Yukon Zinc CORPORATION

Wolverine Project

RECLAMATION AND CLOSURE PLAN

VERSION 2007-02

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1 Introduction

This report has been prepared to satisfy requirements contained within Quartz Mining License QML-0006 (QML) pertaining to reclamation and closure of the Wolverine Project (Section 8.0). Specifically, this document provides information that updates Reclamation and Closure Plan 2006-01 (June 2006) and incorporates the Temporary Closure Plan (February 2007) approved June 8, 2007 for activities to be undertaken at final closure and during any temporary closure.

This document presents the requirements for reclamation and closure based on current and anticipated site development and incorporates requirements of QML-0006 and the Yukon Mine Site Reclamation and Closure Policy (January 2006), including:

- Reclamation objectives
- Progressive reclamation of the site during the life of the operation
- The removal or stabilization of any structures or workings
- The design standard for reclamation and closure of the tailings facility and temporary waste rock and ore storage pad
- Reclamation and re-vegetation of surface disturbances
- Methods for protection of water resources during and after mine closure
- A cost estimate of the work required to close and reclaim the mine
- Closure environmental monitoring plans
- A plan for ongoing and post closure monitoring and reporting at the site

1.1 Glossary of Terms

The requirements of the QML, Type A Water Licence (QZ04-065) and the Yukon Mine Site Reclamation and Closure Policy (January 2006) have been reviewed and incorporated into this Plan. For consistency in interpretation with the contents contained herein, the following terms are defined:

- **Decommissioning** - the period following the cessation of operations involving the removal of equipment from active service
- **Temporary Closure** - has been defined in the QML as (unless otherwise agreed to in writing by the Chief, Dept. of Energy, Mines and Resources):
  1. The cessation of development or production that extends for more than a continuous two week period; or
  2. Any closure after the start-up date where no ore is mined or ore or tailings milled for a period exceeding two consecutive months.
- **Closure or Permanent Closure**
  1. The period that in which decommissioning and reclamation activities are completed for the purpose of returning the mine site to a viable, self-sustaining ecosystem (estimated to be a three year period for the Wolverine Project to meet

water discharge standards in the tailings facility); Monitoring frequency is quarterly during closure

2. As defined in the QML, where temporary closure exceeds three continuous years

- **Post Closure –** The period following closure where all reclamation activities are complete and the monitoring schedule frequency is reduced to annual assessments.

2 Project Description

The Wolverine Project is an underground mining project that will produce copper, lead and zinc concentrates. The Wolverine Project is located within the Finlayson District in the south-eastern Yukon, approximately 280 km east of Whitehorse, 190 km northwest of Watson Lake and 135 km southeast of Ross River, near the headwaters of the Wolverine Lake watershed. Site access is via air or a 26 km long all season access road that connects with the Robert Campbell Highway at km 190.

The Finlayson area is within the Kaska Nation traditional territory (Figure 2.0-1). In the Yukon, the Kaska Nation is comprised of the Ross River Dena Council (RRDC) and the Liard First Nation (LFN). The area is sparsely populated and considered to be a pristine wilderness supporting numerous wildlife populations. The climate is cold with a mean daily summer temperature of 15ºC and a mean daily winter temperature of -25ºC. Precipitation falls fairly evenly throughout the year, predominantly as rain from May to September and snow for the balance of the year. The mean annual precipitation is 570 mm, with total snow fall of less than 2 m. Maximum wind gusts are less than 40 km/hr and the annual average is 15 km/h. The project site elevation is approximately 1,350 m asl.

The property, originally staked in 1973, was extensively explored over the past two decades. In early 2005, a Type B Water Licence (QZ01-051) and Mining Land Use Permit (LQ00140) were issued to allow for advanced exploration activities. Under these approvals, Yukon Zinc completed test mining and detailed infill diamond drilling programs. A Quartz Mining License (QML-0006) and a Type A Water Licence (QZ04-065), to allow for the development and operation of the mine, were issued in December 2006 and October 2007, respectively.

The project includes operation of an underground mine with surface ramp access to produce 1400 t/day of mill feed ore. The underground mine will extend from approximately 1345 m asl at the portal to 1090 m asl at the bottom stope. The mine includes access ramps, ventilation and evacuation shafts and infrastructure. The industrial complex includes a truck shop, mill, laboratory and office buildings. Power is supplied by diesel gensets and local distribution system.

Mine operation will require approximately 150 people who will live on-site in a self-contained camp. The camp will consist of a kitchen, mess hall, food handling and laundry facilities, administration offices, recreation room, and bunk rooms. Waste water from the camp will be treated with a biological sewage treatment plant and discharged to Go Creek.

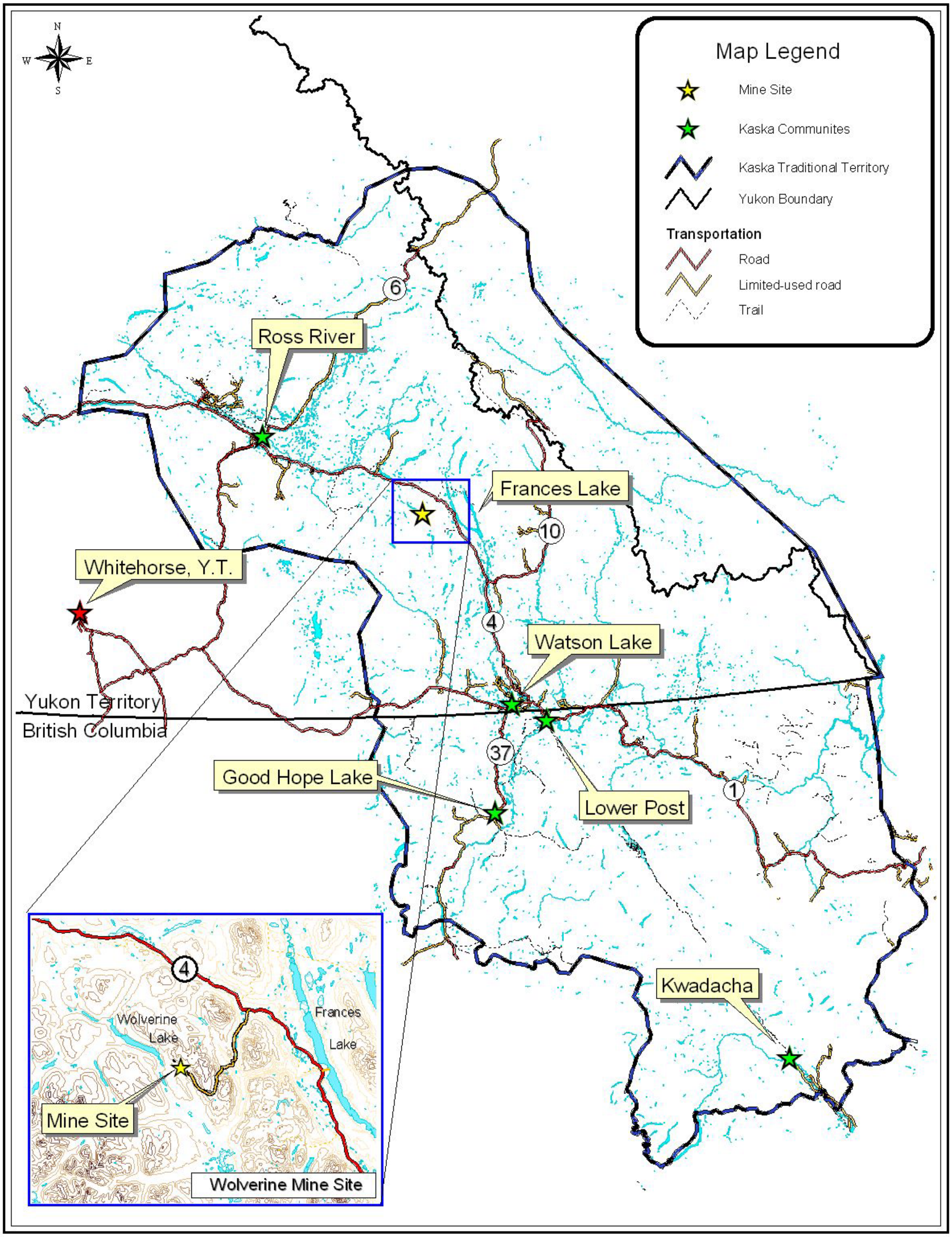


Figure 2.0-1 Location of the Wolverine Project within the Kaska Nation Traditional Territory

Milling involves crushing, dense media separation (DMS), and two-stage grinding followed by differential flotation processes. All water from the milling process will be pumped to the tailings facility for reuse or will be discharged following treatment through a high density sludge and bioreactor processes. Treated water from the tailings facility will be discharged to Go Creek.

Waste rock from the mine will be stored temporarily on a waste rock pad, then mixed with cement, DMS float material, and tailings to produce as paste to backfill the mined-out stopes.

Metal concentrates will be trucked, via the mine access road, to the Robert Campbell Highway and then south to the existing Stewart Bulk Terminal at Stewart, BC for transportation via ocean freighter to various smelters in Asia.

The Wolverine Project has been planned and will be constructed to meet the Terrestrial Performance Standards outlined for terrain hazards, erosion control, re-vegetation, watercourses, contaminated soils, roads and trails, buildings and infrastructure, rock dumps, underground openings and workings, acid mine drainage concerns, tailings impoundment, and water control structures as outlined in QML Schedule D.

3 Temporary Closure

A Temporary Closure Plan (TCP) was submitted to Energy, Mines and Resources pursuant to Section 8.2 of the License on February 3, 2007 and approved on June 8, 2007. The TCP details activities to be undertaken during a temporary closure and the contents of that plan are current as no additional infrastructure has been constructed at site beyond that incorporated in the TCP. The approved Temporary Closure Plan with cost estimates is included in Appendix A.

4 Progressive Reclamation

The primary objectives of land reclamation and revegetation at the Wolverine Project will be to provide short and long term erosion control, to ensure land use compatible with surrounding lands, and to leave the area as a self-supporting ecosystem. The overall goal is to prepare the site (including roads) so that the vegetation returns to a state as near as possible to that in existence prior to mining activities.

The preferred approach to return the site to a productive state is to conduct progressive reclamation throughout the life of the project. Areas that may be considered for progressive reclamation include laydown areas, footprints were temporary structures and redundant components were located, borrow sites, and the downstream face of the tailings dam. Wherever possible, concurrent reclamation of disturbed areas will occur throughout the operational phase of the mine.

4.1 Slope Stabilization and Revegetation

Although most decommissioning and reclamation activities will commence following cessation of underground mining and processing operations, slope stabilization and revegetation activities will be completed progressively during operations where possible. During closure, slopes will be stabilized by contouring and leveling to provide land forms which conform to the surrounding terrain and provide suitable seedbeds. Erosion features will be minimized on re-sloped surfaces, runoff will be diverted away from steep slopes, and settling ponds and diversion ditches will be used as necessary. Organic stockpile material will be used in conjunction with growth media to sustain re-vegetation.

Seeding following ground preparation with the Wolverine Project custom roadside and slope seed mixtures will be used for the reclamation of disturbed lands if vegetation does not establish naturally (Table 4.1-1).

Table 4.1-1 Wolverine Project – Custom Seed Mixture

Use	Common Name *Species*	% in Mixture	Application Rate
Roadside	Violet wheat grass *Agropyron violaceum*	40	30kg/ha
	Slender wheat grass *Agoropyron pauciflorum*	10	
	Tickle Grass *Agrostis scabra*	5	
	Sheep Fescue *Festuca ovina*	20	
	Arctic Fescue *Festuca saximontana*	25	
Slope	Violet wheat grass *Agropyron violaceum*	50	40kg/ha
	Fowl Blue grass *Poa palustris*	10	
	Tickle Grass *Agrostis scabra*	5	
	Tufted Hair Grass *Deschampsia caespitosa*	10	
	Arctic Fescue *Festuca saximontana*	25	

Recontoured areas would be inspected for physical stability, and any runoff collected to determine chemical stability. Revegetation success will be measured against specific criteria such as cover rate, productivity, and period to attain a self-sustaining condition. Monitoring locations will include randomly allocated plots located within areas representative of the reclaimed lands.

Performance standards for revegetation will be evaluated against the vegetative cover and productivity of surrounding areas (recognizing that revegetation plans often result in differences in vegetation types (e.g. grasses vs. adjacent forest)), according to the parameters suggested by Environment Canada[1]. The direct application of cover and productivity rates will be evaluated, including consideration of the vegetation cover requirements for reducing erosion. A reclamation research program is outlined in Section 5.2.1 and will also be submitted within the Monitoring and Surveillance Plan, as required by QML Section 12.2.

Table 4.1-2 provides revegetation performance standards, as suggested by Environment Canada, for evaluating the success of revegetation efforts and for estimating the need for further re-vegetation efforts. The standards will be applied on a per area basis and will

[1] Environment Canada, letter from Eric Soprovich to Arlene Kyle, Re: *Wolverine Project Plans (Various) (Versions 2006-01),* July 24, 2006

include a time component, recognizing that the long-term performance of revegetation will only be confirmed by evaluation in successive years (and into post closure).

Table 4.1-2: Conceptual Revegetation Success Rate Performance Standards

Revegetation Success Rate on a Unit Area	Cover Rate*	Productivity**	Time (yrs) Self-Sustaining***
0	<50%	<50%	< 2 years
10%	50% to 80%	50% to 80%	2 years
25%	50% to 80%	50% to 80%	5 years
60%	50% to 80%	50% to 80%	10 years
100%	50% to 80%	50% to 80%	15 years
25%	>80%	>80%	2 years
70%	>80%	>80%	5 years
100%	>80%	>80%	8 years

Notes:
* Percentage of some specified leaf area index
** Percentage of productivity in surrounding terrain
*** no addition of fertilizer or seed

4.2 Mine Access Road

The all-weather access road is scheduled for completion during the operations phase. Yukon Engineering Services has assessed the road closure requirements based on completion of the Phase 2 road, and these requirements are provided in General Site Plan 2007-03. Detailed progressive reclamation plans for borrow sites, staging area and/or cut and fill slopes will be prepared following completion of the Phase 2 as-built drawings.

4.3 Temporary Waste Rock and Ore Storage Facility

Yukon Engineering Services has assessed two closure scenarios applicable that are applicable for this report for the temporary waste rock and ore storage facility (waste rock pad or pad):

1. Closure of the pad as it exists today (Phase 1) prior to pre-production development (Figure 4.3-1)
2. Closure of the pad near the end of mine life (Phase 1 and 2) (Figures 4.3-2 and 4.3-3)

The Design Parameters for the waste rock pad for all closure phases are as follows:

- Maximum allowable slope – 3H:1V
- The waste rock will be overlain by 1000 mm thick clay cap blanket and 2000 mm thick granular till cover (both compacted to 90% Modified Proctor with 2% of optimum moisture content), and 150 mm-300 mm topsoil and vegetative layer.
- Collection ditches will be required to transport run-off from the WRP to the existing (south) sump and a future (north) sump
- An interceptor ditch will be required to intercept natural runoff from the higher ground surrounding the pad, returning it to natural downstream drainage courses.

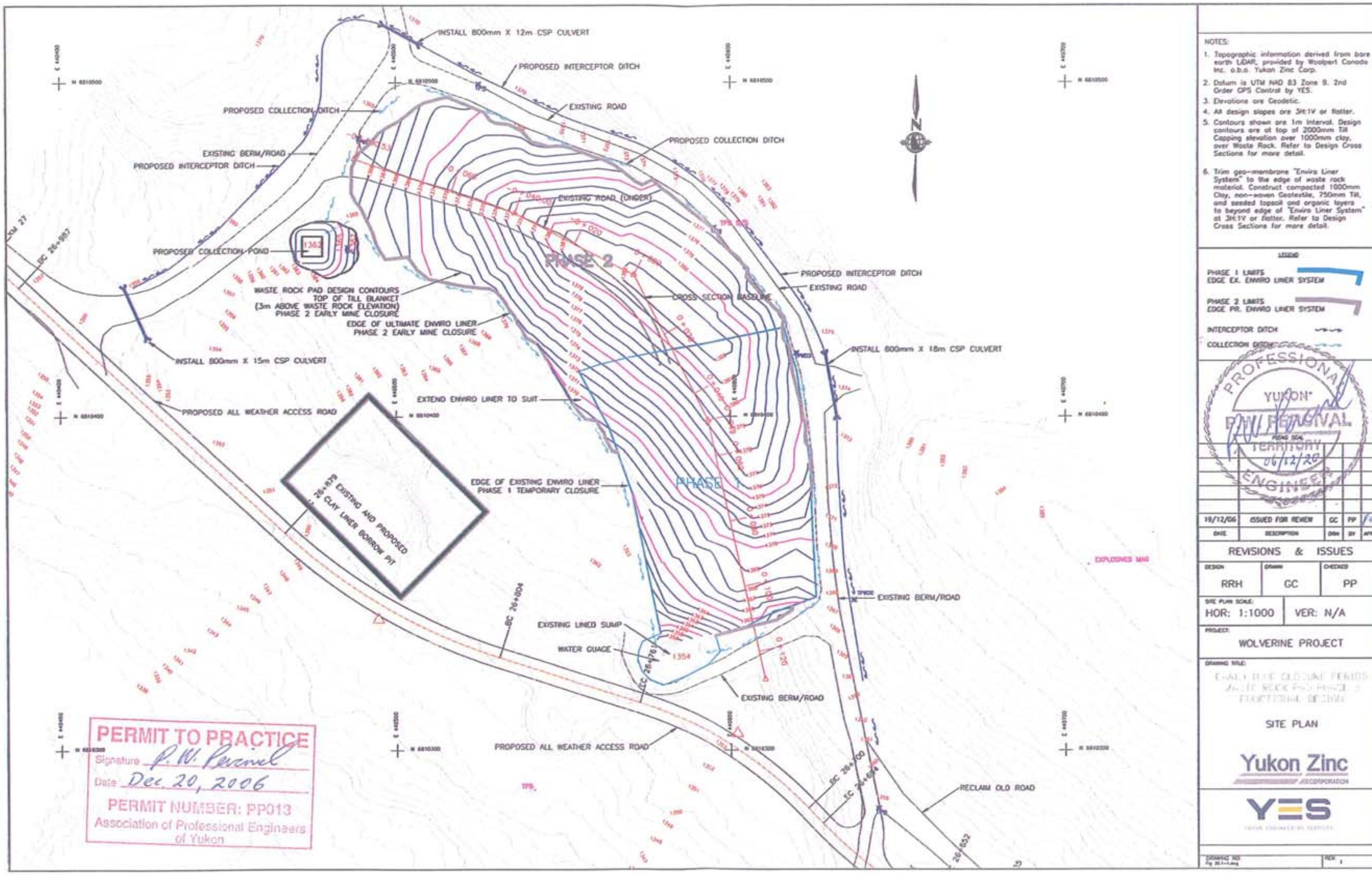


Figure 4.3-1 Closure of the Waste Dump Pad – Early Closure Condition

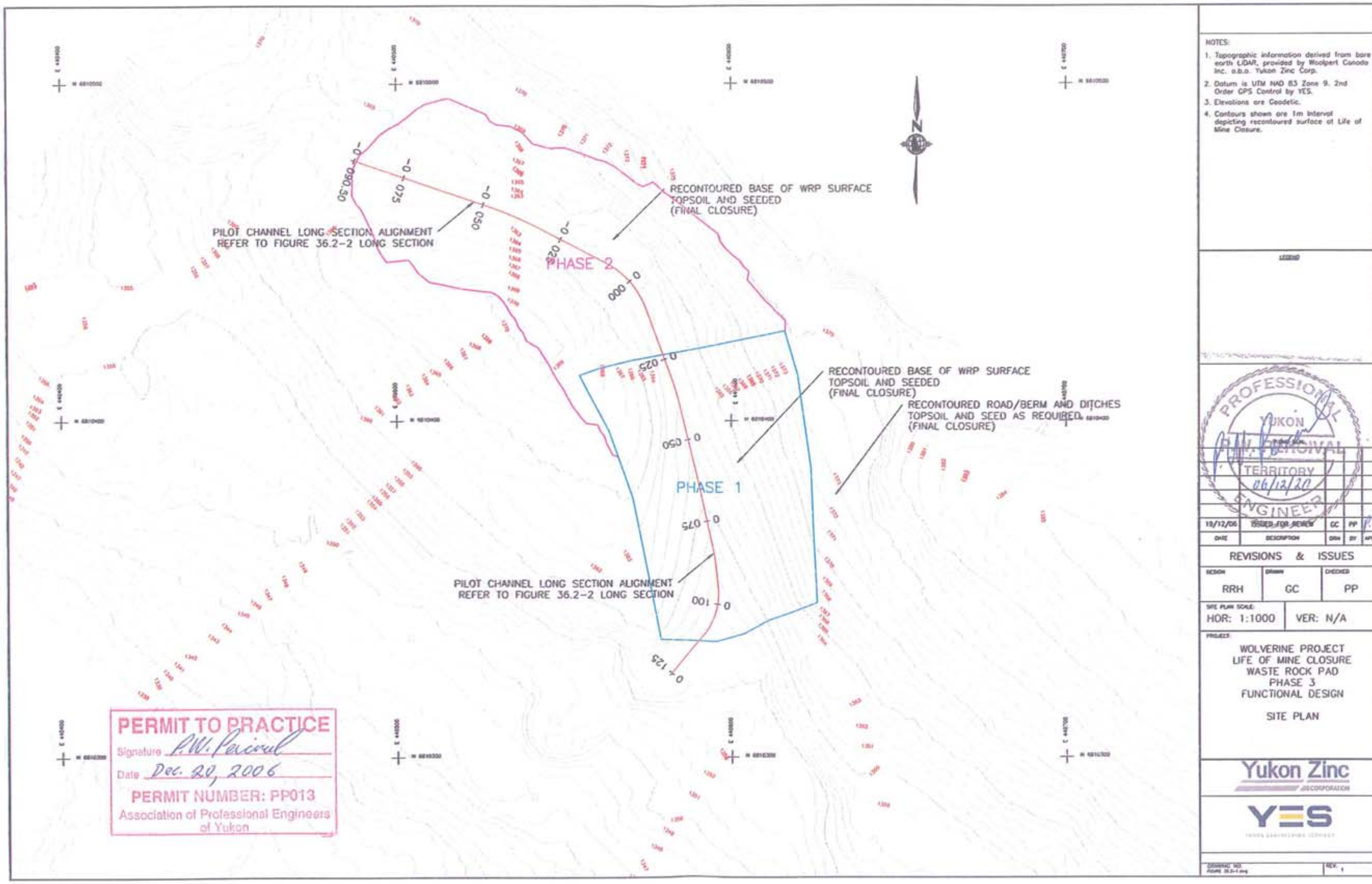


Figure 4.3-2 Closure of the Waste Dump Pad – Life-of-Mine Closure Condition

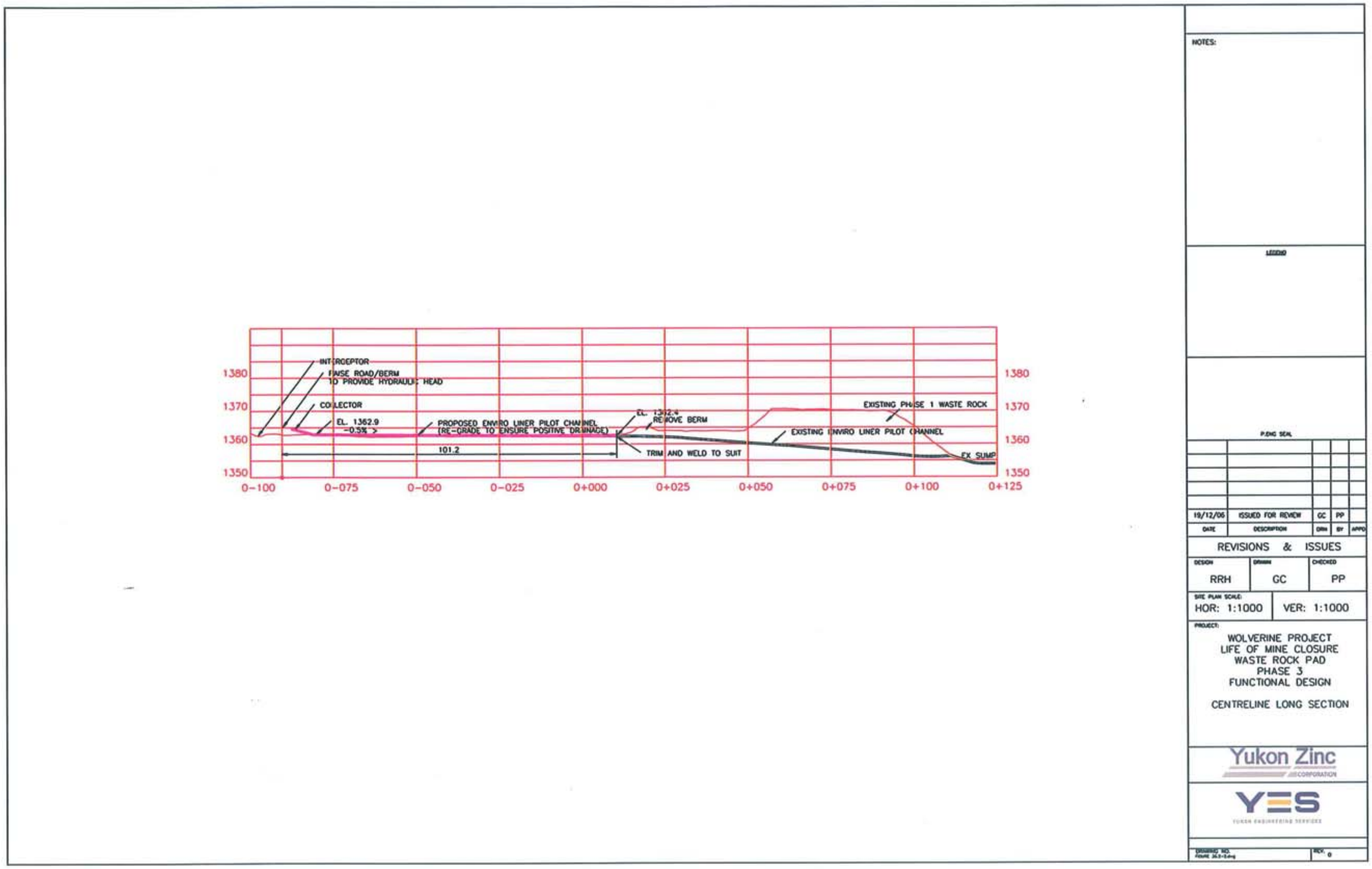


Figure 4.3-3 Closure of the Waste Dump Pad – Life-of-Mine Closure Condition Cross-Section through Centreline

4.3.1 Scenario 1 – Early Closure

There is presently ~14,600 m^3 of material on the waste rock pad, comprised of ~12,700 m^3 waste rock, plus 1,900 m^3 ore. Approximately 4,450 m^3 is considered "over-build", and sits outside of the slopes and grades as described in the Design Parameters. As part of the re-contouring, this 4,450 m^3 will be cut back and placed inside of the design envelope. The 1,900 m^3 of ore will be hauled back underground.

Prior to the placement of the capping material, the pad will be re-contoured to a dome shape with a final grade of 3H:1V on all the side slopes. The waste rock will be compacted and the surface smoothed by heavy equipment to facilitate shedding of surface water. Berms and/or lined energy absorbing runoff channels will be constructed to minimize infiltration and erosion. To minimize the generation of future acid rock drainage, the domed waste will be capped by a clay layer.

To protect the clay from freeze-thaw effects (e.g. development of vertical shrinkage cracks), a frost protection layer is needed. This frost cover will consist of the locally abundant granular till material. Finally, the stockpiled topsoil and organic material will be spread over the capped pad. The surface of the organic material will then be seeded to re-establish a vegetation cover, with the seed mix designed to minimize attraction of wildlife.

All surface water draining towards and from the engineered cover system will be collected in perimeter “collection” ditches immediately outside of the toe of the capping material. The perimeter ditches will flow by gravity into the existing sump where, if needed, this water will be treated before finally being discharged to natural drainage just southeast of the pad. The total length of the perimeter ditches will be approximately 265 m. As soon as it has been established that these flows do not (or no longer) require treatment, the existing sump will be filled with the locally available till-like material and re-vegetated.

Reclamation may also include the installation of passive sediment retention systems such as hay bales or activated carbon to ensure there are no sediment or metal releases to the local streams. A water management plan will be implemented to ensure the success of the passive system. The management plan will include inspections of the pad and its appurtenances during scheduled site inspections for three years after decommissioning and reclamation.

4.3.2 Scenario 2 – Life of Mine Closure

With pre-production and production development, an additional ~65,000 m^3 of material could be stored on the pad. The following steps will be taken during the operation phase once all waste rock has been returned to underground stope voids:

- The granular till and clay components of the pad Enviro Liner will be hauled to underground, and encapsulated behind paste backfill.
- The geo-synthetic components of the Enviro Liner will be cut into manageable segments, then hauled underground, and encapsulated behind paste backfill.
- The sump and pond will be backfilled with fine-grained materials.
- Culverts will be removed and the Collection and Interceptor Ditches will be re-contoured to their original states.

- The entire waste rock pad site will be covered with stockpiled topsoil and organic stripping, and re-vegetated accordingly.

4.4 Tailings Facility

The Tailings and Infrastructure Design and Construction Plan, as per the requirements outlined in QML Section 13.3, is currently in preparation. A plan and implementation schedule for ensuring the long term stabilization and closure of the tailings facility, as well as detailed progressive reclamation plans for the dam face, ditches and disturbed areas will be prepared following construction of the facility and completion of the as-built drawings. These plans will be incorporated into the next revision of the Reclamation and Closure Plan, due December 2009.

4.5 Biopass Pilot Testing

The Biopass system is a contingency measure to ensure that mine discharge from the backfilled mine workings does not affect the environmental integrity of Wolverine Creek and Little Wolverine Lake. The Monitoring and Surveillance Plan, as per the requirements outlined in QML Section 12.2, will be prepared in 2008. A description of the field test and proposed location of the Biopass system, including its construction details, operational protocols and a monitoring plan will be included in that document. The field test is scheduled to commence within the first year or two of operations once ‘typical’ mine water quality is available. Results of efforts undertaken to test the Biopass system under site conditions, should they be completed within the next two years, will be incorporated into the next revision of the Reclamation and Closure Plan (due December 2009).

More details on the conceptual design of the Biopass system are provided in Section 5.3.5.

5 Decommissioning and Closure Phase Activities

5.1 Introduction and Overview

The timing of facility closures is dependent on a number of factors including the purpose of the facility and its future use and environmental considerations. Site decommissioning activities are anticipated to commence during the final stages of operations after year-10 of operations. Table 5.1-1 provides a list of anticipated activities that will be required during the decommissioning and closure period. A number of personnel will be required onsite to implement the various decommissioning, closure and reclamation tasks.

Prior to undertaking closure activities, all areas where ore, concentrate, waste rock, solid wastes, special wastes, fuel and chemicals were stored or handled at the site, the soil will be tested for contaminants, and if contamination is found, the contaminated soil will be removed from the area and hauled offsite in accordance with the Yukon Environment Act and Contaminated Sites Regulation.

The water treatment plant will remain in operation to treat the tailings facility excess water during closure until pond water meets discharge criteria. The following infrastructure and equipment will remain operational or onsite to support water treatment plant operations:

- onsite roads to the camp, tailings facility and water treatment plant
- main access road
- light duty vehicles
- discharge pipelines and pumps
- fuel storage facility
- power generating facility with adequate capacity to power the water treatment plant, pumping systems, and camp
- small maintenance workshop
- laboratory and reagent storage facility
- communication system

Table 5.1-1 Activities Associated with the Decommissioning and Closure Phases

Component	First Year of Closure and Decommissioning	Year 2 to Year 3 of Closure and Decommissioning Phase
Mine workings	Install hydraulic plugs as main ramp is backfilled to stratify underground water Cement/grout ventilation openings and selected dewatering wells Install portal barrier	
Industrial complex area	Dismantle and remove mill building and supporting infrastructure, including buried tanks, pipes and underground services Cover concrete foundations with overburden and re-vegetate Market mining and mill equipment Transport explosive and cap magazines offsite Deactivate most gensets leaving adequate power for the camp and water treatment facility Conduct remediation programs Recontour, replace organic layer and seed disturbed areas Remove freshwater pond	Construct portal discharge ditch to Biopass Remove site runoff collection ditches once area is reclaimed and vegetated Remove remaining gensets and transmission lines once all activities are complete Remove demolition waste or store in authorized landfill. Remove all hazardous waste from site Market and dispose of all assets once support for water treatment and reclamation activities are no longer needed
Tailings facility	Dismantle reclaim and tailings pipelines and dispose of in tailings facility Diversion ditches will be decommissioned Cover tailings with 0.5 m DMS float (winter)	Cover tailings with 0.5 m DMS material (winter placement) Remove water treatment plant and pipelines Remove seepage dam
Water treatment plant	In use for treatment of excess water from tailings facility	Decommissioned only after tailings pond water meets discharge criteria
Camp	Remove modular components not required to support ongoing activities.	Progressively remove all buildings Market sewage treatment plant Seal water well
Airstrip	Will not be decommissioned	Will not be decommissioned
Onsite and access road	In use for removal of material and import of supplies; road access and traffic control maintained	Access and traffic controls in place until the end of the closure period; road route deactivated and reclaimed
Land farm		Use soil in reclamation activities if deemed remediated; haul offsite if contaminated
Landfill and incinerator		Remove incinerator from site Close landfill by contouring, capping and seeding

5.2 Site Reclamation Objectives

The primary objectives of land reclamation and revegetation at the Wolverine Property will be to provide short and long term erosion control, to ensure land use compatible with surrounding lands, and to leave the area as a self-supporting ecosystem. The overall goal is to prepare the site (including roads) so that the vegetation returns to a state as near as possible to that in existence prior to mining activities.

5.2.1 Site-specific Reclamation Research

During the operations phase, additional site information will be acquired to develop a comprehensive closure plan that will be cost effective, and environmentally and technologically feasible. To ensure that reclamation activities have greater success, the results of reclamation research will be incorporated into the plan. Proposed areas of research include the following activities:

- investigate the availability of natural seed or the availability of productive seed material from local surroundings
- undertake vegetation trials using native plant species
- undertake clean fill investigations to determine potential sources of non acid generating material for closure
- inventory all organic stockpile areas created during the exploration and construction periods to determine the availability of soils for reclamation cover
- assess nutrient level deficiencies in the available soils to determine necessary amendments
- determine appropriate seed mixes for reclamation through the experimentation of test plots
- determine the potential metal uptake by the plants

The above studies will be implemented during the operational phase to establish the site-specific plans for progressive reclamation and for closure. YZC will work with consultants, First Nations and other technical groups to address potential environmental constraints and overall site issues of concern. Reclamation plans will be revised to ensure that the land is restored to a productive state for alternate future uses.

The revegetated areas will be subject to periodic inspections that include the monitoring of the metal uptake in vegetation, the inspection of native plant invasion, and the evaluation of plant growth.

Success of the revegetation program will be determined by measuring a number of aspects including growth, survival, density and diversity of perennial species as discussed in Section 4.1. Monitoring locations will include randomly allocated plots located within areas representative of the reclaimed lands.

Monitoring reports will be submitted to the regulatory agencies, the Kaska and the communities of interest as required to obtain feedback on the success of the reclamation program.

5.3 Portal and Underground Workings

5.3.1 Mine Backfill

Throughout operations, backfill of the mine stopes will occur. Near the end of the mine life, when mining along the main decline, paste backfill of the decline will also occur. The backfill serves primarily as structural support for the mining operation but has an added benefit of limiting exposure of mine walls to oxidative conditions.

In addition to backfill, the mine openings must also be stabilized. Two closure considerations apply to the mine openings and workings at the Wolverine Project:

- ensure public safety and protection of wildlife
- limit portal discharge of groundwater

To ensure public safety, all openings exposed to the surface will be capped or blocked. The 1345 Portal will be sealed off by a barrier constructed of tires, course riprap and cemented fill to prevent access by the public and wildlife. It is proposed to construct the barriers of used heavy machinery tires, a technique used in Alberta and British Columbia. The tires would be compressed by an excavator equipped with a thumb attachment and wedged into the opening.

5.3.2 Hydraulic Plugs

Preventing the potential for discharge of groundwater from the mine workings is an important focus of the Wolverine Project closure plan. While most of the underground mine workings will contain paste backfill, it will be necessary to install hydraulic plugs at strategic locations within the main access ramp. A conceptual plan of the parallel plugs is provided in Figure 5.3-1. The purpose of the plugs is to stratify the water within the mine workings, so that only meteoric water is present in the upper part of the main ramp. Plug location must be carefully selected with regard to the mechanical and hydraulic characteristics of the rock, and a detailed knowledge is necessary for detailed design.

The ventilation openings will also be plugged to minimize the potential for groundwater discharge and prevent public or wildlife safety hazards.

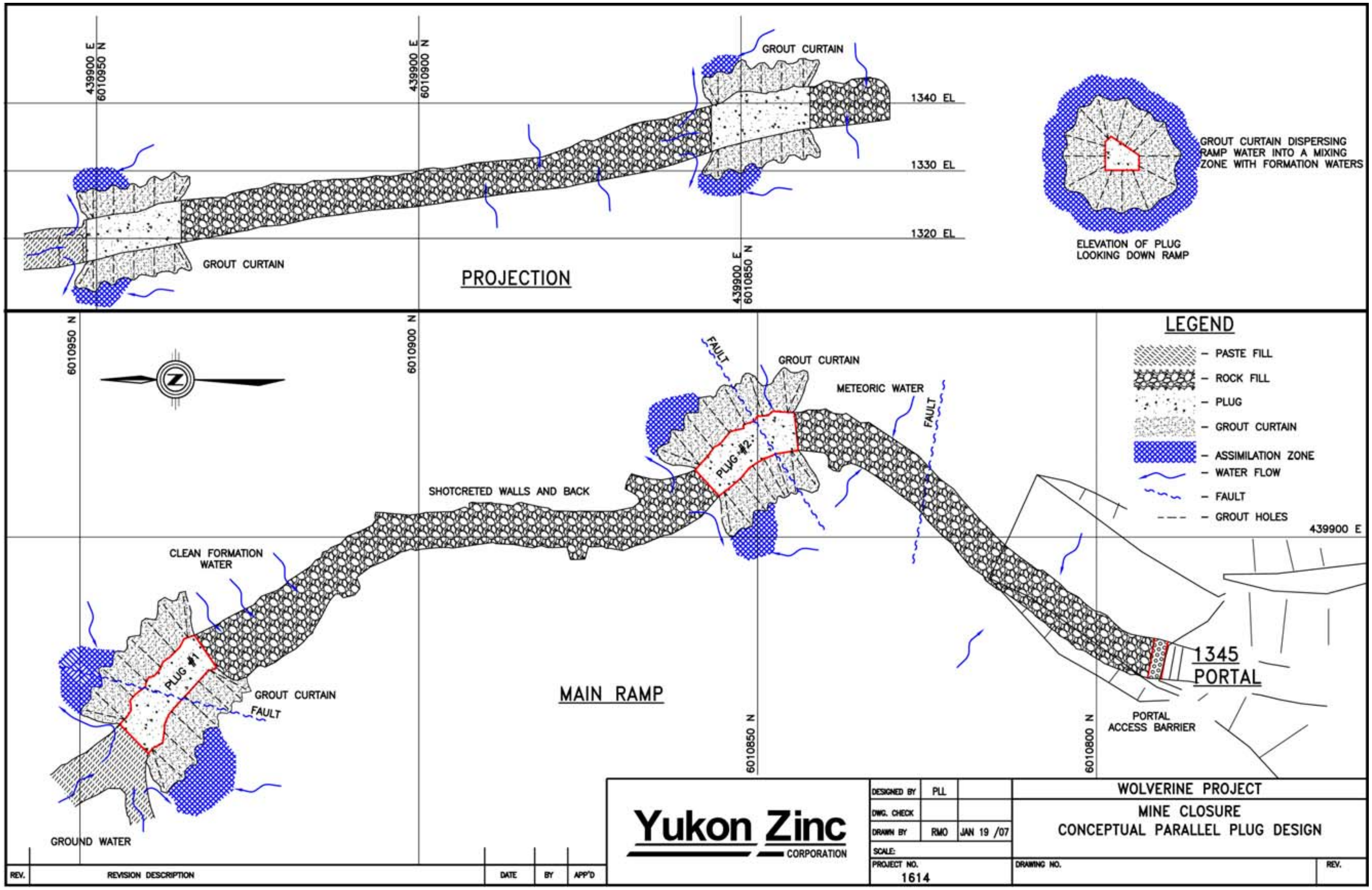


Figure 5.3-1 Parallel Hydraulic Plugs Conceptual Design in Underground Workings

Some portal discharge is expected but based on existing monitoring data from the underground test mine there is a strong likelihood that this water will be of acceptable quality to directly discharge to the environment. In the event that this water is of poorer quality than expected, a contingency measure will be in place. Specifically, YZC will construct a drainage ditch from the portal to the Biopass biotreatment system as a contingency measure in the event of unexpectedly poor quality water passively discharging from the portal. Details pertaining to the Biopass system are provided in Section 5.3.5 below.

5.3.3 Mine Dewatering Wells

Mine dewatering wells that are not used as groundwater monitoring wells, will be cement grouted to surface. Sealing of the dewatering wells is designed to close off any hydraulic pathway to surface.

5.3.4 Underground Water Quality Predictions

The quality of groundwater following the flooding of mine workings has been an important focus of the Wolverine Project. AMEC Earth & Environmental (AMEC) has developed an underground water quality model utilizing the static and kinetic geochemical testing database for mine rock types at Wolverine. The primary objective has been to develop predictions of water quality of flooded mine workings at closure. A detailed assessment and prediction was originally included in YZC's *Revised Documentation in Support of Water Use Application QZ04-05* (January 2007) and is updated herein. The updated memorandum is provided in Appendix B and a summary is provided below.

At Wolverine, backfilling of completed mining areas will occur throughout the life of the operation. Paste backfill, using cemented tailings, will be the dominant backfill material with lesser quantities of mined waste rock and DMS float. The mine access ramp and ventilation raises will have their surfaces shotcreted to enhance structural stability.

At mine closure, hydraulic plugs will be installed (Section 5.3.2) and the backfilled underground workings will be permitted to flood with groundwater. The chemical composition of the flooded mine water will be the result of chemical mass loadings from three different sources:

1. constituents in groundwater;
2. accumulated weathering products on exposed mine rock surfaces; and
3. accumulated weathering products on exposed cemented backfill surfaces

Groundwater that floods the mine will dissolve the soluble weathering products accumulated on the exposed surfaces of mine rock and backfill. Estimates of the accumulated weathering products on the mine surfaces are based on the humidity cell tests with mine rock, ore and paste backfill as well as DMS float. Measured release rates from humidity cells with the major six rock types are used for non-ore bearing rock surfaces. Release rates for all cells were calculated for steady-state conditions that exclude the first 20 weeks of data. To update previous predictions, release rates were calculated for the period ending December 2006 to the period ending October 2007. Although some increases in metal release rates were observed for ore and NP-depleted ore cells (such as Al, Cu, Fe and Ag), in general the majority of release rates for most of the materials have decreased since the previous reporting period.

Mass loadings to the total water volume in the flooded mine are estimated by scaling mass loadings (mg/m^2/wk) derived from humidity cell tests to the estimated surface area exposed in the flooded mine. The weathering products are assumed to accumulate on the mine surfaces throughout the mine operation without losses due to ongoing leaching. Ultimately the water quality of the mine water is estimated by dissolving the total mass (mg) of accumulated weathering products in the total volume of groundwater (L) that has flooded the mine.

The chemical composition of the mine water has been modeled with the geochemical equilibrium model MINTEQ to develop estimates of chemical composition of the groundwater following flooding of the mine workings.

The revised metal release rates were incorporated into the underground water quality model to evaluate the potential impacts due to rate changes. A comparison of the expected mine water concentration as calculated in January 2007 is compared to the expected mine water concentration as calculated with the revised release rates and is summarized in Table 5.3-1.

Table 5.3-1 Updated Prediction of Underground Water Quality for Groundwater in Closed Mine Workings

Parameter	January 2007 Predicted Concentration	December 2007 Predicted Concentration
Sulphate	282	238
Aluminum	0.50	0.64
Antimony	0.08	0.07
Arsenic	0.06	0.06
Cadmium	0.24	0.24
Copper	0.035	0.033
Iron	0.49	1.16
Lead	0.14	0.12
Molybdenum	0.009	0.009
Nickel	0.016	0.016
Selenium	0.50	0.38
Silver	0.002	0.088
Zinc	8.0	7.7

In general, the predicted closure concentrations of the environmentally relevant parameters in the model have decreased slightly; however, the revised water quality predictions are not materially different from previous submissions.

5.3.5 Contingency Water Management and Treatment

The Wolverine Project reclamation and closure plan has included a contingency plan for mitigating the potential effects of poor quality groundwater, originating in the underground workings, and discharging into Wolverine Creek. Naturally, a portion of the groundwater that contributes to the flow in Wolverine Creek is elevated in selenium and other metals. For the treatment of metals and selenium in groundwater that contributes to Wolverine Creek, a passive biological treatment system (termed Biopass) is proposed. The Biopass system represents passive biological treatment where dissolved selenium (selenate, selenite) is reduced to solid phase elemental selenium in a microbial process similar to that used in a bioreactor (active biological treatment) and metals are precipitated as metal sulphides.

The Biopass system will be constructed in the Wolverine Creek channel along the stretch of the creek (e.g. 400 m long) that could potentially receive groundwater with high selenium and other metal concentrations derived from mine water (Figure 5.3-2). Clean water in Wolverine Creek, upstream of the Biopass channel, will be diverted along the western margin of Wolverine Creek in a lined channel and re-introduced into Wolverine Creek in the lower reach that is not adversely affected by poor quality groundwater.

The Biopass system will be approximately 2.5 m deep and 3 m wide and will collect groundwater that naturally discharges to Wolverine Creek (Figure 5.3-3). Deep groundwater that does not enter into Wolverine Creek will flow towards Little Wolverine Lake where no impacts to water quality are predicted to occur. The excavated channel that intercepts groundwater will be filled with an organic substrate to support the microrganisms that reduce dissolved selenium to solid phase elemental selenium as well as sulphate reducing bacteria. Organic materials that can be used as substrate include mixtures of mushroom compost, manure, alfalfa, sawdust or straw, along with natural peats in the area. On top of the organic substrate there is a gravel layer (0.15 m) that facilitates (lateral) drainage of the upward flowing treated effluent. The drainage layer overlying the organic substrate is sealed at the top by an impermeable geomembrane liner that limits exchange of water and gas with the overlying cover (0.25 m) of topsoil to protect the liner. Rainfall and surface runoff that infiltrates into the cover layer is collected in lateral sand drains and removed to prevent water saturation of the topsoil cover.

The groundwater that discharges into the more permeable organic substrate is treated while moving in a down-slope direction. Collected groundwater will flow upwards and through the organic substrate where treatment will occur. Before joining the non-diverted section of Wolverine Creek, the Biopass system will merge into a french drain that discharges into Wolverine Creek. While the water exiting from the Biopass system is expected to be depleted of oxygen, this water will be combined with the diverted well-oxygenated water from upper Wolverine Creek. Moreover, this combined flow will then traverse steep terrain for approximately a kilometer before reaching the mouth of Wolverine Creek and is expected to be fully oxygenated in this fish-bearing reach.

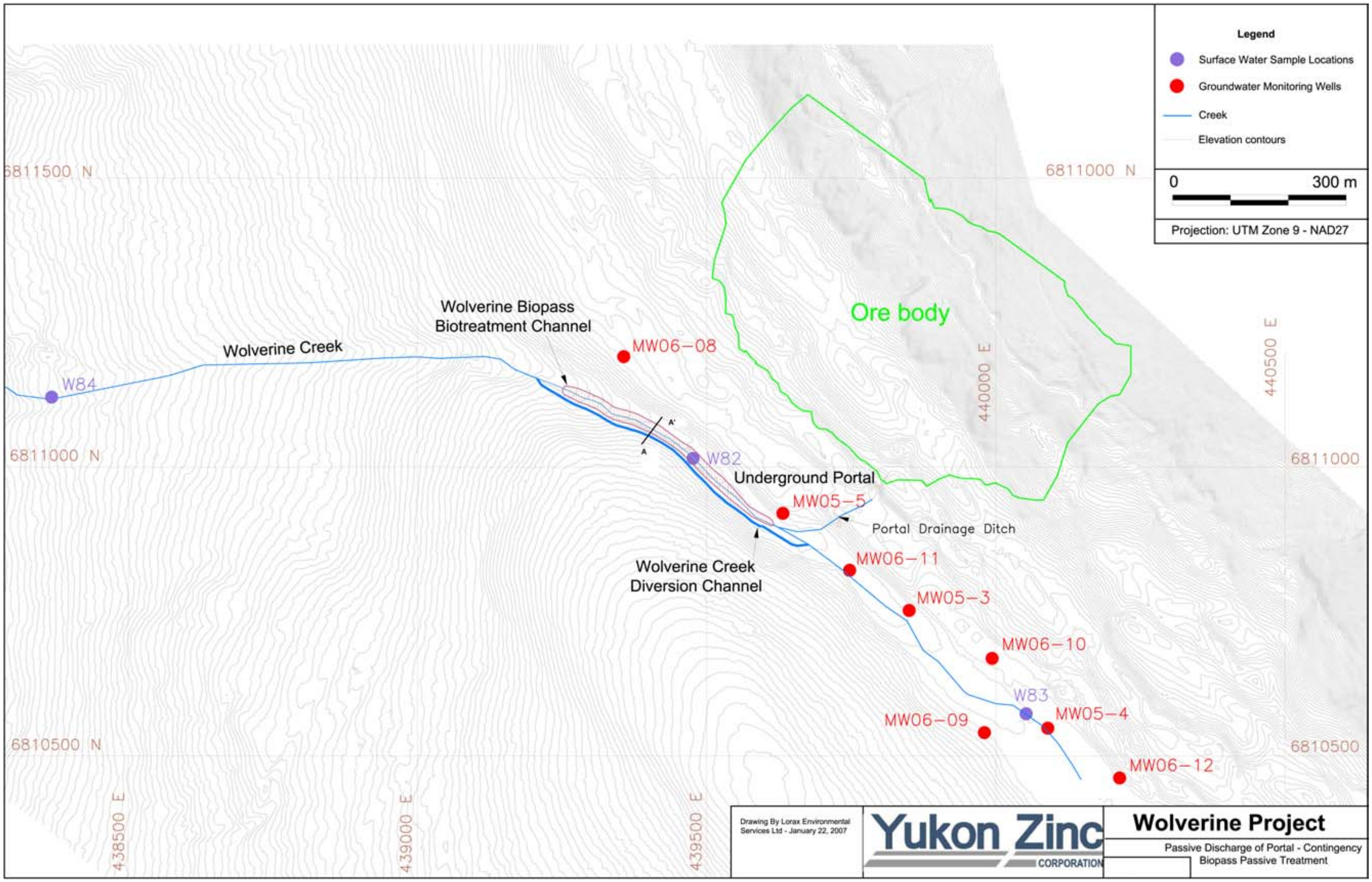


Figure 5.3-2 Location of Biopass Biotreatment System in Wolverine Creek

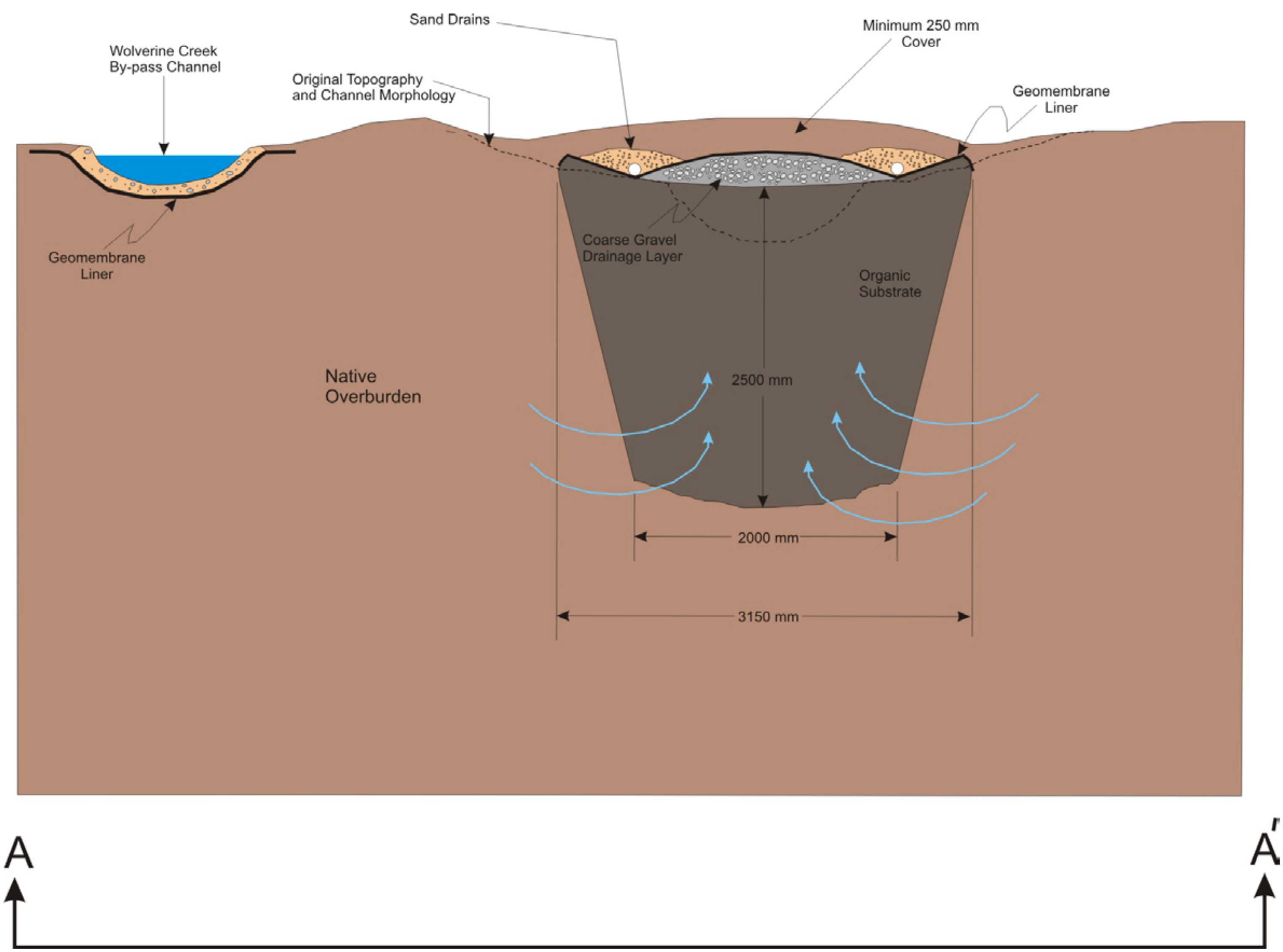


Figure 5.3-3 Cross Section along Wolverine Creek Illustrating Biopass Design and Diversion Channel

The groundwater discharge rates that can be treated will depend on the porosity of the organic substrate layer and the total length of the Biopass system used. For example, by using a Biopass system with a total length of 400 m, it will be possible to treat groundwater at discharge rates of approximately 2 L/s; groundwater discharge rates in the treatment area are expected to be less than 0.5 L/s.

5.3.6 Reclamation

Limited reclamation activity will be required in the areas immediately adjacent to the mine workings and the portal apron. Soil placement and reseeding of these areas are largely addressed as part of the industrial complex reclamation. Minor reclamation and revegetation along the discharge channel corridor from the portal to Wolverine Creek will be performed.

5.4 Industrial Complex Infrastructure

Closure issues related to infrastructure include public health and safety, site stabilization, aesthetics, and restoration of disturbed lands. By the end of the closure period (post water treatment) all materials from industrial complex buildings will be completely removed with the exception of concrete foundations, which will be demolished and buried in situ.

The industrial complex buildings and facilities will be decommissioned in stages, with the water treatment plant supporting infrastructure (listed above) removed last.

Equipment with marketable value will be sold, and the remaining assets will be disposed of through demolition and salvage contracts. In the event that it is uneconomical to remove non-hazardous materials from the site, such material will be buried in the landfill.

5.4.1 Mill and Process Facility

Milling and processing related equipment with marketable value will be sold, and the remaining assets will be disposed of through demolition and salvage contracts. Concrete mill foundations will be demolished and buried with stockpiled soil and revegetated. In the event that it is uneconomical to remove non-hazardous materials from the site, such material will be buried in the landfill.

5.4.2 Power Generation Infrastructure

During the initial closure stage, power requirements will be reduced and only those generators required for ongoing activities will remain operational to support the water treatment plant, pipeline pumps and auxiliary facilities. Excess gensets will be deactivated and removed from the site. Power poles and distribution lines to facilities no longer in use (such as the explosives storage area) will be salvaged or buried in the landfill.

At the end of the closure phase when water treatment is no longer required, the remaining gensets will be removed from the site, and the distribution lines will be re-spooled for salvage or buried in the refuse landfill if in poor condition. Poles will be removed and if the poles are treated with a preservative such as creosote, the contaminated portion of the poles will be disposed of in accordance with the Yukon Special Waste Regulations.

5.4.3 Explosives and Magazines

Unused explosives and detonation devices will be checked for condition and either returned to the supplier for credit, shipped to another third party user, or destroyed through appropriate procedures. In all cases the explosives will be handled, transported and disposed of in compliance with the Explosive Act. The explosives magazines will be returned to the supplier or to a third party.

5.4.4 Fuel Storage Tanks

Fuels and lubricants will be required during the initial 3-year closure phase. During this period, additional fuels will only be provided on an as-needed basis with the objective of reducing the inventory of remaining fuels during the initial closure phase. Fuels remaining at the end of the active closure phase will be either returned to the original supplier or possibly sold to a third party user. Excess fuel storage tanks will be hauled away for salvage. Containment liners will be removed and the berms will be recontoured. All tanks will be emptied of their contents in accordance with the Yukon Environment Act.

Propane tanks used for the storage of propane for underground heating will be removed by a qualified contractor once underground operations cease. Associated fuel delivery lines will be removed and disposed of in an appropriate manner.

5.4.5 Equipment

All fixed equipment with marketable value will be removed from the underground mine workings and sold. Mobile equipment such as scoop trams, and jumbos will be sold. Materials without any marketable value, which are non hazardous, such as piping, wood, and concrete, etc., will be left in place. Electric installation cables will be left in place unless it is determined that they contain levels of hazardous materials. Equipment that cannot be sold will be disposed of in a proper manner.

5.4.6 Industrial Reagents and Hazardous Products

The inventory of chemicals, reagents and hydrocarbon products will be consumed as mine operations are brought to a close. Any remaining materials will be removed from the mine site and returned to the original supplier for credit and reuse, or sold to a third party user subject to the appropriate regulatory requirements. For specialized products, disposal options may include disposal through a licensed waste disposal firm. It is anticipated that such material will be small in volume.

5.4.7 Water Management Structures

The industrial complex has associated drainage works and surface water management structures to eliminate the potential for contamination of surface waters and to convey surface runoff around the facility and into Wolverine Creek. The drainage structures within the industrial complex consist of open channels to transport storm water to a collection pond which is ultimately pumped to the tailings impoundment during operations. The industrial complex drainage works are lined with geomembrane to prevent uncontrolled seepage. These drainage ditches will be decommissioned following the removal of all industrial complex structures. The water collection pond will also be decommissioned with the liner removed and the pond backfilled with coarse material.

The primary surface water management ditch (Ditch 1) upgradient of the industrial complex will also be decommissioned.

5.4.8 Miscellaneous Materials

All salvageable material will be sold and removed from the site. Material that has no scrap value will be disposed of in the landfill site. Prior to disposal in the landfill all of the materials will be examined to ensure that all hazardous materials have been removed and disposed of in an approved manner.

5.4.9 Reclamation and Remediation

Following demolition and dismantling of the industrial complex area, including the mill and concentrator buildings, truck shop and power supply area, approximately 20 ha of area will require soil placement and reseeding. Closure costing has assumed recontouring of the area followed by placement of 250 mm of salvaged topsoil. The area would then be reseeded and fertilized with the reclamation revegetation mix.

During decommissioning and the early closure periods, any hydrocarbon contaminated soils will be isolated and processed for remediation. All fuel storage areas and refueling stations will be assessed for soil contamination. The contaminated soils will be removed from the area and either temporarily disposed of in the landfarm near the airstrip or hauled directly offsite to an approved facility. The selected disposal method will be in accordance with the Yukon Environment Act and Special Waste Regulation.

5.5 Tailings Management Area

Once the mill is no longer operational, the tailings and water reclaim pipelines will be dismantled and disposed of in the tailings impoundment. Diversion Ditches A and B will be decommissioned and clean runoff will be permitted to enter directly into the tailings impoundment. Figure 5.5-1 illustrates the ultimate impoundment configuration immediately prior to closure.

5.5.1 Tailings Impoundment

Ore processing at Wolverine produces waste solids including tailings and dense media separation (DMS) float material. A total of 3.12 M tonnes of tailings and 0.91 M tonnes of DMS float are produced over the life of mine. Only portions of each of these waste streams are actually stored in the tailings impoundment. Process effluent from the grinding and flotation circuits is also stored in the tailings impoundment where a significant portion of it is recycled back to the process plant.

The tailings comprise a sand-silt mixture with a relatively low permeability. Static testing (acid base accounting) of composite tailings samples indicated that the tailings contain significant quantities of sulphide-sulphur and lesser quantities of neutralization potential. As such, Wolverine tailings are characterized as potentially acid generating. Kinetic testing of tailings samples in laboratory humidity cells have been ongoing for over 125 weeks. Although static testing indicates the tailings samples to be ultimately acid generating, humidity cell samples have not gone acid to date (Appendix C). For closure planning purposes, tailings are assumed to be potentially acid generating and closure mitigation strategies have focused on eliminating the potential for tailings oxidation within the impoundment.

To prevent oxidation of the tailings solids and subsequent acid generation, the tailings impoundment has been designed to be a water retaining structure underlain with an impermeable liner. This design permits the tailings to remain completely saturated, both during operations and at closure, and will eliminate the potential for acid drainage from the facility. Moreover, the liner construction also greatly reduces the potential for groundwater contamination occurring both during operations, closure and at post-closure.

The tailings closure strategy involves the placement of a cover of DMS float material over the tailings solids and the maintenance of a water cover over the entire facility. The DMS float material is a fine gravel sized material, which has a low potential for acid rock drainage (Appendix B). Upon cessation of operations, the DMS float in the storage facility will be rehandled and placed over the surface of the tailings in two lifts. During the first winter of the closure period, a 0.5 m thick layer of DMS material will be laid over the ice within the tailings pond. As the ice melts, the DMS will slowly settle over top of the submerged tailings. The objective is to place the cover with minimal disturbance to the tailings interface. The program will provide a stable cover for the tailings and reduce the potential for remobilization and resuspension of tailings solids from wind induced wave action. Following complete settling of the DMS material, an underwater survey will be conducted to ensure adequate cover of the DMS over the tailings. During the second winter, a second 0.5 m thick layer of DMS will be laid over the ice to complete the 1.0 m DMS material cover.

Ultimately, the tailings facility will be closed as a saturated deposit with a combined cover of 1.5 m over the tailings consisting of the approximately 1.0 m of coarse DMS and 0.5 m of water (Figure 5.5-2).

Figure 5.5-3 provides a 3-dimensional rendering of the final closure configuration for the tailings impoundment.

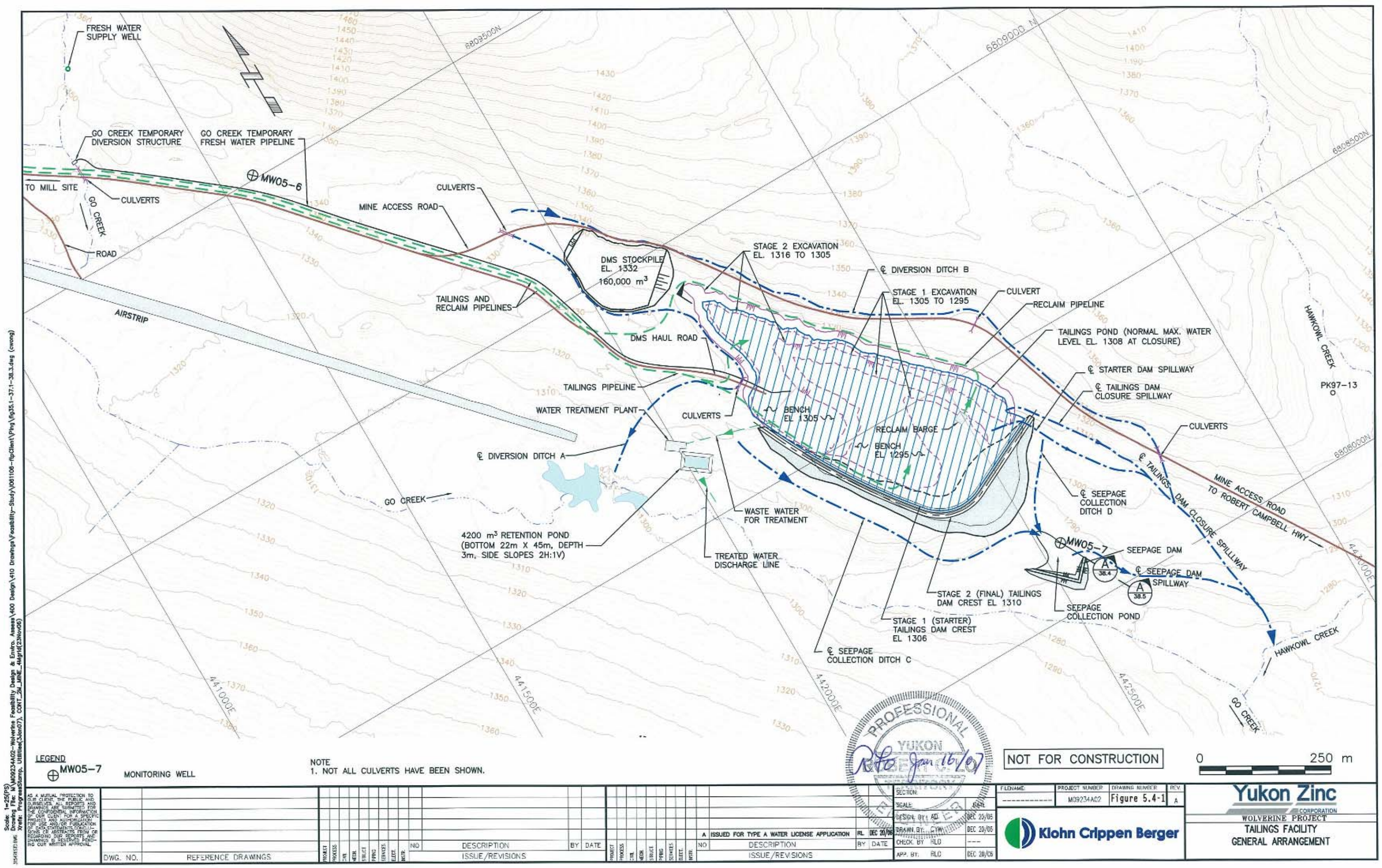
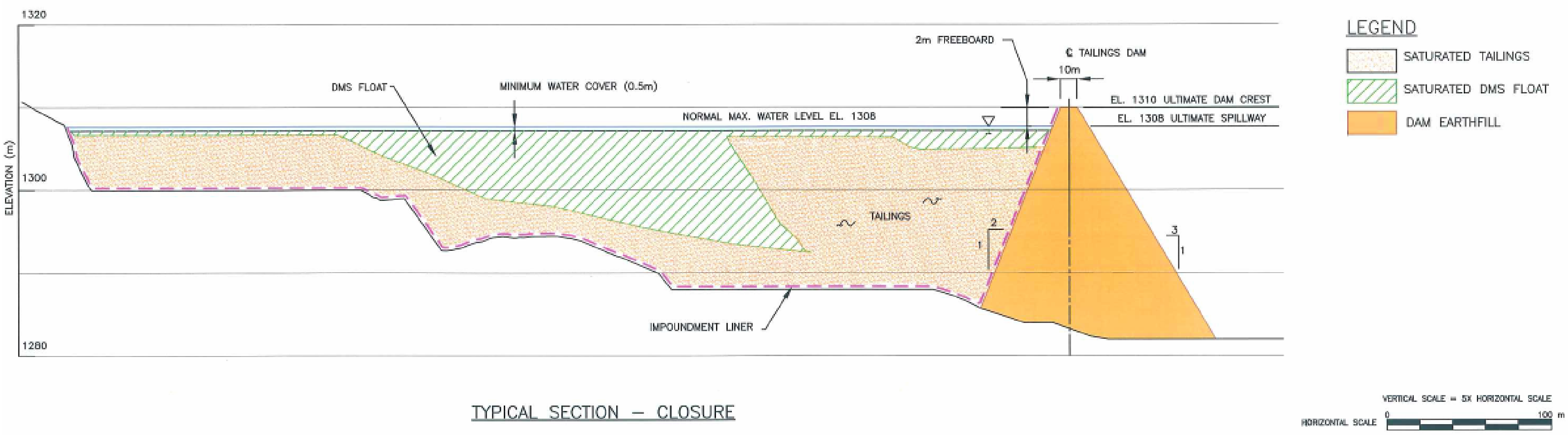


Figure 5.5-1 Final Tailings Facility General Arrangement



original drawing prepared by Klohn Crippen Berger

Figure 5.5-2 Typical Section through Tailings Impoundment at Closure

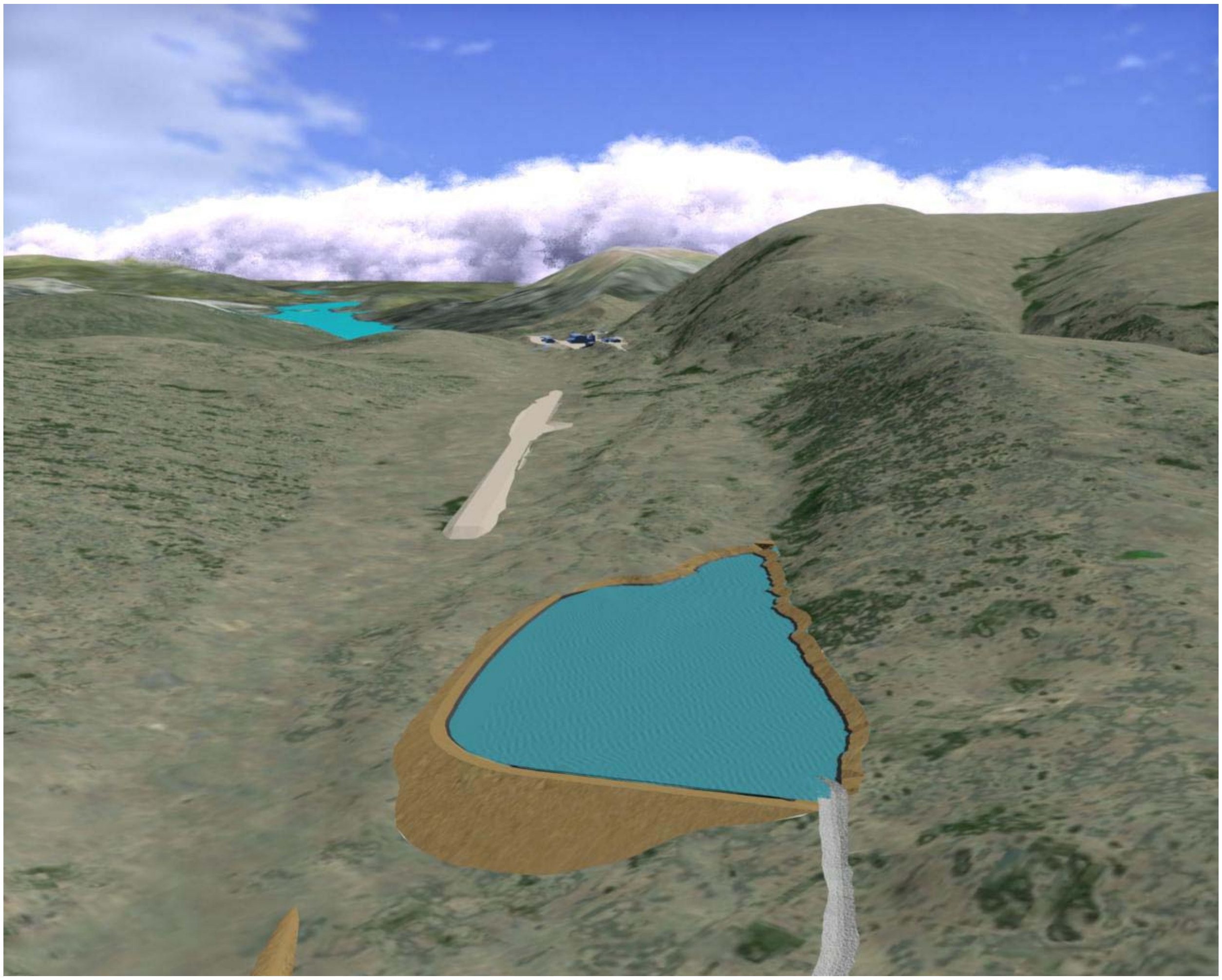


Figure 5.5-3: 3-Dimensional Rendering of Final Closure Configuration of the Tailings Facility

5.5.2 Water Quality at Closure and Treatment Requirements

During closure, the dominant inflow to the tailings impoundment water balance is runoff originating from the tailings area as a result of decommissioning of diversion ditches and the absence of tailings discharge. Precipitation and evaporation rates also increase owing to the larger surface area of the impoundment pond. During the initial 3 years following closure, excess tailings water will be treated through the water treatment plant and water levels in the impoundment will be maintained below the spillway elevation of 1308 m.

At cessation of operations, approximately 80,000 m^3 of tailings water will be held in the impoundment. Upon removal of the diversion ditches associated with the tailings facility, annual inflows of runoff and precipitation to the facility are expected to be on the order of 150,000 to 170,000 m^3. As such, roughly two tailings water volume replacements are expected to occur for each year. Because the tailings are to be covered with approximately 1 m of coarse DMS float, diffusion of tailings porewater to the overlying water column will be greatly attenuated. By the end of year-3 post-closure, approximately 5 to 6 complete volume replacements would have occurred with clean runoff water. After these flushings, impoundment water quality is expected to be of sufficient quality to allow passive discharge through the tailings spillway. As such, the 3-

year closure treatment phase is dictated by the time required to flush tailings influenced water from the impoundment and water quality of the overflow being below discharge limits. The tailings impoundment will be closed as a 'wet" facility with a water cover over the tailings/waste rock and a permanent spillway to manage discharge as well as flood flows through the impoundment.

As previously discussed, the water treatment plant will remain in operation to treat the tailings facility overflow water during the early phases of closure. The following infrastructure and equipment will remain operational or onsite to support water treatment plant operations:

- onsite roads to the camp, tailings facility and water treatment plant
- Retention pond associated with water treatment plant
- main access road
- light duty vehicles
- discharge pipelines and pumps
- fuel storage facility
- power generating facility with adequate capacity to power the water treatment plant, pumping systems, and camp
- small maintenance workshop
- laboratory for analysis and reagent storage facility
- communication system

The water treatment plant and seepage dam will be decommissioned when the effluent quality from tailings facility is in compliance with Type A Water License requirements and suitable for passive discharge to the receiving environment.

Long-term groundwater quality beneath the tailings impoundment following closure is expected to remain at baseline conditions owing to the installation of the Enviroliner on the base of the impoundment during construction.

5.5.3 Water Management Structures

5.5.3.1 Diversion Ditches

Diversion ditches (*e.g*. Ditch A, B and C; see Figure 5.5-1) associated with the tailings impoundment will be decommissioned at closure to permit clean surface runoff to enter directly into the impoundment. Ditches will be backfilled and recontoured consistent with the original topography. Disturbed areas along the Diversion Ditch alignments will be revegetated.

5.5.3.2 Spillway

The spillway on the tailings impoundment will not be removed at closure as this structure serves as the natural overflow of the impoundment once tailings water is of acceptable quality for direct discharge. Routine maintenance of the spillway will be required to ensure that the structure can freely transport water. It is expected the majority of maintenance will be required prior to the onset of the snowmelt period.

5.5.3.3 Seepage Recovery Dam

Once the tailings impoundment water quality is of acceptable discharge water quality, the seepage recovery dam will be decommissioned. Any water within the facility will be tested and if acceptable will be discharged directly to Go Creek. The dam will be recontoured and material spread out to blend in with the existing topography. Disturbed areas will be seeded and revegetated.

5.5.4 Dam Safety and Monitoring

The dam is designed with a minimum factor of safety of 1.15 for the Maximum Credible Earthquake. Consequently, the main concerns with dam safety on closure are associated with erosion of the dam or blockage of the spillway. Accordingly, a long term care and maintenance plan will be prepared to confirm that erosion is not occurring and that the spillway is clear. Measures to mitigate these potential concerns include the following:

- Placement of a 25 m wide neutral rockfill, adjacent to the upstream crest of the dam. The rockfill will maintain the “freewater” away from the dam crest, further reducing the potential for water release even with a significant erosion event.
- The downstream slope of the dam will be revegetated to minimize erosion.
- The spillway will be located in an excavated channel lined with large riprap and will have a design capacity for the peak flow from the 10,000-year rainfall plus snowmelt event.

Site Monitoring

The physical and seepage conditions in the dam and area directly downstream of the dam will be monitored during operations and closure as follows:

- Routine: visual monitoring by mine personnel - daily during mine operations and every second month after mine closure;
- Intermediate: visual monitoring by the site dam engineer and annual review of monitoring data and dam performance by the design engineer during operations and annually after closure;
- Comprehensive: Dam safety review by dam engineer - on first filling, prior to dam raising, prior to decommissioning and otherwise routinely every 7 years (even after decommissioning); and
- Special Reviews: site visit and review of monitoring data are required after the occurrence of any potentially damaging events (e.g., floods, earthquakes) or unusual observations (e.g., cracks, sinkhole formation).

Instrumentation and Monitoring

The following instrumentation will be installed, with regular monitoring as indicated:

- Two inclinometers located in the dam downstream shell to monitor dam foundation deformations in the overburden and bedrock for confirming dam stability. The inclinometers will be monitored two to three times during dam construction and dam raise period. They should be protected from damage during construction and maintained for monitoring under appropriate circumstances, such as after a seismic event or for a comprehensive dam safety review;

- Four piezometers in the dam downstream shell to monitor damfill saturation level - monitored weekly during construction and dam raising, quarterly during operations, annually during closure;
- Ten survey monuments on the crest/downstream slope - monitored quarterly during operations and annually during closure;
- Four groundwater monitoring wells downstream of the dam, with screened sections located in the foundation soils and weathered bedrock unit. Samples to be collected quarterly during operations and annually during closure;
- Continued monitoring of climate conditions throughout operations and the first three years of closure;
- Survey of pond level - weekly during operations and seasonally (i.e. monthly during ice free period) during the first three years of closure. This survey will be supplemented by additional information on quantities of mine wastes placed in the impoundment (e.g., tailings, DMS float and transport water). Confirmation of all information related to impoundment storage will be required prior to dam raise and during mine closure; and
- Bathymetric survey of pond - annually during operations. A more detailed survey will be required prior to placement of DMS during closure and immediately following placement of DMS. The survey following DMS placement will include an underwater survey.
- It is anticipated that above instrumentation and monitoring scheme will be sufficient to identify the onset of potential instability problem. However, if signs of instability are detected, additional surveillance and remedial measures will be taken to safeguard the stability and integrity of the dam.

5.5.5 Reclamation

Reclamation of the dam slopes will be required to limit erosion and to establish a self-sufficient vegetation community on the dam. Topsoil will be placed on the roughly 2.5 ha of dam face and reseeding will occur by hydroseeder. This work may be completed as part of the progressive reclamation program.

The tailings pipelines (e.g. tailings and reclaim lines) will be removed and disposed of within the tailings impoundment prior to placement of the DMS cover. The pipeline corridor will be reseeded and fertilized.

5.5.6 Water Quality Monitoring

Water quality monitoring of the tailings facility and excess water discharge during the ice-free months represents the most significant closure monitoring requirement of the Wolverine project.

During the first three years of closure, the tailings pond will be monitored monthly for water quality. During discharge periods of May to October, daily monitoring of the discharge quality at the retention pond will occur. The total analytical load for water quality monitoring of the tailings facility is on the order of 540 samples over the initial three year closure period

Once tailings pond water is demonstrated to be routinely within permitted discharge limits, monthly monitoring of the tailings impoundment is proposed for the next 4 years as a confirmatory measure.

5.6 Access Route

YZC has commenced the construction of an access route to the site from kilometer 189+965 of the Robert Campbell Highway to the project site. The access construction is being performed in two phases. The first phase involved the construction of a limited-use access road which was largely completed by September 2007. The second phase entails construction of an all weather access road for use by concentrate haul trucks and service vehicles during the operations phase.

Final closure of the access route will also involve two components including strict access control during the initial closure phases, when the route will still be required for hauling of salvageable material and transport of equipment, and final decommissioning when access is no longer required.

5.6.1 Access Control

During the initial closure phase (year 1 to year 3) access to the site via the all weather road will be manned or inspected by representatives from YZC on a 24-hour basis. A gate will be maintained at the road entrance off of the Robert Campbell Highway. The main access roads will be kept open with restricted access and maintained. Once all decommissioning activities have been completed and use of the access road is no longer required an access control gate will be constructed near km 14. The location has been selected on a 10% ascending gradient, some 3 km north of the glacio fluvial plateau that separates the upper Money Creek and Go Creek drainages. The location will deny access to highway vehicles, all terrain vehicles and snow mobiles, and to deter hunting and recreational access to the Go Creek drainage system.

In addition, permanent road closure and access control will occur following the removal (and hauling offsite) of the bridge at Bunker Creek (km 10.25).

5.6.2 Access Road Decommissioning and Closure

At the completion of the mine production phase the mine closure plan will come into effect and reclamation of the access road will be undertaken. This will involve the removal of the culverts and drainage structures and decommissioning of the roadbed itself.

5.6.2.1 Culvert and Drainage Structure Removal

All culverts, drainage structures and the Bunker Creek bridge will be removed and disposed of off-site at an appropriate location. The following activities are planned:

- trenches resulting from the removal of culverts will be swaled or contoured to match the surrounding terrain
- where warranted due to fine grain soils, erosion protection will be installed within the remaining swales, to a point where the reclaimed watercourse meets with its original path in undisturbed soil
- ditch blocks will be removed

- where ditches are to be left intact (some steeper sections) existing ditch erosion protection may be left in place, due to fine-grained soils
- the Bunker Creek bridge will be removed, and the abutments will be excavated to the level of the rip-rap placed during construction

5.6.2.2 Stabilization and Reclamation of Borrow Sources

All remaining borrow sources will be stabilized and recontoured to prevent erosion of the surfaces. All borrow areas will be reseeded and fertilized using the reclamation vegetation mix to further limit erosion and sediment release.

5.6.2.3 Phase 2 Roadbed Decommissioning

The roadbed itself will be contoured and rounded throughout its length, and the following activities are proposed:

- In smaller cuts and fills, ditches will be filled in, and the soils shaped to match the surrounding topography
- In large cuts and fills, the embankment or excavation footprint will be reshaped to a lesser extent, but all slopes will be flattened or rounded to better suit the surrounding terrain
- Organic stripping materials placed at the toe of fills during the original construction phase, will be re-contoured along the downhill side to act as a sediment filter, and to re-establish longer term re-vegetation
- Surfaces of gradients less than 25% will be scarified (using scarifiers on bulldozers, excavators and graders) to better accept seeding

5.7 Camp

5.7.1 Potable and Camp Water Wells

The water supply wells for the camp and industrial complex will be decommissioned once closure activities are completed and the water treatment and camp facilities are no longer required. The pump houses and the buried distribution system will be removed for salvage and or if deemed appropriate, the distribution system will remain in situ to minimize subsequent surface disturbance associated with removal. Water wells will be backfilled throughout their entire length with a combination of concrete and grout. The top 5 m will be completely cemented.

5.7.2 Camp Decommissioning and Reclamation

Portions of the modular camp facilities will be removed as onsite personnel requirements decrease. Facilities will remain for care and maintenance staff and for reclamation crews and monitoring crews until all closure objectives have been met. Once all closure activities have been completed, remaining modular structures will be removed. Sewage treatment facilities will also be decommissioned and salvageable material removed from site.

Once all equipment has been removed, the camp area will be recontoured, drainage ditches removed and soil growth medium will be placed. The area will be revegetated with the appropriate reclamation seed mixture.

5.8 Waste Management Areas

5.8.1 Landfill

Decommissioning and demolition activities will generate some non-hazardous waste material that will be disposed of in the landfill area. At the end of closure activities, the landfill area will be covered with a 250 mm thick layer of compactible soil material and graded to encourage the shedding of water. The site will then be revegetated.

5.8.2 Land Treatment Farm

Soils present in the land treatment farm during the final year of operation will be tested to determine if material is acceptable for use in reclamation programs around the industrial complex. If the soil is found to contain residual contamination that does not permit use in reclamation, the soil in the land treatment farm will be hauled off site to an approved facility.

5.9 Closure Manpower

A number of personnel will be required onsite to implement the various decommissioning, closure and reclamation tasks. The majority of these activities will be undertaken on a seasonal basis (May–October) and directed by an onsite manager. A caretaker will remain onsite following seasonal closure of the site.

The work force requirements for the decommissioning period (Year 1 to Year 3) and the late closure phases are provided in Figure 5.9-1.

Table 5.9-1 Site Decommissioning, Closure and Reclamation Work Force Requirements

Personnel	Decommissioning Period Year 1 to Year 3	Late Closure Period Year 4 to Year 10
Project Manager	1	1
Project/Mine Engineer	1	
Environmental Coordinator	2	1
Laboratory Technician	1	
Construction Supervisor	1	
Equipment Operators	2	1
Mechanics/Welders/Electricians	3	
General Labourers	3	1
Camp Support Staff	4	
Total Seasonal	**18**	**4**
Total Off-Season (Caretaker)	**1**	

6 Reclamation and Decommissioning Cost Estimates

Cost estimates for implementing the Wolverine Project closure plan have been developed. Two closure scenarios have been evaluated:

- Life-of-Mine (LOM) closure costs
- Existing Condition closure costs.

The cost summaries provided below include costs associated with project shutdown, the decommissioning of facilities and support infrastructure, reclamation activities, and compliance and reclamation monitoring. The estimated costs for each scenario are based on the following assumptions, rationale and information:

- No salvage value is included in the estimate.
- No discounting has been included in the estimate
- Reclamation costs are based on the cost of having the work completed by a third party contractor.
- Unit rates for equipment were obtained from Government of Yukon Third Party Equipment Rental Rates (2007/2008) and focused on contractors and rates published out of Ross River and Watson Lake.
- A contingency of 25% has been included in the total cost estimate.
- Decommissioning and closure (including post-closure) phases are assumed to be phased out within a ten-year period.
- The closure phase water balance for the tailings facility will have a net positive balance and the water will require treatment before being discharged to Go Creek for an estimated 3-year period. No funds for treatment have been allocated beyond the closure phase.
- Water treatment costs of $\$0.4/m^3$
- Non-acid generating fill and waste rock will be available within the project area for closure activities.

A summary of the estimated costs to implement the reclamation and closure plans described above are presented in Tables 6.0-1 and 6.0-2 for LOM and Existing Condition, respectively. Detailed cost breakdowns by mine component are provided in Appendix D.

6.1.1 Life of Mine Closure Cost Estimate

Table 6.0-1 provides a summary of the estimated costs associated with implementing the closure plan described previously at the termination of the complete mine life.

Estimated total closure costs without contingency are approximately $7.25 million, with the most significant costs being associated with Site Monitoring and Maintenance (~$3.06 million) and closure of the tailings facility (~$1.6 million). Total estimated closure costs with contingency are approximately $9.05 million.

Table 6.0-1: Summary of Estimated Costs to Execute Decommissioning, Closure and Reclamation Plans - LOM

Work Item Description		Sub-Total Costs		Total Costs
Mine Workings			**$**	**587,314**
1345 Portal Barrier	$	82,564		
Installation of Hydraulic Plugs in Access Ramp	$	183,250		
Installation of Hydraulic Plugs in Ventilation Openings	$	234,000		
Decommission water supply wells	$	87,500		
Tailings Management System			**$**	**1,591,250**
Reclaim Tailings Dam Face	$	53,750		
Reclaim Seepage Recovery Dam	$	13,000		
Decommission Diversion Ditches	$	35,000		
Remove Tailings and Reclaim Pipelines	$	149,700		
Cover Tailings with DMS	$	1,120,000		
Water Treatment and Plant Decommissioning	$	219,800		
Infrastructure			**$**	**1,297,830**
Mill Concentrator Buildings	$	606,540		
Truck Shop	$	21,220		
Power Supply - Gensets	$	53,500		
Reclaim Site Diversions	$	48,625		
Water Supply and Ponds	$	22,100		
Accomodation Camp	$	37,830		
Explosive Magazine	$	5,135		
Miscellaneous Buildings and Structures	$	111,380		
Industrial Reagents and Fuels	$	65,000		
Spill Cleanup	$	201,500		
Demolition Overheads	$	125,000		
Access Road			**$**	**603,405**
Reclamation and Revegetation			**$**	**106,500**
Exploration Road and Trails	$	15,600		
Mine Site and Tailings Haul Roads	$	90,900		
Site Management and Monitoring			**$**	**3,057,530**
Organization, Security and Overhead	$	1,566,100		
Document Control	$	54,000		
Compliance Monitoring and Reporting	$	1,111,000		
Closure Maintenance	$	100,000		
Wolverine Creek Biopass Contingency	$	226,430		
Estimated Sub-Total Closure Costs			**$**	**7,243,829**
25% Contingency			*$*	*1,810,957*
Estimated Total Closure Costs			**$**	**9,054,786**

6.1.2 Existing Condition Closure Cost Estimate

Table 6.0-2 provides a summary of the estimated costs associated with closure of the Wolverine Project facility assuming the current status of the operation without further development.

Estimated total closure costs without contingency are approximately $2.4 million. Closure overhead and monitoring costs are the most significant ($1.4 million). Closure of the Phase 1 access road is estimated at approximately $457,000. Total estimated closure costs with contingency are approximately $3.0 million.

Table 6.0-2: Estimated Costs to Execute Decommissioning, Closure and Reclamation Plans – Existing Condition

Work Item Description	Sub-Total Costs		Total Costs	
Mine Workings			**$**	**183,564**
1345 Portal Barriers	$	92,564		
Installation of Hydraulic Plugs in Access Ramp	$	91,000		
Temporary Waste Rock Storage Pad			**$**	**124,044**
Infrastructure			**$**	**146,365**
Power Supply - Gensets	$	12,420		
Surface Water Ponds	$	19,400		
Accomodation Camp	$	14,550		
Explosive Magazine	$	5,135		
Miscellaneous Buildings and Structures	$	53,860		
Industrial Reagents and Fuels	$	15,000		
Spill Cleanup	$	11,500		
Demolition Overheads	$	14,500		
Access Road			**$**	**456,720**
Reclamation and Revegetation			**$**	**84,450**
Exploration Road and Trails	$	15,600		
Mine Site and Tailings Haul Roads	$	68,850		
Site Management and Monitoring			**$**	**1,411,030**
Organization, Security and Overhead	$	890,900		
Document Control	$	19,700		
Compliance Monitoring and Reporting	$	274,000		
Wolverine Creek Biopass Contingency	$	226,430		
Estimated Sub-Total Closure Costs			**$**	**2,406,173**
25% Contingency			*$*	*601,543*
Estimated Total Closure Costs			**$**	**3,007,716**

Appendix A

Temporary Closure Plan

Wolverine Project

TEMPORARY CLOSURE

UPDATE TO
RECLAMATION AND CLOSURE PLAN 2006-01
AS REQUIRED BY QML-0006

Prepared by:
Yukon Zinc Corporation
Vancouver, British Columbia

In Association with:

Lorax Environmental Services Ltd.
Vancouver, British Columbia

February 3, 2007

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1 Introduction

This report has been prepared to satisfy requirements contained within Quartz Mining License QML-0006 (QML) pertaining to temporary closure of the Wolverine Project. Specifically, this document provides information that updates *Reclamation and Closure Plan 2006-01* (YZC, June 2006a) for activities to be undertaken during a temporary closure as per QML Paragraphs 8.2 and 8.3.

The sections below document the requirements for a temporary closure period, which has been defined in the QML as (unless otherwise agreed to in writing by the Chief, Dept. of Energy, Mines and Resources):

1. the cessation of development or production that extends for more than a continuous two week period; or

2. any closure after the start-up date where no ore is mined or ore or tailings milled for a period exceeding two consecutive months.

A temporary suspension of mining and processing activities could result when factors such as changing market conditions or mine related factors occur, and could be either a defined or indefinite period of suspension. A state of inactivity may evolve into a state of permanent closure if prevailing conditions for the resumption of operations are not favourable. The QML states that where temporary closure exceeds three continuous years, the site will be considered permanently closed and the final closure plans must be implemented.

This document presents the requirements for temporary closure based on current and anticipated site development over the February to November 2007 period and incorporates requirements of QML-0006 as well as Type B Water Licence QZ01-051. A revised Reclamation and Closure Plan (Plan) is required as per QML Paragraph 8.5 within a minimum of six months prior to the start-up date or one year after the Effective Date, which ever comes first. Based on the current project schedule, the revised Plan will be submitted by December 5, 2007. The Plan will incorporate information pertaining to components not described herein, such as those to be detailed designed (i.e. the tailings facility and mill), as well as requirements of the Type A Water Licence, anticipated to be issued late summer 2007.

2 Temporary Closure Activities

Closure activities for a temporary shutdown have been planned to ensure that all safety and environmental standards are achieved. The three objectives incorporated into this plan include: the protection of public health and safety, the implementation of environmental protection measures to prevent adverse environmental impacts, and site monitoring to assess the effectiveness of temporary closure measures during the state of inactivity.

The sections that follow describe the activities that would occur during a temporary closure prior to December 2007, including access and security measures, general maintenance and operation tasks, waste management, water management and treatment, and monitoring requirements. Cost estimates associated with implementing and maintaining the temporary closure measures are also presented.

Table 1 summarizes the update requirements outlined in QML Paragraph 8.3 and provides the section reference where information is contained within this document.

Table 1. Quartz Mining License Requirements and Relevant Report Section

QML-0006 Paragraph 8.3 Requirement	Applicability and Report Section
a) how the Licensee will maintain the site during temporary closure and ensure that all structures, works and installations remain stable and in compliance with the Act, License and other applicable laws	Site Maintenance - Section 2 Compliance (Water Management and Treatment) – Section 2.4
b) how all structures, works and installations required to resume mining, milling, hauling and waste treatment will be maintained in good order on the site during temporary closure	Mining – Section 2.2 Milling, hauling – to be provided (Dec 2007) following detailed design Waste treatment – Section 2.5
c) details of how the access road and the gate installed on the road will be monitored to prevent public use of the road during temporary closure	Road access control – Section 2.1
d) details respecting site security, including use of an on-site care-taker	Site security – Section 2.1 Onsite staff – Section 2.4
e) details of all material stockpiles and on site equipment required to ensure that any unexpected water management event or other contingencies is properly managed by the Licensee	Material Stockpiles – Section 2.5 Water management – Section 2.4
f) monitoring and reporting schedules for ensuring the geochemical and physical stability of all structures, works and installations associated with the Undertaking	Water treatment and monitoring – Section 2.4
g) a contingency plan to ensure that mine flood water does not affect the environmental integrity of Wolverine Creek and Little Wolverine Lake	Not applicable – mine will be dewatered during temporary closure – See Sections 2.2 and 2.4
h) a cost estimate to implement paragraphs (a) to (g), as well as any other elements of the activities required for temporary closure for a period of five (5) years	Cost Estimate – Section 3

During a temporary closure, YZC intends to be a responsible steward of the site and demonstrate its commitment to re-opening the site by continuing to:

- Ensure physical and chemical stability of the site.
- Monitor and maintain buildings and facilities.
- Maintain security and access protocols.
- Dewater the mine to prevent flooding of the underground workings.
- Collect site runoff from the industrial complex and waste rock pad.
- Operate and maintain water management structures and treatment facilities to ensure no uncontrolled discharges occur.
- Maintain the site and main access roads.

Therefore, surface facilities will only be accessible to YZC personnel, or designated representatives, and equipment and facilities will remain essentially intact on site.

2.1 Access and Security

Access to the site is currently limited to aircraft and helicopter.

Once the main access road has been constructed and it is operational (anticipated late spring 2007), it will be kept open with restricted access and monitored on a regular basis. The main access control gate located at the Robert Campbell Highway will be locked closed, but will not be manned, unless deemed necessary from periodic inspections.

The temporary closure access control gate at the midpoint of the road will deny access to highway vehicles, all terrain vehicles and snow mobiles, such that hunting and recreational access to the Go Creek drainage system would be extremely difficult. The selected location, near km 13, is on a 10% ascending gradient, in a rock cut where the rock back-slopes will be 0.5H:1V or vertical.

Figures 1 and 2 provide details of the main operational and temporary closure access control gates.

Figure 1. Main Access Control Gate at Robert Campbell Highway

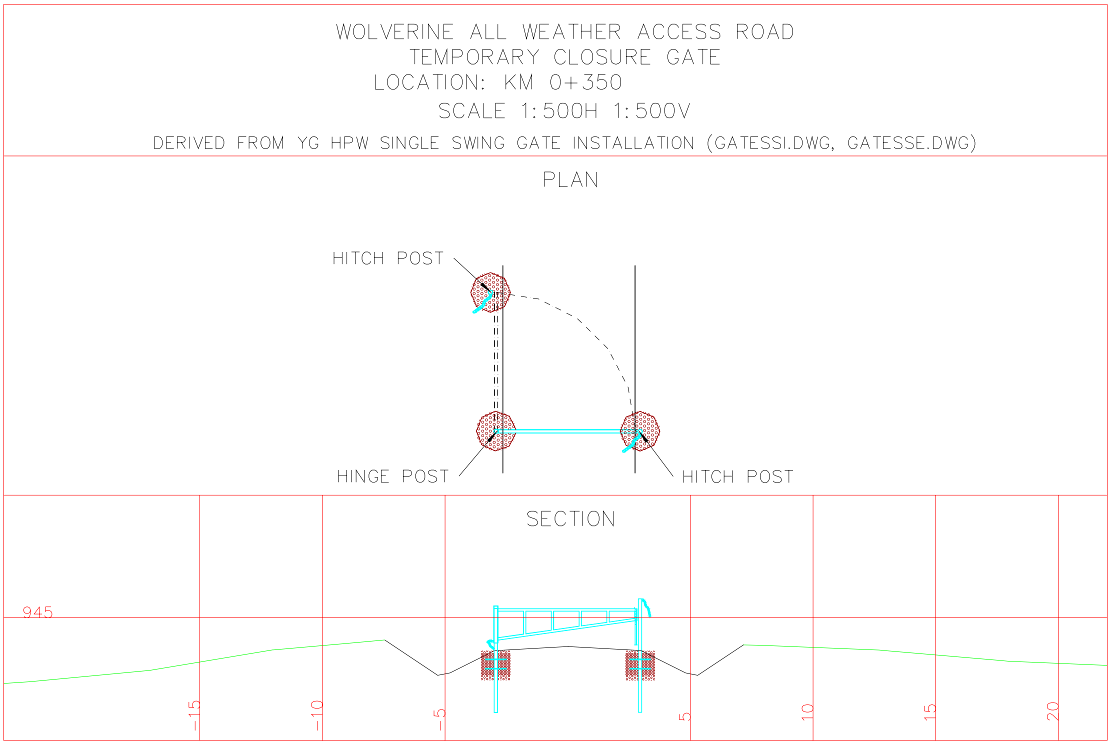
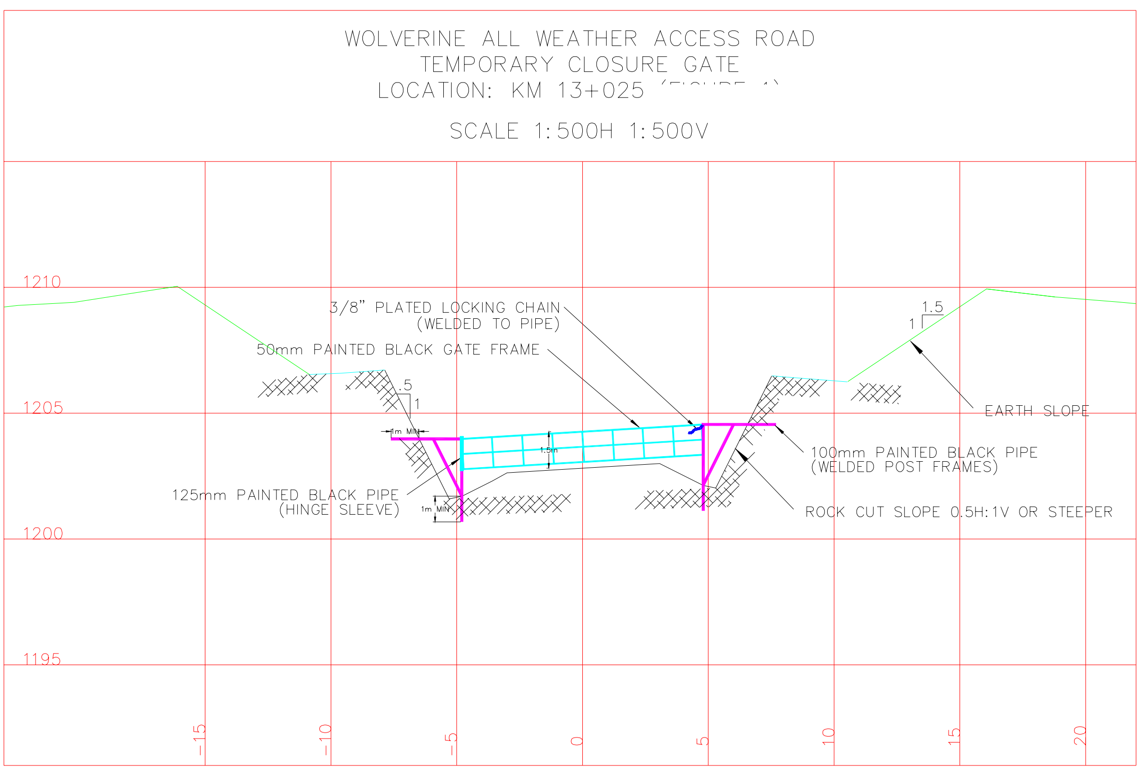


Figure 2. Temporary Closure Access Control Gate at km 13.



2.2 Underground Workings

Two closure considerations apply to the Wolverine mine:

- ensure public safety and protection of wildlife; and
- prevent uncontrolled discharge of groundwater at the portal.

The portal will be gated to restrict access to the mine when access is not routinely required.

Preventing discharge of groundwater from the mine workings is an important focus of the Wolverine Project closure plan. During temporary closure, water levels in the underground would be managed and treated in underground sumps, or dewatered to surface sumps for subsequent treatment (refer to Section 2.4). This is required to prevent flooding of the underground workings to maintain the integrity of the rehabilitated decline and prevent damage to underground electrical and communication systems.

The following infrastructure and equipment will remain operational or onsite to support water management treatment activities:

- onsite roads to the camp, tailings facility and water treatment plant
- main access road
- light duty vehicles
- discharge pipelines and pumps
- fuel storage facility
- power generating facility with adequate capacity to power the water pumping systems, and camp
- small maintenance workshop
- communication system

2.3 General Requirements

Measures that will be taken during a temporary closure period include:

- Mining equipment will be left in no load condition. All surface equipment not required for site maintenance or operating activities during this period will be stored in appropriate areas.
- Depending on the anticipated closure period, chemicals or reagents that are deemed to have short shelf life will be returned to suppliers/manufacturers, and those chemicals that cannot be returned will be disposed of in a proper manner as per manufacturer’s requirements.
- If required, a fuel distribution agent or a waste management contractor will pump the contents of storage tanks. Tanks that will not be reused will be removed and offered for sale or scrap, following appropriate procedures and protocols.

Monitoring during temporary closure will also include:

- Regular inspections of fuel storage tanks for leakage to ensure they are operating according to the applicable regulations and licenses.
- Regular inspection of structures such as the waste rock pad, collection sumps, settling ponds, and roadside ditches and culverts.
- Monitoring as per Surveillance Network Monitoring requirements (see section below)
- Continuous meteorological monitoring, including precipitation, evaporation rates and solar radiation.

2.4 Water Management, Treatment and Monitoring Requirements

Water management activities during temporary closure will consist of dewatering of the underground workings and collection of surface runoff from the temporary waste rock and ore storage facility. An environmental technician and a mine foreman will be onsite to conduct these activities. The following sections describe the infrastructure and treatment processes in place to ensure compliance with Type B Water Licence QZ01-051 (B Licence).

Through the months of May to September, water treatment will be conducted aboveground and during the winter months underground. Treatment will be performed until total metals, ammonia and total suspended solids are brought to below discharge limits required by the B Licence. B Licence maximum authorized discharge water quality limits are summarized in Table 2.

Table 2. Type B Water Licence Maximum Authorized Discharge Water Quality Limits

Parameter	Limit (mg/L)
TSS	15
Ammonia Nitrogen	2.5
Total Arsenic	0.10
Total Cadmium	0.02
Total Copper	0.20
Total Lead	0.20
Total Nickel	0.50
Total Selenium	0.015
Total Zinc	0.50

To date, typical mine water quality has all constituents below discharge limits except for selenium. Waste rock pad sump water quality shows similar results, but levels of selenium and zinc are elevated. The sampling requirements as per the B Licence Surveillance Network Monitoring requirements are provided in Table 3. Reports will be submitted monthly to the Yukon Water Board and Department of Energy, Mines and Resources.

Table 3. Type B Water Licence Surveillance Network Monitoring Sampling Requirements

Component and Station No.	Sampling Frequency
Water Quality - W-9: Wolverine Creek	Quarterly
Water Quality - W-12: Go Creek above Pup Creek	Quarterly
Water Quality - W-16: Go Cr. near Hawkowl Cr.	Monthly
Hydrology (W-9, W12, W16)	Quarterly
Sediment (W-9, W-12, W-16)	Annually
Underground test mine discharge	Weekly
Waste rock stockpile seepage	Weekly
Clean sump decant	Weekly
Water treatment plant settling pond	Weekly

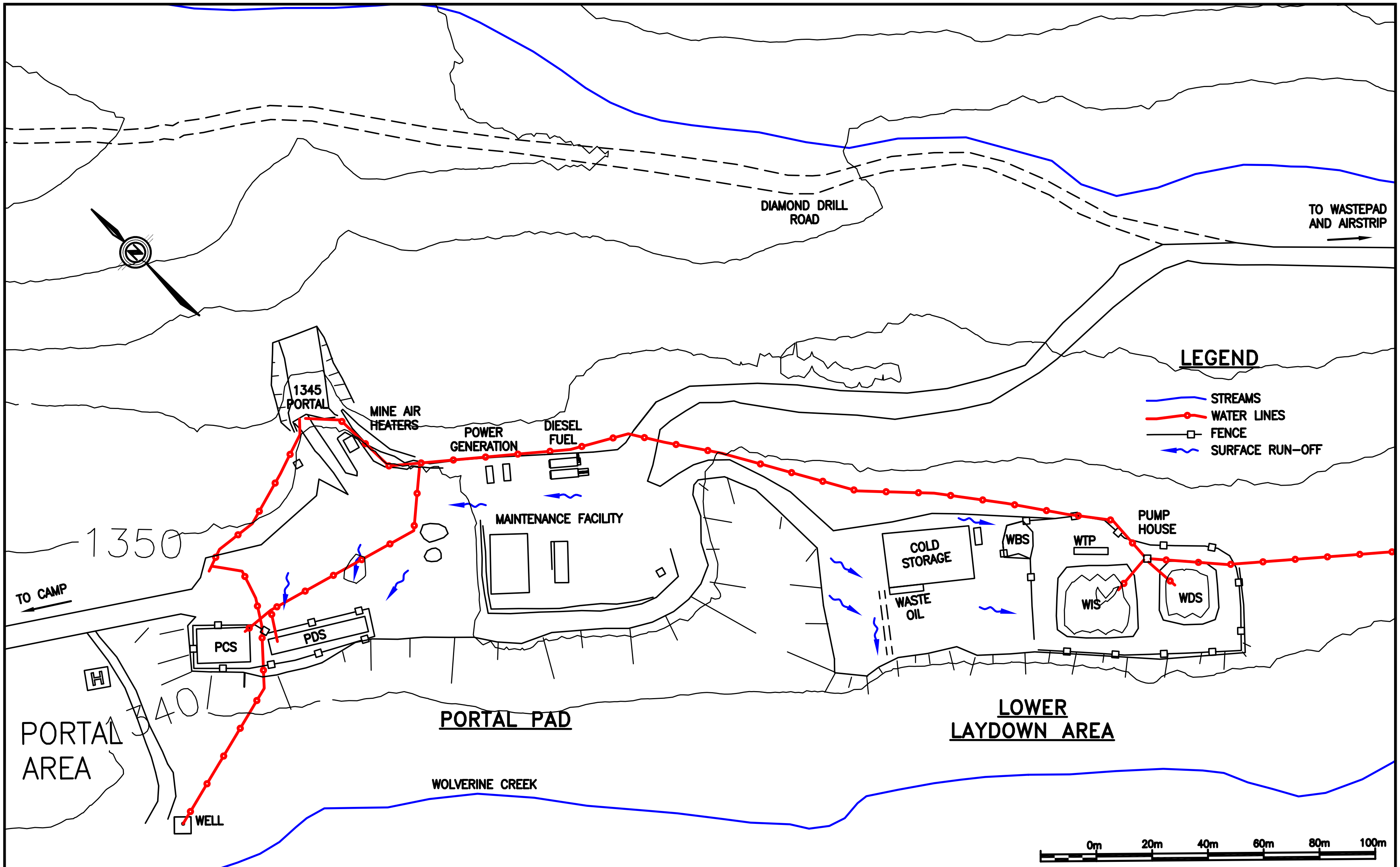
The locations of water collection and treatment infrastructure on surface at the portal pad and lower laydown area are provided on Figure 3. The current process used onsite to effectively remove selenium and zinc is to add ferric sulfate in-line using a metering pump.

During surface treatment, water is pumped from a collection sump (PCS or PDS) or from the underground to one of the treatment sumps (WIS or WDS). WIS and WDS are used interchangeably for treatment with iron addition. Water from the waste rock pad sump is pumped to the treatment sumps as required during the summer months for treatment.

During winter treatment within the mine, the ore ramp is used as a large sump and water treatment is facilitated by pumping the water from the top of the ore ramp through a 4” pipe to the bottom. Treatment chemical is injected at the suction end of the pump and mixes with the water which travels through the pipe to the end of the ore ramp.

Water samples are taken from the treatment sumps or mine, analyzed at an offsite laboratory, and once discharge limits are achieved, the treated water is pumped to the headwaters of Go Creek.

A water treatment plant (WTP) with its own pumping and power capabilities is onsite (Figure 3) to be used as a contingency measure for treating underground mine and waste rock sump water. The WTP is set up with two parallel multi-media filters to remove sediment, and three packed bed activated carbon reactors, which can be run in parallel or series, depending on requirements and effluent concentration. The WTP intakes water from the WIS and discharges clean water into the WDS. The multi-media filters are periodically backwashed, and the backwash water sent to the WBS.



Yukon Zinc
CORPORATION

DWG. CHECK		WOLVERINE PROJECT	
DESIGNED BY		WATER MANAGEMENT AND TREATMENT INFRASTUCTURE	
DRAWN BY			
DATE			
SCALE:		DRAWING NO. FIGURE 3	REV.
PROJECT NO.	1614		

2.5 Waste Management

All wastes will be handled, stored, managed and disposed of in a proper manner as outlined in the *Solid Waste Management Plan 2006-01* (YZC, 2006b). As there will be waste rock or ore (ore mill wastes) generated during a temporary closure period, the main waste sources will include domestic waste and other minor waste streams.

All stockpiles of contaminated soil, and waste rock and ore are located on impermeable liners at the land treatment facility and at the waste rock pad, respectively. As both areas were designed for these purposes, the environmental risk is minimal. Nevertheless, monitoring will be conducted to ensure that all runoff is captured and treated as necessary as per the Surveillance Network Monitoring requirements outlined in Type B Water Licence QZ01-051, and as per Land Treatment Facility Permit No. 4202-24-022.

The project includes one temporary waste rock and ore storage facility. It was constructed during the 2005 test mining program and is permitted under Quartz Mining Land Use Permit LQ00140 and Type B Water Licence QZ01-051. According to 2006 topographic survey information and LiDAR topography, there is presently ~14,600 m^3 of material on the waste rock pad, comprised of ~12,700 m^3 waste rock, plus 1,900 m^3 ore (Figure 4).

Runoff from most of the catchment area upslope of the waste pad is intercepted by the access road ditch located northeast of and upslope of the pad. The access road and collection ditch conform to the approximate shape of the pad. Culverts under the roadway direct flow from the access road ditch towards Go Creek.

All runoff from the waste rock pad is collected in a sump at the southern end. If the water meets the applicable criteria outlined in Type B Water Licence QZ01-051 to allow for discharge, it is discharged down slope to a vegetated area that eventually drains into Go Creek. If the water does not meet these criteria, it is pumped to water treatment infrastructure currently in operation near the portal, and will subsequently be discharged Go Creek.

Figure 4: Temporary Waste Rock and Ore Storage Facility (looking northeast)

3 Temporary Closure Cost Estimates

Personnel required during temporary closure to conduct general maintenance and operation tasks, as well as water treatment and monitoring activities include an environmental technician and a ticketed underground mine foreman. Support staff is not required as the tasks and activities required are not extensive. Specialist personnel, such as mechanics or electricians would be onsite on an as needed basis.

The cost summary provided in Table 4 provides unit and total annual costs associated with a temporary project shutdown, including a contingency of 25%. The unit rates and contingency percentage reflect those used by Energy, Mines and Resources in November, 2006 for a Risk Assessment conducted for MLU LQ00140.

Table 4. Annual Temporary Closure Cost Estimate

Component	Equipment / Labour	Units	Quantity	Unit Cost	Cost
General Requirements					
Environmental Technician	Labour	Monthly	12	$ 9,000	$108,000
Underground Mine Foreman	Labour	Monthly	12	$ 10,500	$126,000
Project Management	Offsite	Lump Sum		$ 5,000	$5,000
Site Operation	Supplies/Fuel	Monthly	12	$ 7,500	$90,000
Flights	Fixed wing	Bi-monthly	24	$ 1,000	$24,000
				Sub-Total	**$353,000**
Monitoring and Treatment					
Water treatment	Reagents	Monthly	12	$ 1,100	$13,200
Water analyses costs	Misc.	Monthly	12	$ 2,700	$32,400
				Sub-Total	**$32,400**
Estimated Cost					$385,400
25% Contingency					**$96,350**
Total Annual Cost					**$481,750**

Note: All costs are reported in 2007 $CDN.

Based on the plans presented herein, the total annual cost of temporary closure is $481,750 including contingency.

As required by QML Paragraph 8.3 h), temporary closure for a period of five years would be $2,408,750 including contingency (noting that as stated previously, temporary closure is considered to be permanent closure after a three year continuous period).

4 Summary

This document presents the requirements for temporary closure based on current and anticipated site development prior to December 2007, and incorporates requirements of Quartz Mining License QML-0006 as well as Type B Water Licence QZ01-051.

During a period of temporary closure, surface facilities will only be accessible to YZC personnel, equipment and facilities will remain essentially intact on site, and water management, treatment, and monitoring tasks including mine dewatering would continue. The estimated annual cost associated with implementing and maintaining these temporary closure measures is $481,750 including a 25% contingency.

A revised *Reclamation and Closure Plan* will be submitted by December 5, 2007. The Plan will incorporate information pertaining to components not described herein, such as those to be detailed designed (i.e. the tailings facility and mill), as well as requirements of the Type A Water Licence.

5 References

YZC, 2006a. *Wolverine Project Reclamation and Closure Plan*. Version 2006-01. Prepared by YZC, June 2006.

YZC, 2006b. *Wolverine Project Solid Waste Management Plan*. Version 2006-01. Prepared by YZC, June 2006.

Appendix B

Update to Underground Water Quality Predictions and Humidity Cell Testing of Waste Rock, Paste and DMS Float Materials

November 20, 2007

Yukon Zinc Corporation
701-475 Howe St.
Vancouver BC V6C 2B3

Dear Pamela Ladyman

Re: Wolverine Project Waste Rock, Ore and Backfill Humidity Cell Release Rates Update

This letter report summarizes the most recent humidity cell release rates for Wolverine mine rock. Release rates from the humidity cells were last reported in January 2007 as part of AMEC Earth & Environmental's (AMEC) water quality estimate for the flooded underground workings. This included humidity cell data up until December 2006. Yukon Zinc Corporation (YZC) has requested that data collected following the January 2007 report be analysed to determine if any significant changes in the calculated release rates have occurred since that time.

Nineteen mine rock humidity cells are currently in operation; eight were initiated in December 2005, five in January 2006 and three each in February and March 2006. The duration of each humidity cell, as of October 4, 2007, is summarized below:

Humidity Cell	HC1 to HC8	HC9 to HC13	HC14 to HC16	HC17 to HC19	HC20 to HC22	T1 and T2
Start Date	22-Dec-05	12-Jan-06	16-Feb-06	21-Feb-06	23-May-06	23-May-06
No. Weeks	89	86	81	79	66	66

Figures 1 to 13 present calculated loadings for waste rock, ore, and backfill humidity cells. Visual inspection of the humidity cell loadings indicates that all parameters show a near-constant rate of release or slight decrease since the last report. The pH values and sulphate loads have remained near-constant during this time. Since start up, three cells have began to produce consistently acidic (pH<5) leachates. These consist of two NP-depleted cells (HC20 and 22) and one rhyolite cell (HC3). Cell HC3 is composed of high sulphide (7.6%) low NP (7 kg$CaCO_3$/tonne) rock which is not considered to represent the bulk of the rhyolite rock in the deposit.

Exceptions to the general trend of constant or decreasing loads are as follows:

- Aluminium, copper, and iron loads in two NP-depleted ore cells (HC20 and 22) and one rhyolite cell (HC3) have increased;

- Cadmium and copper loads are variable to slightly increasing in all three ore cells (HC14, 15 and 16);
- Arsenic loads for two rhyolite cells (HC3 and 4) appear to be constant after week 67, though these loads are slightly higher than in previously reported data;
- Cadmium loads in one iron formation cell (HC2) have increased constantly and gradually since week 16;
- Lead loads for rhyolite cell HC3 had increased up to week 40, after which the load has been decreasing consistently; and,
- Silver loads tended to increase in NP-depleted ore cells to approximately week 56, after which silver loads in these cells have begun to decrease.

Release rates for all cells were calculated for steady-state conditions that exclude the first 20 weeks of data. Rates were calculated for the period ending December 2006, and for the period ending October 2007. These results are presented in Table 1 (attached) and are summarized by rock or material type. The relative percent difference (RPD) between rates reported for the two periods are also presented in Table 1. Although some increases in rates are observed for ore and NP-depleted ore cells (such as aluminium copper, iron and silver), in general the majority of the release rates for most of the material types have decreased since the last reporting period.

The revised release rates were incorporated into the underground water quality model to evaluate the potential impacts due to rate changes. A comparison of the expected mine water concentration as calculated in January is compared to the expected mine water concentration as calculated with the revised release rates and summarized in Table 2. In general, the estimated concentrations of the regulated parameters in the model have to decreased slightly. The iron concentration increased as a result of increased metal loads from one rhyolite humidity cell (HC3). This rhyolite sample is not representative of the bulk of the rhyolite in the underground workings, and as such, final concentrations are expected to be lower. Also, this water quality model does not take into account mineral solubility constraints and saturation conditions, which may result in lower iron concentrations than the model predicts.

The revised release rates for the humidity cells do not appear to be notably different from those reported in January 2007. The recalculated mass balance concentration of the underground mine water at closure suggests that the new rates will have relatively little effect.

Table 2: Comparison of mass balance water quality model results

Parameter	Mass balance concentration (mg/L)	
	Jan-07	Nov-07
Sulphate	282	238
Aluminum	0.50	0.64
Antimony	0.08	0.07
Arsenic	0.06	0.06
Cadmium	0.24	0.24
Copper	0.035	0.033
Iron	0.49	1.16
Lead	0.14	0.12
Molybdenum	0.009	0.009
Nickel	0.016	0.016
Selenium	0.50	0.38
Silver	0.002	0.088
Zinc	8.0	7.7

We trust this meets your needs at this time. Should you have any questions, please do not hesitate to contact the undersigned.

Jennifer Kavalench, B.Sc.
Environmental Geoscientist

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

Table 1: Mine Rock Release Rates

Mine Rock Release Rates (mg/m^2/wk)*

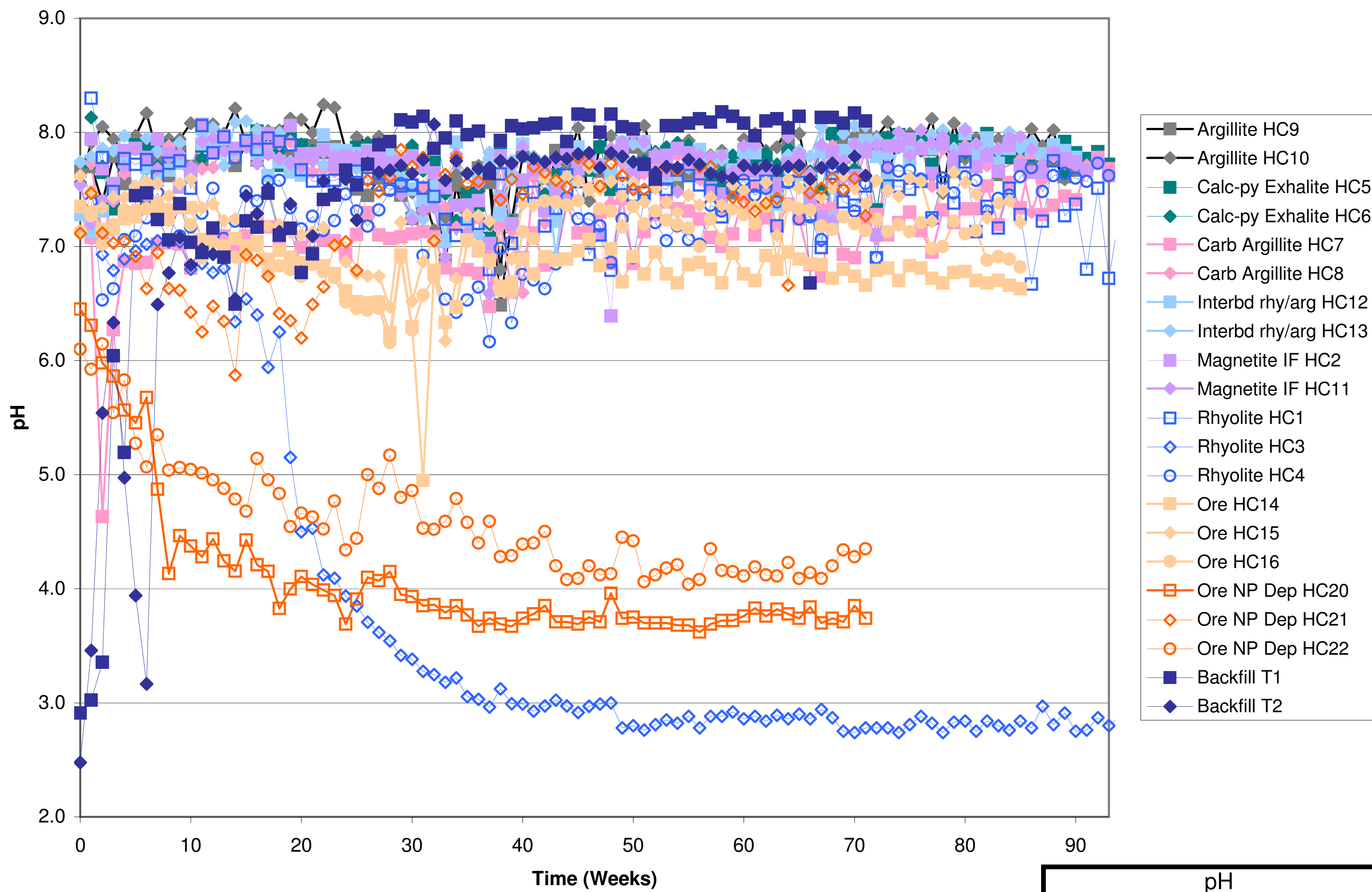
Reported: 'January 2007	Release Rates (mg/m^2/wk)												
Material Type	Rock Type	Sulphate	Al	As	Cd	Cu	Fe	Pb	Mo	Ni	Se	Ag	Zn
Non-Carbonaceous Argillites	1	0.43	0.00092	0.000013	0.000001	0.000025	0.00021	0.000005	0.00004	0.000009	0.00003	0.000001	0.000054
Carbonaceous Argillites	2	1.75	0.00242	0.000019	0.000014	0.000056	0.00075	0.000017	0.00004	0.000104	0.00020	0.000004	0.002251
Calcite-Pyrite Exhalite	3	4.85	0.00168	0.000012	0.000002	0.000055	0.00071	0.000017	0.00002	0.000013	0.00011	0.000003	0.000121
Iron Formation	4	0.94	0.00165	0.000025	0.000006	0.000032	0.00042	0.000019	0.00003	0.000018	0.00060	0.000002	0.000187
Rhyolite/Argillite	5	0.89	0.00085	0.000012	0.000001	0.000024	0.00026	0.000009	0.00007	0.000009	0.00007	0.000001	0.000051
Rhyolite/Rhyolite Fragmental	6	7.07	0.27050	0.000057	0.000567	0.017435	0.18776	0.005853	0.00001	0.000759	0.00127	0.000004	0.055579
NP Depleted Ore		46.3	0.03295	0.007243	0.052376	0.144006	0.04242	0.003949	0.00003	0.019059	0.15594	0.000016	9.879771
Backfill **(T1, T2 Hcell Data)**		14.4	0.00047	0.000676	0.000051	0.000235	0.00165	0.000171	0.00038	0.000030	0.01270	0.000134	0.003373
Ore		13.6	0.00014	0.001275	0.017791	0.000325	0.00110	0.008856	0.00013	0.000264	0.03402	0.000005	0.601462

November 2007 (Current)	Release Rates (mg/m^2/wk)												
Material Type	Rock Type	Sulphate	Al	As	Cd	Cu	Fe	Pb	Mo	Ni	Se	Ag	Zn
Non-Carbonaceous Argillites	1	0.38	0.00075	0.000011	0.000001	0.000022	0.00021	0.000004	0.00003	0.000008	0.00003	0.000001	0.00006
Carbonaceous Argillites	2	1.61	0.00225	0.000018	0.000014	0.000060	0.00086	0.000015	0.00003	0.000100	0.00015	0.000003	0.00208
Calcite-Pyrite Exhalite	3	4.57	0.00128	0.000012	0.000002	0.000050	0.00072	0.000014	0.00002	0.000013	0.00008	0.000003	0.00015
Iron Formation	4	0.82	0.00130	0.000026	0.000010	0.000030	0.00042	0.000017	0.00004	0.000013	0.00047	0.000002	0.00026
Rhyolite/Argillite	5	0.69	0.00073	0.000011	0.000001	0.000020	0.00029	0.000007	0.00009	0.000008	0.00005	0.000001	0.00007
Rhyolite/Rhyolite Fragmental	6	7.30	0.36155	0.000066	0.000313	0.014907	0.62341	0.005628	0.00001	0.000504	0.00097	0.000003	0.03153
NP Depleted Ore		35.5	0.10473	0.006289	0.059309	0.368860	0.15551	0.002281	0.00002	0.012421	0.10434	0.000022	10.8186
Backfill **(T1, T2 Hcell Data)**		12.0	0.00024	0.000448	0.000057	0.000127	0.00088	0.000070	0.00025	0.000033	0.00816	0.000057	0.00346
Ore		10.4	0.00028	0.001159	0.017950	0.000508	0.00103	0.007856	0.00012	0.000256	0.02536	0.006557	0.57981

Relative Percent Difference (%)

	Release Rates (mg/m^2/wk)												
Material Type	Rock Type	Sulphate	Al	As	Cd	Cu	Fe	Pb	Mo	Ni	Se	Ag	Zn
Non-Carbonaceous Argillites	1	-12.6	-20.8	-19.6	20.3	-12.5	-3.10	-7.54	-17.7	-13.0	-18.5	3.32	2.74
Carbonaceous Argillites	2	-8.73	-7.29	-5.75	1.08	6.67	14.4	-9.10	-17.6	-4.24	-27.9	-3.86	-8.04
Calcite-Pyrite Exhalite	3	-5.94	-26.8	-1.21	-0.40	-10.8	1.94	-20.6	-12.1	-2.17	-35.9	1.93	22.0
Iron Formation	4	-12.7	-23.5	4.07	47.9	-8.89	-0.73	-11.5	10.1	-28.8	-22.6	7.73	30.9
Rhyolite/Argillite	5	-25.4	-15.4	-9.79	-0.25	-18.6	9.20	-24.2	27.5	-13.0	-25.8	6.33	35.9
Rhyolite/Rhyolite Fragmental	6	3.12	28.8	13.9	-57.6	-15.6	107	-3.92	20.2	-40.3	-26.7	-9.59	-55.2
NP Depleted Ore		-26.5	104	-14.1	12.4	87.7	114	-53.5	-7.16	-42.2	-39.7	31.1	9.07
Backfill **(T1, T2 Hcell Data)**		-17.7	-65.5	-40.6	11.7	-59.7	-61.4	-84.0	-38.8	7.76	-43.6	-81.2	2.50
Ore		-26.3	68.8	-9.50	0.89	44.1	-6.66	-12.0	-12.9	-2.92	-29.2	200	-3.67

*Calculated release rates exclude first 20 weeks of data



pH November 2007 Wolverine Mine, YK	
Yukon Zinc Corporation	
November 2007	FIGURE 1

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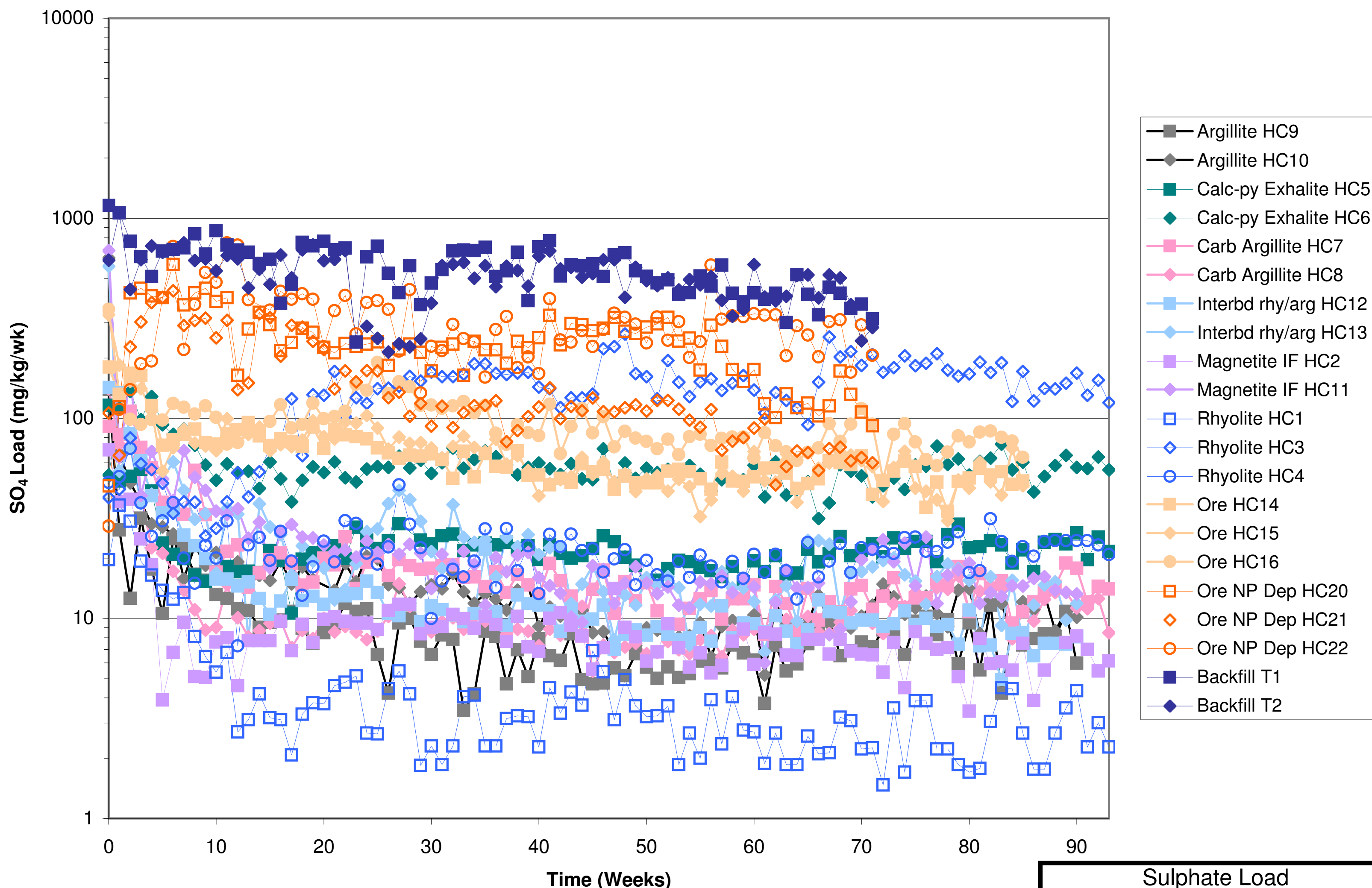

Sulphate Load
November 2007
Wolverine Mine, YK

Yukon Zinc Corporation

November 2007	FIGURE 2

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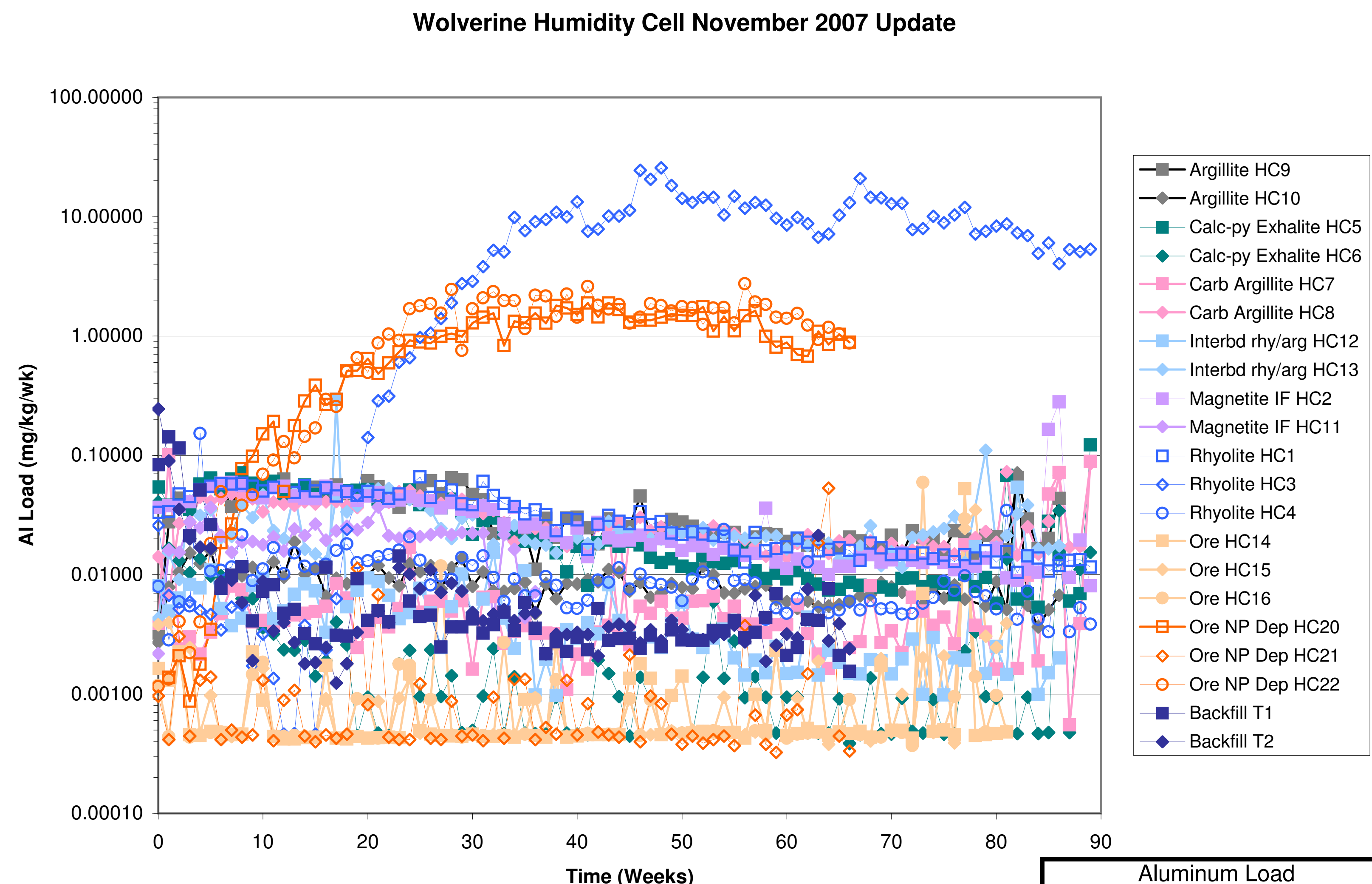

Aluminum Load November 2007 Wolverine Mine, YK	
Yukon Zinc Corporation	
November 2007	FIGURE 3

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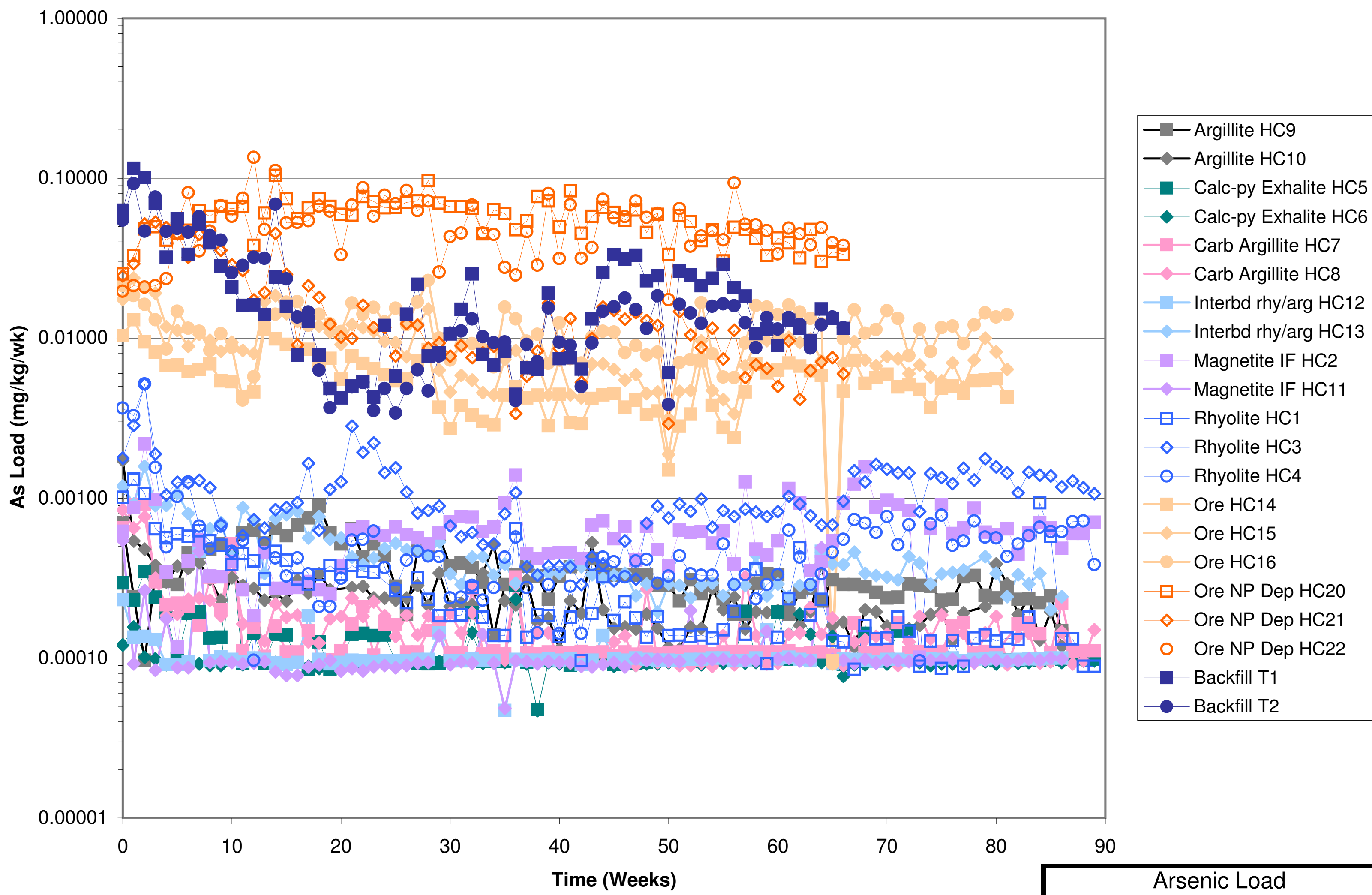

Arsenic Load
November 2007
Wolverine Mine, YK

Yukon Zinc Corporation

November 2007	FIGURE 4

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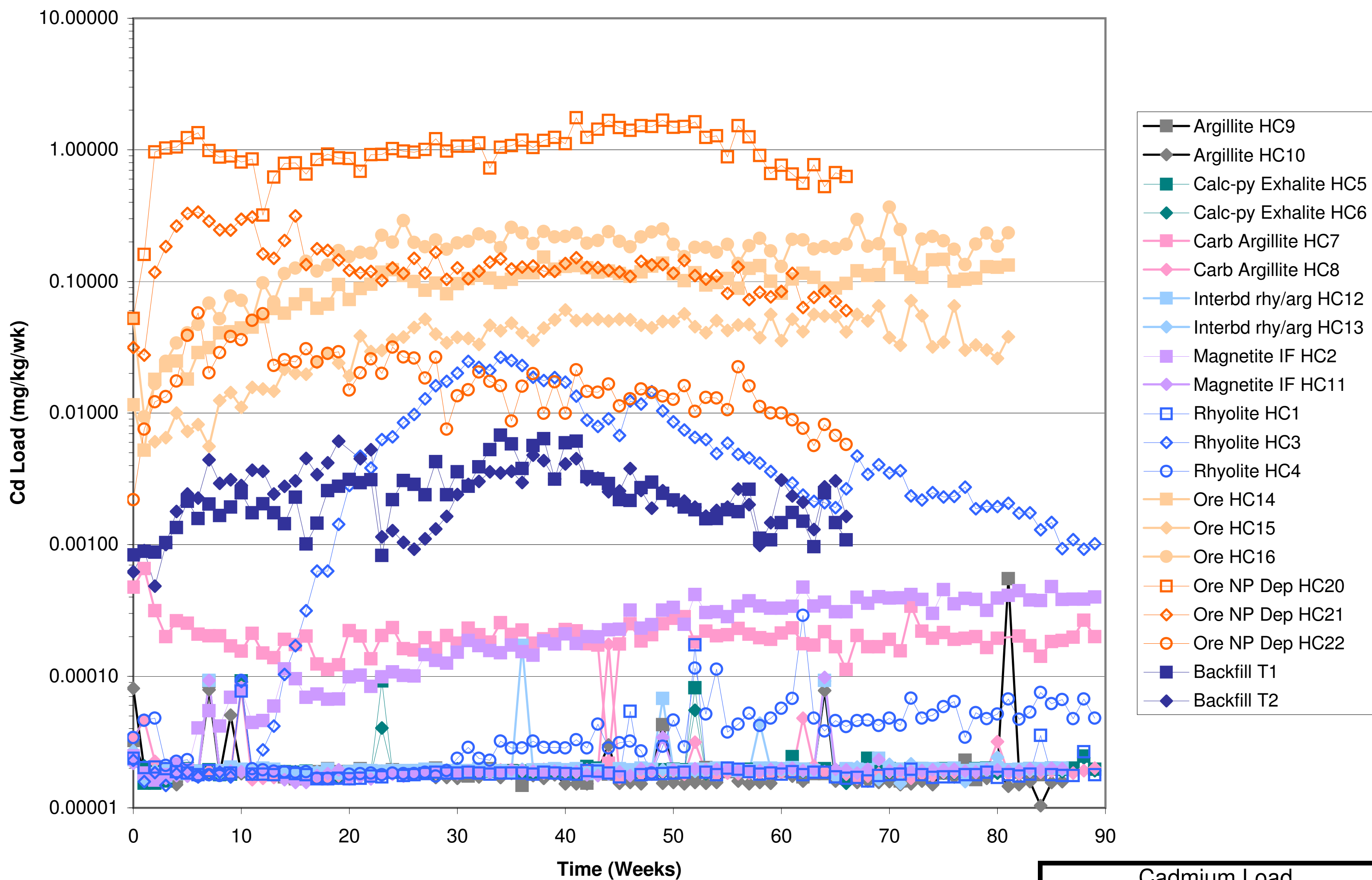

Cadmium Load
November 2007
Wolverine Mine, YK

Yukon Zinc Corporation

November 2007 | FIGURE 5

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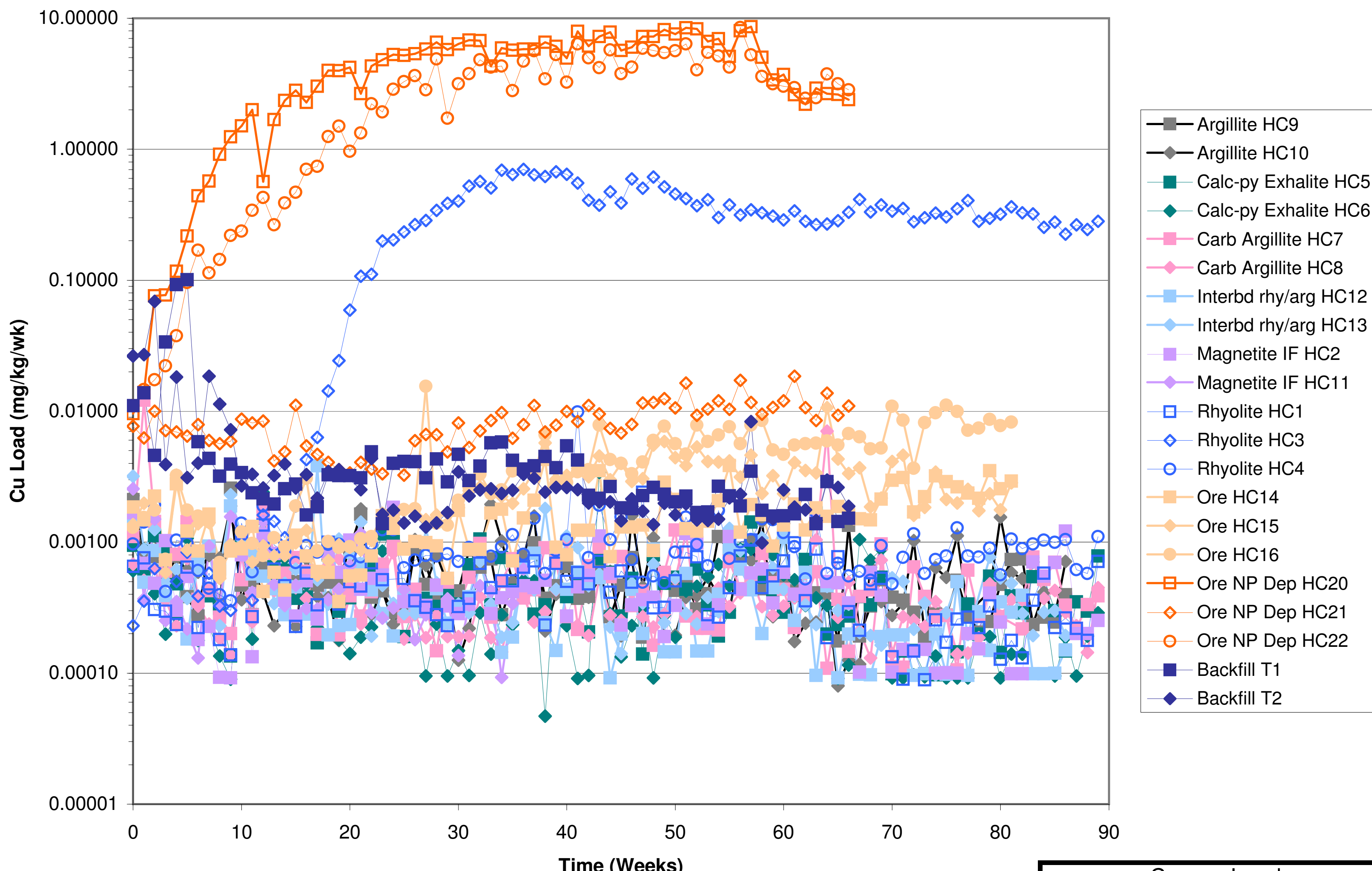

Copper Load
November 2007
Wolverine Mine, YK

Yukon Zinc Corporation

November 2007 | FIGURE 6

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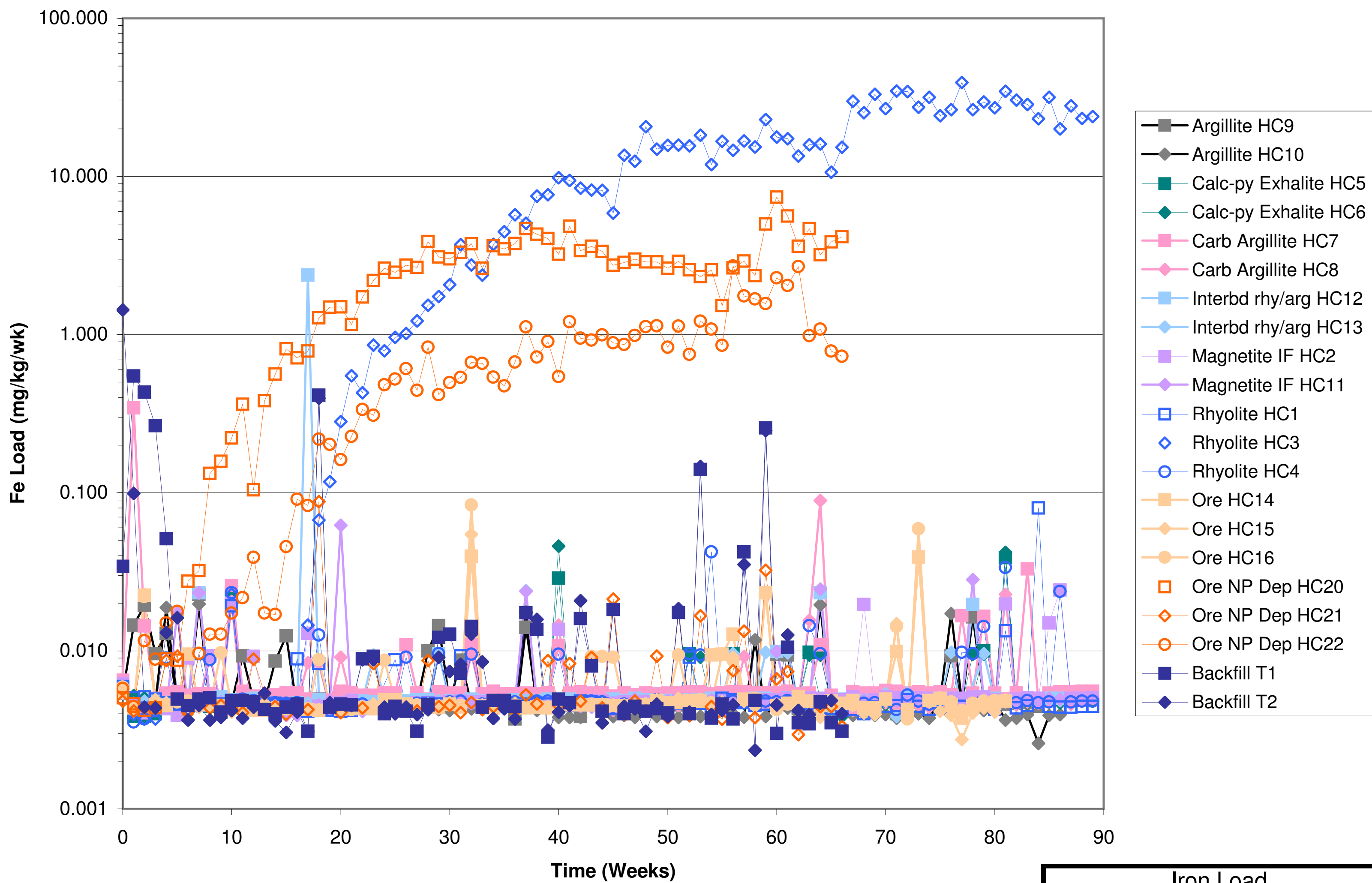

Iron Load
November 2007
Wolverine Mine, YK

Yukon Zinc Corporation

November 2007 | FIGURE 7

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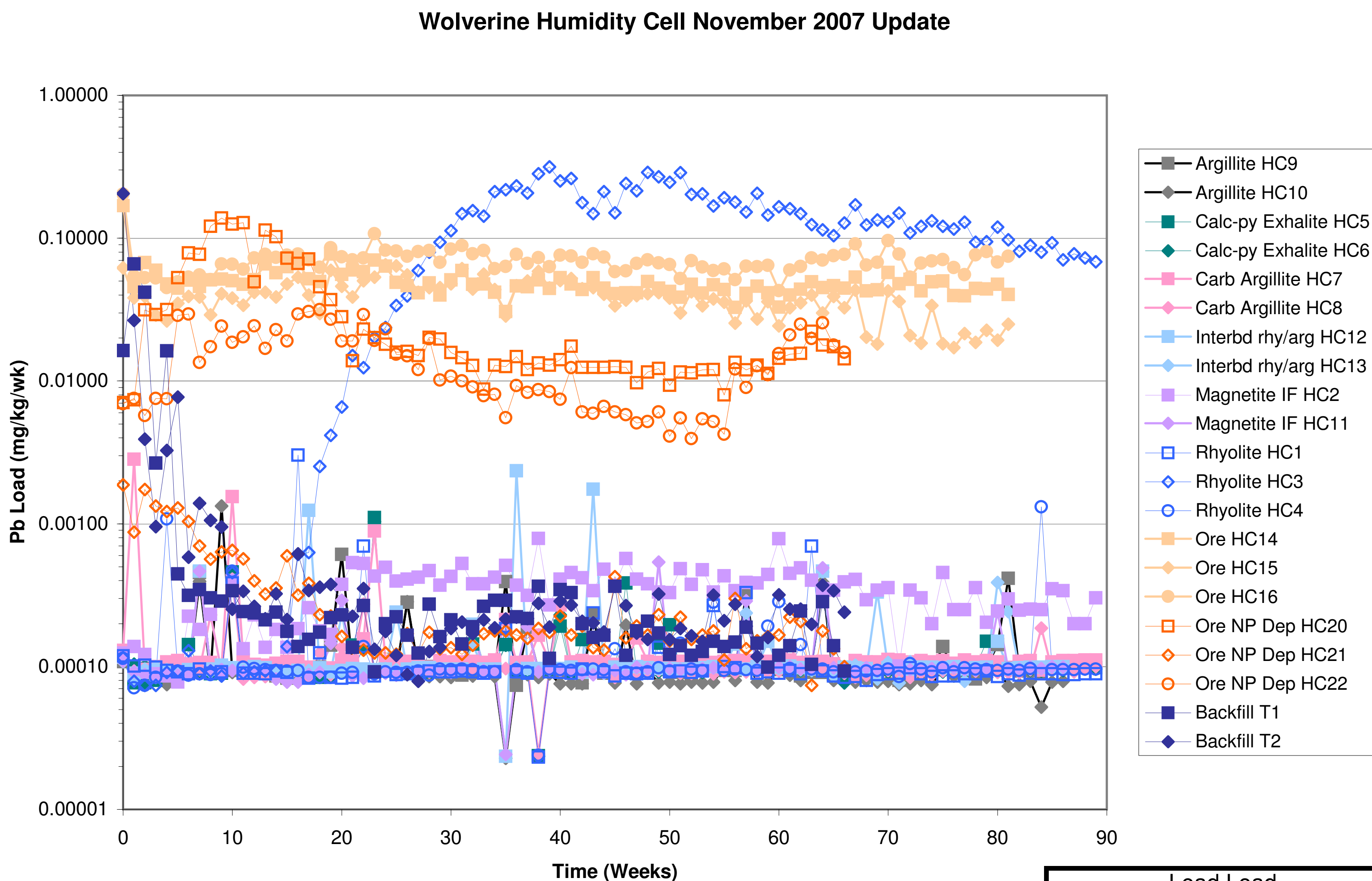

Lead Load November 2007 Wolverine Mine, YK	
Yukon Zinc Corporation	
November 2007	FIGURE 8

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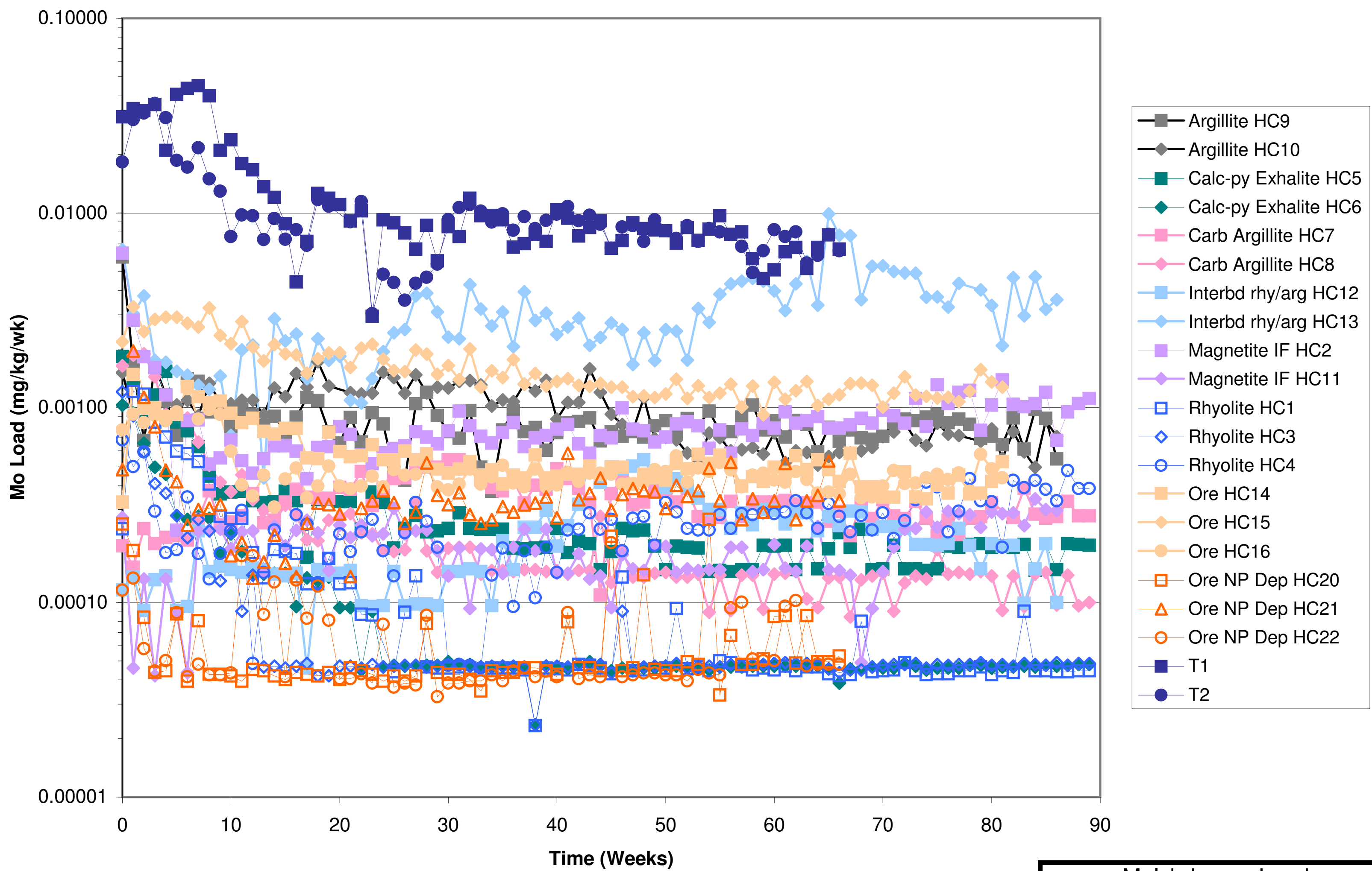

Molybdenum Load November 2007 Wolverine Mine, YK	
Yukon Zinc Corporation	
November 2007	FIGURE 9

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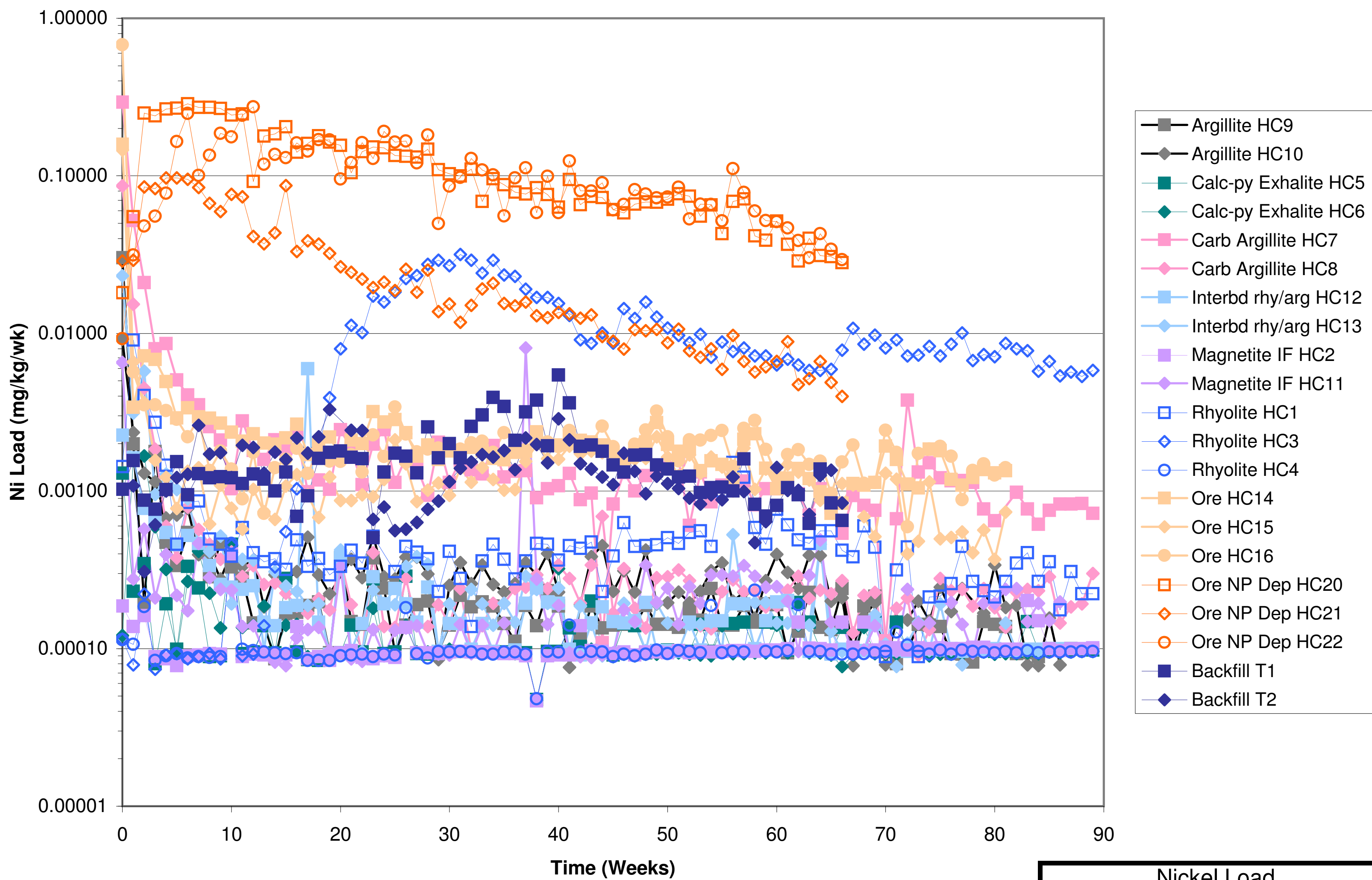

Nickel Load November 2007 Wolverine Mine, YK	
Yukon Zinc Corporation	
November 2007	FIGURE 10

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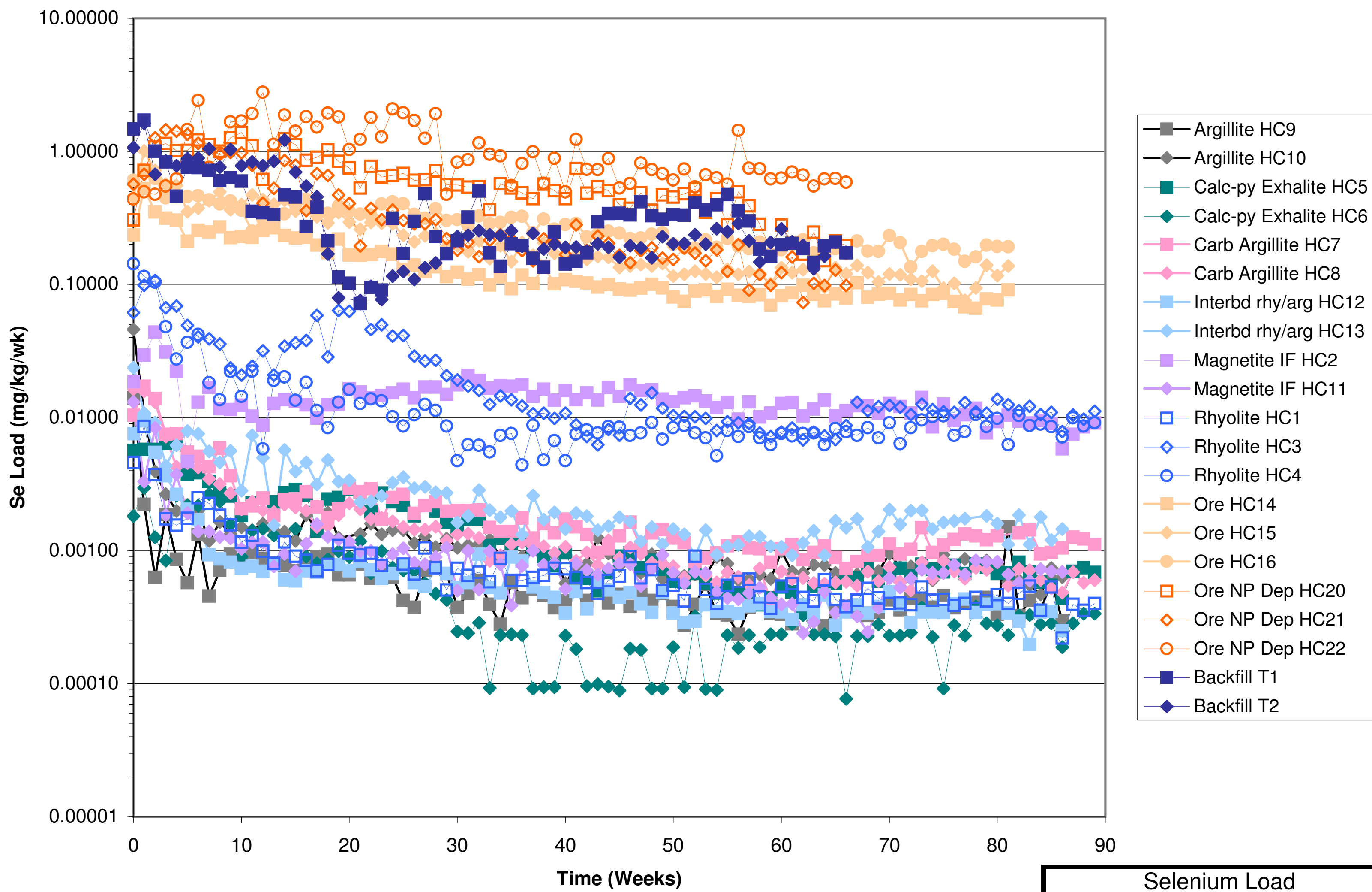

Selenium Load
November 2007
Wolverine Mine, YK

Yukon Zinc Corporation

November 2007	FIGURE 11

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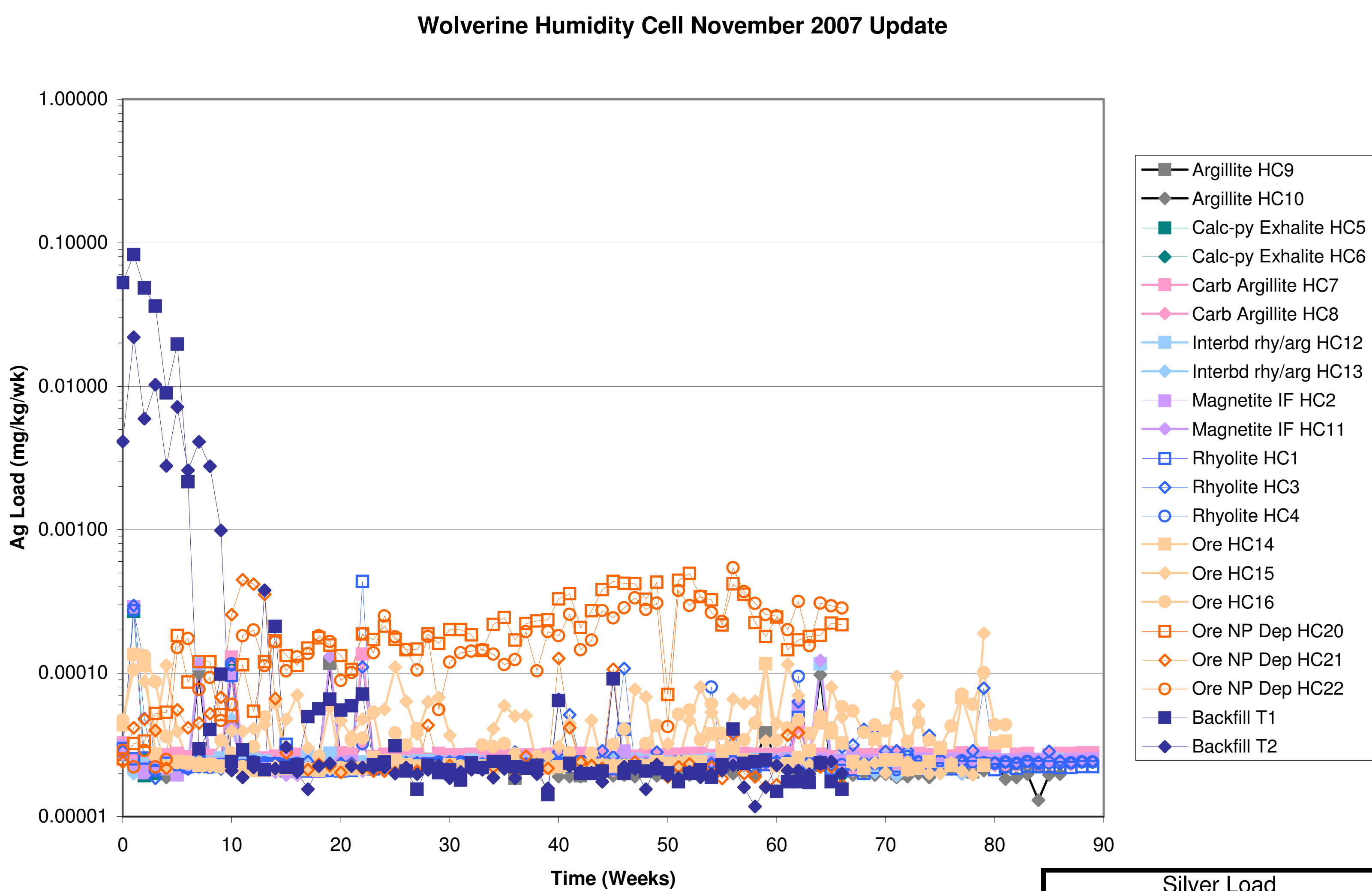

Silver Load November 2007 Wolverine Mine, YK	
Yukon Zinc Corporation	
November 2007	FIGURE 12

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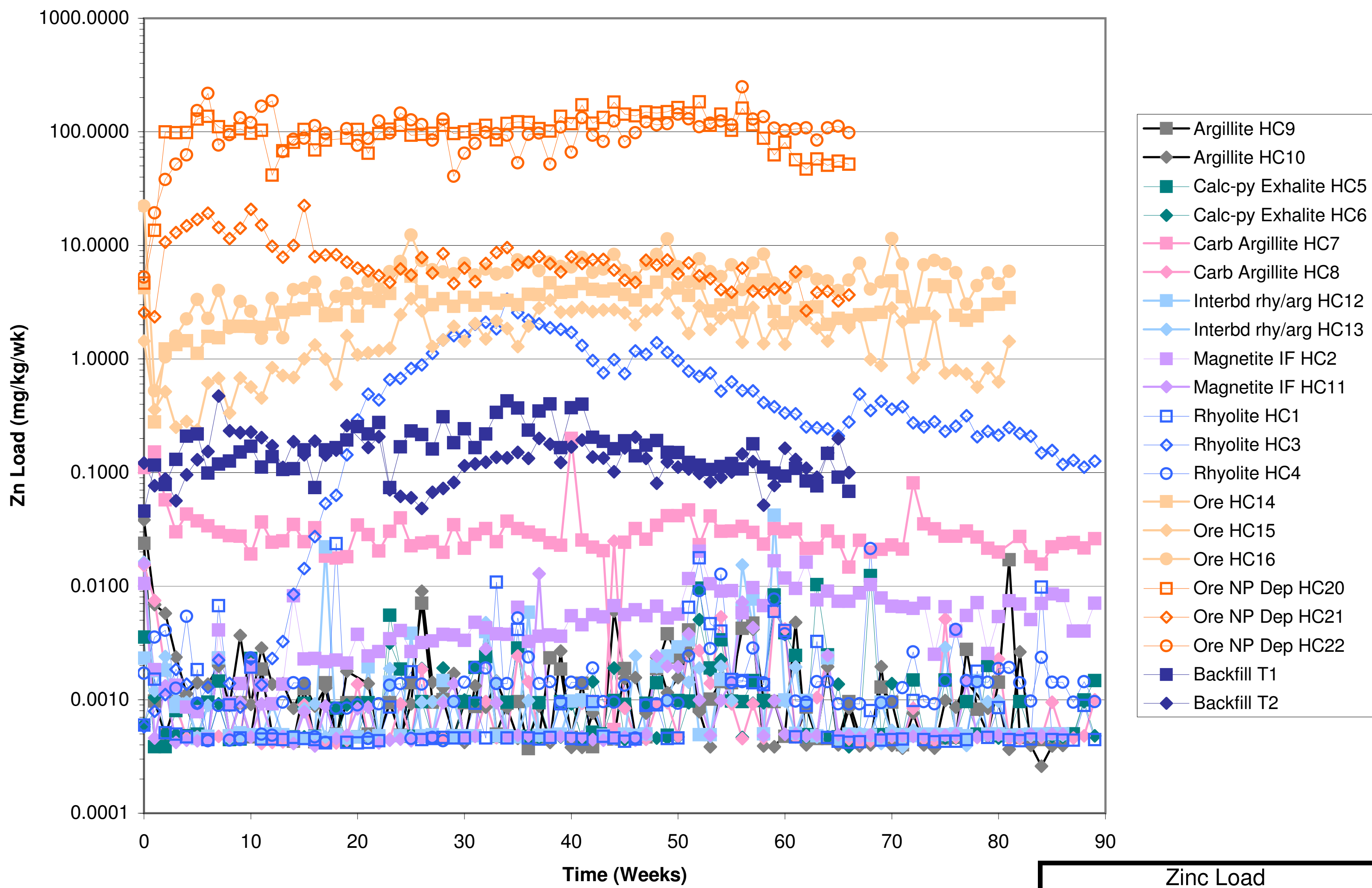

Zinc Load November 2007 Wolverine Mine, YK	
Yukon Zinc Corporation	
November 2007	FIGURE 13

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November 20, 2007

Yukon Zinc Corporation
701-475 Howe St.
Vancouver BC V6C 2B3

Dear Pamela Ladyman

Re: Wolverine Project Dense Media Separation (DMS) Humidity Cell Release Rates Update

This letter report summarizes the most recent humidity cell release rates for three Wolverine DMS float humidity cells that have been in operation for 84 weeks. Release rates from the humidity cells were last reported in January 2007 as part of AMEC Earth & Environmental's (AMEC) water quality estimate for the flooded underground workings. This included humidity cell data up until December 2006. Yukon Zinc Corporation (YZC) has requested that data collected following the January 2007 report be analysed to determine if any significant changes in the calculated release rates have occurred since that time.

Figures 1 to 13 present calculated loadings for DMS float humidity cells. Visual inspection of the humidity cell loadings indicates that all parameters showed a generally decreasing rate of release up to week 71. After week 71, release rates have slightly increased. The pH values have remained near-constant and circum-neutral during this time.

Exceptions to the general trend of decreasing rates to week 71 followed by slightly increasing rates are as follows:

- Aluminium loads tend to fluctuate between 0.001 and 0.01 mg/kg/wk with few exceptions and no distinct trend;
- Arsenic loads are generally constant at approximately 0.0015 mg/kg/wk.
- Iron is consistently below or at the detection limit, yielding release rates between 0.004 and 0.02 mg/kg/wk, depending on the laboratory detection limit.
- Molybdenum loads increased slightly to week 58, and have been decreasing since that time.
- Silver loads are generally below detection throughout testing, except for in HC19, which has had low levels of detectable silver since week 70.

Release rates for all cells were calculated for steady-state conditions that exclude the first 20 weeks of data. Rates were calculated for the period ending December 2006, and for the period ending October 2007. These results are presented in Table 1. The relative percent difference (RPD) between rates reported for the two periods are also presented in Table 1. In general, release rates for DMS cells have increased, with the exception of sulphate.

Table 1: Comparison of release rates for DMS cells (mg/m²/wk)

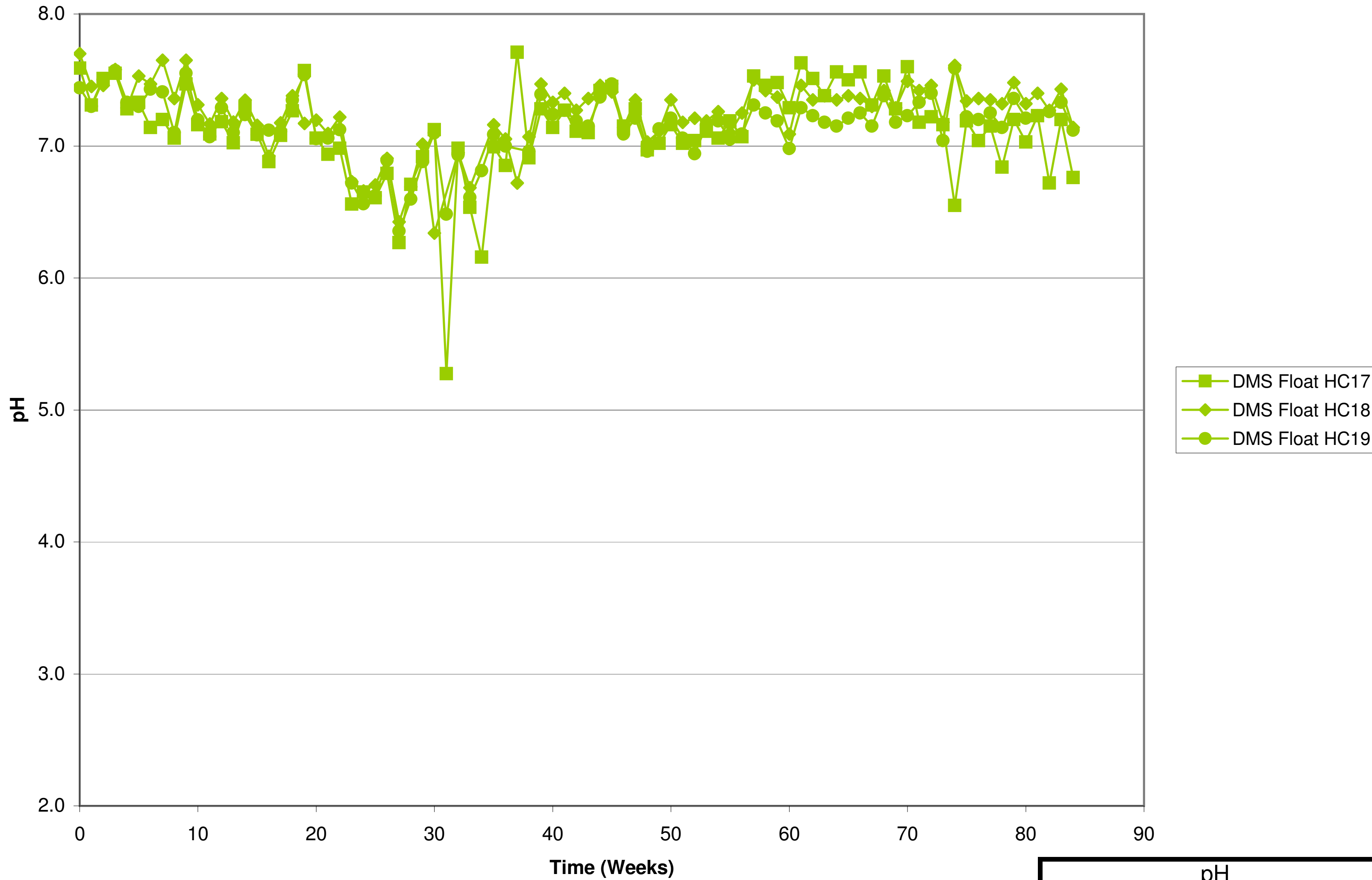
	January 2007	November 2007	RPD (%)
Sulphate	2.34	2.33	-0.38
Al	0.00063	0.00070	10.7
As	0.00014	0.00015	5.25
Cd	0.00010	0.00012	14.8
Cu	0.000093	0.000133	35.4
Fe	0.00080	0.00085	5.51
Pb	0.000048	0.000060	23.3
Mo	0.00029	0.00033	14.2
Ni	0.00016	0.00029	55.7
Se	0.0019	0.0016	-13.8
Ag	0.000004	0.000005	25.7
Zn	0.0023	0.0037	45.9

DMS release rates are not included in the underground water quality model, as the DMS solids will be encapsulated in backfill and therefore will not contribute loads to the underground water quality. As such, the increased release rates from DMS float cells are not expected to have an affect on underground water quality, and will therefore not affect Wolverine's current closure plan.

We trust this meets your needs at this time. Should you have any questions, please do not hesitate to contact the undersigned.

Jennifer Kavalench, B.Sc.
Environmental Geoscientist

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



pH November 2007 Wolverine Mine, YK	
Yukon Zinc Corporation	
November 2007	FIGURE 1

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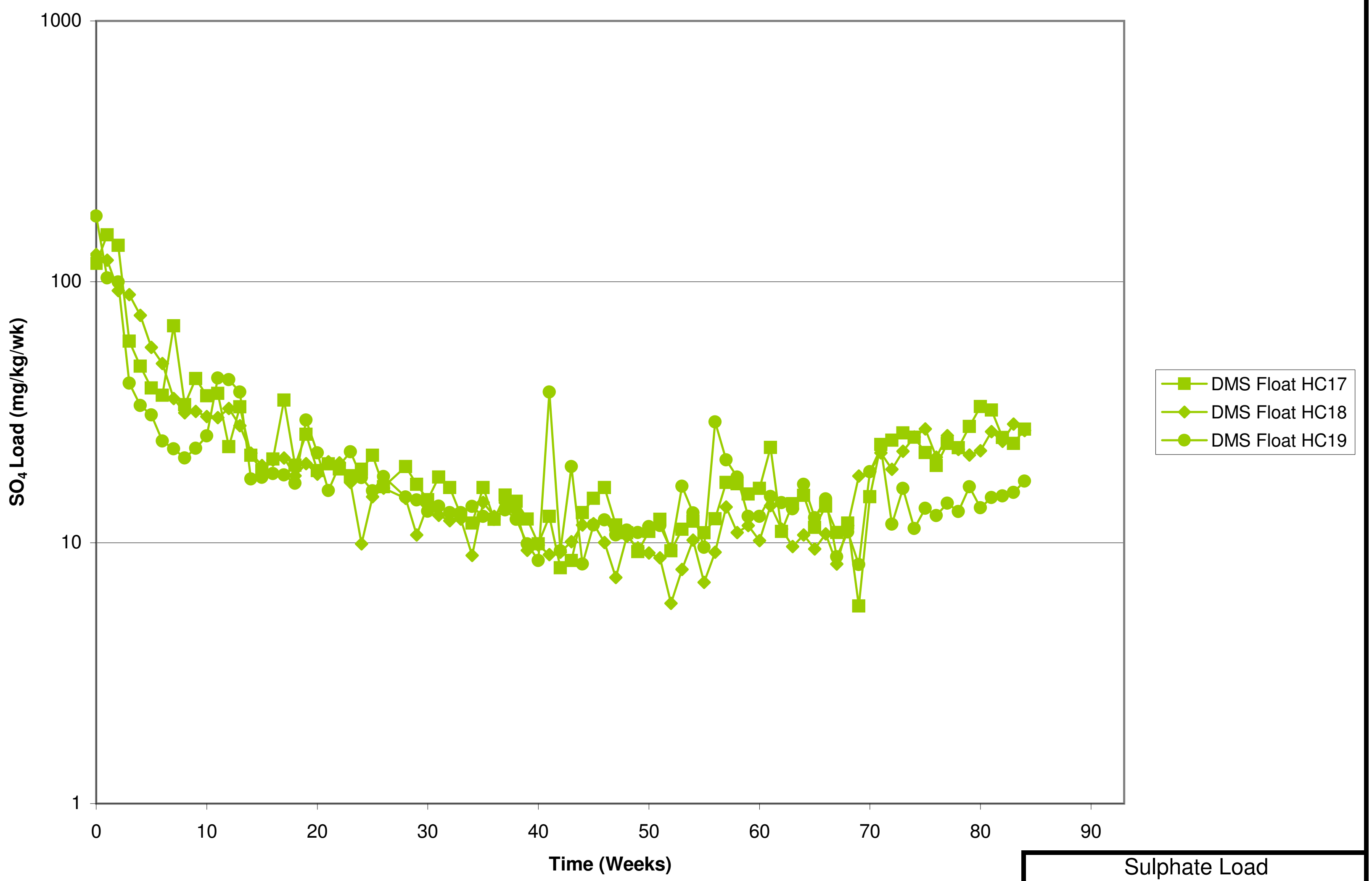

Sulphate Load
November 2007
Wolverine Mine, YK

Yukon Zinc Corporation

November 2007	FIGURE 2

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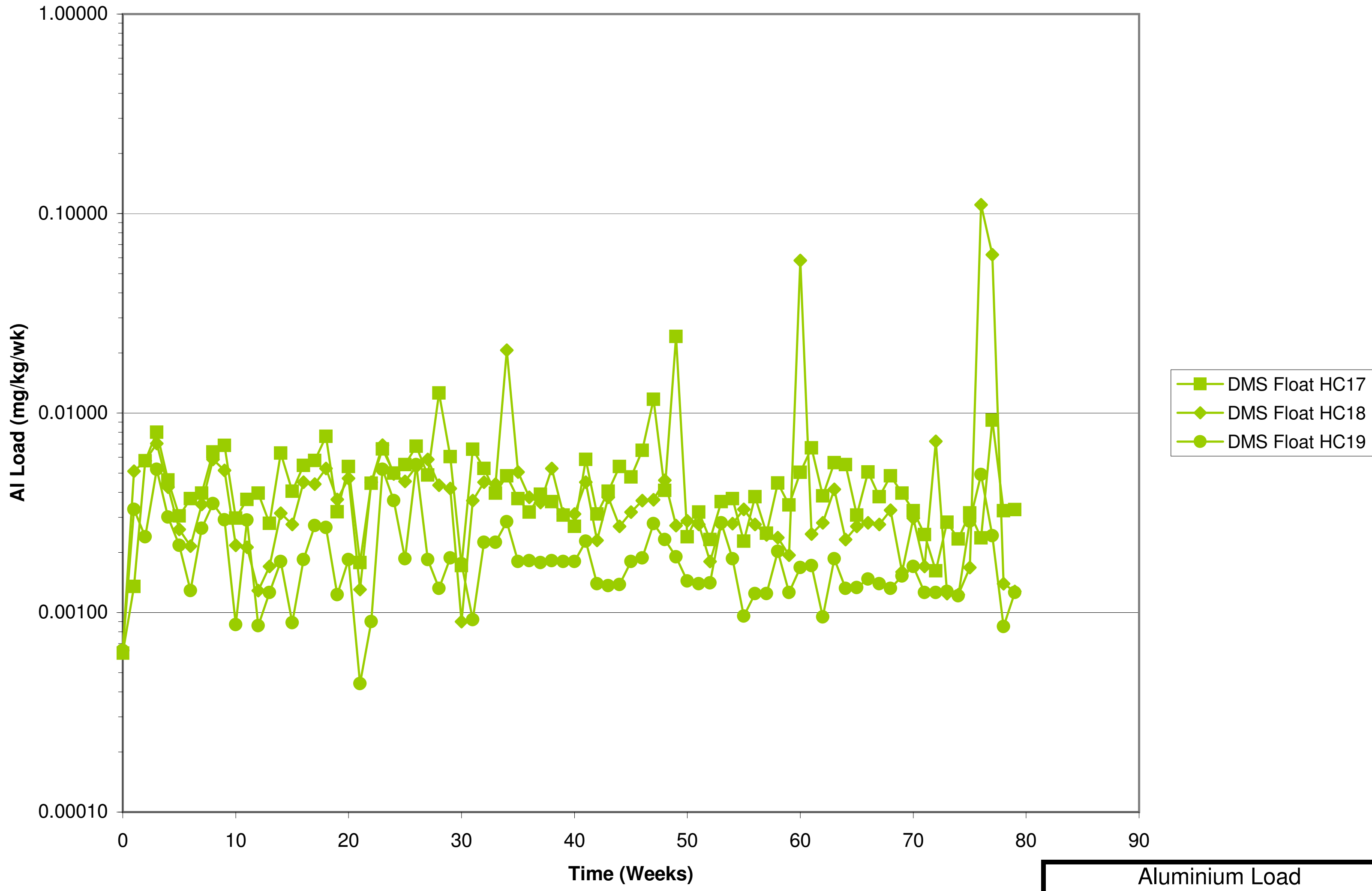

Aluminium Load November 2007 Wolverine Mine, YK	
Yukon Zinc Corporation	
November 2007	FIGURE 3

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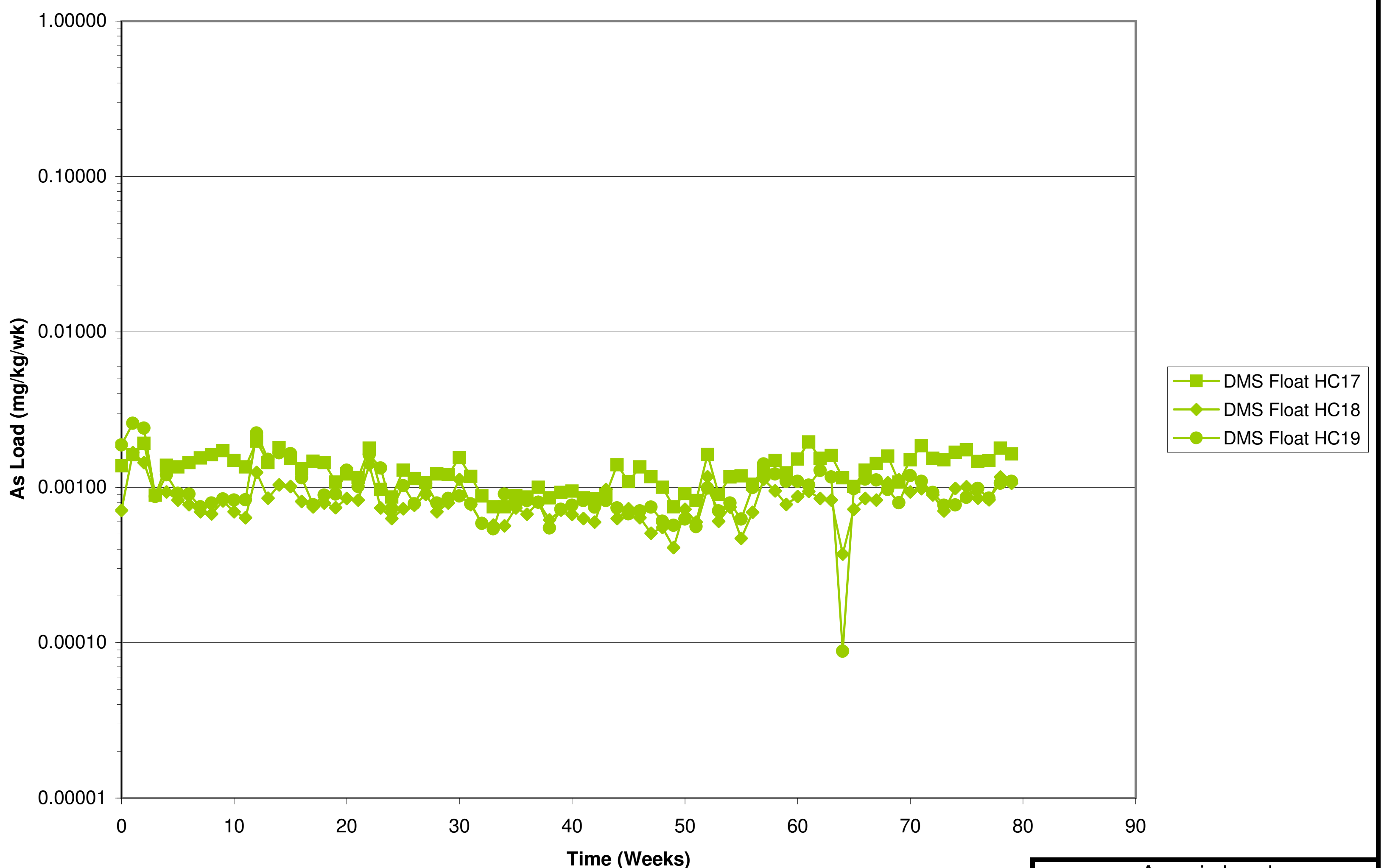

Arsenic Load November 2007 Wolverine Mine, YK	
Yukon Zinc Corporation	
November 2007	FIGURE 4

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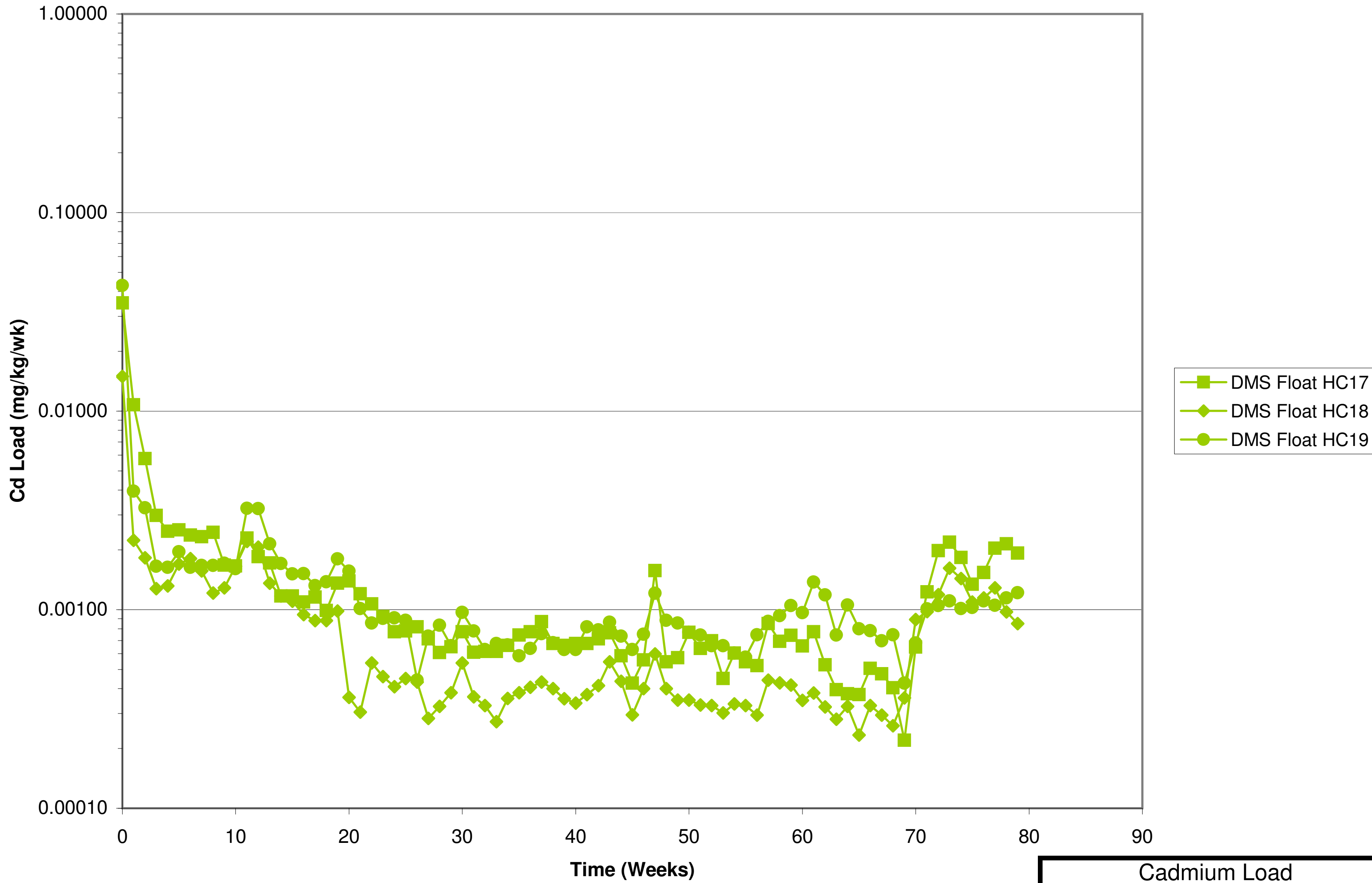

Cadmium Load November 2007 Wolverine Mine, YK	
Yukon Zinc Corporation	
November 2007	FIGURE 5

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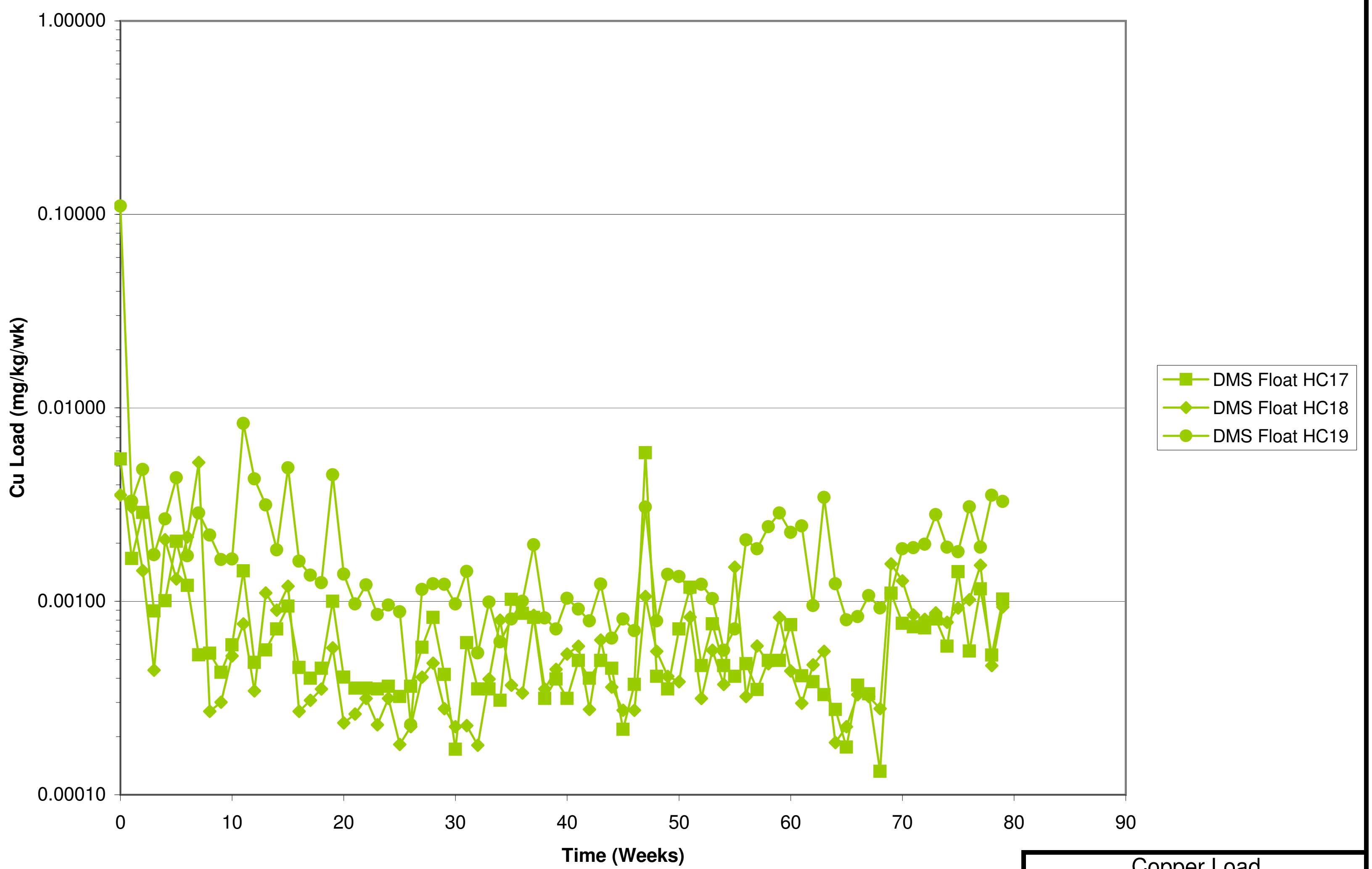

Copper Load
November 2007
Wolverine Mine, YK

Yukon Zinc Corporation

November 2007	FIGURE 6

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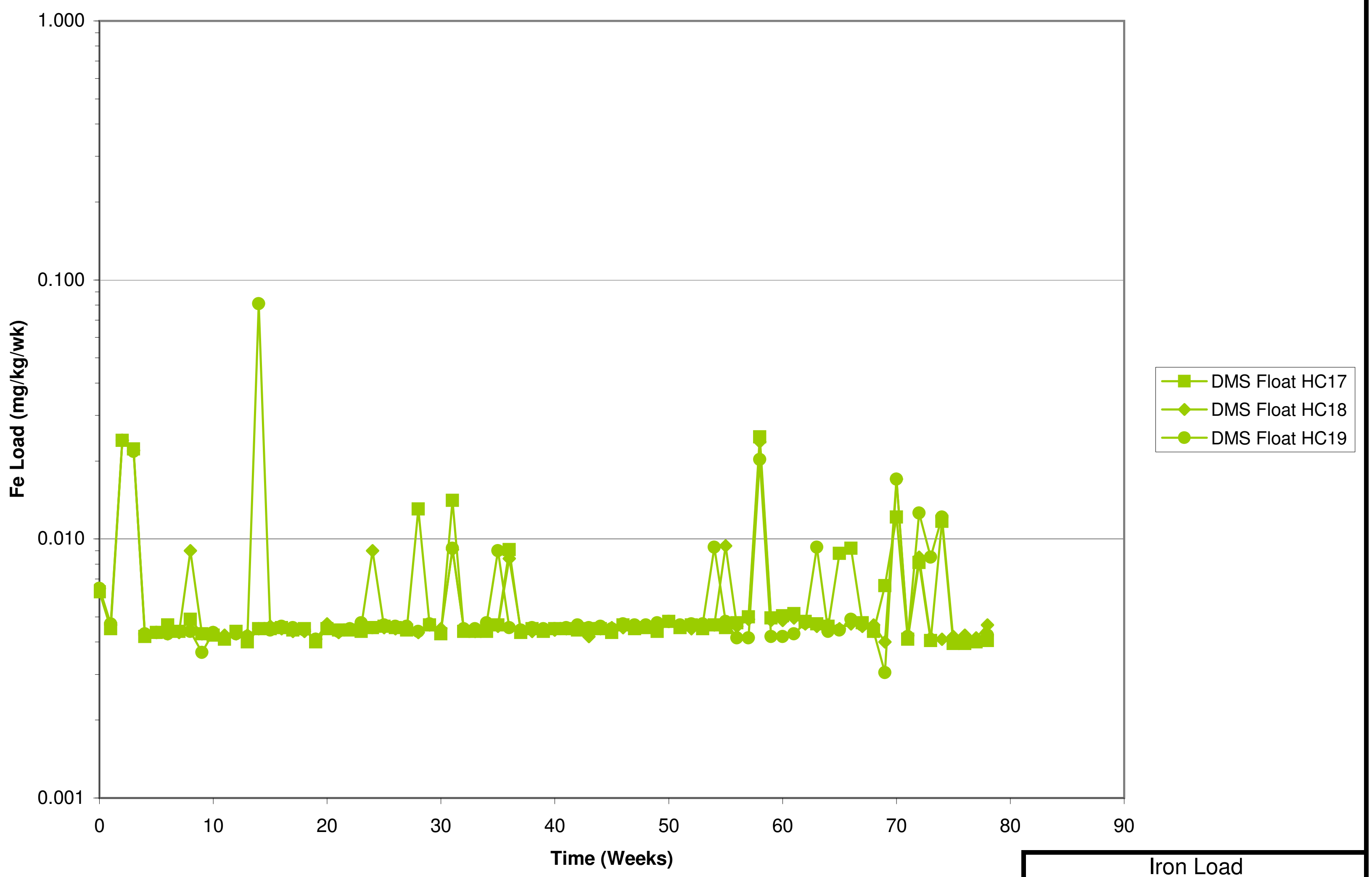

Iron Load November 2007 Wolverine Mine, YK	
Yukon Zinc Corporation	
November 2007	FIGURE 7

TC 53920

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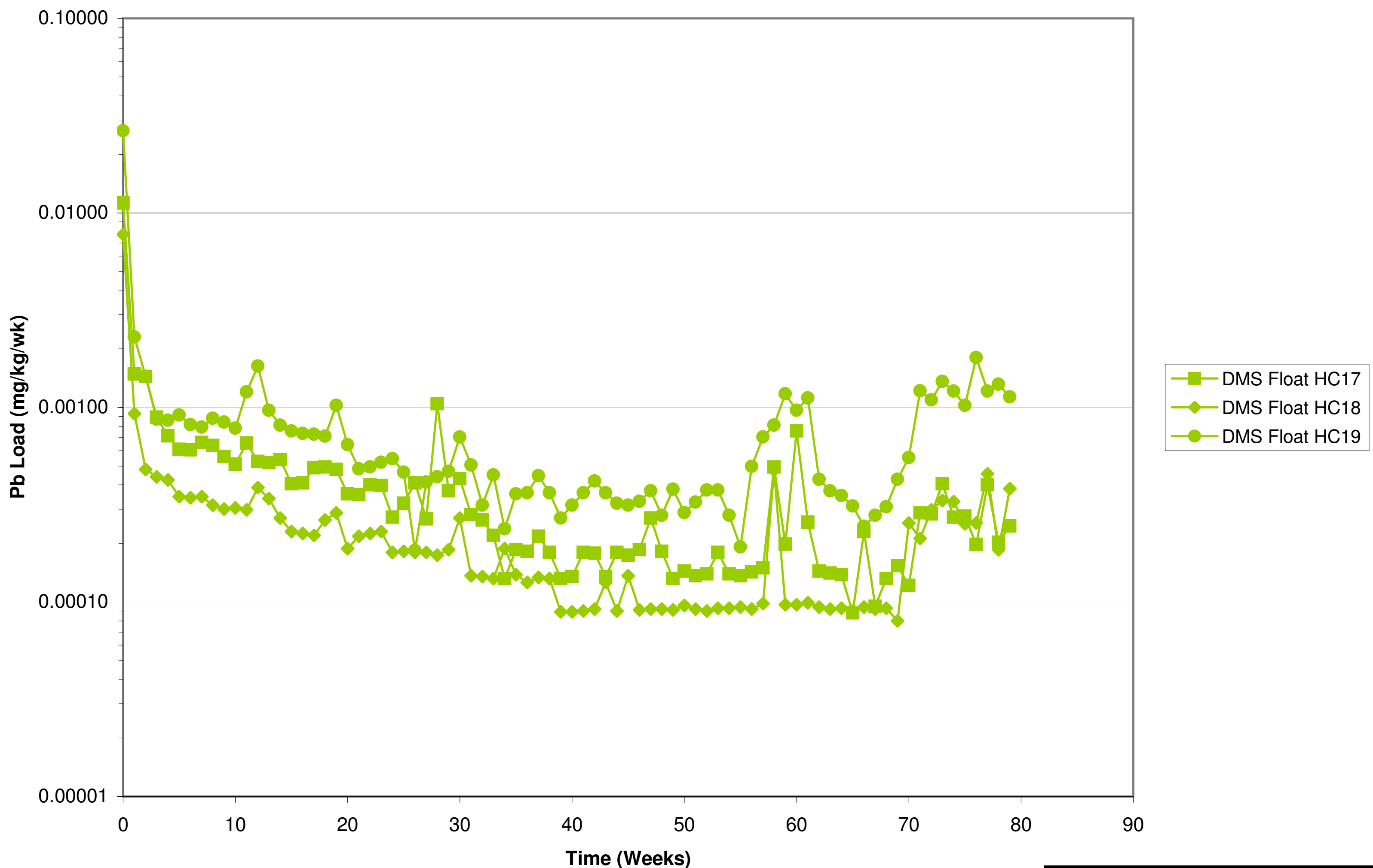

Lead Load November 2007 Wolverine Mine, YK	
Yukon Zinc Corporation	
November 2007	FIGURE 8

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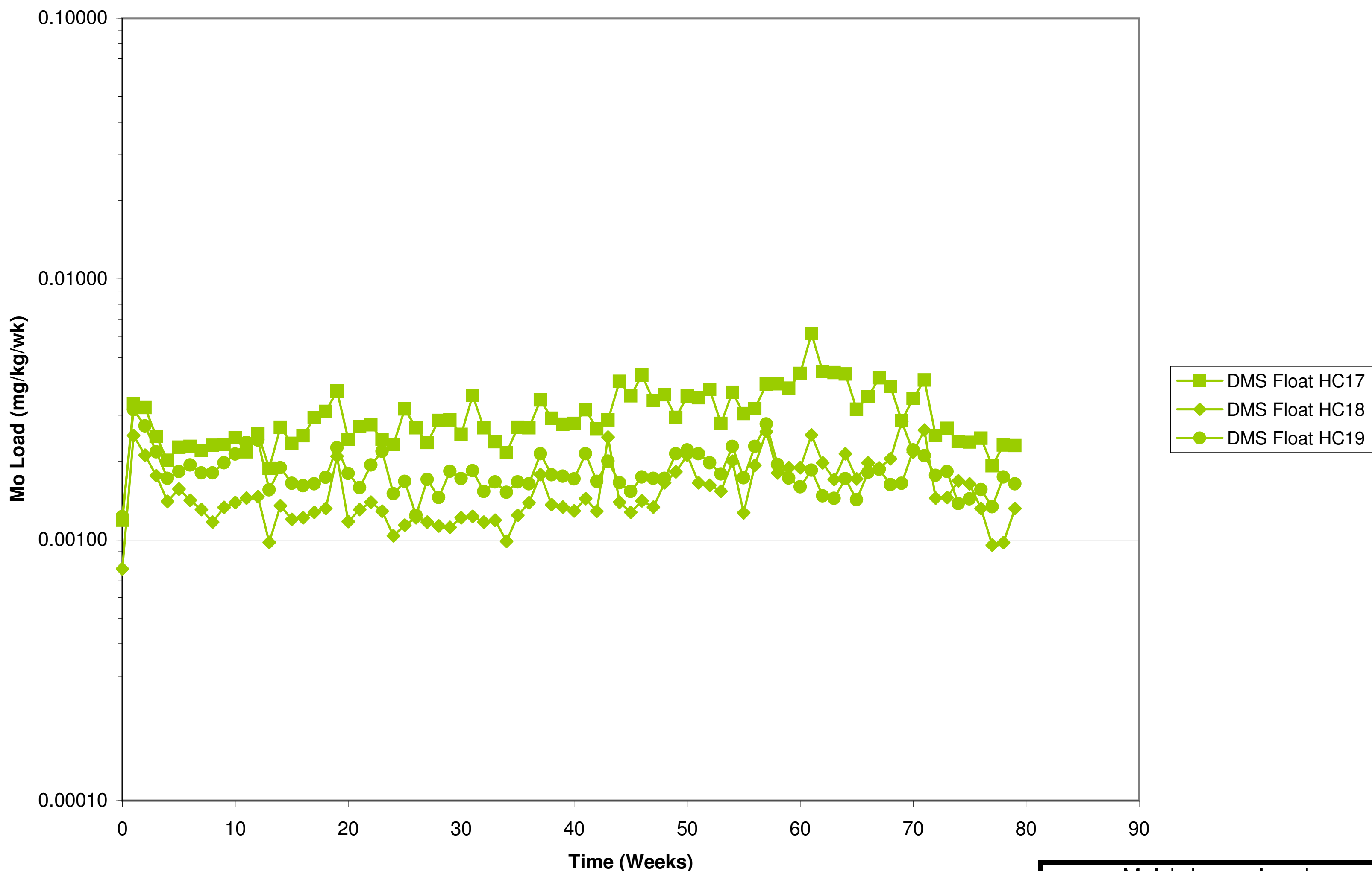
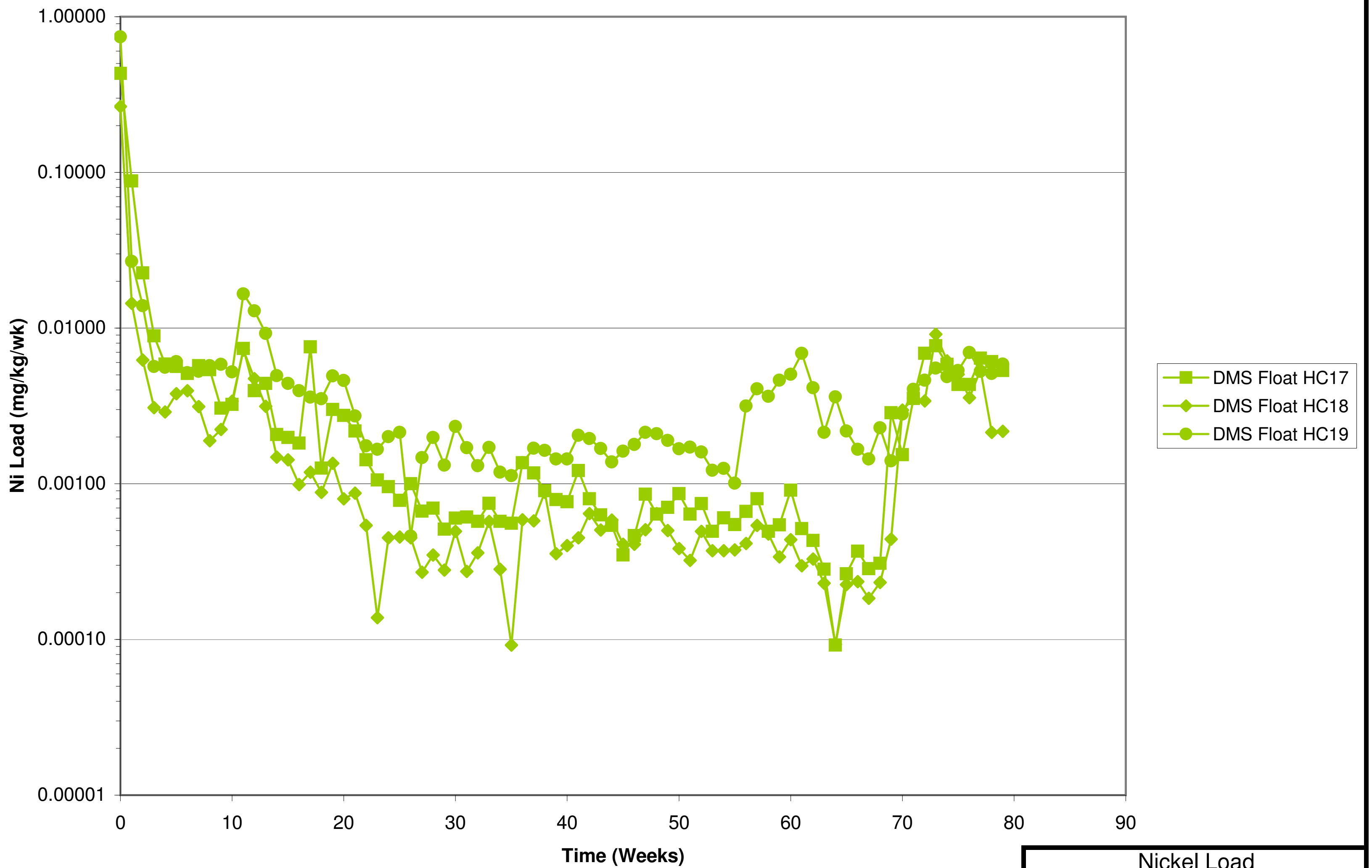


Molybdenum Load
November 2007
Wolverine Mine, YK

Yukon Zinc Corporation

November 2007 | FIGURE 9

TC 53920



Nickel Load November 2007 Wolverine Mine, YK	
Yukon Zinc Corporation	
November 2007	FIGURE 10

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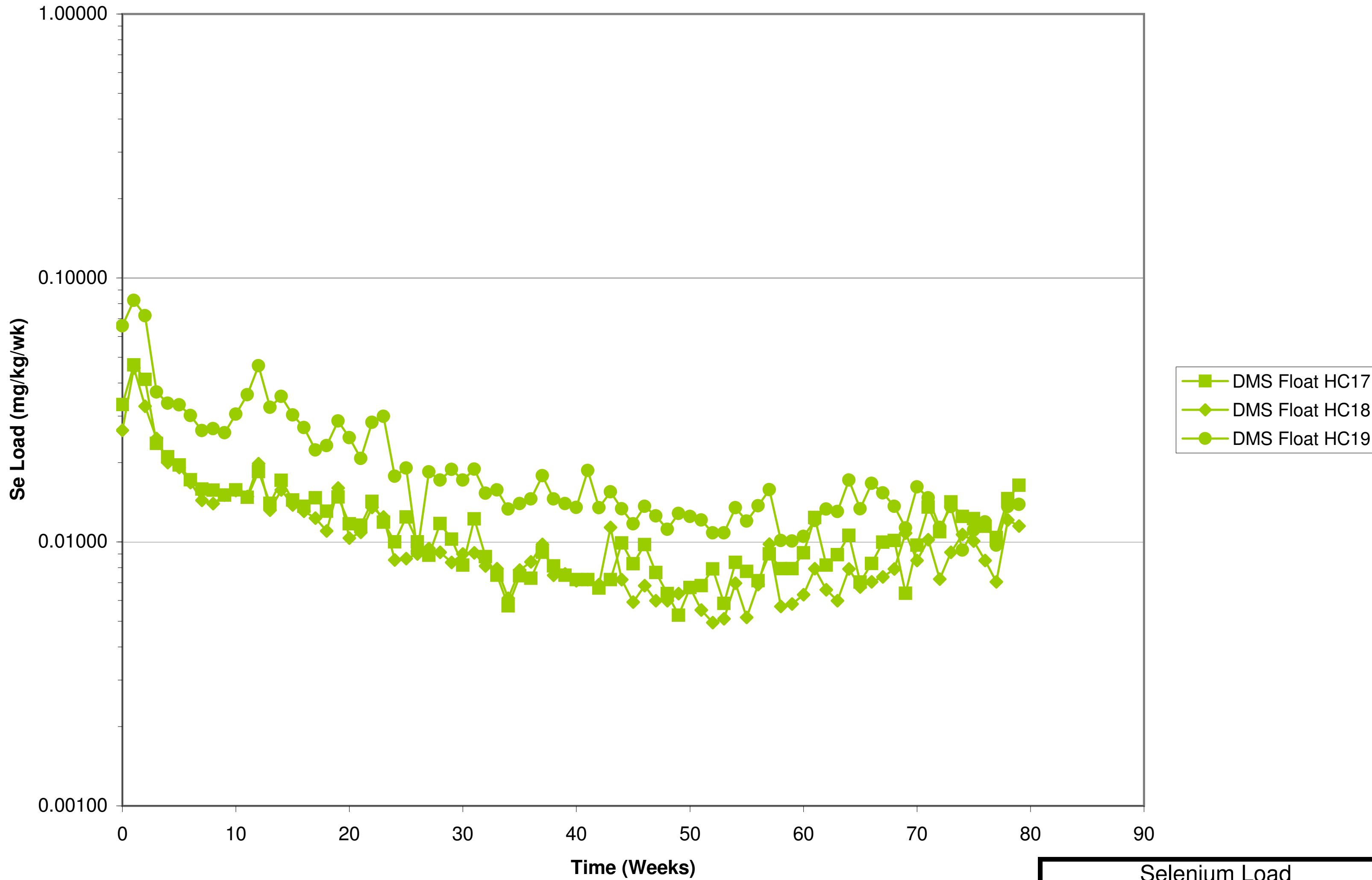

Selenium Load
November 2007
Wolverine Mine, YK

Yukon Zinc Corporation

November 2007	FIGURE 11

TC 53920

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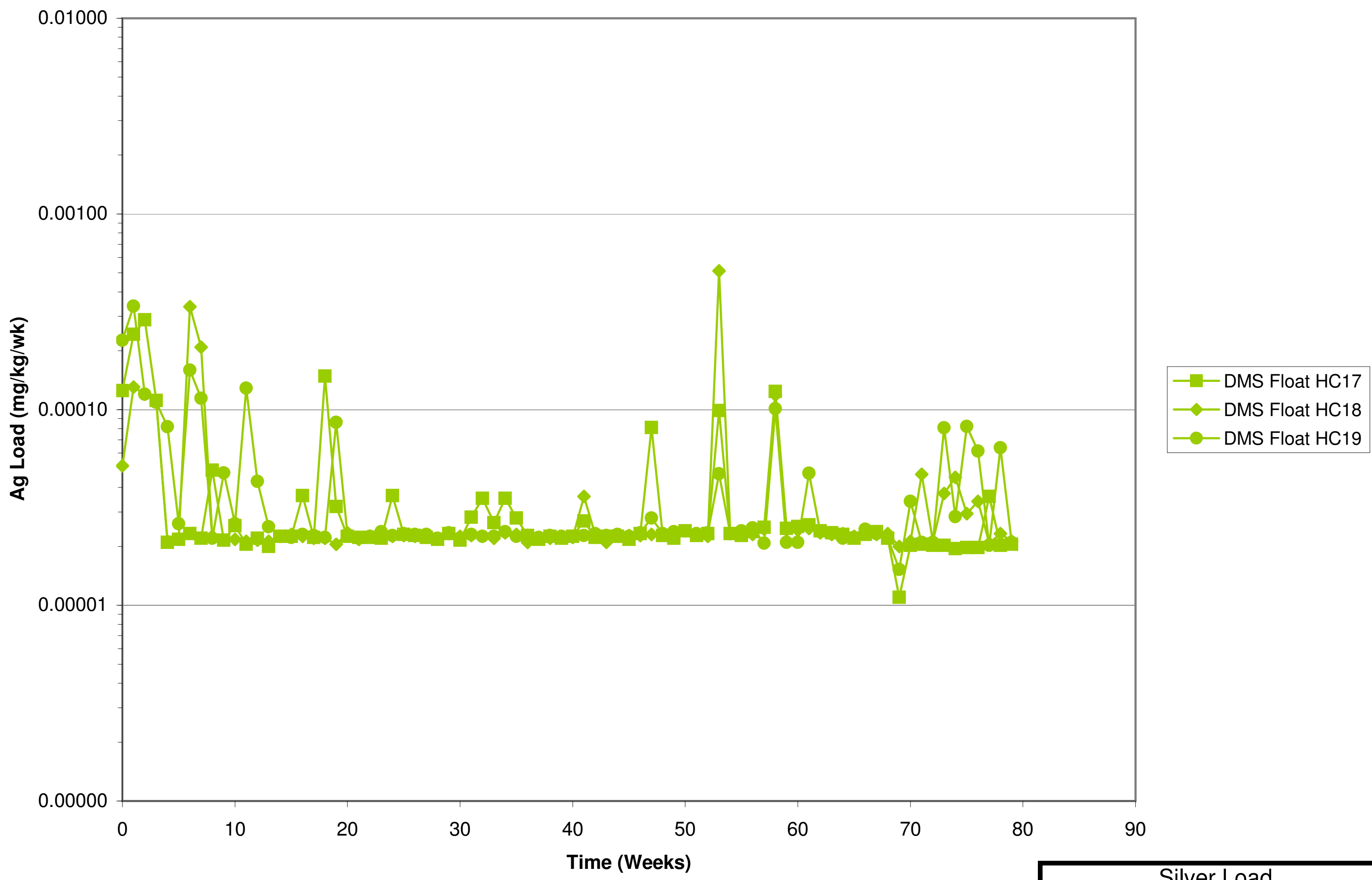

Silver Load
November 2007
Wolverine Mine, YK

Yukon Zinc Corporation

November 2007	FIGURE 12

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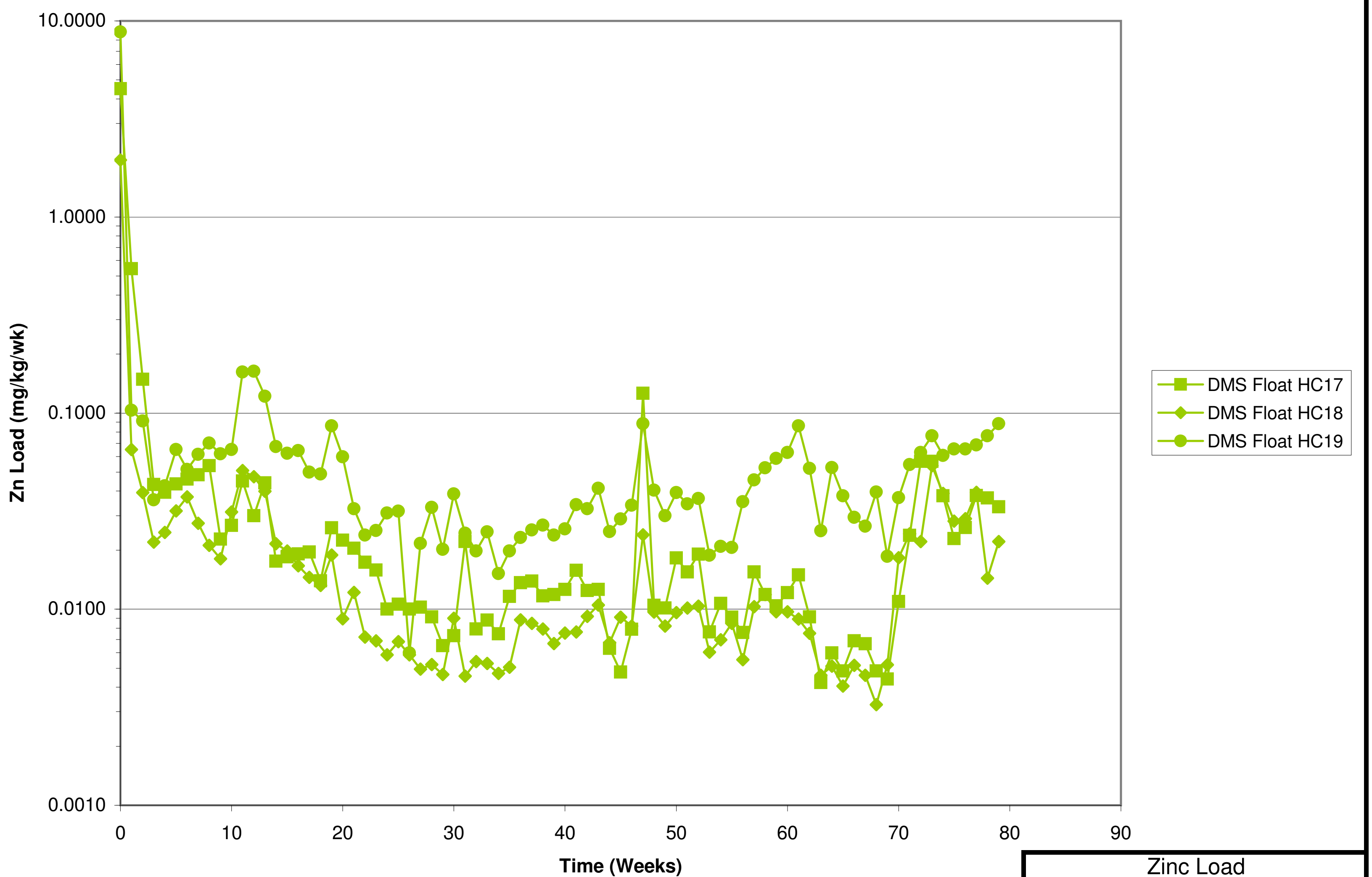

Zinc Load November 2007 Wolverine Mine, YK	
Yukon Zinc Corporation	
November 2007	FIGURE 13

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Appendix C

Update Memorandum on Tailings Humidity Cell Results

MEA

December 14, 2007

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

Ms. Pamela Ladyman, R.P. Bio.
Manager. Environment and Community Affairs

Dear Ms. Ladyman:

Wolverine Tailings Humidity Cells Update

The following provides a summary of the Wolverine tailings humidity cells to November 27, 2007. The Lynx Zone Diluted Ore Composite and the Wolverine Zone Diluted Ore Composite humidity cells were decommissioned in October 2006 at Week 63 and post-decommsioning testwork was completed over the winter. The Overall Ore Composite (OC) and Overall Diluted ore composite (OD) tailings humidity cells continue to run and have reached weeks 129 and 123, respectively.

1. SUMMARY OF HUMIDITY CELL RESULTS

The pH of all cells has remained relatively constant generally between pH 6.5 and pH 7.0 (see Figure 1.1). All the Diluted Ore tailings cells experienced a temporary pH depression within the first 20 weeks, before rebounding. The Overall Ore Composite tailings did not experience this. It is surmised that the amount of thiosalt in solution (400 mg/L) did not exceed the rapid neutralization capacity of the tailings for the OC sample, whereas higher amounts of thiosalt (600-1200 mg/L) in the other cells clearly did. Once the initial flush of thiosalts was over (i.e., thiosalts dropped below 400 mg/L), the pH has been unaffected by these comparatively low concentrations.

There have been a few other instances when the pH dropped below pH 6.0 with the lowest pH in Cell OC at pH 4.7 at week 124. It should be noted that coincident with the low pH value at week 124, the sulphate production was measured at 28 mg/kg/wk well below the 5-week average. The low sulphate value is reflected in the lower conductivity. The lower pH is also reflected in the lower alkalinity and higher acidity values than previous and following cycles. In general, there appears to be some additional variability in the data fluctuations since week 109. These fluctuations do not appear to be occurring simultaneously in both Cell OD and OC, which suggests that the fluctuations are related to variability in reaction rates within the humidity cell and not artifacts of the laboratory testing. However, no trend in median pH is notable.

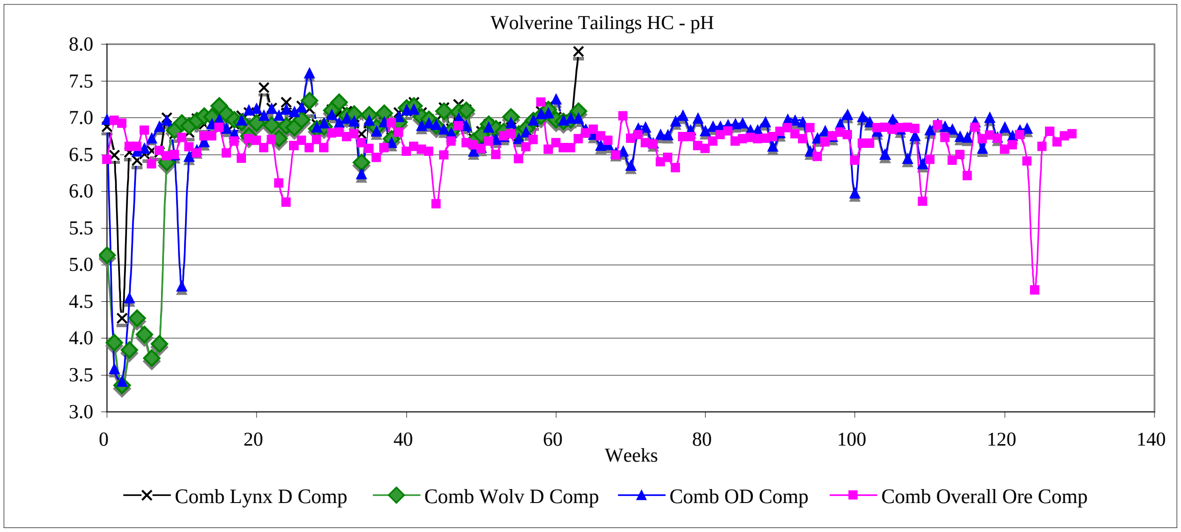

Figure 1.1 Wolverine Tailings Humidity Cells - pH

Acidity and alkalinity production rates remain low in both cells, consistent with the near-neutral pH and limited by calcite solubility.

Sulphate production rates remain constant with recent 5-week average production rates of 84 mg/kg/wk and 190 mg/kg/wk for Cells OC and OD, respectively.

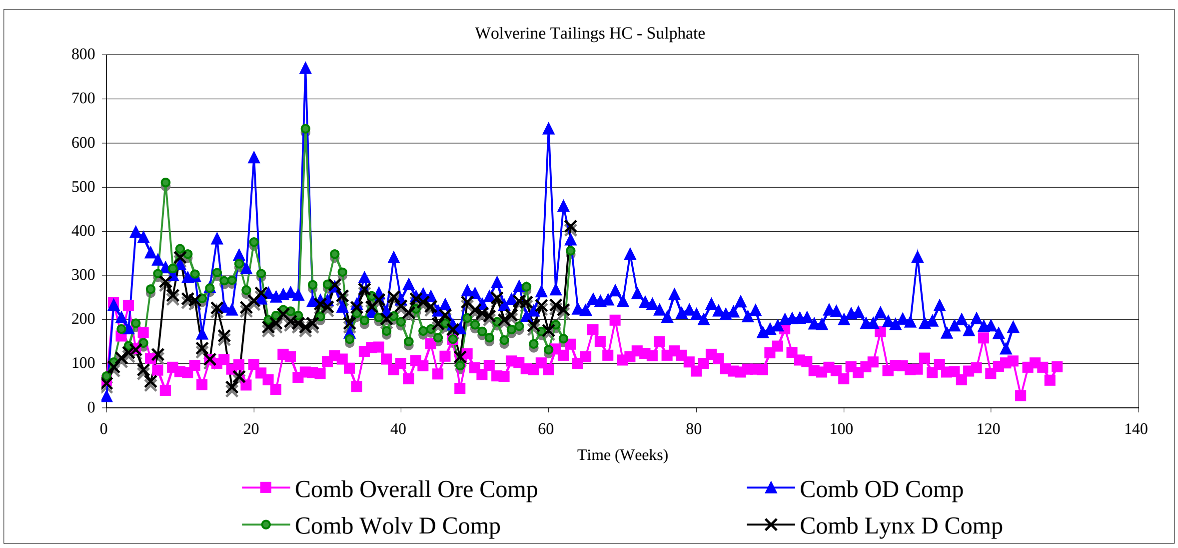

Figure 1.3 Wolverine Tailings Humidity Cells - Sulphate

Both cells show an abundance of total sulphur (mostly as sulphide) remaining (98.5% and 96.2% for cells OC and OD, respectively).

Table 1.1 summarizes the range in loading rates for Se and Zn from recent weeks until the current sampling on November 27, 2007.

Table 1.1 Range in Leachate Elemental Loading Rate over past 20 weeks

ELEMENT	CELL OC LOADING RATE (mg/kg/wk)	CELL OD LOADING RATE (mg/kg/wk)
Se	0.049 – 0.062	0.066 – 0.087
Zn	1.4 – 1.9	0.68 – 0.92

Current Zn loadings in both Cell OC and OD are well below the initial flush values and also below their long term averages (see **Figure 1.4**).

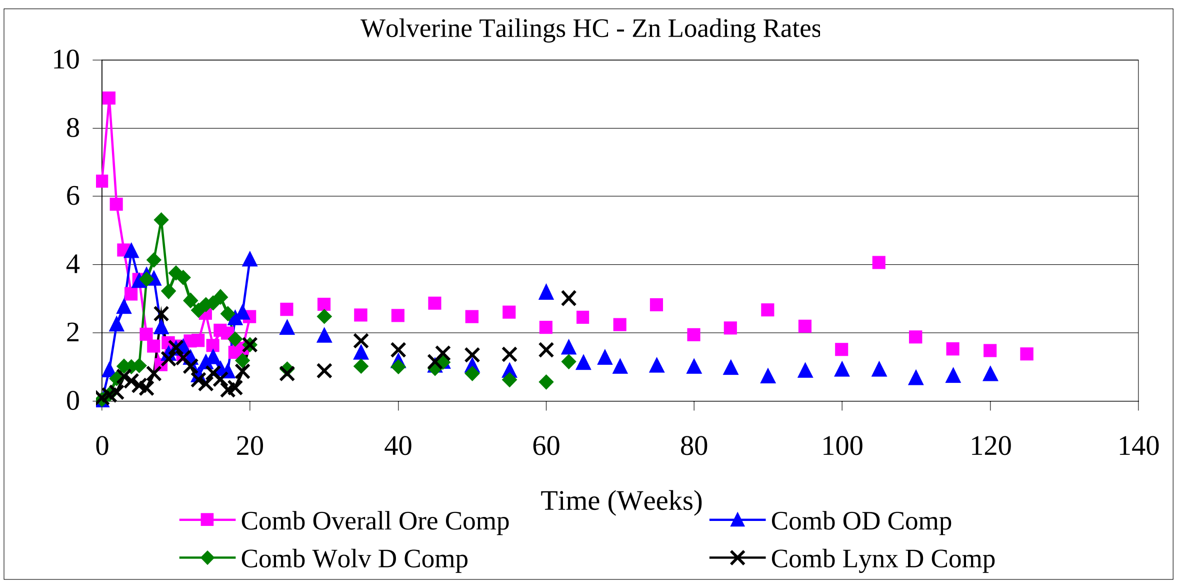

Figure 1.4 Wolverine Tailings Humidity Cells - Zn Loading Rates

Se loadings have remained relatively constant over the testing period for both cells since the initial flush (see **Figure 1.5**). This is likely due to the relatively constant and neutral pH, but shows that soluble minerals still remain even after 2 years of leaching.

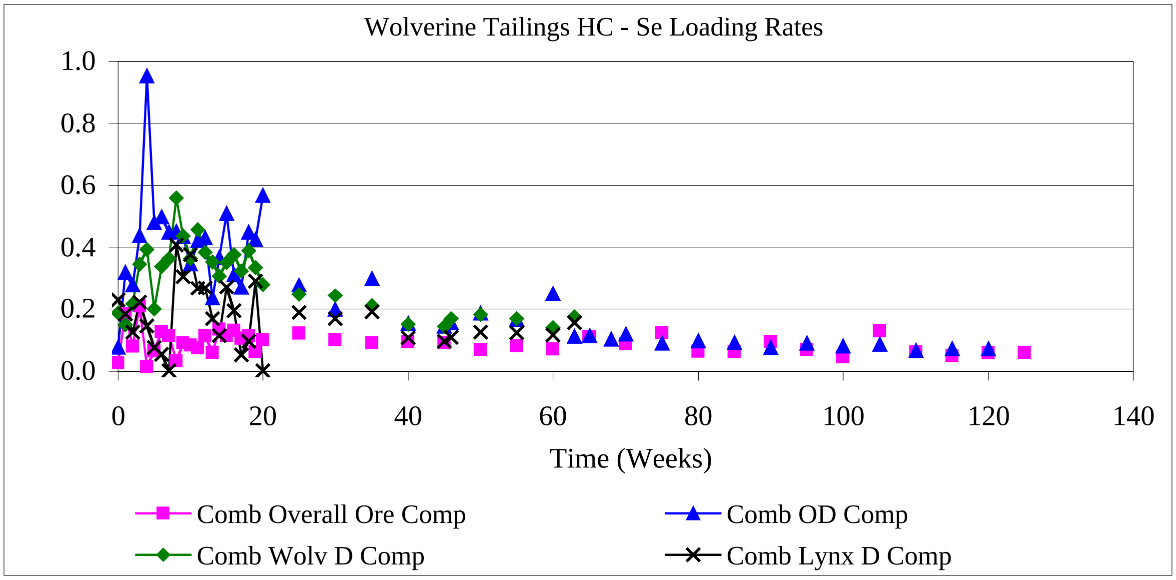

Figure 1.5 Wolverine Tailings Humidity Cells - Se Loading Rates

2. TIME TO ONSET OF ARD

In humidity cell testing, it is commonly assumed that sulphide oxidation is not taking place at a significant 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. However, 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 14 and 3 years for Cells OC and OD, respectively. Almost 50% of the initial sulphate has been removed from the OD cell, however less than 20% 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. Once the initial sulphate is believed to have flushed, NP depletion rates can be defined more explicitly. Even if all the current sulphate production from the past 20 weeks (the beginning of the recent instability in pH) were to be from sulphide oxidation, it would still take another 14 years in the laboratory humidity cell for all the Sobek-NP in Cell OC to become depleted. Without that assumption (or assuming only small a portion of the sulphate production is from sulphide oxidation), the time to NP depletion in the laboratory is currently estimated to be 1,600 and 1,100 years for cells OC and OD, respectively.

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.

3. RECOMMENDATIONS FOR DECOMMISSIONING

Based on the conclusions reached in Section 2 above, it is recommended that one cell be decommissioned. 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. Since the OD cell appears more likely to flush the initial sulphate sooner and thus more likely to achieve NP depletion sooner, it is suggested that the OC cell be decommissioned.

Although little has changed over the past 2 years, it is nevertheless recommended that decommissioning procedures and testwork follow the protocols laid out last year for the Wolverine and Lynx ore tailings cells, to provide confirmation of the similarities in geochemical behaviour. The test program repeats the pre-test characterization following the draft BC Guidelines for the Prediction of Metal Leaching and ARD. The leachate from the final week of humidity cell maintenance is subject to the full suite of analyses including: Cl, F, Hg, CN(T), CNO, CNS, NO_3, NH_3 and NH_4 in addition to the usual pH, acidity, alkalinity, sulphate and metals. Photos are taken of the tailings materials to document any visible evidence of oxidation. A Shake Flask Extraction is conducted to assess the degree of accumulation of oxidation products. The static testing includes expanded ABA, an ICP scan, and mineralogical evaluation (petrographics, XRD with Reitveld).

Yours truly,
Marsland Environmental Associates Ltd.

Rob Marsland, P.Eng.
Senior Environmental Engineer

Appendix D

Detailed Closure Cost Estimates

Life of Mine Closure Cost Estimate

Detailed Costing by Component

Mine Workings

Work Item Description	Description	Units	Quantity	Unit Cost	Total Cost
1345 Portal Closure					
Plug portal with tires	Cat 325 Hoe	hrs	30	$ 190	$ 5,700
Place waste rock cap over tires	Cat 325 Hoe	hrs	20	$ 190	$ 3,800
	A35 Articulated haul truck	hrs	40	$ 200	$ 8,000
Supply broken rock at base of plug and discharge channel riprap	Cat 325 Hoe	hrs	20	$ 190	$ 3,800
	A35 Articulated haul truck	hrs	40	$ 200	$ 8,000
Construct rock drain at base of plug	Cat 325 Hoe	hrs	10	$ 190	$ 1,900
Supply fill to seal discharge channel	Cat 325 Hoe	hrs	10	$ 190	$ 1,900
	A35 Articulated haul truck	hrs	20	$ 200	$ 4,000
Construct lined open channel for discharge from portal to biopass system; 300 m length	Cat 325 Hoe	hrs	20	$ 190	$ 3,800
	Compactor	hrs	10	$ 130	$ 1,300
Stabilize and vegetate area around channel	Seed and Fertilize	ha	0.09	$ 1,500	$ 135
Labour for channel construction	Labourer	hrs	30	$ 50	$ 1,500
Labour to assist with placing tires & cap	Labourer	hrs	80	$ 50	$ 4,000
Design of rock drain and channel (Engineering)	Engineering	hrs	40	$ 125	$ 5,000
Interim Portal Discharge Treatment	water treatment (1 L/s x 2 years)	m^3	63072	$ 0.40	$ 25,229
Supervision to design & install tires and cap	Supervision	hrs	50	$ 90	$ 4,500
Sub Total					**$ 82,564**
Install Hydraulic Plugs in Access Ramp					
Drill and grout	grouting 10 m into wall; 20 m length x 2 plugs	hours	300	$ 190	$ 57,000
Install concrete plugs	20 m length x 5 m x 5 m x 2 plugs	m^3	1000	$ 85	$ 85,000
Labour for plug installation	Labourer	hours	300	$ 50	$ 15,000
Engineering	Design of plugs	hours	60	$ 125	$ 7,500
Supervision	Project engineer	hours	150	$ 125	$ 18,750
Sub Total					**$ 183,250**
Install Hydraulic Plugs in Ventillation Raises					
Install concrete plugs	75 m length x 4 m x 4 m x 2 plugs	m^3	2400	$ 85	$ 204,000
Labour for plug installation	Labourer	hours	200	$ 50	$ 10,000
Engineering	Design of plugs	hours	60	$ 125	$ 7,500
Supervision	Project engineer	hours	100	$ 125	$ 12,500
Sub Total					**$ 234,000**
Decommission Dewatering Wells					
Concrete fill of dewatering wells	Assume 30 wells to decommission	Ea.	30	$ 2,000	$ 60,000
Labour		hours	300	$ 50	$ 15,000
Supervision	Engineer	hours	100	$ 125	$ 12,500
Sub Total					**$ 87,500**
Total					**$ 587,314**

Tailings Management Area

Work Item Description	Description	Units	Quantity	Unit Cost	Total Cost
Reclaim Tailings Dam Face					
Load Haul and Place topsoil	Area of 25000 m^2 with 0.25 m depth	m^3	6250	$ 8	$ 50,000
Revegetate	Seed and Fertilize	ha	2.5	$ 1,500	$ 3,750
Sub Total					**$ 53,750**
Reclaim Seepage Recovery Dam					
Seepage Dam Regrade	Cat D8 Dozer regrade and contour	hours	16	$ 200	$ 3,200
Haul and Place topsoil	Area of 7000 m^2 with 0.25 m depth	m^3	1750	$ 5	$ 8,750
Revegetate	Seed and Fertilize	ha	0.7	$ 1,500	$ 1,050
Sub Total					**$ 13,000**
Decommission Diversion Ditches					
Decommission Diversion Ditches B & C	Cat D8 Dozer regrade and contour	hours	80	$ 200	$ 16,000
Revegetate and Stabilize	Seed and Fertilize area 2 km x 5 m	ha	1	$ 1,500	$ 1,500
Remove 4 - 1200 mm Culverts	Uncovering and removal	Ea.	4	$ 4,000	$ 16,000
Remove 1 - 600 mm Culverts	Uncovering and removal	Ea.	1	$ 1,500	$ 1,500
Sub Total					**$ 35,000**
Remove Tailings Pipeline (3 km)					
Remove Pipeline	Cat 325 hoe	hrs	150	$ 190	$ 28,500
	A35 Articulated haul truck	hrs	150	$ 200	$ 30,000
	Labour	hrs	300	$ 50	$ 15,000
Seeding and Fertilizer Application	3 km x 3 m	ha	0.9	$ 1,500	$ 1,350
Sub Total					**$ 74,850**
Remove Reclaim Pipeline (3 km)					
Remove Pipeline	Cat 325 hoe	hrs	150	$ 190	$ 28,500
	A35 Articulated haul truck	hrs	150	$ 200	$ 30,000
	Labour	hrs	300	$ 50	$ 15,000
Seeding and Fertilizer Application	3 km x 3 m	ha	0.9	$ 1,500	$ 1,350
Sub Total					**$ 74,850**
Cover Tailings with DMS					
Load Haul and Place DMS	Place DMS on ice in winter	m^3	160,000	$ 5	$ 800,000
Load Haul and Place Rockfill	Erosion protection on dam face	m^3	36,500	$ 8	$ 292,000
Haul and Place topsoil on DMS storage area	Area of 20,000 m^2 with 0.25 m depth	m^3	5000	$ 5	$ 25,000
Revegetate DMS stockpile area	Seed and Fertilize	ha	2	$ 1,500	$ 3,000
Sub Total					**$ 1,120,000**
Water Treatment of Excess Tailings Water					
Biotreatment of excess tailings water	Treatment for 3 years; ~170,000 m^3/yr	m^3	510,000	$ 0.40	$ 204,000
Decommissioning of water treatment plant	Decommission after year 3	hours	216	$ 50	$ 10,800
Dismantle infrastructure	Cat 325 hoe	hours	25	$ 150	$ 3,750
Remove retention pond	Labour	hours	16	$ 50	$ 800
Revegetate area	Seed and Fertilize	ha	0.3	$ 1,500	$ 450
Sub Total					**$ 219,800**
Total					**$ 1,591,250**

Note: Water treatment cost includes power supply and amendments.
Current estimate for operations water treatment cost is $0.33/m3 which has been increased to $0.4/m3 for closure

Infrastructure Decommissioning

Work Item Description	Description	Units	Quantity	Unit Cost		Total Cost	
Mill-Concentrator Buildings							
Remove salvageable equipment	General Labour	hours	1080	$	50	$	54,000
	Trades Labour	hours	1080	$	65	$	70,200
Dismantle Building - Manpower	General Labour	hours	1152	$	50	$	57,600
Dismantle Building - Manpower	Trades Labour	hours	576	$	65	$	37,440
Dismantle Building - Equipment	Cat 325	hours	150	$	190	$	28,500
Concrete Demolition	Cat 325	hours	80	$	190	$	15,200
	Hammer/Impactor	hours	80	$	75	$	6,000
Misc. Supplies & Tools	Misc.	L.S.	L.S.			$	10,000
Scrap haul to landfill	A35 Articulated haul truck	hours	200	$	200	$	40,000
Reslope and contour and bury	Cat D8	hours	80	$	200	$	16,000
Haul and place topsoil	Area of 194000 m^2 x 0.25 m depth	m^3	48500	$	5	$	242,500
Revegetate, seed and fertilize	Seed and Fertilize	ha	19.4	$	1,500	$	29,100
Sub Total						**$**	**606,540**
Truck Shop							
Dismantle Building - Manpower	General Labour	hours	72	$	50	$	3,600
	Trades Labour	hours	48	$	65	$	3,120
Dismantle Building - Equipment	Cat 325	hours	10	$	190	$	1,900
Concrete Demolition	Cat 325	hours	10	$	190	$	1,900
Misc. Supplies & Tools	Misc.	L.S.	L.S.			$	500
Scrap haul to landfill	A35 Articulated haul truck	hours	8	$	200	$	1,600
Reslope and contour and bury	Cat D8	hours	8	$	200	$	1,600
Haul and place topsoil	Area of 5000 m^2 x 0.25 m depth	m^3	1250	$	5	$	6,250
Revegetate, seed and fertilize	Seed and Fertilize	ha	0.5	$	1,500	$	750
Sub Total						**$**	**21,220**
Power Supply - Gensets							
Remove salvageable equipment	General Labour	hours	180	$	50	$	9,000
	Trades Labour	hours	108	$	65	$	7,020
Salvage and remove powerline and poles		L.S.	L.S.			$	25,000
Dismantle Building - Manpower	General Labour	hours	96	$	50	$	4,800
	Trades Labour	hours	48	$	65	$	3,120
Dismantle Building - Equipment	Cat 325	hours	12	$	190	$	2,280
Concrete Demolition	Cat 325	hours	12	$	190	$	2,280
Sub Total						**$**	**53,500.00**
Reclaim Site Diversions							
Decommission 2500 m of diversion ditch	Cat 325 hoe	hours	150	$	190	$	28,500
remove culverts 1200 mm	4-1200 mm	L.S.	4	$	4,000	$	16,000
Remove culverts 600 and 900 mm	1-900 mm; 1-600 mm	L.S.	2	$	1,500	$	3,000
Revegetate, seed and fertilize	2.5 km x 3 m	ha	0.75	$	1,500	$	1,125
Sub Total						**$**	**48,625**

Infrastructure Decommissioning Cont'd

Water Supply and Pond								
Remove salvageable equipment - pipeline/pumps and tank	General Labour	hours	24	$	50	$	1,200
	Trades Labour	hours	24	$	65	$	1,560
Remove pipeline and haul to tailings or underground	A35 Articulated haul truck	hours	8	$	200	$	1,600
	Cat 235	hours	8	$	190	$	1,520
	General Labour	hours				$	-
Decommission water supply well	fill with concrete	Ea.	1	$	2,000	$	2,000
Misc. Supplies & Tools	Misc.	L.S.	L.S.			$	500
Remove freshwater pond	Cat 325	hours	12	$	190	$	2,280
	General Labour	hours	12	$	50	$	600
Backfill with coarse material		m^3	2000	$	5	$	10,000
Haul and place topsoil	Area 30 m x 20 m x 0.25	m^3	150	$	5	$	750
Revegetate, seed and fertilize	30 m x 20 m	ha	0.06	$	1,500	$	90
Sub Total						**$**	**22,100**
Accomodation Camp							
Remove salvageable material	General Labour	hours	108	$	50	$	5,400
	Trades Labour	hours	48	$	65	$	3,120
Dismantle Building - Manpower	General Labour	hours	48	$	50	$	2,400
	Trades Labour	hours	48	$	65	$	3,120
Dismantle Building - Equipment	Cat 325	hours	16	$	190	$	3,040
Remove sewage treatment plant	Labour	hours	24	$	50	$	1,200
Misc. Supplies & Tools		L.S.				$	1,000
Scrap haul to landfill	A35 Articulated haul truck	hours	20	$	200	$	4,000
Reslope and contour	Cat D8	hours	48	$	200	$	9,600
Revegetate, seed and fertilize	Seed and Fertilize	ha	3.3	$	1,500	$	4,950
Sub Total						**$**	**37,830**
Explosive Magazine							
remove from site		L.S.				$	5,000
Revegetate area	Seed and Fertilize	ha	0.09	$	1,500	$	135
Sub Total						**$**	**5,135**
Miscellaneous Buildings and Structures							
Remove salvageable equipment	General Labour	hours	216	$	50	$	10,800
	Trades Labour	hours	216	$	65	$	14,040
Remove salvageable equipment	Cat 980 loader	hours	150	$	200	$	30,000
Dismantle Building - Manpower	General Labour	hours	216	$	50	$	10,800
	Trades Labour	hours	216	$	65	$	14,040
Dismantle Building - Equipment	Cat 325	hours	40	$	190	$	7,600
Concrete Demolition	Cat 325	hours	40	$	190	$	7,600
Reslope, contour & bury	Cat D8	hours	60	$	200	$	12,000
Misc. Supplies & Tools	Misc.	L.S.				$	2,500
Scrap haul to landfill	A35 Articulated haul truck	hours	10	$	200	$	2,000
Sub Total						**$**	**111,380**
Industrial Reagents Fuels and Waste							
Industrial Reagents	remove from site	L.S.				$	25,000
Fuels	remove from site	L.S.				$	20,000
Wastes	remove from site	L.S.				$	20,000
Sub Total						**$**	**65,000.00**
Spill Cleanup							
Concentrator haul out		L.S.				$	100,000
Other building site spill clean up		L.S.				$	100,000
Reclaim landfarm area	Cover and revegetate	ha	1	$	1,500	$	1,500
Sub Total						**$**	**201,500**
Demolition Overhead							
Supervision	Supervision	hours	1,000	$	90	$	90,000
Mob/Demob	Misc.	L.S				$	30,000
Office/Admin Costs	Misc.	L.S				$	5,000
Sub Total						**$**	**125,000**
	Total					**$**	**1,297,830.00**

All Weather Access Road - Phase II Road

Work Item Description	Description	Units	Quantity	Unit Cost	Total Cost
Decommission and Reclaim Access Road					
Lower road grade	remove excess materials to adjacent areas including borrow areas to stabilize against erosion	Hrs	100	$ 185	$ 18,500
	Cat 325 hoe	Hrs	140	$ 190	$ 26,600
	A35 Articulated haul truck	Hrs	140	$ 200	$ 28,000
Stabilize side slopes	Flatten minor roadside cut banks/fill slopes with Cat 325	Hrs	80	$ 190	$ 15,200
culverts 600-800 mm	Work includes uncovering, removal to offsite for re-use, resloping banks and amoring wetted section	Each	61	$ 1,500	$ 91,500
Culverts >2400	Work includes uncovering, removal to offsite for re-use, resloping banks and amoring wetted section	Each	2	$ 4,000	$ 8,000
Culvert Crossing restoration work	Minor restoration work, installation of environmental protection measures	L.S.	1	$ 20,000	$ 20,000
Bunker Creek Bridge Removal	Removal of bridge complete with bin-wall, resloping of banks	L.S.	1	$ 75,000	$ 75,000
Bunker Creek habitat restoration	Restoration of habitat in riparian zone and re-seeding	L.S.	1	$ 2,000	$ 2,000
Scarify road surface	To encourage re-vegetation (25 km x 15 m) Cat D8	Ha	37.5	$ 2,000	$ 75,000
Reclaiming Spoil Piles	Restoration of spoil piles containing excess organics from road construction - Cat 325	Km	25	$ 1,000	$ 25,000
Borrow Sources-stabilize slopes	Stabilize the slopes of the excavations - Cat D8	Hrs	40	$ 200	$ 8,000
Borrow Sources-S&F flat sources	Using ATV mounted applicator for seed and fertilizer	Ha	15	$ 1,500	$ 22,500
Borrow Sources Hydroseeded	Apply hydro-seed to steeper slopes (>1V:4H slope)	Ha	5	$ 3,000	$ 15,000
Corridor re-vegetate-broadcast S&F	Using ATV mounted applicator for seed and fertilizer including staging area	Ha	44.5	$ 1,500	$ 66,750
Maintenance S&F-after 1 year	Assume coverage of 50% with seed & fertilizer alone	Ha	44.5	$ 1,000	$ 44,500
Permanent barrier at highway	Trenching and barricading using natural materials in the area, to dissuade casual access	L.S.	1	$ 3,500	$ 3,500
Permanent barrier at Km 14	Barricading to provide ultimate barrier to more interior access	L.S.	1	$ 3,500	$ 3,500
					$ 548,550
Engineering 5%	For major components, particularly removal of bridge				27,427.50
Surveying 5%	For final as-builts of new contours and stream crossings				27,427.50
Sub Total					**$ 603,405**

Remaining Land Reclamation

Work Item Description	Description	Units	Quantity	Unit Cost	Total Cost
Exploration Road and Trails					
Stabilize Slopes - Erosion Barrier	Unit Cost Basis	km	8	$ 1,500	$ 12,000
Revegetate, seed and fertilize	General Labour	ha	2.4	$ 1,500	$ 3,600
Sub Total					**$ 15,600**
Mine Site and Tailings Haul Roads					
Lower road grade	remove excess materials to adjacent areas including borrow areas to stabilize against erosion	hours	60	$ 185	$ 11,100
	Cat 325 hoe	hours	80	$ 190	$ 15,200
	A35 Articulated haul truck	hours	80	$ 200	$ 16,000
stabilize slopes - erosion barriers	Cat 325 hoe	hours	40	$ 190	$ 7,600
Culvert removal	uncover, remove and stabilize	Ea.	15	$ 1,500	$ 22,500
Scarify	Cat D8	hours	40	$ 200	$ 8,000
Revegetate, seed and fertilize	Seed and Fertilize	ha	7	$ 1,500	$ 10,500
Sub Total					**$ 90,900**
Total					**$ 106,500**

Site Management and Monitoring

Work Item Description	Description	Units	Quantity	Unit Cost	Total Cost
Organization, Security and Overhead					
Pre closure planning and organization	Management	months	6	$ 8,800	$ 52,800
Site Manager	Management	months	36	$ 8,800	$ 316,800
Corporate	Management	L.S			$ 100,000
Camp Cost	labour	days	3285	$ 100	$ 328,500
Site caretaker	Responsible for security and camp; general maintenance	months	36	$ 5,500	$ 198,000
pre closure site environmental assessment	contract	L.S			$ 75,000
post closure environmental cleanup confirmation	contract	L.S			$ 75,000
vehicles for security and manager	light truck	months	120	$ 2,000	$ 240,000
site maintenance costs	general maintenance	year	3	$ 10,000	$ 30,000
miscellaneous office/supply/costs	miscellaneous	year	10	$ 15,000	$ 150,000
Sub Total					**$ 1,566,100**
Document Control					
document reviews and storage	miscellaneous	monthly	120	$ 200	$ 24,000
final as built drawings	manhours	hours	240	$ 125	$ 30,000
Sub Total					**$ 54,000**
Compliance Monitoring and Reporting					
Environmental Monitor	responsible for sampling and monitoring	months	48	$ 4,500	$ 216,000
Environmental Lab Technician	responsible for analysis	months	18 [1]	$ 4,500	$ 81,000
Water Quality Analytical (Closure Phase Yr 1 to Yr 3	Groundwater and Surface Water	samples	660	$ 400	$ 264,000
Water Quality Analytical (Post-Closure Phase Yr 4 to Yr 10	Groundwater and Surface Water	samples	300	$ 400	$ 120,000
Helicopter		L.S.			$ 25,000
Hydrological Monitoring		L.S.			$ 15,000
EEM Monitoring requirements		annual	3	$ 30,000	$ 90,000
External Consulting Services		L.S.			$ 50,000
Geotechnical Inspections Closure Phase		annual	3	$ 25,000	$ 75,000
Geotechnical Inspections Post-Closure Phase		annual	7	$ 25,000	$ 175,000
Sub Total					**$ 1,111,000**
Closure Maintenance					
Tailings Closure Spillway	twice per year maintenance	annual	10	$ 10,000	$ 100,000
Sub Total					**$ 100,000**
Wolverine Creek Biopass Contingency					
Construction of Biopass Channel	Cat 325 hoe	hrs	60	$ 190	$ 11,400
Construction of diversion channel	Cat 325 hoe	hrs	80	$ 190	$ 15,200
Placement of liner in channel	Labour and materials	m	600	$ 200	$ 120,000
Source, haul and place organics	500 m x 2 m x 2.5 m	m^3	2500	$ 8	$ 20,000
Organics and fill placement	Labour	hrs	432	$ 50	$ 21,600
Engineering, Construction Management and Survey Control	15% of capital cost				$ 28,230
Maintenance	twice per year	annual	10	$ 1,000	$ 10,000
Sub Total					**$ 226,430**
	Total				**$ 3,057,530**

1: Lab technician only at site during 6 month period of daily discharge from water treatment plant for first 3 years of closure

Total LOM Closure and Reclamation Costs - Summary

Work Item Description		Sub-Total Costs		Total Costs
Mine Workings			**$**	**587,314**
1345 Portal Barriers	$	82,564		
Installation of Hydraulic Plugs in Access Ramp	$	183,250		
Installation of Hydraulic Plugs in Ventilation Raises	$	234,000		
Decommission water supply wells	$	87,500		
Tailings Management System			**$**	**1,299,250**
Reclaim Tailings Dam Face	$	53,750		
Reclaim Seepage Recovery Dam	$	13,000		
Decommission Diversion Ditches	$	35,000		
Remove Tailings and Reclaim Pipelines	$	149,700		
Cover Tailings with DMS	$	828,000		
Water Treatment and Plant Decommissioning	$	219,800		
Infrastructure			**$**	**1,297,830**
Mill Concentrator Buildings	$	606,540		
Truck Shop	$	21,220		
Power Supply - Gensets	$	53,500		
Reclaim Site Diversions	$	48,625		
Water Supply and Ponds	$	22,100		
Accomodation Camp	$	37,830		
Explosive Magazine	$	5,135		
Miscellaneous Buildings and Structures	$	111,380		
Industrial Reagents and Fuels	$	65,000		
Spill Cleanup	$	201,500		
Demolition Overheads	$	125,000		
Access Road			**$**	**603,405**
Reclamation and Revegetation			**$**	**106,500**
Exploration Road and Trails	$	15,600		
Mine Site and Tailings Haul Roads	$	90,900		
Site Management and Monitoring			**$**	**3,057,530**
Organization, Security and Overhead	$	1,566,100		
Document Control	$	54,000		
Compliance Monitoring and Reporting	$	1,111,000		
Closure Maintenance	$	100,000		
Wolverine Creek Biopass Contingency	$	226,430		
Estimated Sub-Total Closure Costs			**$**	**6,951,829**
25% Contingency			*$*	*1,737,957*
Estimated Total Closure Costs			**$**	**8,689,786**

Existing Condition Closure Cost Estimate

Detailed Costing by Component

Mine Workings

Work Item Description	Description	Units	Quantity	Unit Cost	Total Cost
1345 Portal Closure					
Remove salvageable material from underground	Labourer	hours	360	50	$ 18,000
Plug portal with tires	Cat 325 Hoe	hours	30	$ 190	$ 5,700
Place waste rock cap over tires	Cat 325 Hoe	hours	20	$ 190	$ 3,800
	A35 Articulated haul truck	hours	40		$ -
Supply broken rock at base of plug and discharge channel riprap	Cat 325 Hoe	hours	20	$ 190	$ 3,800
	A35 Articulated haul truck	hours	40	$ 200	$ 8,000
Construct rock drain at base of plug	Cat 325 Hoe	hours	10	$ 190	$ 1,900
Supply fill to seal discharge channel	Cat 325 Hoe	hours	10	$ 190	$ 1,900
	A35 Articulated haul truck	hours	20	$ 200	$ 4,000
Construct lined open channel for discharge from portal to biopass system; 300 m length	Cat 325 Hoe	hours	20	$ 190	$ 3,800
	Compactor	hours	10	$ 130	$ 1,300
Stabilize and vegetate area around channel	Seed and Fertilize	hours	0.09	$ 1,500	$ 135
Labour for channel construction	Labourer	hours	30	$ 50	$ 1,500
Labour to assist with placing tires & cap	Labourer	hours	80	$ 50	$ 4,000
Design of rock drain and channel (Engineering)	Engineering	hours	40	$ 125	$ 5,000
Interim Portal Discharge Treatment	water treatment (1 L/s x 2 years)	m^3	63072	$ 0.40	$ 25,229
Supervision to design & install tires and cap	Supervision	hours	50	$ 90	$ 4,500
Sub Total					**$ 92,564**
Install Hydraulic Plug in Access Ramp					
Drill and grout	grouting 10 m into wall; 20 m length x 1 plug	hours	150	$ 190	$ 28,500
Install concrete plug	20 m length x 5 m x 5 m x 1 plug	m^3	500	$ 85	$ 42,500
Labour for plug installation	Labourer	hours	150	$ 50	$ 7,500
Engineering	Design of plugs	hours	30	$ 125	$ 3,750
Supervision	Project engineer	hours	70	$ 125	$ 8,750
Sub Total					**$ 91,000**
Total					**$ 183,564**

Temporary Waste Rock Storage Pad

Work Item Description	Description	Units	Quantity	Unit Cost	Total Cost
Place Cover Over Existing Waste Rock					
Excavate, Haul and Place Clay Cap	Place 1 m thick clay cap on waste rock (3725 m^2)	m^3	3725	$ 8	$ 29,800
Excavate, Haul and Place Granualar till	Place 2 m of granular till on clay cap	m^3	8901	$ 8	$ 71,208
Compaction of till	Compactor	hours	80	$ 130	$ 10,400
Haul and Place topsoil	3725 m^2 x 0.25 m	m^3	931	$ 5	$ 4,656
Remove Phase II liner	Cat 325 to remove ~2000 m^2 of enviroliner	hours	12	$ 190	$ 2,280
Regrade and contour	Cat D8	hours	24	$ 200	$ 4,800
Revegetate	Seed and Fertilize	ha	0.6	$ 1,500	$ 900
Sub Total					**$ 124,044**

Infrastructure Decommissioning

Work Item Description	Description	Units	Quantity	Unit Cost	Total Cost
Power Supply - Gensets					
Remove salvageable equipment	General Labour	hours	108	$ 50	$ 5,400
	Trades Labour	hours	108	$ 65	$ 7,020
Sub Total					**$ 12,420.00**
Surface Water Ponds					
Remove mine water treatment ponds and portal settling ponds	Cat 325; remove liners	hours	24	$ 190	$ 4,560
Scrap haul to landfill	A35 Articulated haul truck	hours	20	$ 200	$ 4,000
Backfill with coarse material		m^3	2000	$ 5	$ 10,000
Haul and place topsoil	Area 30 m x 20 m x 0.25	m^3	150	$ 5	$ 750
Revegetate, seed and fertilize	30 m x 20 m	ha	0.06	$ 1,500	$ 90
Sub Total					**$ 19,400**
Accomodation Camp					
Reslope and contour	Cat D8	hours	48	$ 200	$ 9,600
Revegetate, seed and fertilize	Seed and Fertilize	ha	3.3	$ 1,500	$ 4,950
Sub Total					**$ 14,550**
Explosive Magazine					
remove from site		L.S.			$ 5,000
Revegetate area	Seed and Fertilize	ha	0.09	$ 1,500	$ 135
Sub Total					**$ 5,135**
Miscellaneous Buildings and Structures					
Remove salvageable equipment	General Labour	hours	108	$ 50	$ 5,400
	Trades Labour	hours	72	$ 65	$ 4,680
Remove salvageable equipment	Cat 980 loader	hours	50	$ 200	$ 10,000
Dismantle Building - Manpower	General Labour	hours	180	$ 50	$ 9,000
	Trades Labour	hours	72	$ 65	$ 4,680
Dismantle Building - Equipment	Cat 325	hours	40	$ 190	$ 7,600
Reslope, contour & bury	Cat D8	hours	40	$ 200	$ 8,000
Misc. Supplies & Tools	Misc.	L.S.			$ 2,500
Scrap haul to landfill	A35 Articulated haul truck	hours	10	$ 200	$ 2,000
Sub Total					**$ 53,860**
Industrial Reagents Fuels and Waste					
Industrial Reagents	remove from site	L.S.			$ 5,000
Fuels	remove from site	L.S.			$ 5,000
Wastes	remove from site	L.S.			$ 5,000
Sub Total					**$ 15,000**
Spill Cleanup					
Other building site spill clean up		L.S.			$ 5,000
Miscellaneous soil cleanup		L.S.			$ 5,000
Reclaim landfarm area	Cover and revegetate	ha	1	$ 1,500	$ 1,500
Sub Total					**$ 11,500**
Demolition Overhead					
Supervision	Supervision	hours	50	$ 90	$ 4,500
Mob/Demob	Misc.	L.S			$ 5,000
Office/Admin Costs	Misc.	L.S.			$ 5,000
Sub Total					**$ 14,500**
	Total				**$ 146,365.00**

All Weather Access Road - Phase I Road

Work Item Description	Description	Units	Quantity	Unit Cost	Total Cost
Decommission and Reclaim Access Road					
Stabilize side slopes	Flatten minor roadside cut banks/fill slopes with Cat 325	Hrs	80	$ 190	$ 15,200
culverts 600-800 mm	Work includes uncovering, removal to offsite for re-use, resloping banks and amoring wetted section	Each	61	$ 1,500	$ 91,500
Culverts >2400	Work includes uncovering, removal to offsite for re-use, resloping banks and amoring wetted section	Each	2	$ 4,000	$ 8,000
Culvert Crossing restoration work	Minor restoration work, installation of environmental protection measures	L.S.	1	$ 20,000	$ 20,000
Bunker Creek Bridge Removal	Removal of bridge complete with bin-wall, resloping of banks	L.S.	1	$ 75,000	$ 75,000
Bunker Creek habitat restoration	Restoration of habitat in riparian zone and re-seeding	L.S.	1	$ 2,000	$ 2,000
Scarify road surface	To encourage re-vegetation (25 km x 15 m) Cat D8	Ha	20	$ 2,000	$ 40,000
Lower road grade	remove excess materials to adjacent areas including borrow areas to stabilize against erosion	Hrs	100	$ 185	$ 18,500
Reclaiming Spoil Piles	Restoration of spoil piles containing excess organics from road construction - Cat 325	Km	25	$ 1,000	$ 25,000
Borrow Sources-stabilize slopes	Stabilize the slopes of the excavations - Cat D8	Hrs	40	$ 200	$ 8,000
Borrow Sources-S&F flat sources	Using ATV mounted applicator for seed and fertilizer	Ha	15	$ 1,500	$ 22,500
Borrow Sources Hydroseeded	Apply hydro-seed to steeper slopes (>1V:4H slope)	Ha	5	$ 3,000	$ 15,000
Corridor re-vegetate-broadcast S&F	Using ATV mounted applicator for seed and fertilizer including staging area	Ha	27	$ 1,500	$ 40,500
Maintenance S&F-after 1 year	Assume coverage of 50% with seed & fertilizer alone	Ha	27	$ 1,000	$ 27,000
Permanent barrier at highway	Trenching and barricading using natural materials in the area, to dissuade casual access	L.S.	1	$ 3,500	$ 3,500
Permanent barrier at Km 14	Barricading to provide ultimate barrier to more interior access	L.S.	1	$ 3,500	$ 3,500
					$ 415,200
Engineering 5%	For major components, particularly removal of bridge				20,760.00
Surveying 5%	For final as-builts of new contours and stream crossings				20,760.00
Sub Total					**$ 456,720**

Remaining Land Reclamation

Work Item Description	Description	Units	Quantity	Unit Cost	Total Cost
Exploration Road and Trails					
Stabilize Slopes - Erosion Barrier	Unit Cost Basis	km	8	$ 1,500	$ 12,000
Revegetate, seed and fertilize	General Labour	ha	2.4	$ 1,500	$ 3,600
Sub Total					**$ 15,600**
Mine Site and Tailings Haul Roads					
Lower road grade	remove excess materials to adjacent areas including borrow areas to stabilize against erosion	hours	50	$ 185	$ 9,250
	Cat 325 hoe	hours	60	$ 190	$ 11,400
	A35 Articulated haul truck	hours	60	$ 200	$ 12,000
stabilize slopes - erosion barriers	Cat 325 hoe	hours	30	$ 190	$ 5,700
Culvert removal	uncover, remove and stabilize	Ea.	10	$ 1,500	$ 15,000
Scarify	Cat D8	hours	40	$ 200	$ 8,000
Revegetate, seed and fertilize	Seed and Fertilize	ha	5	$ 1,500	$ 7,500
Sub Total					**$ 68,850**
	Total				**$ 84,450**

Site Management and Monitoring

Work Item Description	Description	Units	Quantity	Unit Cost	Total Cost
Organization, Security and Overhead					
Pre closure planning and organization	Management	months	2	$ 8,800	$ 17,600
Site Manager	Management	months	36	$ 8,800	$ 316,800
Camp Cost	labour	days	1665	$ 100	$ 166,500
Site caretaker	Responsible for security and camp; general maintenance	months	36	$ 5,500	$ 198,000
post closure environmental cleanup confirmation	contract	L.S			$ 75,000
vehicles for security and manager	light truck	months	36	$ 2,000	$ 72,000
miscellaneous office/supply/costs	miscellaneous	year	3	$ 15,000	$ 45,000
Sub Total					**$ 890,900**
Document Control					
document reviews and storage	miscellaneous	monthly	36	$ 200	$ 7,200
final as built drawings	manhours	hours	100	$ 125	$ 12,500
Sub Total					**$ 19,700**
Compliance Monitoring and Reporting					
Environmental Monitor	responsible for sampling and monitoring	months	36	$ 4,500	$ 162,000
Water Quality Analytical (Closure Phase Yr 1 to Yr 3)	Groundwater and Surface Water+ waste rock pad	samples	130	$ 400	$ 52,000
Helicopter		L.S.			$ 10,000
External Consulting Services		L.S.			$ 50,000
Sub Total					**$ 274,000**
Wolverine Creek Biopass Contingency					
Construction of Biopass Channel	Cat 325 hoe	hrs	60	$ 190	$ 11,400
Construction of diversion channel	Cat 325 hoe	hrs	80	$ 190	$ 15,200
Placement of liner in channel	Labour and materials	m	600	$ 200	$ 120,000
Source, haul and place organics	500 m x 2 m x 2.5 m	m^3	2500	$ 8	$ 20,000
Organics and fill placement	Labour	hrs	432	$ 50	$ 21,600
Engineering, Construction Management and Survey Control	15% of capital cost				$ 28,230
Maintenance	twice per year	annual	10	$ 1,000	$ 10,000
Sub Total					**$ 226,430**
	Total				**$ 1,411,030**

Total Existing Condition Closure and Reclamation Costs - Summary

Work Item Description	Sub-Total Costs	Total Costs
Mine Workings		**$ 183,564**
1345 Portal Barriers	$ 92,564	
Installation of Hydraulic Plugs in Access Ramp	$ 91,000	
Temporary Waste Rock Storage Pad		**$ 124,044**
Infrastructure		**$ 146,365**
Power Supply - Gensets	$ 12,420	
Surface Water Ponds	$ 19,400	
Accomodation Camp	$ 14,550	
Explosive Magazine	$ 5,135	
Miscellaneous Buildings and Structures	$ 53,860	
Industrial Reagents and Fuels	$ 15,000	
Spill Cleanup	$ 11,500	
Demolition Overheads	$ 14,500	
Access Road		**$ 456,720**
Reclamation and Revegetation		**$ 84,450**
Exploration Road and Trails	$ 15,600	
Mine Site and Tailings Haul Roads	$ 68,850	
Site Management and Monitoring		**$ 1,411,030**
Organization, Security and Overhead	$ 890,900	
Document Control	$ 19,700	
Compliance Monitoring and Reporting	$ 274,000	
Wolverine Creek Biopass Contingency	$ 226,430	
Estimated Sub-Total Closure Costs		**$ 2,406,173**
25% Contingency		*$ 601,543*
Estimated Total Closure Costs		**$ 3,007,716**