Silver Hart Property
2007 Mine Production Application
And Project Description

Prepared for:
CMC Metals Ltd

Prepared by:
Access Consulting Group

March 2008

TABLE OF CONTENTS

LIST OF TABLES

LIST OF FIGURES

LIST OF APPENDICES

1.0 Corporate Profile

CMC Metals Ltd. (CMC) is a public mining company trading on the TSX Venture Stock Exchange, and is focused on the development of advance staged mineral properties. CMC searches for high grade precious and base metal properties that are sufficient in size to meet their economic criteria plus demonstrate the ability to minimize environmental foot print. For a property to be considered for development, the property must be sustainable financially, environmentally, and socially. Currently CMC has four properties that are being evaluated for development - three are located in the Yukon Territory (see Figure 1). For more information see www.cmcmetals.ca.

CMC METALS LTD

ACCESS CONSULTING GROUP

CMC METALS LTD. PROPERTY

Drawn By: HD	**Figure 1**
Checked By: PI	Date: Nov. 2006

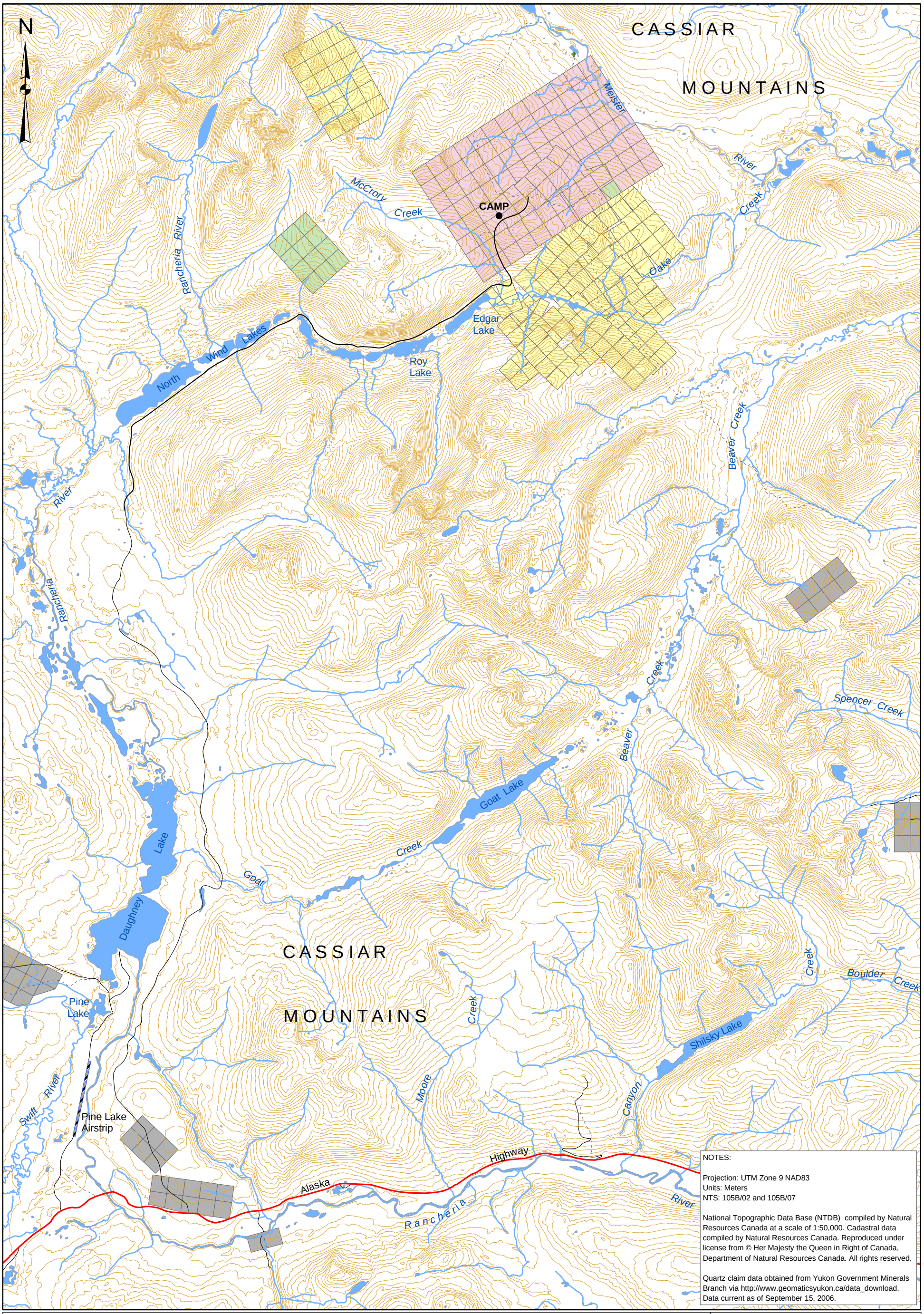
Our File: D:\Project\AllProjects\CMC_Metals\gis\mxd\YESAB_Fall06\Fig1_GenLoc.mxd

2.0 Project Background

2.1 Project Location and History

The CMC Silver Property, also known as the Silver Hart Property, is located in south central Yukon between the Meister River and the Oake Lake/Oake Creek watersheds. The property is located near the headwaters of the Rancheria River but outside of this watershed (see Figures 1 and 2).

The Silver Hart Property is a previously discovered precious metals deposit that has seen a number of advanced exploration programs since it was initially discovered. The deposit is a silver, lead, and zinc mineralization, with minor values of tungsten, copper and molybdenum. Documents indicate that the area was first staked as early as 1947 (Bastille Claims owned by Great Northern ECL) but there are no records of any work being undertaken until the area was re-staked in 1971 by Wolf Lake Joint Venture. Following this re-staking some test pits and mapping was undertaken. The area was once again re-staked in 1980 and named the CMC claims. In 1981 the claims were acquired by McCrory Holdings (Yukon) Ltd., after which more test pits were dug and rock-chip samples obtained. These samples indicated high levels of silver, lead, and zinc. In 1982 the CMC claims were optioned by BRX Mining and Petroleum Ltd. who carried out an airborne geophysical survey, ground VLF/EM and drilled 196.9 m in two holes. T. McCrory and B. Preston discovered two additional zones of silver-lead-zinc mineralization in 1983 and 1984. Analyses from one of the zones attracted the interest of Shakwak Exploration Company Limited and Silver Hart Mines Ltd. A 1985 exploration program focused on testing the continuity along strike and down dip of the silver-lead-zinc veins in the two surface zones, zone F and T. The program included surface geological mapping, preliminary grid geophysical (VLF) and geochemical surveys, bulldozer trenching, as well as the completion of 50 diamond drill holes. During the winter of 1985-86, underground exploration was conducted in the T zone, just above an elevation of 4,600 feet (1402 m). Trackless mining methods were used with openings on haulages of approximately 12-16 ft (3.6-4.9 m) wide by 10 ft (3 m) high. Slusher drifts and raises were approximately 5 ft (1.5 m) wide by 7 ft (2.1 m) high. Approximately 2,208 ft (673 m) of openings were driven.


N
CASSIAR
MOUNTAINS
Meister
River
Creek
McCrory
Creek
CAMP
Rancheria River
Oake
Edgar
Lake
Roy
Lake
North
Wind
Lakes
River
Beaver Creek
Rancheria
Creek
Spencer Creek
Beaver
Creek
Goat Lake
Creek
Goat
Lake
Daughney
CASSIAR
MOUNTAINS
Creek
Boulder Creek
Pine
Lake
Shilsky Lake
Swift River
Pine Lake
Airstrip
Moore
Canyon
Highway
Alaska
Rancheria
River
NOTES:
Projection: UTM Zone 9 NAD83
Units: Meters
NTS: 105B/02 and 105B/07
National Topographic Data Base (NTDB) compiled by Natural Resources Canada at a scale of 1:50,000. Cadastral data compiled by Natural Resources Canada. Reproduced under license from © Her Majesty the Queen in Right of Canada, Department of Natural Resources Canada. All rights reserved.
Quartz claim data obtained from Yukon Government Minerals Branch via http://www.geomaticsyukon.ca/data_download. Data current as of September 15, 2006.
Legend
Road
Limited-Use Road
Trail
Contour
Water Course
Water Body
Quartz Claims
Claim Owner, Status
, Expired
Archer, Cathro & Associates, Active
CMC Metals Ltd., Active
Other Quartz Claims
Scale:
1:100,000
0 500 1,000 2,000 3,000 4,000 5,000 6,000 m
CMC METALS LTD
ACCESS CONSULTING GROUP
CMC METALS LTD. PROPERTY
Figure 2
Area Overview
Drawn by: HD
Checked by: PI
Date: November 2006
Our File: D:\Project\AllProjects\CMC_Metals\gis\mxd\YESAB_Fall06\Fig2_AreaOverview.mxd

In 2005 CMC bought the property and conducted a due diligence exploration program to confirm the past geological data. Recently in 2006 and 2007, CMC continued to gather additional information by way of diamond drilling, trenching and geochemical surveys. Reclamation of past site operators camp facilities, closure of the adit opening and upgrading of the access road on the claims also occurred during this time.

2.2 Geology

2.2.1 Regional Geology

The Silver Hart Property lies within the Omineca physiographic belt of the Yukon Territory. The property is a part of the Rancheria District of northeastern BC and southeastern Yukon that contains numerous silver-rich vein and replacement style deposits. The general underlying geology is described as Paleozoic sedimentary rocks of the Cassiar Platform on the east, in contact with Cretaceous Plutonic rocks of the Cassiar Batholith to the west. The overall trend of the contact is roughly northwest, as is the trend of the Cassiar Fault to the west. The Cretaceous Cassiar Batholith, Marker Lake Batholith, and Meister Lake Stock are predominantly granite, but range in composition from quartz diorite, through trontjemite, granodiorite, to quartz monzonite. The Paleozoic sediments consist of interbedded wakes, arenites, quartz arenites (quartzite), and derived metamorphosed equivalents, such as mica schists, quartzofeldspathic gneisses, schists and quartzite (Amukum and Lowey, 1986).

The mafic and felsic dykes are considered to be spatially and temporally associated with late Cretaceous and early Tertiary faults and mineralization (Amukum and Lowey, 1986). Green “andesite” dykes are found throughout the mineral district and appear to be related to faulting that hosts silver-bearing veins (Read, 1987). The dominant structural features of the area are large regionally continuous, northwest-trending, transcurrent faults that are likely superimposed on the major regional faults, and considered to postdate arc-continent collision of early Mesozoic time (Tempelman-Kluit, 1979).

2.2.2 Property Geology

The Silver Hart Property covers a portion of the contact zone between the Cretaceous Cassiar Batholith and Lower Cambrian Atan Group sediments of the Cassiar Platform. Sediments are unsubdivided carbonate rocks and interbedded quartz rich clastic rocks with derived schists and gneisses. Amukum and Lowey (1986), and Read (1987), describe the Silver Hart Property Geology as follows:

> The northwest-trending contact of the granodiorite of the Cassiar Batholith to the west, with metasediments to the east, is very irregular. Some contacts may be intrusive, but many are fault-related. However, faults trending northeast (grid north) appear to contain blocks of metasediments in a graben-like configuration.
>
> As indicated by the limestone beds, the remnant bedding of the sediments strikes obliquely across the mine grid in approximately a true north direction and dips to the east. It is displaced across the No.1 Vein system with an apparent left-hand movement, which more likely is a dip displacement across a normal fault. This is supported by 1985 drill holes through the fault, and K Zone deeper holes drilling into granodiorite in the footwall.

2.2.3 Deposit Geology and Mineralization

The Silver Hart Property is a vein hosted Ag-Zn-Pb+/-Cu mineral system. Although there is evidence for skarn mineralization in the Silver Hart Property area, the dominant mineral occurrences are of the low sulphidation epithermal type. Lindgren (1933) has classified a number of precious metal, base metal, mercury, and stibnite deposits as epithermal deposits and suggests they formed from the discharge of hydrothermal fluids from a magmatic source at low temperatures (<200°C). However, a more generally accepted classification of an epithermal deposit is a precious metal deposit, which forms from meteoric waters with temperatures between 200°C and 300°C (Sillitoe, 1987). White and Hedenquist (1990) note that epithermal deposits are found in a variety of geological environments, in which the type of epithermal deposit is defined by various combinations of igneous, tectonic and structural settings. On a worldwide scale, most epithermal deposits occur in Tertiary volcanic rocks associated with subduction zones at plate boundaries. They were once thought to occur exclusively in rocks that are Tertiary

in age but exploration and research has lead to the discovery of deposits in a variety of magmatic environments. Older epithermal deposits are likely less common due to the effects of erosion or metamorphism (Sillitoe, 1987). Sillitoe (1987) provides a brief description of the similarities and differences of adularia-sericite (low sulphidation) type or acid-sulphate (high sulphidation) type deposits:

> The two types of deposits appear to form under similar pressure-temperature conditions but in different geological and geochemical environments in ancient geothermal systems. The acid-sulphate type deposit forms in root zones of volcanic domes from acid waters that contain residual magmatic volatiles. The adulariasericite type deposit forms in a geothermal system where surficial waters mix with deeper, heated saline waters in a lateral flow regime, high above and probably offset from a heat source at depth; neutral to weakly acidic, alkali chloride waters are dominant.

The Silver Hart Property system exhibits silicification, propylitic, argillic and sericitic alteration along with the presence of pyrite, chalcopyrite, base metal sulphides, tetrahedrite and sulfosalts, which are commonly found in adularia-sericite type deposits. The propylitic and sericitic alteration proximal to veins found on the Silver Hart Property supports an adulariasericite type of deposit. (Smith, 1988).

Many descriptions of the mineralization at the CMC claims have been written, Smith (1988) summarizes the mineralization on the Silver Hart Property as follows:

> In general, the veins (T, F and S) all lie near the contact of the sedimentary rocks and the Cassiar Batholith. To date only the T vein/fault is filled in part with one of the andesite dykes. The veins all strike close to the same direction where drilled and sampled, and wall rock alteration in the granitic rocks is epithermal in style with replacement mineralization and manganese flooding in the sedimentary host rocks. The mineralization is of the epithermal type. The hanging wall alteration consists of varying degrees of claying proximal to the vein, sericite as the next outer shell and finally weak to intense propylitic alteration as the outer-most shell of alteration. A distinctive feature of this alteration is the pervasive flooding of the hanging wall rock with manganese wad such that the veined areas can be easily located during prospecting. In

areas of sedimentary rocks hosting the veins, there are very wide patches of black gossan surrounding the vein and local replacement zones of sphalerite and galena with low silver content.

The `T' vein strikes N55° to 60°E and dips from 40° to 80°NW. It consists of intensely fractured, oxidized and silicified breccia of argillically altered granodiorite, with at least 5 stages of quartz and/or sulfide filling in right lateral shears. Metallic minerals present in the vein are: sphalerite, galena, chalcopyrite, tetrahedrite (freibergite), pyrite, pyrargyrite, arsenopyrite, covellite, chalcocite, smithsonite and hematite. Accessory minerals are; quartz, calcite, dolomite, and manganese rich carbonates.

The `T zone from about sections 9900 to 9700 consists of a series of fault splays all to the west (hanging wall) of the main fault. These splay faults contain massive sulfides or grey quartz fillings. Based on cross-cutting relations there are about 5 ages of filling with the youngest (most western) having the most visible grey freibergite filling, and the next two older zones having the most galena. The early quartz fillings and the quartz zones associated with the galena all contain very fine grained grey sulfides similar to the silver bearing quartz zone at the trench.

Additional geological characterization and mapping is currently being undertaken and will be included as part of the Waste Rock Management Plan.

2.3 Current Site Conditions

The Silver Hart Property itself is centered on a low peak in the Cassiar Mountains between the Caribou Lake and Meister River drainage to the north and the Edgar Lake and Oake Creek drainage to the south and east, which subsequently drains north into the Meister River (see Figure 2). The majority of the deposit, and the initial area to be mined, is on the south facing slope within the Edgar Lake and Oake Creek drainage. The deposit is located near or above tree line above the valley floors on either side. Current planning has all mine infrastructure constructed above the valley bottom near the tree line.

3.0 Project Scope

CMC is planning to develop an open pit mine and milling facilities at the Silver Hart Property. The Silver Hart Property contains a high grade silver, lead, zinc deposit located towards the center of the 21.7km^2 CMC claim block, in south central Yukon, 132 km west of Watson Lake on the Alaska Highway (see Figure 2). The site is accessed through an existing 43 km access road (see Figure 2). Current production plans are for the mining of 63,213 tonnes in the area known as the TM zone and the off shoot S zone. This is expected to provide approximately 3 years of production. Mining will be seasonal at approximately 150 days per year and the 80 tonnes per day mill will be a year-round milling operation. Exploration to better understand the reserves and determine the potential of adjacent ore-bodies began in 2005 and continued in 2006 and 2007. Historical and current drilling totals 7,963 m of diamond drilled core. Current plans are for exploration to continue within the claim block to determine the potential for an expansion of the operational life of the development.

3.1 Environmental Assessment and Regulatory Approvals

- YESAA Designated Office (DO) Screening;

Once the project has been screened under YESAA and the Designated Office project specifics as described herein will require the following:

- Waters Act Type B Water Use Licence for the use of water for milling (< 100 tonnes per day is a Type B - Schedule 7 YWR); and
- Quartz Mining Licence for production;

Existing Approvals currently in place:

- Land Use Permit - minor road upgrading will be required (applied for as part of the Class III Exploration permit); and
- Mining Land Use Class III Exploration permit.

3.2 Project Activities

Principle activities:

- Mining and milling of ore;
- Open pit mine;
- Deposit of tailings;
- Waste rock storage;
- Use of water for milling and camp; and
- Ancillary facilities.

Temporal Scope:

- 4 month construction project;
- 3 year mining/milling;
- 1 year closure; and
- Total: 5 years.

Spatial Scope:

The spatial scope of the project is the upper Meister and Oake Creek drainages (see Figure 3).

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Legend

- Weather Station
- Water Quality Station
- Trail
- Limited-Use Road
- Contour
- Water Course
- Environmental Assessment Project Spatial Boundary
- Infrastructure

Quartz Claims
Claim Owner, Status

- Expired
- Archer, Cathro & Associates, Active
- CMC Metals Ltd., Active

Caribou Lake
CMC-01
CMC-10
Landing
CMC-02
Meister River
CMC-03
CMC-03A
CMC-05
CMC-06
CMC-04
Proposed Waste Dump Area
CMC-WX
TM Pit
CMC-U2
McCrory Creek
CMC-11
Facilities
CMC-M1
Tailings Pond
Oake Creek
CMC-U1
CMC-M2
CMC-OC2
CMC-OC3
CMC-07
Edgar Lake
Roy Lake
Beaver Creek

NOTES:

Projection: UTM Zone 9 NAD83
Units: Meters
NTS: 105B/07

Quartz claim data obtained from Yukon Government Minerals Branch via http://www.geomaticsyukon.ca/data_download. Data current as of September 15, 2006.

Figure 3

Site Overview

Scale: 1:50,000

0 250 500 1,000 1,500 2,000 m

ACCESS Consulting Group

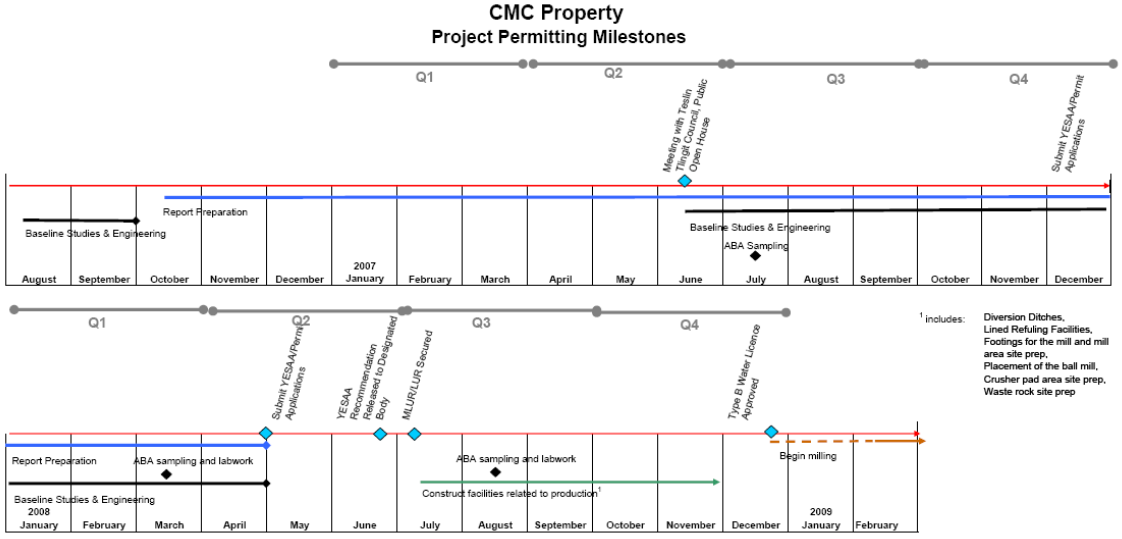
Drawn by: HD | Checked by: PI

Date: November 2006

Our File: D:\Project\AllProjects\CMC_Metals\gis\mxd\YESAB_Fall06\Fig3_SiteOverview.mxd

3.3 Project Schedule

Exploration is continuing on-site and more resources may be discovered during the planned life of the mine. Should exploration indicate an increase in the viable resources allowing for an increase or extension of the operation, any legislative requirements for additional permits or approvals will be met. Below is an estimated timeline for the permitting and development of the project.



3.4 Additional Reports and Plans

The following plans and reports will be submitted in support of the application as required:

- ARD Management Plan (see Section 5.1.2);
- Environmental Monitoring Plan (see Section 5.2);
- Detailed Decommissioning and Reclamation Plan (see Section 7.2.5);
- Waste Rock Management Plan (see Section 4.2.4); and
- Environmental Impacts and Mitigation (see Section 7).

4.0 Summary of Proposed Development

4.1 Mining

CMC determined that based on the geological setting, configuration and determined grades, mining of the TM zone area is best suited for a combination of surface open pit mining and underground mining. Total pit dimensions are estimated to be 192 m long by 57 m wide and a maximum pit depth of 50 m (see Figures 4-1 to 4-4). The systematic mining approach consists of prestripping organic duff, stripping the unconsolidated overburden, excavating waste rock, and removal of the ore down to the 1400 m (4,600 ft) elevation. The final pit floor will coincide with the current underground workings and will have exposed openings on the north and south ends of the pit. Once the pit is completed the underground portion of the ore will be recovered by standard narrow vein stope mining methods. All run-of-mine ore will be crushed and stockpiled for mill processing over the year. Figures 4-1, 4-2, 4-3, and 4-4 demonstrate the general layout of the mine components.

4.1.1 Prestrip Organics

The Silver Hart Property has seen extensive surface disturbance from past owners. Unfortunately the organic duff material had not been stockpiled for future reclamation of the site. Therefore, there is no duff material that is available for salvage in the TM pit area. Mill site and tailings pond disturbance areas will be cleared and organic duff salvaged for reclamation work. All organic duff material stockpiles will be placed in a suitable location to minimize erosion loss and documented for future recovery.

404,200E

404,300E

404,400E

404,500E

6,689,000N

Overburden Removal

57 m

192 m

Current Excavation

6,688,900N

Overburden Strip Boundary

Current Trench Boundary

Water Well Location

Scale

10 20 30 40 50 m

CMC Metals Ltd.

Figure 4-1
TM Pit Plan Current Excavation Yr 0

March 15,2007		DW

404,200E

404,300E

404,400E

404,500E

6,689,000N

6,688,900N

Overburden Removal

Bench 4

Bench 3

Bench 2

9940

9820

9700

9565

A

A’

Original Ground Level

Bench 4

Bench 3

Bench 2

Section A-A’

Scale

10 20 30 40 50

CMC Metals Ltd.

Figure 4-2
TM Pit Plan Yr1

March 15,2007		DW

404,200E

404,300E

404,400E

404,500E

6,689,000N

Overburden Removal

A’

9940

9820

9700

9565

A

Section A-A’

Original Ground Level

Pit Access Road

U/G Workings

U/G Workings

6,688,900N

Horizontal Scale

5m
10m
15m

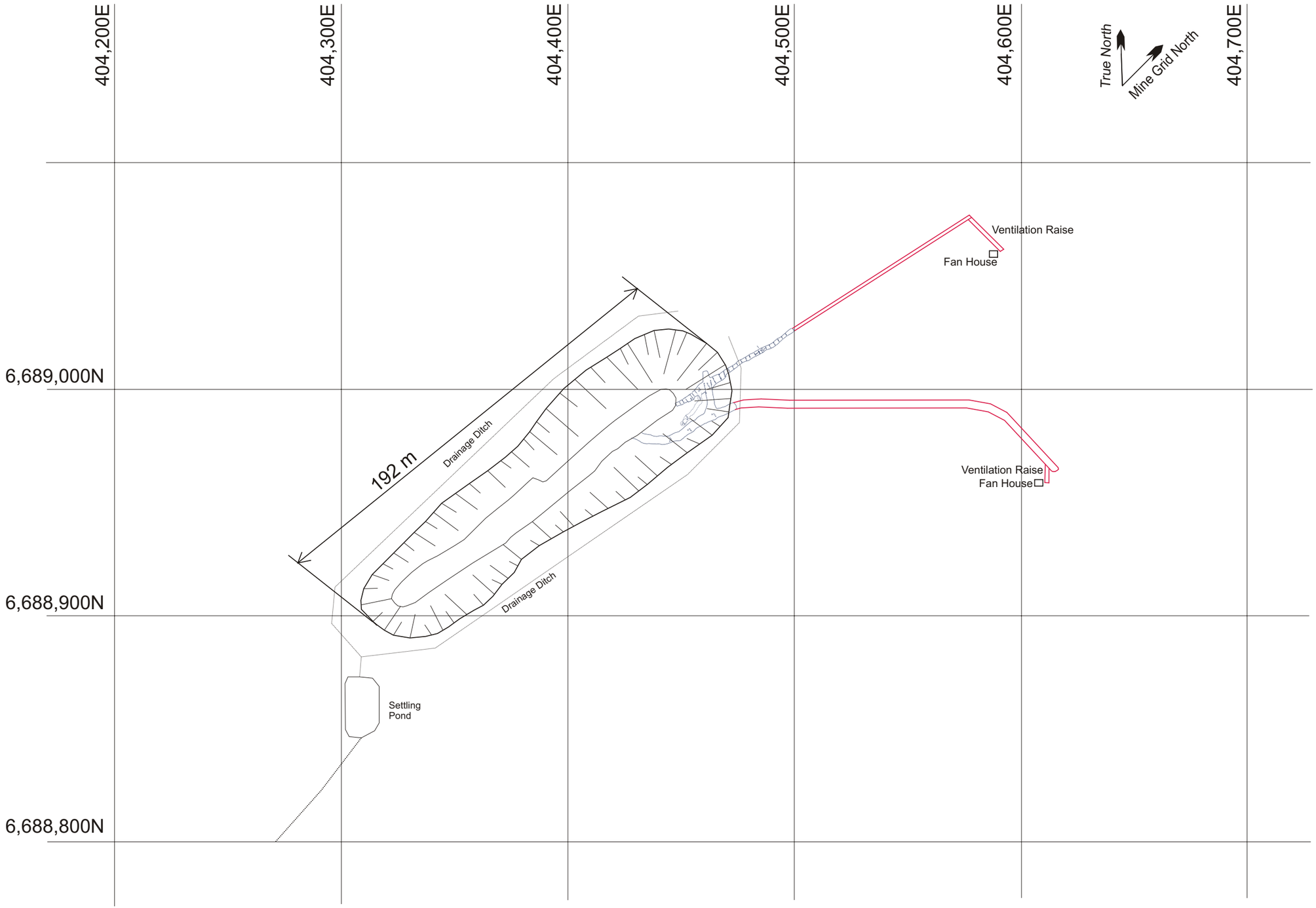
Scale

10 20 30 40 50

CMC Metals Ltd.

Figure 4-3
TM Final Pit Plan Yr 2

March 22, 2007		DW



New U/G Development Workings

CMC Metals Ltd.

Figure 4-4
Underground Development Workings

May/2007	Scale 1:100	DW/AW

4.1.2 Overburden Stripping

During the progressive development of the pit, the unconsolidated overburden material will be prestripped to expose the bedrock. During the first two years a total of 44,100 bank cubic m (bcm's) will be removed to allow the waste rock and ore removal. The overburden consists of silty clay with cobbles and the occasional glacial bolder. The unconsolidated overburden has demonstrated the capability of natural propagation of shrubs since the mid-eighties. As the overburden is stripped to expose the rock interface, it will be used as road base material, tailings dam construction and mill site grade elevation material. The overburden material can be recovered at the decommissioning stage to provide unconsolidated material to assist in the recontouring of the site and allow for natural propagation of shrubs on the exposed rock benches, waste dump and tailings pond capping. It was observed that the exposed overburden tends to not be well draining and the lower TM depression in the overburden maintains water throughout the summer months. Therefore, the overburden material is suitable to be used for road base construction, mill site grading, construction of the containment berm for the fueling site, and for tailing pond dam and liner bed material. Table 1 (Overburden Material Placement) shows the anticipated volume removed and the placement of the overburden material.

Table 1 Overburden Material Placement - Volume in Bank Cubic Meters (bcm)

Source	Removal	Placement
TM Pit Stripping	44100	
Road Base Fill		800
Mill Site Grade Fill		6600
Tailings Dam Fill		30700
Tailings Pond Liner Fill		5800
Fuel Containment Berm		200
Totals	44100	44100

4.1.3 Open Pit and Underground Development Program

The current mine design is a combination of open pit mining and underground operation. The plan calls for an open pit of approximately 192 m by 57 m and a maximum depth of approximately 50 m. The open pit mining will continue until the floor elevation reaches 1,400 m elevation. This open pit will tie into the existing underground workings. The existing underground workings will provide access to the deeper covered ore veins in the S zone, to the east and the continuation of the TM zone ore veins striking to the northeast. A small amount of underground development will be required to access the ore veins and development of stopes. The underground mining will follow a typical narrow vein cut and fill method. Figure 4-4 (Underground Development Workings) demonstrates the current underground workings and the proposed workings. Small 3 cyd LHD diesel scoops will tram the ore to the surface where articulated haul trucks will transport the ore to the mill site area. Jackleg drills will be used to drill and blast the underground 3 m by 3 m development drifts. Stope on-vein ore mucking will be conducted by hand in the narrow vein ore bodies and by electric or air slushers for the wider (+1.0 m width) veins. Stope waste will be moved with electric or air slushers. Any excess stope waste that cannot be disposed of underground will be removed to the waste rock site. All new development drifting will be at least a negative 2 percent incline to allow underground workings to flood at the end of the project life.

As a precautionary measure to mitigate potential metals leaching, a 1 m lift of crushed limestone will be placed in the floor of the pit plus backfilling of the south underground opening. This will provide additional buffering for any flow that drains from the pit through the south adit opening.

4.1.4 Ore Extraction

The ore zone in the TM pit is associated with a fault shear that has allowed replacement mineralization to occur. Most of the ore can be excavated with a hydraulic excavator and not require ripping or blasting. Based on the geological sampling, the ore vein varies in width from 0.61 m to 2.73 m over the length of the proposed pit. Average vein width for the TM pit is 1.27 m grading 1,099 gm/mt silver, 3.55 % lead, and 3.86 % zinc. To minimize dilution, an excavator with a 0.60 m wide bucket will remove the ore and load directly into 30 tonne articulated haul trucks. As the pit is successively mined, the

footwall of the vein develops the footwall of the pit. The excavator will remove the ore in 5.0 m lifts and side cast the waste until the waste removal benching proceeds. The following section, 4.2.4 describes the waste rock removal process.

Once the ore lift is excavated, the next sequence of waste benching will proceed. The waste removal will be in 5.0 m lifts. Every second waste lift will coincide with the highwall bench development. Highwall bench dimensions will be 5.0 m wide and a height of 10.0 m. The ore and waste sequence will continue until the pit floor is reached, coinciding with the current underground workings at the 1400 m elevation. To ensure that the underground workings do not compromise the safety of the workers or equipment, as the pit floor approaches to within 10.0 m, the waste rock will be drilled and blasted for a controlled collapse of the underground workings. This will allow the pit excavation to proceed in a controlled manner.

A pit access road will be constructed on the highwall side of the pit. A maximum grade of 10 percent will be cut into the benches to allow access to the lower bench levels. A 1.0 m safety berm, on the pit side of the road will be constructed and each pit turning point will have an emergency run-away. Figures 4-1 to 4-3 are a series of plans demonstrating the pit limits and progressing bench plans for the TM pit development.

Once the open pit is completed, the pit floor will coincide with the current underground workings and will have an exposed opening on the northeast and south footwalls. The exposed underground openings will be utilized to expand the underground workings to recover in-place ore veins from the TM and S zone. The underground workings will use the current developed workings in the TM zone, plus will extend the main drift 125 m to the east to allow the S zone ore to be mined. Narrow vein stope mining techniques will be used to recover the ore. Development drifts will be standard 3.0 m by 3.0 m openings. Stope openings will be 1.2 m by 2.4 m and will follow the vein structure over the 120 m strike length. Stope development will be by typical drill and blast techniques and with pneumatic jack hammers. Rubber tire load-haul-dump vehicles (LHDs) will be used to haul the ore to the portal opening where it will be loaded into a dump truck to be transported to the crushing area. Figure 4-4 shows the pre-stope underground development.

All ore removed will be trucked to the mill site area 150 m east of the pit, where it will be crushed and stockpiled for mill processing. All surface run-off will be directed around all

physical workings (mill area, open pit, rock dump, etc.) to settling ponds through the use or diversion ditches and berms. This will allow suspended solids to settle out and as a point for monitoring water quality (Figure 5). Mining will be conducted from late spring to early fall. Based on an annual production of 20,000 tonnes per year, this will allow ore from the TM zone to be extracted over a three year period. Other exposed mineralized surface outcrops will be evaluated for the purpose of replenishing the depletion of the TM zone ore and could lengthen the operational life of the mine.

4.1.5 Technical Data for Proposed Mining Methods

The following Tables 2 and 3 list the design criteria for the proposed mining methods to be used at the mine site. Mine parameters were based on the current geological rock types and structures identified by surface and underground geological mapping, diamond drill holes and surface trenching.

Table 2 Surface Mine Criteria

Item	Design Criteria
Minimum Mining Width	0.60 m
Minimum Cut-off Grade	100 gm/tonne Silver
Maximum Pit Depth	50 m
Highwall Bench Width	5.0 m
Highwall Bench Height	10.0 m
Haulage Road Grade	10 percent
Method of Waste Rock Fracturing	Ripping and/or Blasting
Pit Strip Ratio	4.2 to 1
TM Pit Recoverable Tonnage	36,150 tonnes
Total Waste Rock Removed	152,047 bcm's

403,700E 403,800E 403,900E 404,000E 404,100E 404,200E 404,300E 404,400E 404,500E 404,600E 404,700E

UTM NAD 83, Zone 9

6,689,100N
6,689,000N
6,688,900N
6,688,800N
6,688,700N
6,688,600N
6,688,500N

9800N, 9000E

TM Pit
Ore Tonnage: 36,150 Tonnes
Average Grade: Silver 1099 gm/mt
Lead 3.55 %
Zinc 3.86 %
Waste Rock: 152,047 bcm
Overburden: 25,371 bcm
Strip Ratio: 4.91 bcm/ tonne

N

Run-of-Mine Ore Pile
Min. 1600 tonnes
Max. 20,000 tonnes

Mobile Crusher/ Stacker
Pad Area

9800N, 10,000E

12.5mm Crushed Ore Pile
Min. 1600 tonnes
Max. 20,000 tonnes

Mill Facilities
Area- 1.00 Ha

Camp Facilities

Refueling Site

9300N, 9500E

U/G Workings

Settling Pond

Drainage Ditch

Rock Dump
205,000 LCM
Area- 1.28 Ha

Settling Pond

Drainage Ditch

Emergency Spillway

Decant Culvert

Settling Pond

Drainage Ditch

Tailings Water Line

Tailings Pond
Capacity- 39,500 m^3
Area- 0.89 Ha

CMC 28
CMC 36
CMC 68
CMC 61

Claim Block
Drainage Ditch
Tailings/Water Decant Lines

SCALE
10 20 30 40 50m

CMC Metals Ltd.

Figure 5
General Project Layout Plan

July 2007		DW

Table 3 Underground Mine Criteria

Item	Design Criteria
Development Drift Openings	3.0m X 3.0m
Stope Openings	1.2m X 2.4m
Development Drift Incline	-2.00%
Excavation Method	Drill and Blast
Ore Tramming Method	Diesel LHD
Ventilation Method	2- 1.0m High Volume Fans
Waste Rock Disposal	U/G or at the Waste Dump
Minimum Vein Width	.08 m
Minimum Dilution Grade	100 gm/tonne Silver
Total Recoverable Ore	27,063 tonnes

4.2 Waste Management

4.2.1 Waste Rock Management

Primary waste rock is expected to be granodiorites and altered granodiorites. Based on surface exposed waste rock, waste can be dozer ripped to facilitate removal. However, to provide reasonable excavation of the waste with an excavator, it is anticipated that a minor amount of blasting of the rock will be required to "fluff" or fracture the waste for removal. Drilling and blasting on a 5.0 m by 5.0 m grid spacing will provide sufficient fracturing of the waste rock. Explosive type to be used is ANFO at a powder factor of 0.23 kg/tonne. All waste drilling and blasting will be conducted by contractor services and eliminate the necessity to establish a powder magazine on site. A total of 152,047 bcm's (395,322 tonnes) will require removal for the total TM pit. All waste rock will be disposed at the waste rock site located 150 m to the southwest. Figure 6 (Waste Rock Site Design) demonstrates the waste site design criteria and area required. Based on a swell factor of 1.4 and a compaction factor of 1.10, the waste rock generated would be 193,514 loose cubic m (lcm's). At the decommissioning stage of the project, reclaimed overburden material will be used to cap the waste site to minimize the infiltration of water from the waste site.

There is no infrastructure or natural structures within 500 m of the waste rock site. A run-on, run-off drainage ditch will perimeter the waste rock site and collect the water in a settling pond located in the south east corner of the waste rock dump site. This will allow any developed siltation to settle out. Outflow of the settling pond will be to a natural surface drainage field to allow the flow to enter the subsurface. Water samples will be collected and tested for suspended solids and metals from this outflow point.

Based on the proposed mine development a total of 152,047 bcm's of waste rock will be removed from the TM pit and the TM/S underground workings. All excess waste rock will be stockpiled at the waste rock site located at the current waste rock site (see Figure 5). The rock types associated with the waste will be granodiorites, and andesite dyke material. Table 4 (Waste Rock Site Design Criteria) lists the parameters used in the development of the Waste Rock site. The waste rock site is within an area of extensive bedrock outcropping and shallow unconsolidated overburden and surface soils. This bedrock provides a stabile foundation for the waste rock storage site.

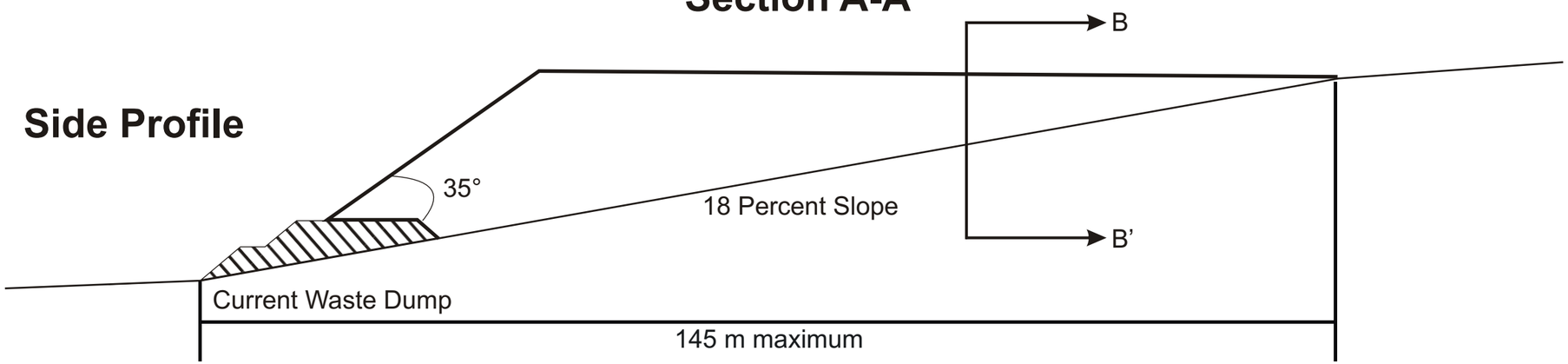
Table 4 Waste Rock Site Design Criteria

Item	Design Criteria
Angle of Repose	35 Degrees
Natural Foundation Grade	18 Percent
Maximum Dump Height	25 m
Maximum Dump Length	145 m
Maximum Dump Width	105 m
Dump Area	1.28 Ha
Designed Capacity	205,000 LCM

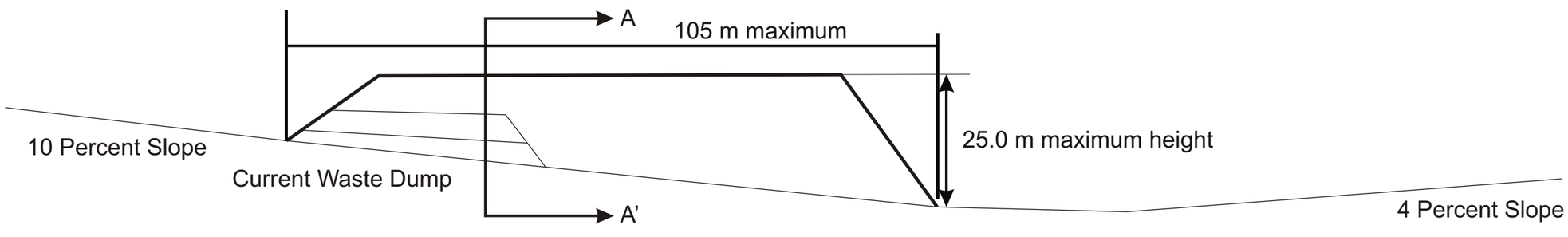
This information is considered to be preliminary planning for waste rock management and a more detailed Waster Rock Management Plan will be completed in the spring of 2008 and included in Appendix J.

North

Section A-A’



Section B-B’



Waste Rock Angle of Repose - 35 Degrees
Capacity - 205,000 LCM
Area - 1.28 Ha

CMC Metals Ltd.

Figure 6
Waste Site Design

Apr./2007	Scale: NTS	DW/AW

4.2.2 Camp Waste

Waste paper, plastic, and kitchen refuse will be bagged and removed weekly to a designated public landfill site such Swift River or Watson Lake as permitted. Camp wastes will be disposed of in a permitted septic field to be constructed in 2008. This septic field will be in the area of the camp, the exact location to be determined based on a study by an engineer familiar with sewage disposal facility design and construction in northern climates. If a study of soil suitability indicates that this is not possible a septic holding tank will be installed. This tank will be pumped by a contractor pumper truck and disposed of the solid waste at the nearest raw sewage disposal site. Gray water (washhouse sink, shower, kitchen water) will be held in a sump and allowed to infiltrate and evaporate.

4.2.3 Contaminated Soils

While every step will be made to prevent spills from occurring should any spills happen the contaminated soils or special waste generated will be excavated and moved to a permitted land treatment facility or other permitted disposal site, following the *Yukon Environment Act Contaminated Sites Regulation* and *Protocols For the Contaminated Sites Regulation under the Environment Act*.

4.3 Mill Operations and Tailings Management

4.3.1 Mill Operations

The mill site facilities will include both comminution and concentration of the raw ore. The comminution process involves crushing the raw ore through a series of crushers until a feed product of <12.5 mm material is achieved for the ball mill feed. The comminution process will start with the raw ore stockpile feeding over a grizzly separator with 600 mm bar spacing to separate oversize material before feeding into the primary jaw crusher. A primary jaw crusher will reduce the raw ore to a minimum size of <150 mm. The product from the jaw crusher will then be fed over a vibrating screen deck to screen fines (<12.5 mm) to bypass the secondary crusher. Oversize screenings will then be fed into the secondary crusher to crush the ore to -12.5 mm size. Due to the

comminution process occurring on a seasonal basis with mining, all -12.5 mm crushed product will be stockpiled on a lined and bermed storage area. The ore storage area will utilize an impermeable geotextile or poly liner to prevent potential contamination of the surrounding soils and groundwater. The crushed ore will also be covered with tarps to minimize moisture infiltration into the crushed ore stockpile. Figure 7 (Crusher Circuit Layout) demonstrates a typical comminution layout for the mill site area.

For the concentration processing of the crushed ore, a ball mill will grind the crushed raw ore to a particle size of 100 mesh (150 microns). A hydrocyclone will classify the material to ensure proper grinding. Oversized material will be recirculated back to the ball mill for further grinding. The undersized material will be conditioned with industry standard reagents to prepare for the floatation recovery of silver, lead, and zinc. Table 5 lists the reagents and conditioners used in the concentration process and the estimated amount consumed based on metallurgical testing.

The primary flotation rougher will first concentrate the sulfide ores in two flotation cells; a second rougher circuit will concentrate the oxide portion of the ores. A cleaner flotation circuit will upgrade the rougher concentrate to a grade that meets the requirements for shipment to a smelter and refiner. Silver/lead flotation concentrates are further processed to extract the majority of the silver into a silver electrolyte.

The silver electrolyte is passed through an electrowinning (EW) cell to remove the silver. The 99.9 percent pure silver is removed from the EW cell plates and melted in a melt pot to pour silver ingots or left as sheets for shipping to a refinery. The refiner will further upgrade the silver content to 99.99 percent silver to meet commodity market grade for sales.

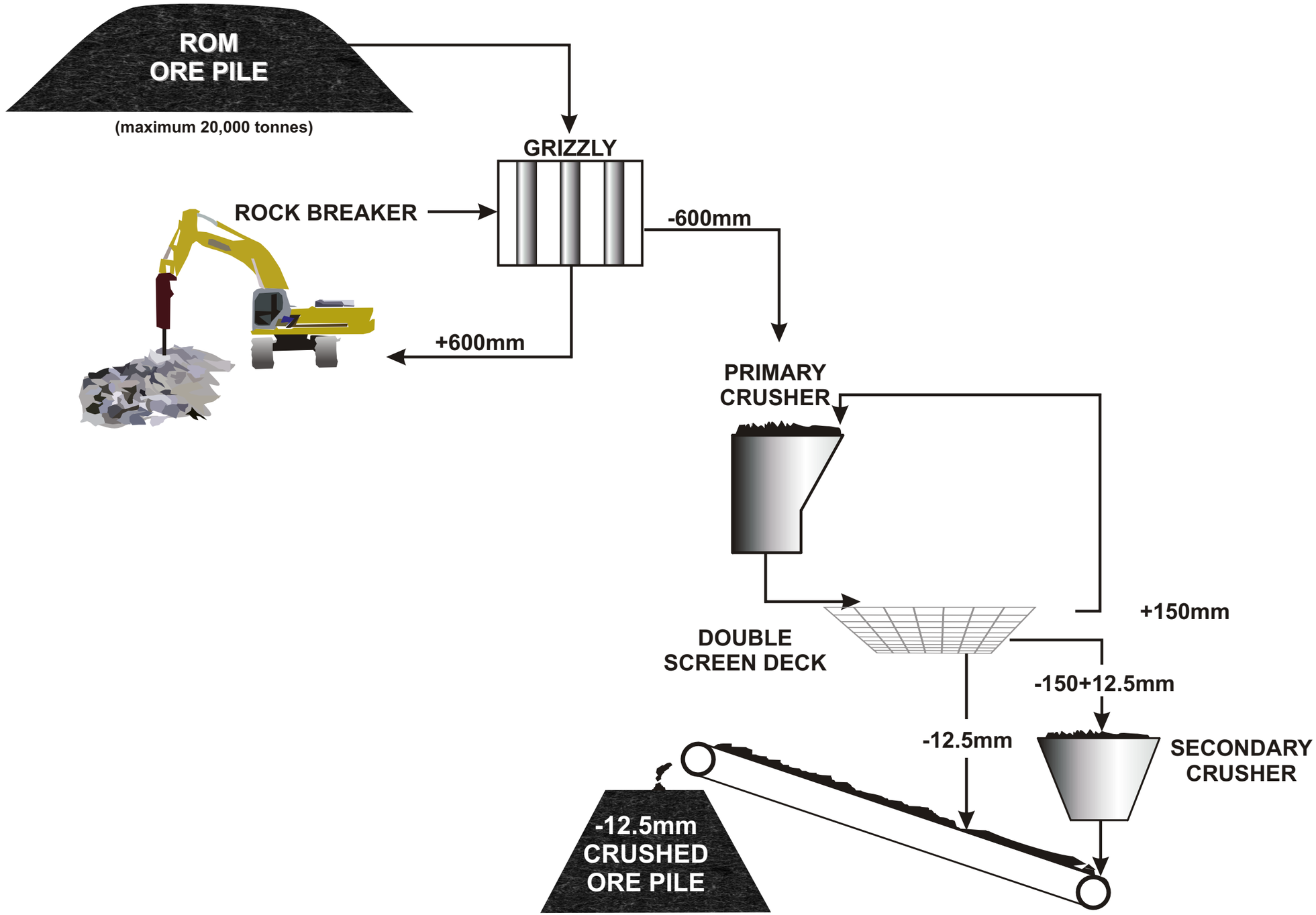


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Figure 7
Crusher Circuit Layout

May/2007	Scale n/a	DW

All concentrates will be dewatered with a filter press and dried to less than 10 percent moisture. Concentrates will then be loaded into 5 tonne polywoven ore bags for shipment to various smelters depending on the concentrate type and grade. Estimated mill head grades with mining dilution are 1099 gm/tonne silver, 3.86% zinc, and 3.55% lead. Annual concentrate production is estimate to be 20,235 kg of silver ingots at 99.9% silver, 827.4 tonnes of lead/zinc/silver sulphide concentrate grading 52.0% lead, 44.8% zinc and 1025 gm/tonne silver, and 800.6 tonnes of lead/zinc/silver oxide concentrate grading 32.3% lead, 30.9% zinc and 270 gm/tonne silver. Based on the SGS Lakefield Laboratories Ltd. metallurgical test results, metal recoveries from the raw ore are 96.9% silver, 97.0% lead, and 80.0% zinc. Figure 8 (Mill Flow Diagram) is a typical flow diagram for the concentration mill being proposed.

Table 5 Milling Reagents and Conditioners - Concentration (gm.tonne)

	Circuit Reagents						
	Na2CO3	Lime	A31	SIPX	NaHS	407	MIBC
Grind	1500						
PbS Condition			31				
PbS Rougher 1				10			10
PbS Rougher 2			40	20			10
PbO Condition		1885					
PbO Rougher 1	2855			40	1000	60	
PbO Rougher 2				40	1000	60	
PbO Rougher 3				40		60	
Subtotal	4355	1885	71	150	2000	180	20
Annual Consumption (tonnes)	87.1	37.7	1.4	3.0	40.0	3.6	0.4

-12.5mm CRUSHED ORE PILE

80 MTPD

122.0 m^3/D

6' x 8' BALL

CYCLONE

-100 MESH

+100 MESH

FLOATATION

FLOATATION TAILINGS

THICKENER TANK

SILVER LEACH TANK

EW CELLS

FILTER PRESS

Pb/Zn CONC.

DECANT WATER 77.2 m^3/D

TAILINGS POND

WATER WELL 44.8 m^3/D

DRYER

SILVER INGOTS

MELTING POT

Pb/Zn CONC. STORAGE FOR SHIPPING

Pb/Zn CONC. BAGGING

CONC. BINS

SILVER STORAGE FOR SHIPPING

CMC Metals Ltd.

Figure 8
Mill Flow Diagram

May, 2007	Scale: NTS	DW/AW

4.3.2 Materials Balance

Figure 9 (Mill Materials and Water Balance) shows the mill materials and water balance for the proposed mill facilities.

4.3.3 Personnel

Milling will be conducted on a year round basis with two 12 hour shifts per day, with a work rotation of 14 days on, 14 days off. Table 6 (Manpower Requirements) outlines the anticipated Manpower schedule required for the milling process. Both mining and transportation of the concentrate will be on a contract basis. Priority for employment will be from the Teslin and Watson Lake communities first when possible, then from within the Yukon, and then from outside the Territory. Upon commissioning of the mill, standard operating health and safety and environmental protocols will be undertaken to maximize the value of the manpower resources.

Table 6 Manpower Requirements

Management	Days On	Days Off	Number Per Shift	Number of Shifts	Number of Rotations	Total Required
Mine/Mill Manager	5	2	1	1	1	1
Grade Control Technologist	14	14	1	2	2	4
Subtotal-						5
Mill Positions						
Mill Maintenance	14	14	1	1	2	2
Mill Labours	14	14	2	2	2	8
Equipment Operators	14	14	1	2	2	4
Subtotal-						14
Support Positions						
Cook/Medic	14	14	1	2	2	4
General Camp Maintenance	14	14	1	1	2	2
Subtotal-						6
Totals-						25
Mine Positions*						
Mine Supervisor/ Mechanic	5	2	1	1	1	1
Excavator Operator	5	2	1	1	1	1
Truck Operator	5	2	2	1	1	2
Crusher Operator	5	2	2	1	1	2

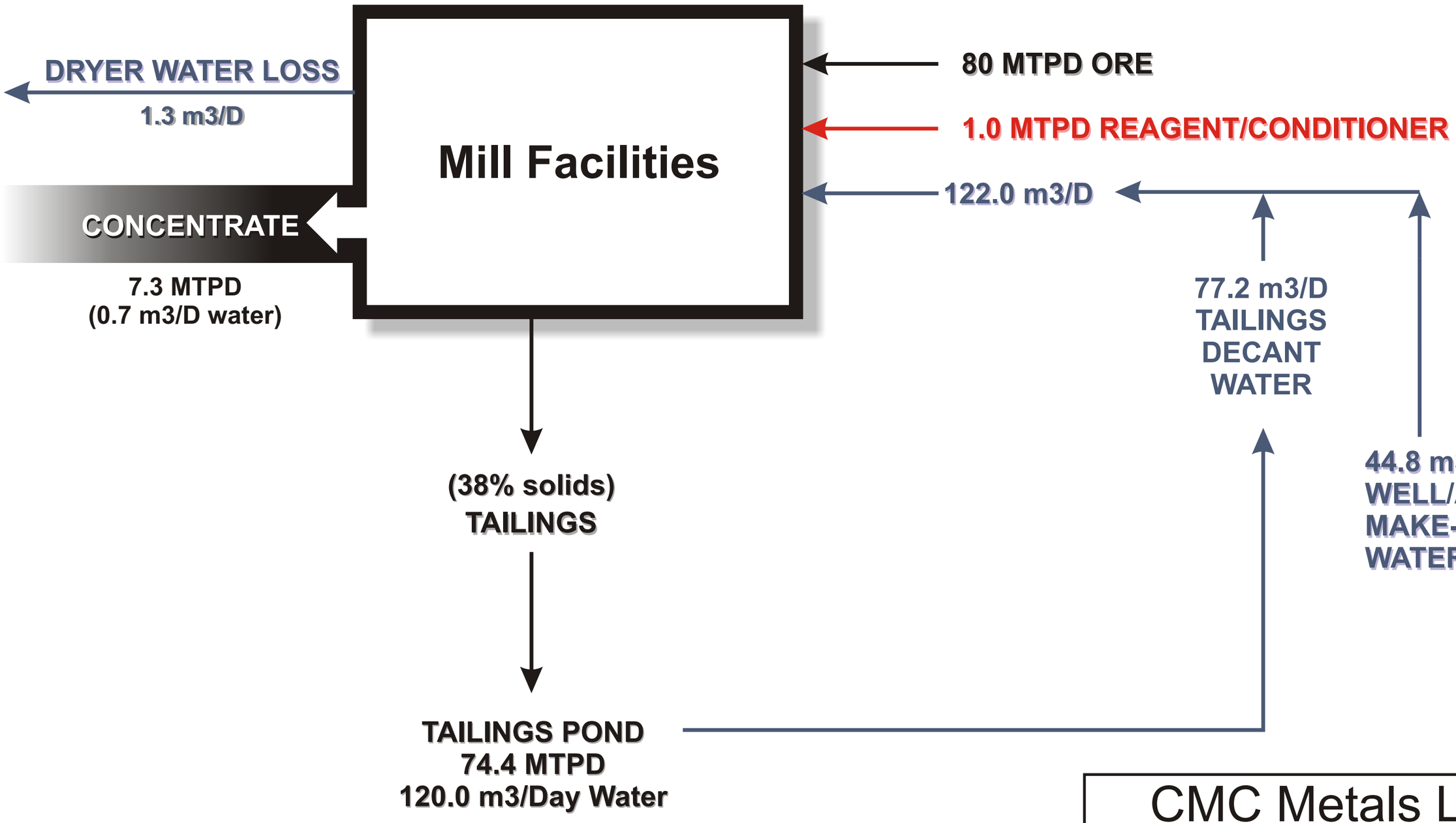

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Figure 9
Mill Materials and Water Balance

May/2007	Scale: N/A	DW/AW

4.3.4 Tailings Management

Based on current metallurgical tests performed by SGS Lakefield Laboratories Ltd. and the detailed mine dilution analysis, 91.8 percent of the ore by weight is residual tailings. Current recoverable ore in the TM zone area for the surface and underground mining to the 1400 m level is estimated to be 63,213 tonnes with an average grade of 1099 gm/tonne silver, 3.86% zinc, and 3.55% lead. Estimated tailings produced will be 58,030 tonnes or 24,589 m^3 of solidified tailings volume. Average tailings grade estimated to be 37 gm/tonne silver, 0.84% zinc, and 0.12% lead. The proposed tailings pond has a potential volume capacity of 39,500 m^3. The tailings pond will utilize the additional capacity for adit water retention, settling capacity, and for any additional resources that may be discovered and processed.

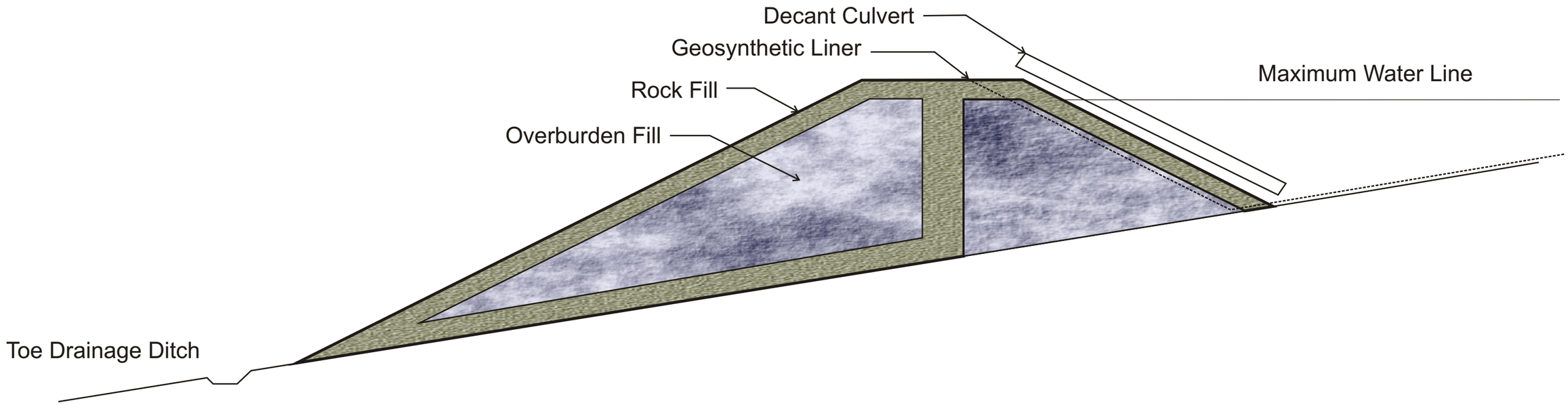
The tailings berm construction is a typical tailings retention type dam constructed from overburden fill with a coarse rock center core. First the brush and vegetative mat material is removed from the tailings area in preparation of the retention berm construction. The vegetative duff is stockpiled for reclaiming the tailings pond at the decommissioning phase of the site. A 1.5 m high coarse rock drainage core is placed at the center of the berm to assist in the elimination of any potential hydrostatic pressure build-up. Overburden fill that is removed from the TM pit boundary and at the surrounding tailings pond area, is placed in 0.30 m lifts on both side of the center coarse rock fill. Successive 0.30 m lifts will continue until the first 1.5 m coarse rock level is reached. Another 1.5 m coarse rock core lift is placed and the overburden placement sequence is repeated. A geosynthetic liner is placed over the tailings storage area to minimize the potential of exfiltration and seepage from the tailings material. Protective bedding sand is installed above and below the liner to prevent punctures. The downstream and upstream faces of the tailings dam will have a minimum 1.0 m coarse rock fill to eliminate the potential of erosion effects (a decant culvert and a return tailings water line will be installed to allow for the reuse of the tailings water for the milling process). A 0.50 m freeboard level is maintained to eliminate topping of the berm and erosion from wave action. The tailings pond design criteria are outlined in Table 7. At the decommissioning of the tailings pond an overburden cap will be installed to minimize water infiltration into the tailings material and provide a base for the replacement of the vegetative mat material. Required area for the tailings berm and pond is 0.89 hectares.

Figure 10 (Tailings Dam Cross Section) demonstrates the construction cross section of the tailings dam.

A drainage ditch is located to the north of the pond area to direct any run-on flow into a downstream settling pond. A water decant system is installed to allow reuse of the tailings water for the milling process. This will assist in minimizing the amount of make-up water required to process the ore through the facilities. For emergency water spillage, an overflow drainage ditch is located on the north corner of the berm to allow a controlled spill during the event of an excessive rain fall. All outflow from the filter drainage zone and emergency spillage is directed to a settling pond to allow retention time for sediments to settle. Outflow from the settling pond will be visually monitored on a weekly basis and quarterly water samples taken for analysis of Total Dissolved Solids, Total Suspended Solids, turbidity, hardness, pH, conductivity, and total and dissolved metals.

Table 7 Tailings Pond Design Criteria

Item	Design Criteria	
Maximum Dam Height	7.0	m
Crest Width	4.0	m
Crest Length	175.3	m
Downstream Slope	2:1	
Upstream Slope	2:1	
Rock Core Width	1.0	m
Number of Toe Drains	6	
Slope Face Rock Cover	1.0	m



Maximum Crest Height- 7.0 m
Freeboard- 0.5 m
Maximum Water level- 6.5 m
Crest Width- 4.0 m
Crest Length- 175.3 m
Upstream and Downstream Slopes- 2:1
Minimum Coarse Rock Core- 1.0 m
Tailings Capacity- 39,500 m^3
Tailings Area- 0.89 Ha

CMC Metals Ltd.

Figure 10
Tailings Berm Cross Section

August 7,2007	Scale: NTS	DW

4.4 Summary of Project Water Use and Water Management

4.4.1 Water Use

A water well will be drilled for camp water use and for any excess water requirements of the mill. There is currently a small amount of water flowing from the existing adit and the current plan is for this water to be used, where practical, in the milling process along with water flow from the tailings decant. Any water requirements above this will be drawn from the water well to be drilled in 2008. Water use requirements for personnel are estimated to be 200 L per day per person for drinking, washroom use, showering, laundry and kitchen use. Therefore, depending on the crew size onsite, the estimated water consumption for personal use is 5.0 m^3/day during construction, 4.0 m^3/day during mining/milling, and 2.6 m^3/day during milling. In addition to the personal water consumption, make-up water for the mill will consume an estimated 44.8 m^3/day when a static state in recycled tailings water is reached. Table 8 (Water Consumption) lists the water requirements over the project life. Potable water will be trucked to the site from the nearest available source of potable water and held in a cistern as required. Bottled (19.8 L) potable water stands will also be available at locations for drinking water. The water well will be in the vicinity of the camp if possible. For consideration of the water use licence the total water to be used will be approximately 48.8m^3/day, with an emergency additional 20% is approximately 60m^3/day.

Table 8 Water Consumption (m^3/day)

Item	Source	Consumption
Well/Adit Water	48.8	
Tailings Decant Water	77.2	
Potable Water	0.1	
Concentrate Dryer Evaporation		1.3
Tailings Retained Water		42.8
Tailings Decant Water		77.2
Concentrate Retained Moisture		0.7
Potable Water		0.1
Camp Facilities		4.0
Subtotal-	126.1	126.1

Tables 9 and 10 show the average and daily extremes of the Silver Hart property and the two nearest environment climate stations with recorded climate normals for the purpose of water management considerations.

Table 9 Average Precipitation

	Silver Hart (mm)[1]	Teslin [2]		Watson Lake[2]	
		Rainfall (mm)	Snowfall (cm)	Rainfall (mm)	Snowfall (cm)
Jan	0.0	0.2	29.4	0.3	35.7
Feb	0.0	0.1	18.3	0.0	29.5
Mar	0.2	0.2	16.5	0.2	19.8
Apr	6.8	3.2	6.8	4.1	11.5
May	6.8	20.7	1.8	35.2	4.6
Jun	67.6	29.1	0.0	52.4	0.0
Jul	137.4	45.9	0.0	59.9	0.0
Aug	18.4	43.1	0.0	44.0	0.3
Sept	17.6	41.0	1.9	39.7	2.1
Oct	7.2	19.0	19.9	18.8	21.4
Nov	0.0	1.0	26.2	0.3	33.9
Dec	0.0	0.2	27.4	0.2	37.6
Year total	262.0	203.7	148.2	255.1	196.5

[1] Year range is from September 21 2006 to August 23 2007

[2] Environment Canada Climate Normals average precipitation 1977-2000

Table 10 Daily Precipitation Extremes

	Teslin		Watson Lake	
	Rain (mm)	Snow (cm)	Rain (mm)	Snow (cm)
Jan	4.1	32	4.3	26.4
Feb	6.6	11.7	1	27.7
Mar	6.1	27.4	13.5	18.8
Apr	9.6	11.9	11.6	19.3
May	21.1	8.1	33.4	17.2
Jun	27.7	2.5	47	0
Jul	37.8	0	41.4	0
Aug	28.2	2	39	3.2
Sept	29.4	25.4	28.4	21.1
Oct	20.8	16	15.2	17
Nov	11	33.5	13.7	25.1
Dec	3.3	23	3.6	26.7

[2] Environment Canada Climate Normals extreme daily precipitation 1977-2000

A hydrogeological study included in a 1987 report by Klohn Leonoff for Silver Hart Mines calculates the 200 year flood value to be 45 mm/hr (1.77 inches/hr) corresponding to a duration of 10 minutes and a return period of 200 years (see Appendix G).

4.4.2 Spillways

Emergency overflow spillways will be provided for the tailings reservoirs to prevent uncontrolled overtopping of embankments. The tailings spillways will be sized to pass the peak flow from a 100 yr return period storm. Embankment crest elevations will be determined by adding 500 mm of freeboard to the maximum routed water elevation.

4.4.3 Diversion Channels

Surface water diversion channels will be provided around key project facilities to divert natural runoff water away from the structures, these channels are shown on Figure 5. The channels will be designed with 250 mm freeboard above the peak flows from a 100 yr return period storm event. Diversion channels will be consistent with the design hydraulic capacity of the structure and will be based on the maximum flow velocities expected in the local channel.

4.4.4 Sediment Control

Sedimentation below the tailings pond, waste dumps and plant site will be controlled with conventional settling ponds. The settling ponds will be sized to remove inflowing suspended sediments down to fine silt sizes for events up to a 10 year return period 24 hour duration storm. Emergency spillways will be provided for the tailings reservoir as described in Section 4.7.2.

4.4.5 Mine Dewatering

The existing adit is a positive incline and has water flowing from the decommissioned adit. This water, and any water produced from pit or underground workings dewatering will be utilized as the primary water source in the milling process. Based on flow measurements at the adit, an estimated 0.5-1.0 L/s is available for use in the mill processing facilities. At lowest flows this will nearly cover the milling requirements for most of the year and any excess during the higher flow periods will be diverted to the tailings pond. Treatability testing of the adit water is currently being undertaken to

determine what type of treatment will be required for any liquids decanted from the tailings area. Any excess water requirements for milling will be made up from the tailings impoundment area or the water well, as required. During operations, the outflow from the adit and water well use will be monitored for site water balance accounting.

4.4.6 Water Disposal

Analysis of the water flowing from the existing adit has shown zinc, arsenic, and cadmium levels in exceedance of the CCME guidelines (Appendix E). This water goes subsurface near the adit and travels above and below ground for 500 m to the nearest watercourse, McCrory Creek. Analysis of the water in McCrory Creek upstream and downstream of the general flow direction from the adit flow (stations CMC-M1 and CMC-M2 respectively) showed no trend of increase in these metals levels downstream of the point where the adit flow is thought to join McCrory Creek. Adit water discharge has been going since the mid-80's and hasn't produced a measurable change to the water quality of McCrory Creek. A large portion of the adit flow is expected to be used in the milling process.

4.5 Facilities

To minimize onsite construction, the mill facilities will be prefabricated off site and transported to the site for installation. This will reduce the construction and commissioning time required plus minimize the decommissioning of the mill by being modular.

4.5.1 Temporary Camp

A temporary camp will not be required during the construction phase. A maximum of 25 people may be on sight at any time during development and construction of the initial mine and mill facilities. The construction crew will utilize the mill facilities once the camp has been installed and commissioned for use.

4.5.2 Mill Site Camp Infrastructure

The camp facility could house a maximum of 25 people. During the mining/milling operation phase a crew of 19 will be on site. A crew of 13 is required during the winter milling operations. The mill camp facilities will include bunkhouse units, a washroom and shower facilities, a drying unit for wet clothing, kitchen and dinning facilities, a recreation room, and a separate office/First Aid unit. Other infrastructure associated with the camp facilities includes a fresh water cistern, a raw sewage septic cistern, and a grey water sump.

4.5.3 Mill and Ancillary Facilities

The proposed mill and ancillary facilities will include the mill building to house the ball mill, flotation circuits, a silver recovery tank and EW (electrowinning) cells, a concentrate dryer, concentrate bins, tailings thickener, a generator building, a materials storage shed, an equipment maintenance building, and a refueling area. The metal Quonset building currently on the site will be moved to the mill site as the equipment maintenance and/or materials storage building. The camp was be mobilized to the site in 2007 in modular units. A camp inspection will be coordinated with Government of Yukon, Building Safety, as soon the camp facilities are operable.

4.5.4 Fuel Storage

Diesel, gas, and propane fuels will be used at the project. Appropriate primary containment measures in the form of above ground storage tanks and a lined and bermed storage and refueling storage area will be constructed. Secondary containment in the form of a lined bermed area will provide containment of a minimum of 110% of the maximum possible stored fuel volume. Existing onsite fuel tanks will be used and relocated to the refueling site. One 22,700 L vertical diesel fuel tank and two 4,540 L horizontal gas fuel tanks will be relocated to the refueling site.

Propane fuel will be used as the primary fuel for heating the camp facilities and as a fuel source for the concentrate dryers in 1,000 gallon tanks. Propane tanks will be refilled or replaced as required.

4.5.5 Emergency Spill Response Plan

A *Fuel Spill Contingency and Emergency Response Plan* is attached to this report as Appendix A. The plan outlines procedures to be followed in the event of a petroleum product spill during all phases of the project. Safety procedures for personnel and proper equipment usage during such operations are discussed within this plan. All contractors and staff will be trained in the *Fuel Spill Emergency Response Plan*. All heavy equipment repairs will occur at the maintenance building which will have a geotextile liner under the entire area to minimize potential fuel spills entering the subsurface.

4.6 Property Access and Security

Access to the site is through an existing 43 km access road from kilometer 1116.4 on the Alaska Highway, near the Continental Divide Lodge. Currently the roadway is used for recreational and some sports fishing and hunting. One seasonal recreational cabin (Gerald Hudson) is also accessed from this road. A separate application for a Class III Exploration Permit for a 5-year period (LQ 00213) covers the access road upgrades and reinstallation of the culverts and stream crossings. Discussions with Water Resources have indicated there is no requirement for a water use licence for these installations based on water licence thresholds in the *Waters Regulations* of the *Waters Act*. Fisheries and Oceans Canada have been contacted and all operations are following Operational Statements (pers. comm.. Paul Christensen). A gate will be installed on the CMC quartz claims to control access to the site for public safety.

5.0 Characterization of the Environment

5.1 Terrestrial Environment

5.1.1 Acid Rock Drainage and Metals Leachate

CMC undertook geological sampling of the TM zone on-vein ore, for the purposes of metallurgical testing of ore for mill process engineering design work. The locked cycle testing ("LCT") undertaken by SGS Lakefield Research Inc., produced a solid and a liquid tailings product that was then run for a series of Acid Base Accounting tests as described herein. Additional work is being undertaken to expand the understanding of the geology and the acid generation and metals leachate potential of the rock.

SGS labs conducted the following laboratory test work on the tailings liquid and the tailings solids:

- Modified Acid Base Accounting;
- Net Acid Generation;
- Strong Acid Digest Elemental Analysis;
- Synthetic Precipitation Leaching Procedure;
- Liquid Effluent Analysis; and
- Effluent Toxicity Testing.

The lab results from the above testing suggested uncertain acid generation potential of purely high grade ore material (i.e. without dilution effect of non-sulphide, non-ore grade rock that will be milled along with this material). Net Acid Generation (NAG) testing of the same material reported a final pH of 5.63. The equivalent of 2.3 kg H2SO4/ t was neutralized when back-titrated to pH 7.0.

Lead concentrations reported above Metal Mining Effluent Regulations (MMER) guideline values in both the liquid tailings effluents and leachates generated from Synthetic Precipitation Leaching Procedure (SPLP) testing of the tailings solids.

Toxicity testing indicated a LC50 to Daphnia magna of 37.6%. As such a treatment plant will likely be required for the tailings discharge.

The reader is directed to Appendix B, "*Environmental Testing of TM Zone Tailings, Silver Hart Mine*" prepared by SGS for a complete description of the test work and discussion of results.

Given the lack of certainty of these results, CMC has submitted further ore zone material for kinetic ARD testing, which is being conducted by SGS as well.

Also, CMC collected representative samples of hangingwall and footwall host lithologies for the same series of laboratory testing as the LCT tailings samples noted above. Although not expected to be ARD generating material due to the dominance of carbonate/sedimentary lithologies, should the results of the initial static testing suggest the potential, even weakly, for acid generation, then these samples will also be submitted for further kinetic (humidity cell) tests.

5.1.4.2 Initial Phase ML/ARD Assessment: Geological Sampling

A second series of samples for ARD testing was undertaken in July 2007, as well as treatability testing of the tailings effluent and adit discharge.

5.1.4.2 Analytical Results

See Appendix B for the initial ARD testing results.

5.1.2 Topography and Soils

The site lies within the Pelly Mountains ecoregion. The following is a general description of the Pelly Mountains ecoregion:

> "Permafrost is sporadically distributed. Dystric and Eutric Brunisols are codominant in the ecoregion. Dystric Brunisols are associated with coarse igneous rocks at higher elevation. Plateau areas with sandy loam morainal parent materials are associated with Eutric Brunisols. Turbic Cryosolic soils are found in alpine areas and in some imperfectly to poorly drained sites." (Environment Canada, 2005)

Detailed information on soils for the study area is not available. Relief on the Silver Hart Property is 660 m, from the low point of 1,000 m along the Meister River to a high point of 1,660 m on the northeast corner. The site is within the Cassiar Mountains along a ridge running southeast through the Silver Hart Property, dividing it into two topographical areas. The southern third of the Silver Hart Property is south facing steep slopes upon which all of the proposed facilities will be constructed. The northern two-thirds consist of more gentle sloping north faces. The tree line is at an elevation of 1450 m to 1,500 m. The proposed milling site has an elevation of approximately 1,440 m.

5.1.3 Vegetation

The following information on vegetation at the Silver Hart Property results from field observations taken at the site in September 2006 by an independent Vegetation Specialist (Stu Withers). A map delineating primary vegetation types within the project area is shown in Figure 11 and the original results of the survey are included in Appendix C.

The project area lies within the Pelly Mountains Ecoregion. Alpine fir forests dominate most of the area. Alpine fir occurs as both open and closed canopy forests and as a krummholz growth form on areas with increased exposure at higher elevations.

The primary vegetation types within the project area are described as follows:

5.1.4.2 Closed Alpine Fir

This closed canopy forest is dominated by alpine fir with the occasional presence of white spruce. The canopy height ranges from 8 to 10 m. Lodgepole pine is found colonizing disturbed sites. The understorey layers are poorly developed with relatively few shrub and forb species. Feather mosses (*Hylocomium splendens* and *Pleurozium schreberi*) form extensive ground carpets.

This closed alpine fir forest is successionally stable and is found at mid-elevations (lowest elevations within the area surveyed).

CMC Metals Ltd. Property

CMC METALS LTD

Legend

- Trail
- Limited-Use Road
- Contour
- Water Course
- Water Body

Quartz Claims
Claim Owner, Status

- Expired
- Archer, Cathro & Associates, Active
- CMC Metals Ltd., Active

Vegetation

- AS Alpine Shrub
- AFd Dwarf Alpine Fir
- AFo Open Alpine Fir
- AFc Closed Alpine Fir

Caribou Lake
Meister River
McCrory Creek
Edgar Lake
Roy Lake
Oake Creek
Beaver Creek
CAMP
AFc
AFd
AFo
AS

Projection: UTM Zone 9 NAD83
Units: Meters
NTS: 105B/07

Vegetation identified by Stu Withers, S.P Withers Consulting, Whitehorse, Yukon.

Quartz claim data obtained from Yukon Government Minerals Branch via http://www.geomaticsyukon.ca/data_download. Data current as of September 15, 2006.

Figure 11

Area Overview

Scale: 1:50,000

0 250 500 1,000 1,500 2,000 m

ACCESS CONSULTING GROUP

Drawn by: HD | Checked by: PI

Date: November 2006

Our File: D:\Project\AllProjects\CMC_Metals\gis\mxd\YESAB_Fall06\Fig11_Vegetation.mxd

5.1.4.2 Open Alpine Fir

Alpine fir dominates this open canopy forest. White spruce occurs occasionally. The shrub layer (primarily dwarf birch) is well developed. The ground cover is mostly feather moss and a variety of herbaceous species. Lichen (mostly *Cladina* spp.) occurs on the open, drier areas.

This vegetation type occurs on the project area's well-drained upland slopes. These open alpine fir stands are climax within their elevational range.

5.1.4.2 Dwarf Alpine Fir

Growth forms of dwarf alpine fir is variable, ranging from prostrate and twisted krummholz thickets to low-stature, upright individuals. Other shrub and herb species are poorly represented. The ground cover is feather mosses, liverworts and lichens (principally *Cladina* spp.)

Within the projects area, this successionally stable vegetation type occurs on higher subalpine elevations, frequently on exposed, windswept ridges.

5.1.4.2 Alpine Shrub

The alpine dwarf shrub vegetation community consists of a variety of alpine shrub and herb species. Isolated stunted trees (alpine fir, white spruce and lodgepole pine) are found in a few sheltered areas. The ground cover is a discontinuous carpet of lichens (primarily *Cladina* spp., *Cetraria* spp. and *Stereocaulon* spp.).

This alpine shrub vegetation type occurs on the project area's highest, most exposed ridges.

5.1.4.2 Vegetation Densities

The total area investigated in the vegetation survey is about 1949 ha. The area for each of the four primary vegetation types observed is shown in the following table.

Table 11 Vegetation Types

Primary Vegetation Type	Area (Total ~ ha)
Closed Alpine Fir	623.3
Open Alpine Fir	956.8
Dwarf Alpine Fir	194.8
Alpine Shrub	173.7
Total	1948.6.

5.1.4.2 Vascular Plant Species

Of the vascular plant species catalogued during the September 2006 survey, only one species (*Rubus pedatus*) is considered to be rare in the Yukon. This was the third recorded observation of this species in the territory. *Rubus pedatus* was observed in the Dwarf Alpine Fir vegetation zone.

A list of vascular plant species observed during the September 2006 survey is included in Appendix C. This is not an exhaustive inventory of plant species expected in this area.

5.1.4 Wildlife

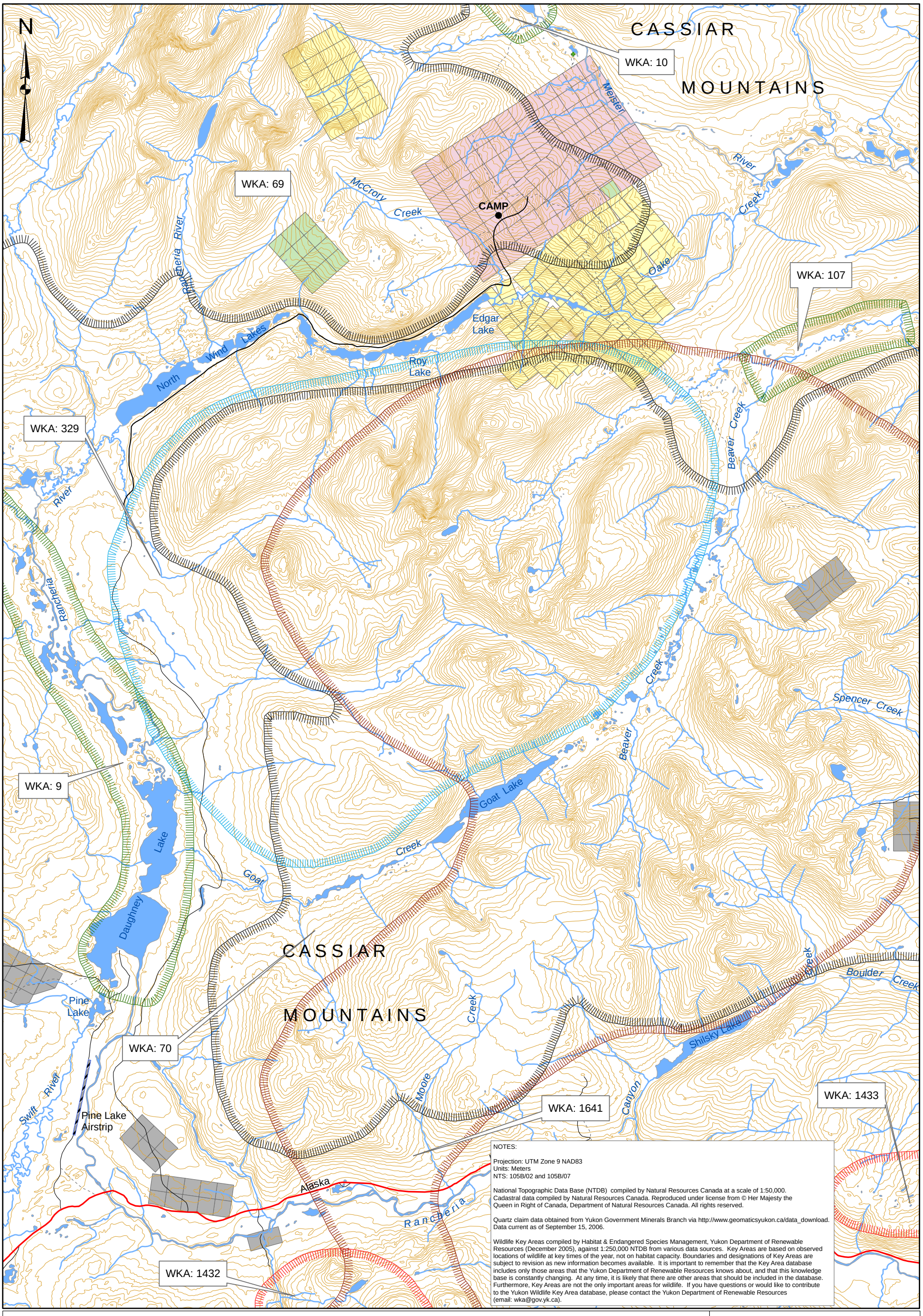
Based on the Wildlife Key Area Inventory Program produced by the Yukon Government Department of Environment, the Silver Hart Property is within a mountain goat wildlife key area (WKA) for year-round functions as it is in the upland area favoured by these animals. On the northern edge of the Silver Hart Property is a key wildlife area for beaver, following the Meister River from Caribou Lake. The access road, which travels north from the Alaska Highway alongside Daughney Lake and the Rancheria River before turning northeast and running alongside Northwind, Roy, and Edgar Lakes. Within this area, along the Rancheria River and the Northwind Lakes a beaver WKA is also noted.

Outside the Silver Hart Property and immediate project area but of note are a number of WKA to the south of the Silver Hart Property and east of the access road. These include areas used by thinhorn sheep, mountain goats, and woodland caribou (probably the

Wolf Lake Caribou herd). Discussions with the Regional Biologist for the Southern Lakes Region indicate that the area may be used by a number of different woodland caribou herds (pers. comm., Rob Florkiewicz, 2006).

The entire access road and project area is within a single Game Management Zone (GMZ), # 1028, but the Meister River is the boundary between this zone and GMZ #1027 which should be noted as a nearby second GMZ. Figure 12 shows the Game Management Zones and Wildlife Key Areas in the area of the Silver Hart Property.

A post-rut moose and caribou survey of the area was undertaken in early December 2006 by an independent wildlife biologist (Grant Lortie) to track any early winter movement of moose and other large animals in the area. The results of this survey are included in Appendix D. No moose or large mammal tracks were observed on the Silver Hart Property but a few moose and moose sign were observed on the northern side of the Meister River and in a valley to the west of the Silver Hart Property. Figure 13 shows the animals and animal tracks observed during the survey.



Legend

- Road
- Limited-Use Road
- Trail
- Contour
- Water Course
- Water Body

Quartz Claims
Claim Owner, Status

- , Expired
- Archer, Cathro & Associates, Active
- CMC Metals Ltd., Active
- Other Quartz Claims

Wildlife Key Area

- Beaver
- Golden Eagle
- Mountain Goat
- Thinhorn Sheep
- Woodland Caribou

Scale:
1:100,000
0 500 1,000 2,000 3,000 4,000 m

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ACCESS Consulting Group

CMC METALS LTD. PROPERTY

Figure 12

Wildlife Key Areas

Drawn by: HD | Checked by: PI

Date: November 2006

Our File: D:\Project\AllProjects\CMC_Metals\gis\mxd\YESAB_Fall06\Fig12_WKA.mxd

CMC METALS LTD. PROPERTY

CMC METALS LTD

Legend

- Trail
- Limited-Use Road
- Contour
- Water Course
- Mill Site
- Area Impacted by Fire
- Proposed Waste Dump Area

Surveyed Features

- Moose Sighting
- Moose Track
- Otter Track
- Weather Station
- Other Surveyed Point
- Flight Line

Quartz Claims
Claim Owner, Status

- Expired
- Archer, Cathro & Associates, Active
- CMC Metals Ltd., Active

Waypoint: 01010
402958 mE
6698392 mN

Waypoint: 0055
406241 mE
6698008 mN
Elevation: 1520m

Waypoint: 0033
409897 mE
6695313 mN
Elevation: 1221m

Waypoint: 0044
407832 mE
6696631 mN
Elevation: 1433m

Waypoint: 0066
409363 mE
6693605 mN
Elevation: 1218m

Waypoint: 0022
412662 mE
6694825 mN
Elevation: 1162m

Waypoint: 0077
404001 mE
6689362 mN
Elevation: 1480m

Waypoint: 0088
400432 mE
6689920 mN
Elevation: 1465m

Waypoint: 0099
395330 mE
6687705 mN
Elevation: 1316m

Waypoint: 0011
403902 mE
6685970 mN
Elevation: 1287m

Waypoint: 01111
391107 mE
6680101 mN
Elevation: 1061m

Sab Lake
East Blank Creek
1998 Fire
Caribou Lake
Meister River
1965 Fire
CAMP
McCrory Creek
Oake Creek
Edgar Lake
Roy Lake
North Wind Lake
START
Beaver Creek

NOTES:

Projection: UTM Zone 9 NAD83
Units: Meters
NTS: 105B/07 and 105B/02

National Topographic Data Base (NTDB) compiled by Natural Resources Canada at a scale of 1:50,000. Cadastral data compiled by Natural Resources Canada. Reproduced under license from © Her Majesty the Queen in Right of Canada, Department of Natural Resources Canada. All rights reserved.

Quartz claim data obtained from Yukon Government Minerals Branch via http://www.geomaticsyukon.ca/data_download. Data current as of September 15, 2006.

Moose Survey and Wildlife Sightings surveyed by Grant Lortie, Whitehorse, Yukon, December 8, 2006

Figure 13

Moose Survey Results December 2006

Scale:

0 500 1,000 2,000 3,000 4,000 m

ACCESS CONSULTING GROUP

Drawn by: HD | Checked by: PI

Date: December 2006

Our File: D:\Project\AllProjects\CMC_Metals\gis\mxd\MooseSurveyFall06\Fig13_MooseSurvey.mxd

5.2 Aquatic Environment

5.2.1 Site Hydrology

Stream flows in the Yukon are generally characterized by peak flows in the spring and low flows in the winter with 1-2 peak summer precipitation events. Maximum discharges typically occur during the spring as the result of snow melt or rain-on-snow events, with flows gradually decreasing following the disappearance of snow. Sizeable flood events may also occur in the late summer due to intense rainstorms. These rainfall events are particularly significant on small basins. The smallest discharges of the year occur in mid-winter. Ice develops on all rivers and many streams freeze entirely, reducing their winter flows to zero.

Streams in the environmental study area include: the Meister River, Oake Creek, McCrory Creek, and approximately five unnamed creeks.

CMC is planning to establish a hydrometric station on McCrory Creek downstream of the Silver Hart Property in 2007 to further inform the hydrologic assumptions about the project. Data from this station and subsequent stations on the Silver Hart Property will be used to characterize flow discharges and water balances for the site. A fall water quality field program undertaken by Access Consulting Group (ACG) in 2006 included stream flow measurements gathered using a Price 121 Type AA flow velocity m at stations along McCrory Creek, Oake Creek, the Meister River and five unnamed creeks that drain the Silver Hart Property (see Appendix E).

A weather station was established on site in September 2006 that is recording a number of parameters including air temperature, wind speed and direction, and precipitation. These factors can help refine the calculation of a water balance for the area. The tailings pond has a small uphill catchment area of less than 1 km^2, and with the use of upslope diversion ditches, the amount of additional water input into the tailings area, beyond that from the milling and mine dewatering, will be quite small. Precipitation from the end of September 2006 to the end of August 2007 shows the site to have received slightly more rainfall than either of the nearest Environment Canada weather stations with a calculated climate normal from 1971-2000 (Teslin A and Watson Lake). This may be as a result of unusually heavy precipitation in June and July 2007 or orthographic

effects. Table 9 shows the annual rainfall versus the climate normals at the two nearest Environment Canada weather stations.

5.2.2 Surface Water Quality

In 2006, ACG developed a network of 15 Water Quality Stations (WQS) (see Figure 3) based on station locations established in previous monitoring programs in the 1980's. These stations have been physically marked on the ground and GPS referenced for ease of data management and mapping. Each station is described in Table 11. Some stations were removed from the 2007 sampling program because they were deemed to have little relevancy to the project. The locations were chosen to capture existing baseline conditions upstream and downstream from the Silver Hart Property and to replicate existing water quality stations established in previous baseline studies to make possible the comparison of existing data with data collected for this project. These stations were established with the intention that they continue to be used by company personnel through the production life of the mine, to post closure monitoring. At each EMS, ACG has collected water samples and sediment samples from the stream for analysis of various physiochemical parameters, conducted measurement flows, and characterized the stream substrate and riparian habitat. The laboratory test results and summary tables and are included in Appendix E. The baseline water quality data to date indicates that some metals were found in slightly elevated concentrations at various locations when compared to the CCME guidelines. These metals include arsenic, cadmium, and zinc from the adit outflow, aluminum in McCrory Creek, and pH in Oake Creek. The natural pH value is only slightly beyond the acceptable range as is common at many areas in the Yukon. The aluminum value likewise is also only slightly beyond the acceptable range. The cadmium, zinc, and arsenic values are all noteworthy natural exceedances. These exceedances could be caused by a number of factors but the most likely is that weathering of areas of heavy mineralization has resulted in the transport of dissolved metals through the watercourses. The elevated values of many metals in the adit water is likely a result of the exposure of the main ore body to groundwater and the surfacing of this groundwater at the location of the existing decommissioned adit. As the current water management plan calls for the use of the adit outflow in the milling process and subsequent disposal in the tailings area, concerns over these exceedances will be resolved during the processing.

Table 12 Environmental Monitoring Stations

EMS*	SITE DESCRIPTION	Northing	Easting
CMC-01	Mouth of Meister River at Caribou lake	6694564	405216
CMC-02	Small stream possibly contributing to Meister River	6693141	406140
CMC-03	Tributary to Meister River	6692366	406974
CMC-03A	Tributary to Meister River	6691603	407735
CMC-04	Meister River upstream from Oake Creek confluence	6690129	411208
CMC-05	Meister River just downstream of Oake Creek confluence	6690849	412312
CMC-06	Oake Creek just upstream of Meister River confluence	6690673	412137
CMC-07	Mouth of Oake Creek at Edgar Lake	6686763	403918
CMC-10	Tributary to Meister River just downstream of Caribou Lake	6694539	405212
CMC-11	Adit just south of camp	6688769	404126
CMC-M1	McCrory Creek upstream from unnamed tributary to the south	6688350	403628
CMC-M2	McCrory Creek upstream from Edgar Lake confluence;	6687110	404215
CMC-OC2	Oake Creek, downstream from McCrory Creek and Edgar Lake	6686894	404668
CMC-OC3	Oake Creek, downstream from unnamed creek confluence	6686666	406063
CMC-U1	Tributary to Oake Creek	6688432	405458
CMC-U2	Tributary to Meister River; leads to CMC-03A		

EMS - environmental monitoring station

5.2.3 Hydrogeology

As previously stated the existing incline adit is producing a small amount of water. Bucket flow measurements of the adit were taken in December 2006, with an average flow of approximately 0.5 L/s – 1.0 L./s Much of this water will be used in the milling process and any excess will be disposed of in the tailings pond. Based on the location of the planned open pit area, water is expected to be encountered at the lower levels of mining and the pit will require dewatering. Water removed from the pit will be used in the milling process when possible and any remaining water will be used in dust control or placed in the tailings area for treatment or evaporation. A more complete picture of the site hydrogeology is currently being undertaken and will be submitted in the spring of 2008 and included as Appendix K.

5.2.4 Fishery Investigations

The Meister River watershed is a tributary to the Liard River and is part of a known fish-bearing watershed that contains a number of species of fish.

5.2.4.2 Fishery Investigations

Fish and fish habitat investigations were undertaken by R&D Environmental on September 21- 23, 2006 at nine sites within the area of the Silver Hart property. Sites included CMC-01, CMC-03, CMC-03A, CMC-05, CMC-06, CMC-07, CMC-10, CMC-M2, CMC-OC2 and CMC-OC3 (Figure 3). Several additional sites were visited during the survey in order to collect water and sediment samples but were not sampled for fish as they were either not deemed as potential fish habitat due to a limited amount of flow at the site (CMC-11, CMC-U1, CMC-U2), or sampling occurred on the same system close to the site (CMC-04, CMC-M1). Visual observations for fish however were made at all sites.

A second survey was undertaken in August 21-23, 2007 with sampling occurring at the same sites sampled in September 2006 except for CMC-05. One additional site, CMC-M1 was sampled during 2007.

5.2.4.2 Methods

Gee traps, using prepared Yukon River origin chinook salmon roe and commercial bait (frozen herring) as an attractant, were set at various sites throughout the study area during the 2006 and 2007 surveys. Traps were set for a nominal 24 hour soak. Up to four traps were set at each site.

Where stream/river conditions allowed certain sites during the 2007 survey were electrofished using a Smith/Root back-back electrofishing unit. Conductivity was measured at each site and was used to determine the settings used on the electrofishing unit.

Angling, using spin casting gear was conducted at CMC-01 on the Meister River and at CMC 03A on Oake Creek.

Beach seining, using a beach seine net (12 metre length x 2 metre depth) with 1/8" mesh was conducted at two sites, CMC-01 and CMC-07 during the 2007 survey.

All fish captured were identified, and enumerated before release. Some individuals were measured for fork or total length.

In-situ water quality measurements were conducted for temperature and conductivity, dissolved oxygen (D.O.), and pH. D.O. and pH were measured using Oxyguard meters. Water and sediment samples were collected at each site and sent to a water analysis lab for analysis. Water flows were also determined at most of the sites during the fisheries surveys.

5.2.4.2 Fish Sampling Results

Sampling during the 2006 survey within the Meister River and Oake Creek watersheds resulted in the capture of only 1 fish, a Long-nose sucker (*Catastomas catastomas*). This fish was captured at CMC-07, at the outlet of Edgar Lake. Numerous slimy sculpins (*Cottus cognatus*) and other small unidentified species were observed but not captured in the Meister River during the sampling period.

In the 2007 sampling period 5 species of fish were captured in the Meister River, including lake trout (*Salvelinus namaycush*), bull trout *(Salvelinus confluentus*), Arctic grayling (*Thymallus arcticus*), Mountain whitefish (*Prosopium williamsoni*) and slimy sculpin.

A total of 3 species of fish were captured in the Oake Creek system in 2007 including slimy sculpin, Long-nose sucker and burbot (*Lota lota*).

In all 7 species of fish were captured during sampling in 2006 and 2007.

No fish were captured or observed during the 2006 and 2007 surveys in McCrory Creek or in any of the unnamed tributaries that were sampled that flow into the Meister River.

5.2.4.2 Discussion and Recommendations

Based on the results of the 2007 sampling program and anecdotal knowledge it is known that substantial fish populations inhabit the Meister River drainage. Because of this

knowledge extensive and/or intensive sampling was not conducted at sample sites along the Meister River and Oake Creek Drainage. Observations for spawning fish and or habitat use did not reveal any activity or signs of spawning activity at the sites examined.

Certain sample locations (CMC-02, CMC-11, CMC-U1) were not deemed as suitable fish habitat due to low water flow rates and/or volume of wetted habitat available to fish.

Fish were not captured or observed in tributaries of Meister River (CMC-10, CMC-03, CMC-03A or in McCrory Creek (CMC-M2) which is a tributary of Oake Creek. Habitat at these sites appears to be suitable for fish. Although these tributaries cascade down off the side of the surrounding mountains to the Meister River and Oake Creek there are no significant barriers to fish migration downstream of the sample sites (the cascades however may limit upstream migration of smaller fish) except on the tributary that flows into the Meister River at CMC-01 (near the outlet of Caribou Lake). On this tributary a fish barrier (waterfall) was observed, during aerial reconnaissance, about 500 metres upstream of its confluence with the Meister river.

The sites sampled for fish during this survey should be revisited during late spring, early summer to determine usage by fish during this season as sampling has only occurred in late summer and early fall to date.

5.2.5 Stream Sediments

Stream sediments were collected from each EMS assessed during the two water quality surveys in 2006 and a single water quality survey in 2007. A composite sample from three locations from each EMS was collected when possible and sent to Norwest Labs for analysis. At some sites substrate type in the sampling area prevented sediment sampling. The results of these sediments sample tests are included in Appendix E. The stream sediments show naturally high levels of a number of metals throughout the area, some metals found to exceed the Interim Sediment Quality Guidelines (ISQG) and, less frequently, to exceed the higher Probable Effect Level (PEL). Of the seven metals with guidelines, only mercury was not found in excess of the ISQG and only cadmium and copper were found in excess of the ISQG but not the PEL. The remaining parameters (arsenic, chromium, lead, and zinc) were all found in excess of the PEL at one or more

EMS. These exceedances indicate that weathering of mineralized areas upstream of the locations has resulted in naturally high levels of a number of metals.

5.3 Atmospheric Environment

5.3.1 Climate

The climate in the Pelly Mountains Ecoregion is cold and semiarid with a mean annual temperature of –3.0 °C. The summer mean temperature is 10.5°C and the winter mean for the ecoregion is –17.5°C. Mean annual precipitation ranges from 500 mm – 1000 mm, varying with elevation (Environment Canada, 2005). The nearest Environment Canada Weather Station is located at Teslin, approximately 110km away. Environment Canada Climate normals for Teslin indicate an average annual rainfall of 203.7mm and an average annual snowfall of 148.2 cm. Another Station at Watson Lake (approximately 125km away) shows an average annual rainfall of 510.3mm and an average annual snowfall of 329.9 cm. A meteorological station was installed at the site in September 2006. This station collects data on rainfall, air temperature, soil temperature, barometric pressure, wind speed, solar radiation, and relative humidity. Preliminary data shows climate parameters similar to the Watson Lake Environment Canada Weather Station. A data summary is included in Appendix H.

5.4 Human Environment

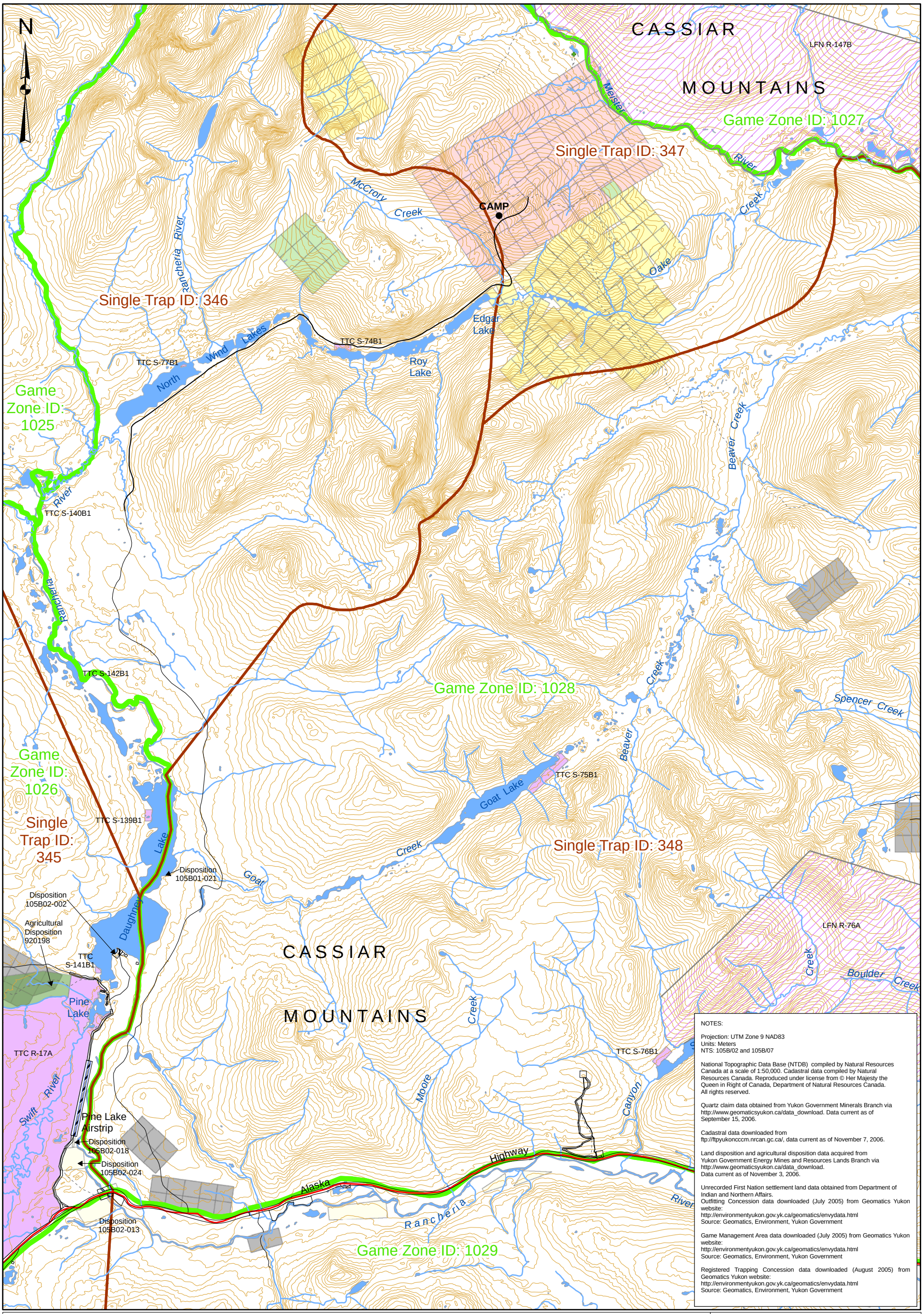
5.4.1 Land Use and Land Tenure

CMC owns 116 claims in the project area within the Meister River watershed. Southeast of the CMC claims are 125 adjacent claims owned by Archer Cathro and Associates Ltd. (Archer Cathro). To the northwest of the CMC claims are 24 claims also owned by Archer Cathro (Figure 3). The existing public access route passes through two trapping concessions; registered trapline # 348 and # 346. The Silver Hart Property is located on # 347 and # 346. The outfitting concession is # 20. CMC is in the process of discussing the project with the owners of these trapping concessions regarding the impact of the project on these activities. According to Yukon Government Traditional Territory maps

the project study area is within the Liard First Nation Traditional Territory, and the access road borders both the Teslin Tlingit First Nation and the Liard First Nation. Hunting and recreational fishing does occur in the Meister River watershed and the Upper Rancheria watershed. These activities should not be impacted by the project. Figure 14 shows the current land uses in the area.

5.4.2 Heritage Resources and Archaeology

C. Thomas of Thomas Heritage Consulting was contracted to conduct a detailed evaluation of heritage resources and archaeological sites in the project area in September 2006. No known heritage resources were found. Please refer to Appendix F for the complete report.



NOTES:

Projection: UTM Zone 9 NAD83
Units: Meters
NTS: 105B/02 and 105B/07

Quartz claim data obtained from Yukon Government Minerals Branch via http://www.geomaticsyukon.ca/data_download. Data current as of September 15, 2006.

Cadastral data downloaded from ftp://ftpyukoncccm.nrcan.gc.ca/, data current as of November 7, 2006.

Land disposition and agricultural disposition data acquired from Yukon Government Energy Mines and Resources Lands Branch via http://www.geomaticsyukon.ca/data_download.
Data current as of November 3, 2006.

Unrecorded First Nation settlement land data obtained from Department of Indian and Northern Affairs.
Outfitting Concession data downloaded (July 2005) from Geomatics Yukon website:
http://environmentyukon.gov.yk.ca/geomatics/envydata.html
Source: Geomatics, Environment, Yukon Government

Game Management Area data downloaded (July 2005) from Geomatics Yukon website:
http://environmentyukon.gov.yk.ca/geomatics/envydata.html
Source: Geomatics, Environment, Yukon Government

Registered Trapping Concession data downloaded (August 2005) from Geomatics Yukon website:
http://environmentyukon.gov.yk.ca/geomatics/envydata.html
Source: Geomatics, Environment, Yukon Government

Legend

- Road
- Limited-Use Road
- Trail
- Contour
- Water Course
- Water Body
- Trapping Concessions
- Game Management Zones

Quartz Claims
Claim Owner, Status

- Expired
- Archer, Cathro & Associates, Active
- CMC Metals Ltd., Active
- Other Quartz Claims

Land Use

- Cadastral Parcel
- Land Disposition
- Agricultural Disposition
- First Nation Settlement Land
- First Nation Settlement Land - Unrecorded

Scale: 1:100,000

0 500 1,000 2,000 3,000 4,000 m

CMC METALS LTD. PROPERTY

Figure 14

Land Use

Drawn by: HD	Checked by: PI
Date: November 2006	

Our File: D:\Project\AllProjects\CMC_Metals\gis\mxd\YESAB_Fall06\Fig14_LandUse.mxd

5.4.3 Socioeconomic Conditions

The Village of Teslin is approximately 120 km west of the project site and the Town of Watson Lake is approximately 80 km east southeast of the project site. The proposed project lies within the Liard First Nation Traditional Territory. Notifications of the project will be distributed throughout Teslin and Watson Lake as well as to interested parties in Whitehorse. A meeting with the Lands and Resources Manager of the Liard First Nation Government indicated that the only major concern was protection of the woodland caribou that use the area as a migration pathway. A meeting with the Liard First Nation Government was planned for early May, late May, and early June 2007, but was postponed each time at the request of the Liard First Nation Government. Rescheduling of this meeting has been attempted but has not been confirmed. A meeting with the Teslin Tlingit Council Government was held on the 16th of May 2007.

There will be approximately 25 people employed during the construction of the mine/mill facilities, approximately 32 during the active mining and milling portion, and during the winter milling 25 people will be employed. As mining will be undertaken on a seasonal basis and milling will be year-round, the number of people employed during the winter months will be reduced. CMC will promote the hiring of qualified local personnel including members of the Liard and Teslin Tlingit First Nations. The following information on the communities of Teslin and Watson Lake was taken from the 2004 Edition of Yukon Community Profiles complied by the Government of Yukon and Yukon Chamber of Commerce (http://yukoncommunities.yk.ca).

The economy in Teslin includes traditional subsistence activities, tourism, and territorial government highway, forestry, and social services. The major employer is the TTC. Tourism activities include accommodation, food services, transportation services, cultural activities, and outfitting and guiding services. Tle-nax Tawei Inc., the economic development arm of the TTC, promotes tourism, outfitting, and a sawmill in the area.

Teslin is 183 km from the City of Whitehorse, which are connected by the Alaska Highway. A 1,700 m gravel all season runway is located in Teslin. Float plane access is also available from Teslin Lake. The TTC offer social services that include social counselors, a community health representative, community education liaison coordinator, and youth worker.

Watson Lake sits at the junction of the Alaska Highway, the Robert Campbell Highway to the central Yukon, and the Stewart-Cassiar Highway from central British Columbia. Watson Lake is 455 km to the southeast of Whitehorse, connected by the Alaska Highway. An airport is located 13 km from the town and the town has float plane access from Watson Lake. A small hospital and health clinic operate in Watson Lake and there are volunteer fire and ambulance services.

Watson Lake had a population of approximately 1,500 people in 2004 (the last year of information provided) that has fluctuated over the years. Watson Lake has a diversified economy, in part because it is the regional service and business centre for the southeastern Yukon. Primary industries occasionally increase the local economic activity including some forestry and mining and energy exploration. Watson Lake also plays a role as a transportation hub for northern tourism and shipping to Whitehorse and Alaska.

6.0 Consultation

To date CMC has held a meeting with the Assistant Lands Manager of Liard First Nation to discuss the project and a meeting with a number of members of the Government of the Teslin Tlingit Council. A public Open House was also held in the Town of Watson Lake on May 15, 2007. A meeting with the Teslin Tlingit Council Government occurred on May 16th, 2007. More meetings will be scheduled with both the Liard First Nation and the Teslin Tlingit Council as the process moves forward. Additional public input and consultation will be made available through the Yukon Environmental and Socioeconomic Assessment Board (YESAB) and Water Use Licence application processes. The Open House included forms and an informal discussion setting to allow for public comment.

Project information posters have been developed to provide project overview and details on pertinent aspects of the environmental studies and impact assessment conducted to date. Poster components include:

- Area Overview;
- Project Overview;
- Project Timeline;
- Environmental Cultural Studies;
- The Mining/Milling Process;
- Recognition of Rights, Title and Interest;
- Promotion of First Nation growth and Business Relations; and
- Increase community relations.

Regular and open consultation will occur throughout the life of the project, including information sharing and site tours organized for community and first nations leaders.

7.0 Potential Environmental and Socioeconomic Effects and Proposed Mitigation

7.1 Summary of Potential Environmental and Socioeconomic Effects

This section identifies potential environmental and socioeconomic effects that may be associated with the project, and proposes mitigation measures to eliminate or minimize these potential effects.

Table 13 provides a summary of the assessment of potential environmental effects, a listing of mitigation measures, and a determination of the significance of the potential effects. The valued ecosystem and cultural components that were evaluated for potential environmental effects include: atmospheric; topography; soils (including permafrost); surface water quality and hydrology; groundwater hydrology; aquatic resources including fisheries resources, benthic invertebrates; wildlife and habitat; vegetation; land use capability; and, socio-economic effects including public health and safety.

Table 13 Summary of the Assessment of Potential Environmental Effects Resulting from the Proposed CMC Silver Project

Parameters	Potential Environmental Effect	Mitigation	Significance of Effects							Significant
			Duration	Geographic Extent	Magnitude	Reversibility	Ecological Context	Economic & Social Context	Overall Rating	(Y/N)
Atmospheric	fugitive dust - access roads fugitive dust - pit and facilities areas vehicle/equipment emissions	road watering watering proper maintenance	Very Low	Low	Low	High	Low	Low	Low	**N**
Topography	road cuts - access roads facility area cuts open pit area	recontoured and revegetated upon closure recontoured and revegetated upon closure recontoured and revegetated upon closure	Low	Low	Low	High High Low	Low	Low	Low	**N**
Soils (including permafrost)	stripping and erosion of soils - access roads stripping and erosion of soils - facilities area stripping and erosion of soils - open pit	stockpiling of overburden for cover/revegetation, prevent erosion stockpiling of overburden for cover/revegetation, prevent erosion recontoured and revegetated upon completion of project	Low	Low	Low	Low	Low	Low	Low	**N**
Surface Water Hydrology	stream crossings - access roads camp and mill - water use	upgrade existing bridge crossings and culverts minimize use, use groundwater and adit flow	Very Low	Low	Low	High	Low	Low	Low	**N**
Surface Water Quality	sediments - access road sediments - construction and operation infiltration of metals with recharge to Meister River surface waste waters	no instream construction, maintain vegetation buffer zones no instream construction, maintain vegetation buffer zones segregation of ARD waste on lined pad construction of septic field	Low	Very Low	Low	High	Medium	Medium	Low - Medium	**N**
Groundwater Hydrology	water use - mill and camp Lowering water table	water recycling, adit flow use in milling process water recycling, adit flow use in milling process	Low	Very Low	Low	High	Medium	Low	Low - Medium	**N**
Water Quality **Fisheries Habitat loss**	sediments - access roads sediments metals decrease in surface flows during milling	minimize instream construction, maintain vegetation buffer zones minimize instream construction, maintain vegetation buffer zones segregation of ARD waste on lined pad, no discharge to surface water from tailings area water recycling, monitor surface flows	Very Low	Very Low	Low	High	Medium	Medium	Low - Medium	**N**
Benthic Macro invertebrates	sediments - access road sediments - construction and operation metals - operation decrease in surface flows	minimize instream construction, maintain vegetation buffer zones minimize instream construction, maintain vegetation buffer zones segregation of ARD waste on lined pad, no discharge to surface water water recycling, monitor surface flows	Very Low	Very Low	Very Low	High	Low	Low	Low	**N**
Periphyton	sediments - access road sediments metals decrease in surface flows	minimize instream construction, maintain vegetation buffer zones minimize instream construction, maintain vegetation buffer zones segregation of ARD waste on lined pad, no discharge to surface water water recycling, monitor surface flows	Very Low	Very Low	Very Low	High	Low	Low	Low	**N**
Wildlife	Direct habitat loss Indirect habitat loss, avoidance, habitat fragmentation Harassment Hunting & poaching pressure Road kills	revegetating revegetating no wildlife harrassment policy on-site no hunting policy, no firearms policy, access management posted speed limits and wildlife crossings, access management	Low	Low	Medium	Medium	Medium	Medium	Medium	**N**
Vegetation	Removal of vegetation - access roads Removal of vegetation - construction	revegetating after closure revegetating after closure	Low	Low	Low	High	Low	Low	Low	**N**
Land Capability & Historic Use Trapping Traditional/Cultural Use	Decrease in wildlife populations, decrease trapping success Decrease in access to wildlife and cultural pursuits	provide access and revegetation provide access and revegetation	Low	Low	Low	High	Low	Medium	Low - Medium	**N**
Socioeconomic Effects Local community Human Health & Safety (Accidents)	Increase positive and negative local social effects Effects of health/livelihood/community	community communication and consultation Health & safety plans, EMS, Training, Monitoring	Low	Low	Low	Medium	Medium	Medium	Low - Medium	**N**

7.2 Summary of Potential Environmental and Socioeconomic Effects and Proposed Mitigation

All field activities will be guided by a Field Operations Manual, which will include:

- A summary of legislative obligations;
- Copies of all permits and licenses;
- Emergency contact numbers;
- An Emergency Spill Response Plan;
- An Environmental Management Plan; and
- Any other applicable information (such as Fisheries and Oceans Canada Operational Statements).

CMC commits to practices that meet or exceed all terms and conditions of pertinent licenses, permits, and authorizations.

A Fuel Spill Contingency and Emergency Response Plan, provided in Appendix A, outlines response protocols for petroleum product spills. The purpose of this plan is to minimize effects of environmental disturbances and the resultant hazard to people, aquatic systems, and wildlife. Special mitigative measures for the exploration area including containment structures, response equipment, and the presence of trained spills-response personnel will be instituted to minimize the possibility of contamination of watersheds adjacent to these facilities. All employees working at the site will be familiar with the Fuel Spill Contingency Plan. Employees will understand the potentially hazardous situations that spills can create to the health and safety of workers and the environment. They will understand their responsibilities as employees to prevent, identify, report, and appropriately deal with a spill. The plan will be available for viewing by all employees and the company will advise employees of revisions or changes to the plan.

To prevent accidents and malfunctions and their associated impacts on the environment, CMC will make best effort to:

- Provide suitable and operational monitoring and emergency equipment, including fuel spill response equipment;

- Ensure proper handling and storage of fuels and hazardous substances;
- Implement safe fuel transfer procedures;
- Install suitable and operational safety devices on explosive gases;
- Maintain proper and routine servicing of all equipment and vehicles;
- Provide suitable safety and environmental training to site personnel, including manuals and plans;
- Employ qualified supervisory personnel to monitor operations;
- Follow all safety, environmental protection, and emergency response procedures; and
- Establish a high order of preparedness in the event a spill occurs by implementing and following, in the event of a spill, the Fuel Spill Contingency Plan. Spills will be immediately reported to the Spill Report Line.

7.2.1 Terrestrial Environment

To protect the terrestrial habitat, CMC will make best effort to:

- Minimize the project footprint;
- Use existing infrastructure (exploration trails, staging areas, and airstrip) to minimize disturbances;
- Instruct equipment operators not to disturb ground unnecessarily;
- Implement procedures, if fire hazards exist in the area during operations, to prevent inadvertent fires;
- Implement and follow, in the event of a spill, a Fuel Spill Contingency Plan. Spills will be immediately reported to the Spill Report Line; and
- Reclaim new site disturbance by recontouring and revegetating; and
- Implement the ARD/ML management plan as required.

7.2.2 Wildlife

To protect wildlife, CMC will undertake:

- A “no hunting” policy. The policy will be strictly enforced for company and contractors' employees while working within the project area;

- A “no firearms” policy. Firearms will be banned from company and contractor controlled operations except as authorized for protection of employee’s safety while in the field;
- A “no wildlife harassment” policy. This policy will encompass no wildlife feeding, employee wildlife education, and wildlife avoidance. The policy will be strictly enforced for company and contractors' employees while working within the project area, and include provisions for:
- Prohibiting the personal use by employees of non-company or contractor all terrain vehicles (ATV’s) and the after hour use of company or contractor recreational vehicles for non-company activity within the project area;
- Ensuring that employees comply with Government of Yukon policy with respect to bear management and bear education programs; and
- Enforcing waste management at camp and work sites.

7.2.3 Aquatic Environment

To protect aquatic resources, CMC will make best efforts to:

- Operate in accordance with applicable Fisheries and Oceans Canada Operational Statements;
- Minimize alteration of the beds or banks of watercourses;
- Maintain no disposal of waste materials, wastewater, or drilling fluids directly into watercourses in a manner than may result in seepage into watercourses;
- Monitor and treat, if necessary, of any wastewater released for land application due to unforeseen circumstances (i.e. excessive precipitation);
- Segregate waste to control and prevent metals from the drill program from circulating through the environment;
- Store liquid fuels and oils in a closed system during transportation and on site. No fuels will be stored within 100 m of a watercourse;
- Implement and follow, in the event of a spill, the Fuel Spill Contingency Plan. Spills will be immediately reported to the Spill Report Line;
- Test and monitor ice conditions and follow appropriate construction and vehicle operation procedures on winter access; and
- Create and implement an ARD/ML management plan as required.

7.2.4 Atmospheric Environment

To protect air quality, CMC will make best effort to:

- Ensure equipment is in good working order in compliance with the energy intensity policy;
- Provide suitable and operational monitoring equipment;
- Follow all safety, environmental, and emergency response procedures; and
- Employ qualified supervisory personnel and providing suitable safety and environmental training to site personnel.

7.2.5 Decommissioning

The scope and intensity of decommissioning activities for the project will be determined directly by the success of the continuing exploration programs. Should results from subsequent exploration expand the known deposit estimates from the current evaluated resources, thereby leading the proponent to prepare for further mine development and production, decommissioning of infrastructure and associated reclamation of lands associated with these project elements would not be carried out following the completion of the initially proposed mining and production activities. If, however, the situation upon completion of the proposed mining leads CMC to discontinue further exploration and development at the site, the company will implement the following decommissioning program at the site. The following activities are intended to meet Operating Conditions related to final decommissioning and the following closure objectives:

- Leave the site clean following project completion;
- Remove hazardous materials and petroleum products including items from previous work such as tanks and storage buckets; and
- Re-contour major cuts and side slopes, prevent long-term erosion/slumping and promote successful revegetation of disturbed areas.

The decommissioning goal will be to return the site as close as possible to its pre-program condition. To ensure slope stability and erosion control, the following Best Management Practices will be integrated into the final decommissioning activities:

- Capping the tailings pond with overburden and any reserved topsoil and reseeding with a native species;
- Re-contouring/re-sloping of disturbed areas to a 2.5:1 slope should be achievable in most locations, with contouring aimed at matching natural topography;
- Runoff control measures such as slope drains, cross drains or rock-lined ditches will be employed where feasible (during the project where possible, otherwise during decommissioning activities) to minimize the requirements for more expensive and less effective erosion and sediment control by diverting runoff and decreasing flow velocities;
- Long slopes (>15 m high) will be benched and slopes will be roughened mechanically across contour to discourage rill-and-gully type erosion and to provide growing sites for revegetation;
- Where possible, topsoil from disturbed areas will be stockpiled for use in preparing reclaimed areas for re-establishment of vegetation;
- Where native vegetation is not expected to re-establish naturally, an appropriate native seed mixture and fertilizing regime will be selected and applied;
- Periodic monitoring of the run-off and erosion control measures will be conducted, and if failing in sensitive areas, sediment control measures (silt fences, check dams, straw dikes) may be employed and monitored to prevent sediment transport into streams;
- Sediment control measures will be instituted in areas of high run-off/sediment transport potential to avoid downstream sedimentation (this may include sump/silt trap construction or use of slash windrows and natural vegetation buffers); and
- Systematic approach to decommissioning (progressive reclamation)

In addition to progressive cleanup during each phase of the operations, the following measures will be employed with respect to cleanliness and waste disposal upon the decision to permanently forego further exploration/development at the site being taken:

- All machinery, materials, fuel drums, used hydrocarbons, and metal waste will be removed from the site including items on site previous to the advanced exploration program;
- All non-combustible solid camp waste will be backhauled to a public landfill Waste Facility;
- Compacted areas will be loosened and prepared for revegetation measures if necessary;
- Fire hazard will be reduced by burning slash piles in accordance with a valid Burning Permit; and
- Wildlife hazards (barbed wire, glass or plastic debris) will be removed.

A detailed decommissioning and reclamation plan will be completed and submitted for approval within the first year of production. Should it be required based on Acid Base Accounting (ABA) and Metals Leachate testing results, an Acid Rock Drainage management plan will also be submitted. A detailed Decommissioning and Reclamation Plan will be submitted within six months of start-up.

7.2.6 Post Closure Management

To ensure that there are no long-term effects from the project and remediation activities have been successful, CMC will make best efforts to:

- Undertake mine planning to incorporate progressive reclamation;
- Provide short and long term slope stabilization and erosion control on linear and nonlinear disturbances;
- Ensure the long-term chemical stability of residual mining components and their effects on water quality draining the property;
- Ensure the long-term physical stability of key structures such as the waste dumps and the diversion and drainage ditches;

- Work towards a walk-away closure scenario for most or all mine components;
- Ensure site safety and controlled access;
- Monitor areas affected by the project and reclamation success;
- Conduct site visits by company, Government of Yukon, and First Nations representatives to assess mitigation implementation and success;
- Compliance monitoring;
- Periodic inspection of structures; and
- Annual reporting.

7.3 Cumulative Environmental Effects

Cumulative effects refer to those effects on the environment that result from effects of a project when combined with those of other past, existing, and imminent projects and activities. To address cumulative effects, a project's activities must be considered in context to actual or potential impacts on the environment from other sources. The approximate spatial boundaries for assessing cumulative effects are the same as the boundaries proposed for the environmental assessment study area, which are based on the potential geographic extent of effect. The geographic boundary for the project site has been identified as the area bound by Oake Creek to the south, McCrory Creek to the west and the Meister River to the north.

The cumulative assessment included the following:

- Identify environmental effects from the project's activities;
- Identify other likely projects or activities that would occur in the study area during the CMC Mine/Mill production program, and assess linkages and cumulative effects from other potential projects or activities with project related effects;
- Consider mitigation measures and evaluate significance of cumulative effects; and
- Summarize findings of cumulative effects assessment.

With an understanding of the potential environmental effects resulting from the project, interactions with any likely projects or activities that would occur during the CMC mine

production program have been considered. The CMC mine production program is located in a relatively remote area and other regional activities are limited. The current activities in the region include:

- Quartz mining exploration;
- Traditional land uses;
- Subsistence and recreational harvesting of wildlife and fisheries;
- Trapping (two traplines);
- Outfitting (one outfitter); and
- Other: In addition to considering current land uses, which may cumulatively interact with the project, consideration was also given to interactions, based on future land use activities. Upon review of the current land use activities, the potential future land use activities were identified as possible further mineral exploration and exploitation.

However, the likelihood of these other activities being undertaken is not known and no known authorizations are in place for these activities. An adjacent Archer Cathro property has seen some exploration in recent years but there are no known development plans. This property is almost entirely in the Oake Creek drainage also, thus potential effects on the watershed from this project could increase the cumulative impacts.

The potential cumulative impacts from the above mentioned activities are considered to be insignificant. Mitigation of the impacts of the development on these activities is planned and therefore there is little potential for cumulative effects.

7.4 Previous Environmental Assessments

Previous environmental assessments undertaken of the site include Phase I and Phase II Environmental Site Assessments by Environmental Services, Public Works and Government Services Canada for the Action on Waste Program, Indian and Northern Affairs Canada. The Phase I report was completed in 1996 and the Phase II report was released in 1997 entitled *Phase II Environmental Site Assessment of the Silver Hart Mine Site*. This assessment was conducted to:

"a) identify potential environmental and human health risks associated with the present condition of the mine site, and

b) provide recommendations and preliminary cost estimates for remediation of those risks."

The results of this report indicated a need for further testing of moderately acid generating waste rock disposal area and a water monitoring program to be undertaken every five years. No results from the proposed follow-up water monitoring program from the BWC reports have been made available. The items of environmental concern noted include above ground fuel storage tanks, some contaminated soil in the area of the existing Quonset shop, and 19 drums of fuel. Recommendations to remove or remediate all of these items of environmental concern, and a number of health and safety concerns have been undertaken and CMC has dealt with or is in the process of dealing with these items on a voluntary basis.

7.5 Environmental Monitoring Plans

A Monitoring Program describing the proposed environmental, geotechnical, and operational monitoring requirements for the project will be developed. A continuation of the existing baseline studies, as undertaken by Access Consulting Group in 2006 and 2007 will form a portion of the Environmental Monitoring Plan. Environmental and physical monitoring programs are required at all stages of exploration. These programs are designed to monitor the following:

- The effectiveness of component design;
- Mitigation success;
- Potential impacts to the receiving environment;
- Improve CMC's understanding of local environment to in turn improve operational and decommissioning activities;
- Collect long-term data on soil, sediment, and water quality for additional baseline conditions; and
- Ensure compliance with licence, permit and regulatory conditions.

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9.0 Limitations and Acknowledgements/Closure

Access Consulting Group (ACG) prepared this report with considerable thoughtful input from CMC Metals Ltd. Specifically, CMC Metals contributed much of, or the entire text for the following sections:

1.0 Corporate Profile;

2.0 Project Background;

4.0 Summary of Proposed Development; and

5.1.1 Geology and Mineralization

This report was prepared for the exclusive use of CMC and is based on data and information collected from past reports, and recent site investigations that included laboratory analysis. Access Consulting Group has followed standard professional procedures in preparing the contents of this report. The material in this report reflects Access Consulting Group's best judgment in light of the information available at the time of the preparation of this report. Any use that a third party makes of this report, or any reliance on decisions to be made based on it, are the responsibility of the third parties. Access Consulting Group accepts no responsibility for damages, if any, suffered by any third party as a result of decisions made or actions based on this report. Access Consulting Group believes that the contents of this report are substantively correct.

The information and data contained in this report, including without limitation, the results of any sampling and analyses conducted by Access Consulting Group, are based solely on the conditions observed at the time of the field assessment and have been developed or obtained through the exercise of Access Consulting Group's professional judgment and are set to the best of Access Consulting Group's knowledge, information, and belief. Although every effort has been made to confirm that all such information and data is factual, complete and accurate, Access Consulting Group offers no guarantees or warranties, either expressed or implied, with respect to such information or data.

Access Consulting Group shall not by the act of issuing this report be deemed to have represented that any sampling and analyses conducted by it have been exhaustive or

will identify all contaminants or contamination of the site, and persons relying on the results thereof do so at their own risk.

Should you have any questions regarding this report, or require further information, please contact the undersigned at Access Consulting Group in Whitehorse, Yukon.

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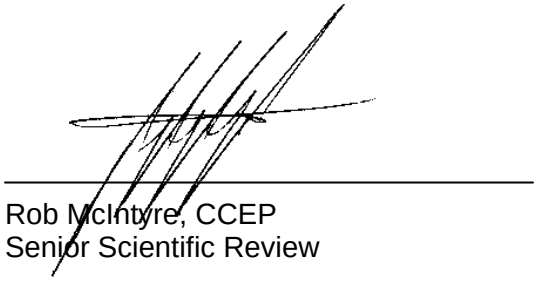

Rob McIntyre, CCEP
Senior Scientific Review

SILVER HART PROPERTY

PROJECT DESCRIPTION
APPLICATION FOR TYPE 'B' WATER USE LICENCE
APPLICATION FOR MINE PRODUCTION LICENCE

APPENDIX A
EMERGENCY SPILL RESPONSE PLAN

March 2008

Prepared by:

ACCESS
CONSULTING GROUP

SPILL RESPONSE PLAN FOR PETROLEUM PRODUCTS (FUELS)

December 2006

Prepared By:

A Registered Tradename for Access Mining Consultants Ltd.
accessconsulting.ca

Introduction

Fuel use/handling activities will be undertaken during the mobilization/demobilization of the TBM and the development of the decline. These activities involve the use of equipment that consume petroleum products, including refuelling and storage of other hydrocarbons.

This Spill Response Plan is a guide for the contractors and subcontractors as to the planned course of action in the event of a spill or leakage of petroleum products during the course of the operation. Safety procedures for personnel and for proper equipment usage during such operations are discussed within this plan.

This plan outlines procedures to be followed in the event of a petroleum product spill. A table of contact phone numbers is provided below in Table 1.

Table 1 Spill Related Resources and Emergency Contact Numbers

Resource	Contact Number
Yukon Spill Line	**(867) 667-7244**
Liard First Nation	**(867) 536-2912**
Fire Department – Whitehorse	**(867) 390-2005**
Ambulance – Watson Lake	**(867) 536-4444**
Fire Department – Watson Lake	**(867) 536-2222**
Police – Watson Lake	**(867) 536-5555**
Access Consulting Group (Environmental Consultant)	**(867) 668-6463**
YG Department of Environment Monitoring and Inspections Section	**(867) 667-3227**
YG Environmental Protection Branch	**(867) 667-3436**
Trans North Helicopter (emergency air evacuation)	**(867) 536-2100 or Whitehorse dispatch (867) 668-2177**
CANUTEC (Dangerous Goods information)	**0 (613) 996-6666**
Yukon Emergency Response Spill Line	**(867) 667-7244**

PETROLEUM PRODUCT SPILLS

Spills and leaks are addressed herein.

A, **"spill"** is defined as: "Petroleum product or lubricant which is poured, spilled, or pumped onto the ground or into water, by faulty conveyance or transfer, overturned vehicles or equipment, or through human error or negligence."

Severity rating: Non-Reportable – Less than 100 litres* Minor – More than 100 litres and Less than 400 litres Major – More than 400 and Less than 1,000 litres Emergency - More than 1,000 litres

*If a spill is less than 100 litres and has not entered a watercourse, the Owner and/or operator do not have to report the spill but CMC will endeavour to report spills of any severity.

A **"leak"** is defined as: "Passing of a petroleum product through a breach, tear or puncture in a container, or receptacle at a rate of less than 10 litres per minute."

Please find a table of reportable spills for various substances in Appendix A.

Reporting Procedures

The following two levels of reporting is required by any individual who locates a spill or leak:

Report to a Supervisor: Refers to the direct supervisor in charge of the individual who located the spill or leak.

and,

Report to the Owner: The Owner shall immediately be given details of any leak or spill. It is the Owner's responsibility to ensure protection of human health and safety, provide directions to stop or contain spills, and report the spill (if necessary, see severity rating and notes above) to affected agencies prior to investigating the spill themselves.

Affected Agencies: Affected Agencies shall all be contacted through the 24-hour emergency spill response line at ***(867) 667-7244***.

The following information shall be conveyed to the affected agencies through the 24-hour Emergency Spill Response Line. This information should be documented on the "Spill Reporting Form" provided in Appendix B.

- Location of the Spill or Leak
  - Nearest community, town, highway, major water body, kilometre location on highway if known etc.
- Time of Spill
- Severity of Spill or Leak
  - Minor – more than 100 litres and less than 400 litres
  - Major – more than 400 litres and less than 1,000 litres
  - Emergency - more than 1,000 litres
- Type of Spill
  - Total loss/leakage
  - Overturned vehicle or tanker (plus name of transport company)
  - Ruptured tank
  - Lost drum
- Product Spilled
  - Diesel Fuel (Identify Grade)
  - Gasoline
  - Lubricant (Identify Grade)
  - Other (Identify)
- Nearest Watercourse
  - Identify by name and description the nearest watercourse, pond or lake, with an approximate distance to the spill.
  - Describe the soils conditions and direction of probable flow for the spilled product.

- Potential to enter surface water
- Fire Hazard
- Hazard to life and limb, injuries
- Environmental effect expected, if any
- Equipment and clean-up consumables on hand

Response by Affected Agencies depends upon the location of the possible spill and will vary. However, they will be co-ordinated by phoning the Emergency Response Spill Line ***(867) 667-7244***. For the purpose of this Plan, it is recommended that only one call be made to government or other agencies using the 24 hour spill line.

Other affected parties may include organizations associated with fuel supply and transport companies or local First Nations. Most major suppliers in the Yukon are members of the Transportation Emergency Assistance Plan (TEAP). One of the responsibilities of this organisation is the sharing of resources, consumables, equipment and personnel in the event of a spill. The transporter is responsible for contacting TEAP in the event of a spill.

The Canadian Transport Emergency Centre (CANUTEC), a branch of Transport Canada, can also be contacted for 24 hr technical advise on Dangerous Goods, as needed. The CANUTEC – help line for dangerous goods is **0 (613) 996-6666 (collect)**.

Emergency Spill Response Procedure

The first person on the scene is to do the following:

Ensure personal and worker safety, if you cannot identify the spilled substance consider it dangerous.

If Personnel Are Injured

-Call for medical help, attend to injured person, and administer first aid if safe to do so.

-Warn / remove bystanders

If Safe (do not enter confined spaces or expose self to fire hazard)

-Stop all sources of ignition and stop or reduce the source flow of the spill

-Shut off all valves

-Shut off all electrical power

-Initiate containment: put down sorbent pads and berm spill area, if possible

-Recover product and contaminated soil / other materials

-Remain at the site and assist with response as needed when help arrives.

If Unsafe

-Initiate evacuation (upgrade or upwind), move to safe area

-Notify Owner

-Report the following: location, initial spill site, possible cause, description of present condition, affecting or about to enter water.

-Isolate area and deny entry until qualified response personnel arrive

-Deny access to all unauthorized personnel

-Update Owner on spill status

Response for Gasoline Spills

If in water and if safe to do so:

1 Stop or reduce discharge, if safe to do so, by plugging, uprighting, adjusting valves, or other suitable method.

2 If possible, contain discharge by booming using commercial boom material, logs, or other material at hand.

3 If in rapidly flowing water, direct to quieter backwater using booms to deflect material.

4 Ensure that you have reported the spill.

5 Remove from water by skimming, using absorbents, and collect in suitable container (tanks, drums, plastic lined depression in ground or snow). **See Appendix C for a listing of typical spill response tools/equipment**.

NOTE: IN THE EVENT MATERIAL IS SPILLED DURING VERY WARM WEATHER AND THERE IS DANGER OF FIRE DUE TO FUMES, DO NOT ATTEMPT TO CONTAIN PRODUCT ON WATER. ALLOW PRODUCT TO DISPERSE AND EVAPORATE.

6. Dispose absorbents by recycling or incineration if conditions are suitable and after consultation with environmental authorities and/or forestry officials contacted through the Emergency Spill Response Line.

Response for Gasoline Spills (Cont'd)

If on land and it is safe to do so:

1 Stop, or reduce discharge if safe to do so by plugging, uprighting, adjusting valves or other suitable method.
2 Contain spill by diking with earth, snow and ice or other barrier, possible trenching or creating a lined sump down gradient from the spill source.
3 Ensure that you have reported the spill.
4 Remove fuel from containment area with pumps, vacuum equipment and place in appropriate containers. Ensure equipment intrinsically safe (does not have a source of ignition/spark).
5 Absorb residual liquid on natural or synthetic absorbents (e.g. 3M products).
6 Remove contaminated soils in the spill site to an appropriate disposal site if spill located near water supply or stream/river course or for aesthetic reasons.
7 Dispose of contaminated fuel by recycling or incineration. In situ, incineration may be possible if permission granted from environmental and forestry officials contacted through the Emergency Spill Response Line.

Response for Diesel Spills

If in water and if safe to do so:

1 Stop, or reduce discharge if safe to do so by plugging, uprighting, adjusting valves, or other suitable method.
2 If possible, contain discharge by booming using commercial boom material, logs or other material at hand.
3 If in rapidly flowing water, direct to quieter backwater using booms to deflect material.
4 Ensure that you have reported the spill.
5 Remove from water by skimming, using absorbents, and collect in suitable container (tanks, drums, plastic lined depression in ground or snow).
6 Dispose by recycling or incineration, if conditions are suitable and regulatory authorities grant permission.

Response for Diesel Spills (Cont'd)

If on land and it is safe to do so:

1 Stop or reduce discharge if safe to do so by plugging, uprighting, adjusting valves or other suitable method.

2 Contain spill by diking with earth, snow or ice or other barrier, possible trenching or creating a lined sump down gradient from the spill source.

3 Ensure that you have reported the spill.

4 Remove fuel from containment area with pumps, vacuum equipment and place in appropriate containers.

5 Absorb residual liquid on natural or synthetic absorbents (e.g. 3M products).

6 Remove contaminated soils in the spill to an appropriate disposal site if spill site is located near water supply or stream/river course or for aesthetic reasons.

7 Dispose of contaminated fuel by recycling or incineration. In site, incineration may be possible if permission granted from environmental and forestry officials.

Hazardous Materials Information

Gasoline

Characteristics
-Flammable
-Solubility in water 1 to 100 ppm
-Floats
-Flash point - 38 to -43 C

Human Health
-Moderately toxic by inhalation. Avoid prolonged exposure to fumes

Environment
-Harmful to aquatic life. Fish toxicity: 5 - 40 ppm rainbow trout

Protective Clothing
-No specific recommendations. Protective clothing is required.

Diesel

Characteristics
-Combustible/Flammable liquid
-Insoluble in water (30 ppm)
-Floats
-Flash point 52 to 96 C

Human Health
-Low toxicity by all routes

Environment
-Fish toxicity: 10 ppm rainbow trout; 2 ppm for grass shrimp

Protective Clothing
-Gloves and boots made from neoprene or butyl rubber

SPILL RESPONSE FOR PETROLEUM PRODUCTS (FUELS)

APPENDIX A

REPORTABLE SPILLS

A spill in excess of the following thresholds is considered a spill under the Yukon *Spill Regulations* (O.I.C. 1996/193), pursuant to the Environment Act. In this table, the listed regulations "Federal Regulations" means the *Transportation of Dangerous Goods Regulations* (Canada) Sor/85/77 of January 18, 1985.

Substance Spilled	TDG Code	Reportable Quantity
Explosives of Class 1 as defined in section 3.9 of the Federal Regulations.	1	Any amount
Flammable gases, of Division 1 of Class 2 as defined in section 3.11 (a) of the Federal Regulations.	2.1	Any amount of gas from a container larger than 100 L, or where the spill results from equipment failure, error or deliberate action or inaction.
Non-flammable gases of Division 2 of Class 2 as defined in section 3.11 (d) of the Federal Regulations.	2.2	Any amount of gas from a container larger than 100 L, or where the spill results from equipment failure, error or deliberate action or inaction.
Poisonous gases of Division 3 of Class 2 as defined in section 3.11(b) of the Federal Regulations.	2.3	Any amount
Corrosive gases of Division 4 of Class 2 as defined in section 3.11 (c) of the Federal Regulations.	2.4	Any amount
Flammable liquids of Class 3 as defined in section 3.12 of the Federal Regulations.	3	200 L (Any amount if spilled into a watercourse)
Flammable solids of Class 4 as defined in section 3.15 of the Federal Regulations.	4	25 kg
Products or substances that are oxidizing substances of Division 1 of Class 5 as defined in sections 3.17(a) and 3.18(a) of the Federal Regulations.	5.1	50 kg or 50 L
Products or substances that are organic compounds that contain the bivalent "-0-0-" structure of Division 2 of Class 5 as defined in sections 3.17 (b) and 3.18 (b) of the Federal Regulations.	5.2	1 kg or 1L
Products or substances that are poisons of Division 1 of Class 6 as defined in sections 3.19 (a) to (e) and 3.20 (a) of the Federal Regulations.	6.1	5 kg or 5 L
Organisms that are infectious or that are reasonable believed to be infectious and the toxins of these organisms as defined in sections 3.19(f) and 3.20(b) of the Federal Regulations.	6.2	Any amount
Radioactive materials of Class 7 as defined by section 3.24 of the Federal Regulations.	7	Any discharge or a radiation level exceeding 10 mSv/h at the package surface and 200 mSv/h at 1 m from the package surface.
Products or substances of Class 8 as defined by section 3.24 of the Federal Regulations.	8	5 kg or 5 L
Miscellaneous products or substances of Division 1 of Class 9 as defined by sections 3.27 (1) and 2 (a) of the Federal Regulations.	9	50 kg or 50 L

SPILL RESPONSE FOR PETROLEUM PRODUCTS (FUELS)

APPENDIX B

SPILL REPORTING FORM

Spill Reporting Form

1) Type: (check) Oil ____Gasoline ____Diesel ____Sewage ____

   Other (name)

2) Source (Company):

3) Severity: (check) Minor 100 – 400 litres _____ Major 400 - 1,000 litres _____
   Emergency more than 1,000 litres _____

4) Date of Incident: Time:

5) General Roadway Kilometre Mine Site Location:

6) Specifics of Location (nearest community, watercourse etc.):

7) Cause of Incident (e.g.: building failure):

8) Reason: (e.g.: earthquake):

9) Weather Conditions: ___ Wind ____ Precipitation ____
   Temperature __ Direction/Speed __ __

10) Hazards to human life or health:

11) Expected Environmental Effects:

12) Nearest Surface Water with Approximate Distance to Spill:

13) Potential to Enter Surface Water:

14) Fish Kill: Yes ___ No ___ Bird Kill: Yes ___ No ___

15) Fire Hazard:

16) Threat to drinking water:

17) Who to contact at the scene:

Company: Phone: 18) General Comments:

19) How to prevent recurrence:

20) Action taken to date: Containment:

Clean up:

Reported by: Name: Dept.: Phone: Reported to:

Name: Dept.: Phone:

SPILL RESPONSE FOR PETROLEUM PRODUCTS (FUELS)

APPENDIX C

LIST OF TYPICAL SPILL RESPONSE EQUIPMENT

List of Typical Spill Response Equipment

- **Absorbents** (For Petroleum Hydrocarbon {Fuels, Lubricants, and Solvents} and Wastewater)
  - o Booms
  - o Sheets
  - o Towels
  - o Absorbent granules
  -

- **Contaminated Soils Recovery Tools**
  - o Shovels
  - o Picks
  - o Excavators
  - o Loaders
  - o Trucks
  -

- **Liquid Recovery Tools**
  - o Pumps
  - o Containers
  - o Vacuum / Eductor Truck
  -

- **Fire Suppression Equipment**
  - o Various, for different material types

- **Personal Safety Equipment**
  - o Protective Clothing
  - o Eye Protection
  - o Breathing Apparatus

***Note:** This is by no means an exhaustive list of materials and tools that can be assembled and used for spill response.*

More information on spill response equipment and equipment suppliers can be found on the Internet. Yukon Explosives in Whitehorse is an example of a local supplier.

SILVER HART PROPERTY

PROJECT DESCRIPTION
APPLICATION FOR TYPE 'B' WATER USE LICENCE
APPLICATION FOR MINE PRODUCTION LICENCE

APPENDIX B
PRELIMINARY ACID ROCK DRAINAGE AND METALS LEACHATE TESTING RESULTS

March 2008

Prepared by:

ACCESS
CONSULTING GROUP

ENVIRONMENTAL TESTING OF TM ZONE TAILINGS, SILVER HART MINE

prepared for

CMC METALS LTD.

Project CALR-11440-001
April 13, 2007

NOTE:
This report refers to the samples as received.

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Member of the SGS Group (SGS SA)

Table of Contents

Page No.

List of Tables

Executive Summary

SGS Minerals Services (SGS) was contracted by CMC Metals Ltd. to complete environmental testing of tailings generated from locked-cycle testing (LCT) of ore samples from the TM zone in the Silver Hart mine.

Acid Base Accounting (ABA) tests completed on the LCT tailings suggested uncertain acid generation potential. Net Acid Generation (NAG) testing of the same material reported a final pH of 5.63. The equivalent of 2.3 kg H_2SO_4/ t was neutralized when back-titrated to pH 7.0.

Lead concentrations reported above *Metal Mining Effluent Regulations* (*MMER*) guideline values in both the liquid tailings effluents and leachates generated from Synthetic Precipitation Leaching Procedure (SPLP) testing of the tailings solids.

Toxicity testing indicated a LC_{50} to *Daphnia magna* of 37.6%.

Mineralogical examination and long-term humidity cell testing could be completed to confirm the acid generation and metal leaching risk associated with the LCT tailings from the TM zone.

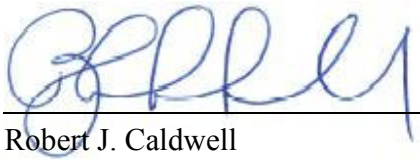
Introduction

SGS Minerals Services (SGS) was contracted by CMC Metals Ltd. to complete environmental testing of tailings generated from metallurgical testing of ore samples from the TM zone in the Silver Hart mine. A scoping-level environmental test program was completed to provide an initial assessment of the TM zone tailings acid rock drainage, metal leaching, and toxicity characteristics.

This report includes a summary of the test work completed and the results thereof.

SGS Minerals Services

Jennifer LaBelle, A.Sc.T.
Technologist, Environmental Testing



Robert J. Caldwell
Group Leader, Environmental Testing

Test Program Summary

1. Scope of Work

Samples of slurried TM locked-cycle test (LCT) tailings were received from metallurgical testing. The scope of work completed on the LCT tailings included the following:

- Modified Acid Base Accounting (ABA).
- Net Acid Generation (NAG).
- Strong Acid Digest Elemental Analysis.
- Synthetic Precipitation Leaching Procedure (SPLP) US EPA Method 1312.
- Supernatant Characterization.
- LC_{50} Toxicity Testing – *Daphnia magna*.

2. Test Methods Summaries

The test methods included in the scope of work are briefly summarized in the following sections.

2.1. Modified Acid Base Accounting

The Modified ABA test was completed to assess the sample's propensity to generate acidic drainage. The Modified ABA test provided quantification of the total sulphur, sulphide sulphur, and sulphate concentrations present and the potential acid generation (AP) related to the oxidation of the sulphide sulphur concentration. The test method determined the neutralization potential (NP) of the sample by facilitating a reaction with excess acid, then titrating to pH 8.3 with NaOH. The balance between the AP and NP assisted in defining the potential of the sample to generate acid drainage.

2.2. Net Acid Generation

The NAG test was completed to assist in determining the sample's propensity to generate acid drainage and provide confirmation of data obtained in the ABA test. The NAG test facilitates a reaction between the sample and concentrated hydrogen peroxide in order to force complete

oxidation and reaction of the acidity produced with the neutralizing minerals present within the sample.

2.3. Strong Acid Digest Elemental Analysis

The tailings samples solids were digested using an acid mixture of HNO_3, HF, $HClO_4$, and HCl to obtain a near total digest of elemental parameters of environmental interest. The inductively coupled plasma, optical emission spectroscopy/mass spectroscopy (ICP-OES/MS) metals scan was performed to provide quantitative analysis of the trace metallic components of the sample material.

2.4. Synthetic Precipitation Leaching Procedure

The EPA method 1312 SPLP was used to determine the mobility of inorganic contaminants present in waste rock and tailings materials. The extraction fluid was made by adding the 60/40 weight percent mixture of sulphuric and nitric acids to reagent water until the pH measured 4.20±0.05. The extraction fluid was added to the sample in a 20:1 liquid: solid ratio and the sample container was rotated end over end for 18 hours. The resultant slurry was then filtered on a 0.7 µm filter and analysed for general chemistry and total metals.

2.5. Liquid Effluent Analysis

A sample of the initial liquid effluents were subjected to general chemistry and total metals analysis to identify contaminant loading that may be a concern later in the project development.

2.6. Effluent Toxicity Testing

Testing was completed to determine the concentration of effluent at which 50% of *Daphnia magna* exposed would die after 48 hours (that is, the LC_{50}). Daphnids were exposed to the full-strength effluent and at least four geometrically more dilute (for example, 50%, 25%, 12.5%, and 6.3%) concentrations of the effluent. A control test of dilution water was run parallel to the test. The test solutions were warmed or cooled to 20 ± 2 °C and adjusted to hardness of ≥ 25 mg/L[1]. The sample was pre-aerated if the dissolved oxygen was <40% or >100% of air saturation, but aeration did not continue throughout the test. Daphnids were added to each solution such that

[1] *If the hardness is < 25mg/L, the sample is adjusted to a hardness of 25 to 30 mg/L by adding sodium bicarbonate, calcium sulphate, magnesium sulphate, and potassium chloride in the ratio of 1.6:1.0:1.0:0.0667.*

there were 12 daphnids per concentration and that the density of daphnids did not exceed one organism per 15 mL. General observations on the daphnids' behaviour were made when starting the exposure. The number of dead daphnids, where death is defined as being without a heartbeat, was recorded after 48 hours. The LC_{50} was statistically estimated.

Results

The results of the tests completed are presented in the following sections.

3. Modified Acid Base Accounting

Results of Modified ABA tests completed on the Silver Hart tailings are presented in Table 1 below.

Table 1 Modified ABA Test Results

Parameter	Unit	13-Mar-07 LCT Tails
Paste pH	units	6.97
Fizz Rate	---	1
Sample	weight(g)	1.99
HCl added	mL	20.00
HCl	Normality	0.10
NaOH	Normality	0.10
NaOH to pH=8.3	mL	17.30
Final pH	units	1.41
NP	t $CaCO_3$/1000 t	6.8
AP	t $CaCO_3$/1000 t	2.5
Net NP	t $CaCO_3$/1000 t	4.3
NP/AP	ratio	2.7
S	%	0.200
SO_4-S	%	0.12
Sulphide-S	%	0.08
C	%	0.173
Carbonate	%	0.040

4. Net Acid Generation Testing

NAG test results are presented in Table 2 below.

Table 2 NAG Test Results

Parameter	Unit	13-Mar-07 LCT Tails
Sample	weight(g)	2.55
vol H_2O_2	mL	250
Final pH	units	5.63
NaOH	Normality	0.10
Vol NaOH to PH 4.5	mL	0.00
Vol NaOH to PH 7.0	mL	1.20
NAG @ pH4.5	kg H_2SO_4/ t	0
NAG @ pH7.0	kg H_2SO_4/ t	2.31

5. Strong Acid Digest Elemental Analysis

Results of elemental analysis completed on the tailings solids are presented in Table 3 below.

Table 3 Elemental Analysis

Parameter	Unit	13-Mar-07 LCT Tails
Hg	g/t	< 0.1
Ag	g/t	460
Al	g/t	36000
As	g/t	340
Ba	g/t	85
Be	g/t	1.7
B	g/t	6
Ca	g/t	490
Cd	g/t	11
Co	g/t	0.84
Cr	g/t	82
Cu	g/t	820
Fe	g/t	20000
K	g/t	16000
Li	g/t	9
Mg	g/t	1200
Mn	g/t	1300
Mo	g/t	1.5
Na	g/t	520
Ni	g/t	9.1
P	g/t	180
Pb	g/t	20000
Sb	g/t	1300
Se	g/t	< 1
Sn	g/t	310
Ti	g/t	210
V	g/t	9
Zn	g/t	850

6. SPLP Leachate Analyses

Results of SPLP leachate analyses are presented in Table 4.

Table 4 SPLP Leachate Analyses

Parameter	Unit	*MMER**	13-Mar-07 LCT Tails
Sample	weight(g)		100
Ext. Fluid	#1 or #2		1
Ext. Volume	mL		2000
Initial pH	units		6.50
Final pH	units		7.06
TDS	mg/L		131
pH	units	6.0 – 9.5	6.60
EMF	mV		206
Acidity	mg/L as $CaCO_3$		nss
Alkalinity	mg/L as $CaCO_3$		7
Conductivity	µS/cm		148
F	mg/L		0.06
Cl	mg/L		< 2
SO_4	mg/L		47
NO_2	as N mg/L		< 0.6
NO_3	as N mg/L		< 0.5
Thiosalts	as S_2O_3 mg/L		< 10
CN(T)	mg/L		< 0.01
NH_3+NH_4	as N mg/L		< 0.1
Hg	mg/L		< 0.0001
Al	mg/L		0.0049
As	mg/L	0.50	< 0.0002
Ag	mg/L		< 0.0001
Ba	mg/L		0.272
Be	mg/L		< 0.0004
B	mg/L		0.030
Ca	mg/L		9.62
Cd	mg/L		0.00222
Co	mg/L		0.000911
Cr	mg/L		< 0.0003
Cu	mg/L	0.30	0.0002
Fe	mg/L		< 0.01
K	mg/L		0.88
Li	mg/L		< 0.0007
Mg	mg/L		0.235
Mn	mg/L		1.44
Mo	mg/L		< 0.00005
Na	mg/L		12.5
Ni	mg/L	0.50	0.0062
P	mg/L		< 0.01
Pb	mg/L	0.20	**0.202**
Sb	mg/L		0.0070
Se	mg/L		< 0.001
Sn	mg/L		< 0.0003
Si	mg/L		0.53
Ti	mg/L		0.0005
V	mg/L		< 0.00006
Zn	mg/L	0.50	0.0909

**Department of Justice Canada. 2002.* Metal Mining Effluent Regulations*, Fisheries Act SOR-2002-222. Updated 2004. Available Online: http://laws.justice.gc.ca/en/F-14/SOR-2002-222/119716.html*

7. Liquid Effluent Analysis

Results of tailings liquid analyses are presented in Table 5 below.

Table 5 Tailings Liquid Effluent Analyses

Parameter	Unit	*MMER**	13-Mar-07 LCT Tails
TDS	mg/L		3050
pH	units	6.0 – 9.5	8.42
EMF	mV		166
Alkalinity	mg/L as $CaCO_3$		214
Acidity	mg/L as $CaCO_3$		< 2
Conductivity	µS/cm		4150
F	mg/L		0.20
Cl	mg/L		18
SO_4	mg/L		1800
NO_2	as N mg/L		< 0.6
NO_3	as N mg/L		< 0.5
Thiosalts	as S_2O_3 mg/L		36
CN(T)	mg/L		< 0.01
NH_3+NH_4	as N mg/L		0.1
Hg	mg/L		< 0.0001
Ag	mg/L		0.00482
Al	mg/L		0.0632
As	mg/L	0.50	0.0108
Ba	mg/L		0.00537
Be	mg/L		< 0.00004
B	mg/L		0.052
Ca	mg/L		74.2
Cd	mg/L		0.00018
Co	mg/L		0.000312
Cr	mg/L		< 0.0003
Cu	mg/L	0.30	0.0138
Fe	mg/L		0.11
K	mg/L		10.5
Li	mg/L		< 0.002
Mg	mg/L		3.99
Mn	mg/L		0.458
Mo	mg/L		0.0124
Na	mg/L		905
Ni	mg/L	0.50	0.0018
P	mg/L		0.10
Pb	mg/L	0.20	**0.542**
Sb	mg/L		0.466
Se	mg/L		0.007
Si	mg/L		1.23
Sn	mg/L		0.0042
Ti	mg/L		0.0132
V	mg/L		0.00036
Zn	mg/L	0.50	0.0104

**Department of Justice Canada. 2002.* Metal Mining Effluent Regulations*, Fisheries Act SOR-2002-222. Updated 2004. Available Online:* http://laws.justice.gc.ca/en/F-14/SOR-2002-222/119716.html

8. Effluent Toxicity Test

Results of effluent toxicity tests are presented in Table 6 below.

Table 6 Toxicity Test Results - *Daphnia Magna* LC_{50}

Parameter	Unit	13-Mar-07 LCT Tails
480h LC_{50} *Daphnia Magna*	% Effluent Concentration	37.6
Mortality at 100% Effluent Concentration	% Mortality	100

Discussion

Standard approaches to the interpretation of the potential for acid generation from modified ABA test data involve examination of the Net Neutralization Potential (NP) and the NP/AP ratio. The Net NP results are expressed in metric tonnes of calcium carbonate ($CaCO_3$) per 1000 metric tonnes of material. Net NP's greater than 20 and NP/AP ratios greater than 3 are considered indicative of a low potential for acid generation. Typically, a Net NP value less than 20 and NP/AP ratios of less than 3 indicate an uncertain potential for acid rock drainage, while Net NP's below zero and NP/AP ratios less than 1 indicate a potential for acid generation.

Based on the aforementioned guidelines for ABA interpretation, the LCT Tailings have an uncertain acid generation potential with a Net NP of 4.3 t $CaCO_3$/1000 t and NP/AP of 2.7. Although the ABA test indicated an available NP of 6.8 t $CaCO_3$/1000 t, the theoretical NP available from carbonate mineralization alone is only 0.66 t $CaCO_3$/1000 t. Because carbonate minerals are typically the only minerals that can react at a fast enough rate to neutralize acidities produced in the field, the difference between the ABA test NP and theoretical carbonate NP is generally a significant factor. However, the generation of acidity is not likely due to the low level of sulphide sulphur (0.08%) found within the sample.

NAG testing completed on the LCT tailings indicated that the final pH after all acid generating minerals had oxidized and neutralizing minerals had reacted was 5.63. The equivalent of 2.3 kg H_2SO_4/ t was neutralized when back-titrated to pH 7.0. This could represent quantities of H_2SO_4 generated by the sample or acidity related to iron.

Elemental analysis of the LCT tailings indicated elevated concentrations of aluminium, iron, potassium, and lead.

Analysis of SPLP leachates generated from the LCT Tailings were compared to the Canadian federal *Metal Mining Effluent Regulations*[2] (*MMER*). Lead was the only controlled parameter measured that reported at concentrations above the guideline values.

[2] Department of Justice Canada. 2002. *Metal Mining Effluent Regulations*, Fisheries Act SOR-2002-222. Updated 2004. Available Online: http://laws.justice.gc.ca/en/F-14/SOR-2002-222/119716.html

A comparison of the liquid tailings water chemistry analysis to the *MMER* guidelines indicated that lead was the only controlled parameter that reported at concentrations above the guideline values.

Toxicity testing indicated a LC_{50} to *Daphnia magna* of 37.6%. All of the test organisms died at 100% effluent concentration.

Conclusions and Recommendations

ABA tests completed on the LCT tailings suggested uncertain acid generation potential. NAG testing of the same material reported a final pH of 5.63. The equivalent of 2.3 kg H_2SO_4/ t was neutralized when back-titrated to pH 7.0. Mineralogical examination and long-term humidity cell testing could be completed to confirm the acid generation risk associated with the LCT tailings from the TM zone.

Lead concentrations reported above *MMER* guideline values in both the liquid tailings effluents and leachates generated from SPLP testing of the tailings solids.

Toxicity testing indicated a LC_{50} to *Daphnia magna* of 37.6%.

Appendix 1 Analytical Data Tables

Water Chemistry Analysis of Tailings Supernatant

Parameter	Unit	13-Mar-07 LCT Tails Sol'n
Tot.Dissolved Solids	mg/L	3050
pH	units	8.42
EMF	mV	166
Alkalinity	mg/L as $CaCO_3$	214
Acidity	mg/L as $CaCO_3$	< 2
Conductivity	uS/cm	4150
F	mg/L	0.20
Cl	mg/L	18
SO_4	mg/L	1800
NO_2	as N mg/L	< 0.6
NO_3	as N mg/L	< 0.5
Thiosalts	as S_2O_3 mg/L	36
CN(T)	mg/L	< 0.01
NH_3+NH_4	as N mg/L	0.1
Hg	mg/L	< 0.0001
Ag	mg/L	0.00482
Al	mg/L	0.0632
As	mg/L	0.0108
Ba	mg/L	0.00537
Be	mg/L	< 0.00004
B	mg/L	0.052
Ca	mg/L	74.2
Cd	mg/L	0.00018
Co	mg/L	0.000312
Cr	mg/L	< 0.0003
Cu	mg/L	0.0138
Fe	mg/L	0.11
K	mg/L	10.5
Li	mg/L	< 0.002
Mg	mg/L	3.99
Mn	mg/L	0.458
Mo	mg/L	0.0124
Na	mg/L	905
Ni	mg/L	0.0018
P	mg/L	0.10
Pb	mg/L	0.542
Sb	mg/L	0.466
Se	mg/L	0.007
Si	mg/L	1.23
Sn	mg/L	0.0042
Ti	mg/L	0.0132
V	mg/L	0.00036
Zn	mg/L	0.0104

LIMS CA11632-MAR07

Modified Acid Base Accounting

Parameter	Unit	13-Mar-07 LCT Tails
Paste pH	units	6.97
Fizz Rate	---	1
Sample	weight(g)	1.99
HCl added	mL	20.00
HCl	Normality	0.10
NaOH	Normality	0.10
NaOH to	pH=8.3 mL	17.30
Final pH	units	1.41
NP	t $CaCO_3$/1000 t	6.8
AP	t $CaCO_3$/1000 t	2.5
Net NP	t $CaCO_3$/1000 t	4.3
NP/AP	ratio	2.7
S	%	0.200
SO_4-S	%	0.12
Sulphide-S	%	0.08
C	%	0.173
Carbonate	%	0.040

LIMS CA11633-MAR07

Net Acid Generation Test

Parameter	Unit	13-Mar-07 LCT Tails
Sample	weight(g)	2.55
vol H2O2	mL	250
Final pH	units	5.63
NaOH	Normality	0.10
Vol NaOH to PH 4.5	mL	0.00
Vol NaOH to PH 7.0	mL	1.20
NAG	@pH4.5	0
NAG	@pH7.0	2.31

LIMS CA11634-MAR07

Strong Acid Digest Elemental Analysis

Parameter	Unit	13-Mar-07 LCT Tails
Hg	µg/g	< 0.1
Ag	g/t	460
Al	µg/g	36000
As	g/t	340
Ba	g/t	85
Be	g/t	1.7
B	g/t	6
Ca	µg/g	490
Cd	g/t	11
Co	g/t	0.84
Cr	g/t	82
Cu	g/t	820
Fe	µg/g	20000
K	µg/g	16000
Li	µg/g	9
Mg	µg/g	1200
Mn	g/t	1300
Mo	g/t	1.5
Na	µg/g	520
Ni	g/t	9.1
P	ug/g	180
Pb	g/t	20000
Sb	g/t	1300
Se	g/t	< 1
Sn	g/t	310
Ti	g/t	210
V	g/t	9
Zn	g/t	850

LIMS CA11635-MAR07

Synthetic Precipitation Leaching Procedure

Parameter	Unit	13-Mar-07 LCT Tails
Sample	weight(g)	100
Ext.Fluid	#1 or #2	1
ExtVolume	ml	2000
InitialpH	units	6.50
Final pH	units	7.06
Tot.Dissolved Solids	mg/L	131
pH	units	6.60
EMF	mV	206
Acidity	mg/L as $CaCO_3$	nss
Alkalinity	mg/L as $CaCO_3$	7
Conductivity	uS/cm	148
F	mg/L	0.06
Cl	mg/L	< 2
SO_4	mg/L	47
NO_2	as N mg/L	< 0.6
NO_3	as N mg/L	< 0.5
Thiosalts	as S_2O_3 mg/L	< 10
CN(T)	mg/L	< 0.01
NH_3+NH_4	as N mg/L	< 0.1
Hg	mg/L	< 0.0001
Al	mg/L	0.0049
As	mg/L	< 0.0002
Ag	mg/L	< 0.0001
Ba	mg/L	0.272
Be	mg/L	< 0.0004
B	mg/L	0.030
Ca	mg/L	9.62
Cd	mg/L	0.00222
Co	mg/L	0.000911
Cr	mg/L	< 0.0003
Cu	mg/L	0.0002
Fe	mg/L	< 0.01
K	mg/L	0.88
Li	mg/L	< 0.0007
Mg	mg/L	0.235
Mn	mg/L	1.44
Mo	mg/L	< 0.00005
Na	mg/L	12.5
Ni	mg/L	0.0062
P	mg/L	< 0.01
Pb	mg/L	0.202
Sb	mg/L	0.0070
Se	mg/L	< 0.001
Sn	mg/L	< 0.0003
Si	mg/L	0.53
Ti	mg/L	0.0005
V	mg/L	< 0.00006
Zn	mg/L	0.0909

Toxicity Test Results* - Daphnia Magna *LC 50

Parameter	Unit	13-Mar-07 LCT Tails
48-h LC_{50} Daphnia Magna	% Effluent Concentration	37.6
Mortality at 100% Effluent Concentration	% Mortality	100

Stantec Work Order Number: 211064

Appendix 2 Laboratory Certificates of Analysis

SGS Lakefield Research Limited
P.O. Box 4300 - 185 Concession St.
Lakefield - Ontario - KOL 2HO
Phone: 705-652-2038 FAX: 705-652-6441

Project : CALR-11440-001

Environmental Met
Attn : Jenn LaBelle Project Manager

Thursday, March 22, 2007

Date Rec. : 13 March 2007
LR Report: **CA11632-MAR07**

Copy: #1

CERTIFICATE OF ANALYSIS
Final Report

Analysis	3: Analysis Approval Date	4: Analysis Approval Time	5: 13-Mar-07 LCT Tails Sol'n
Sample Date & Time			13-Mar-07 09:30
Temperature Upon Receipt [°C]	---	---	18.5
Solids (Total Dissolved) [mg/L]	16-Mar-07	13:02	3050
pH [no unit]	19-Mar-07	08:23	8.42
EMF [mV]	15-Mar-07	12:52	166
Alkalinity [mg/L as CaCO3]	21-Mar-07	15:28	214
Acidity [mg/L as CaCO3]	21-Mar-07	15:28	< 2
Conductivity [uS/cm]	21-Mar-07	15:28	4150
Fluoride [mg/L]	20-Mar-07	12:52	0.20
Chloride [mg/L]	16-Mar-07	09:39	18
Sulphate [mg/L]	15-Mar-07	11:18	1800
Nitrite (as nitrogen) [mg/L]	16-Mar-07	09:39	< 0.6
Nitrate (as nitrogen) [mg/L]	16-Mar-07	09:39	< 0.5
Thiosalts [as S2O3 mg/L]	20-Mar-07	09:51	36
Cyanide [mg/L]	15-Mar-07	14:22	< 0.01
Ammonia+Ammonium (N) [mg/L]	15-Mar-07	11:02	0.1
Mercury [mg/L]	15-Mar-07	12:26	< 0.0001
Silver [mg/L]	21-Mar-07	09:31	0.00482
Aluminum [mg/L]	21-Mar-07	09:31	0.0632
Arsenic [mg/L]	21-Mar-07	09:31	0.0108
Barium [mg/L]	21-Mar-07	09:31	0.00537
Beryllium [mg/L]	21-Mar-07	09:31	< 0.00004
Boron [mg/L]	21-Mar-07	09:31	0.052
Calcium [mg/L]	15-Mar-07	15:41	74.2
Cadmium [mg/L]	21-Mar-07	09:31	0.00018
Cobalt [mg/L]	21-Mar-07	09:31	0.000312
Chromium [mg/L]	21-Mar-07	09:31	< 0.0003
Copper [mg/L]	21-Mar-07	09:31	0.0138
Iron [mg/L]	15-Mar-07	15:41	0.11
Potassium [mg/L]	15-Mar-07	15:41	10.5

SGS Lakefield Research Limited
P.O. Box 4300 - 185 Concession St.
Lakefield - Ontario - KOL 2HO
Phone: 705-652-2038 FAX: 705-652-6441

Project : CALR-11440-001

LR Report : **CA11632-MAR07**

Analysis	3: Analysis Approval Date	4: Analysis Approval Time	5: 13-Mar-07 LCT Tails Sol'n
Lithium [mg/L]	15-Mar-07	15:41	< 0.002
Magnesium [mg/L]	15-Mar-07	15:41	3.99
Manganese [mg/L]	21-Mar-07	09:31	0.458
Molybdenum [mg/L]	21-Mar-07	09:31	0.0124
Sodium [mg/L]	19-Mar-07	07:32	905
Nickel [mg/L]	21-Mar-07	09:31	0.0018
Phosphorus [mg/L]	15-Mar-07	15:41	0.10
Lead [mg/L]	21-Mar-07	09:31	0.542
Antimony [mg/L]	21-Mar-07	09:31	0.466
Selenium [mg/L]	21-Mar-07	09:31	0.007
Silica [mg/L]	15-Mar-07	15:41	1.23
Tin [mg/L]	21-Mar-07	09:31	0.0042
Titanium [mg/L]	21-Mar-07	09:31	0.0132
Vanadium [mg/L]	21-Mar-07	09:31	0.00036
Zinc [mg/L]	21-Mar-07	09:31	0.0104

Brian Graham B.Sc.
Project Specialist
Environmental Services, Analytical

OnLine LIMS

SGS Lakefield Research Limited
P.O. Box 4300 - 185 Concession St.
Lakefield - Ontario - KOL 2HO
Phone: 705-652-2038 FAX: 705-652-6441

Modified ABA (Price 1997)

Project : CALR-11440-001

Environmental Met
Attn : Jenn LaBelle Project Manager

Monday, April 02, 2007

Date Rec. : 13 March 2007
LR Report: **CA11633-MAR07**

Copy: #1

CERTIFICATE OF ANALYSIS
Final Report

Analysis	3: Analysis Approval Date	4: Analysis Approval Time	5: 13-Mar-07 LCT Tails Solids
Sample Date & Time			13-Mar-07
Paste pH [units]	22-Mar-07	14:31	6.97
Fizz Rate [---]	22-Mar-07	14:31	1
Sample [weight(g)]	22-Mar-07	14:31	1.99
HCl added [mL]	22-Mar-07	14:31	20.00
HCl [Normality]	22-Mar-07	14:31	0.10
NaOH [Normality]	22-Mar-07	14:31	0.10
NaOH to [pH=8.3 mL]	22-Mar-07	14:31	17.30
Final pH [units]	22-Mar-07	14:31	1.41
NP [t CaCO3/1000t]	22-Mar-07	14:31	6.8
AP [t CaCO3/1000 t]	22-Mar-07	14:31	2.5
Net NP [t CaCO3/1000 t]	22-Mar-07	14:31	4.3
NP/AP [ratio]	22-Mar-07	14:31	2.7
Total Sulphur [%]	19-Mar-07	11:52	0.200
Acid Leachable SO4-S [%]	02-Apr-07	08:47	0.12
Sulphide-S [%]	02-Apr-07	08:47	0.08
Total Carbon [%]	19-Mar-07	11:52	0.173
Carbonate [%]	20-Mar-07	08:04	0.040

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*NP (Neutralization Potential)

$$= \frac{50 \times (\text{N of HCL} \times \text{Total HCL added} - \text{N NaOH} \times \text{NaOH added})}{\text{Weight of Sample}}$$

*AP (Acid Potential) = % Sulphide Sulphur x 31.25
*Net NP (Net Neutralization Potential) = NP-AP
NP/AP Ratio = NP/AP
*Results expressed as tonnes CaCO3 equivalent/1000 tonnes of material
Samples with a % Sulphide value of <0.01 will be calculated using a 0.01 value.

Sulphur analysis performed following BC ARD Guidelines (Price 1997)

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Lakefield - Ontario - KOL 2HO
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NAG Test

Project : CALR-11440-001

Environmental Met
Attn : Jenn LaBelle Project Manager

Friday, March 30, 2007

Date Rec. : 13 March 2007
LR Report: **CA11634-MAR07**

Copy: #1

CERTIFICATE OF ANALYSIS

Final Report

Analysis	3: Analysis Approval Date	4: Analysis Approval Time	5: 13-Mar-07 LCT Tails Solids
Sample Date & Time			13-Mar-07
Sample [weight(g)]	30-Mar-07	13:11	2.55
vol H2O2 [mL]	30-Mar-07	13:11	250
Final pH [units]	30-Mar-07	13:11	5.63
NaOH [Normality]	30-Mar-07	13:11	0.10
Vol NaOH to PH 4.5 [mL]	30-Mar-07	13:11	0.00
Vol NaOH to PH 7.0 [mL]	30-Mar-07	13:11	1.20
NAG [@pH4.5]	30-Mar-07	13:11	0
NAG [@pH7.0]	30-Mar-07	13:11	2.31

NAG = (49 x Vol. of base x N of base)/sample weight
kg H2SO4/tonne

Brian Graham B.Sc.
Project Specialist
Environmental Services, Analytical

OnLine LIMS

SGS Lakefield Research Limited
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Lakefield - Ontario - KOL 2HO
Phone: 705-652-2038 FAX: 705-652-6441

Project : CALR-11440-001

Environmental Met
Attn : Jenn LaBelle Project Manager

Friday, March 30, 2007

Date Rec. : 13 March 2007
LR Report: **CA11635-MAR07**

Copy: #1

CERTIFICATE OF ANALYSIS
Final Report

Analysis	3: Analysis Approval Date	4: Analysis Approval Time	5: 13-Mar-07 LCT Tails Solids
Sample Date & Time			13-Mar-07
Mercury [µg/g]	21-Mar-07	11:21	< 0.1
Silver [µg/g]	29-Mar-07	15:18	460
Aluminum [µg/g]	29-Mar-07	15:18	36000
Arsenic [µg/g]	29-Mar-07	15:18	340
Barium [µg/g]	29-Mar-07	15:18	85
Beryllium [µg/g]	29-Mar-07	15:18	1.7
Boron [µg/g]	29-Mar-07	15:18	6
Calcium [µg/g]	23-Mar-07	14:39	490
Cadmium [µg/g]	29-Mar-07	15:18	11
Cobalt [µg/g]	29-Mar-07	15:18	0.84
Chromium [µg/g]	29-Mar-07	15:18	82
Copper [µg/g]	29-Mar-07	15:18	820
Iron [µg/g]	23-Mar-07	14:39	20000
Potassium [µg/g]	23-Mar-07	14:39	16000
Lithium [µg/g]	23-Mar-07	14:39	9
Magnesium [µg/g]	23-Mar-07	14:39	1200
Manganese [µg/g]	29-Mar-07	15:18	1300
Molybdenum [µg/g]	29-Mar-07	15:18	1.5
Sodium [µg/g]	23-Mar-07	14:39	520
Nickel [µg/g]	29-Mar-07	15:18	9.1
Total Phosphorus [µg/g]	23-Mar-07	14:39	180
Lead [µg/g]	29-Mar-07	15:18	20000
Antimony [µg/g]	29-Mar-07	15:18	1300
Selenium [µg/g]	29-Mar-07	15:18	< 1
Tin [µg/g]	29-Mar-07	15:18	310
Titanium [µg/g]	29-Mar-07	15:18	210
Vanadium [µg/g]	29-Mar-07	15:18	9
Zinc [µg/g]	29-Mar-07	15:18	850

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Project : CALR-11440-001

LR Report : **CA11635-MAR07**

Brian Graham B.Sc.
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OnLine LIMS

SGS Lakefield Research Limited
P.O. Box 4300 - 185 Concession St.
Lakefield - Ontario - KOL 2HO
Phone: 705-652-2038 FAX: 705-652-6441

SPLP1312 fluid #1

Project : CALR-11440-001

Environmental Met
Attn : Jenn LaBelle Project Manager

Tuesday, April 10, 2007

Date Rec. : 13 March 2007
LR Report: **CA11636-MAR07**

Copy: #1

CERTIFICATE OF ANALYSIS

Final Report

Analysis	3: Analysis Approval Date	4: Analysis Approval Time	5: 13-Mar-07 LCT Tails Solids
Sample Date & Time			29-Mar-07
Sample [weight(g)]	29-Mar-07	14:59	100
Ext.Fluid [#1 or #2]	29-Mar-07	14:59	1
ExtVolume [ml]	29-Mar-07	14:59	2000
InitialpH [units]	29-Mar-07	14:59	6.50
Final pH [units]	29-Mar-07	14:59	7.06
Solids (Total Dissolved) [mg/L]	09-Apr-07	10:45	131
pH [no unit]	10-Apr-07	14:06	6.60
EMF [mV]	30-Mar-07	12:29	206
Acidity [mg/L as CaCO3]	10-Apr-07	14:06	nss
Alkalinity [mg/L as CaCO3]	10-Apr-07	14:06	7
Conductivity [uS/cm]	10-Apr-07	14:06	148
Fluoride [mg/L]	02-Apr-07	12:54	0.06
Chloride [mg/L]	05-Apr-07	08:36	< 2
Sulphate [mg/L]	10-Apr-07	09:53	47
Nitrite (as nitrogen) [mg/L]	05-Apr-07	08:36	< 0.6
Nitrate (as nitrogen) [mg/L]	05-Apr-07	08:36	< 0.5
Thiosalts [as S2O3 mg/L]	04-Apr-07	11:06	< 10
Cyanide [mg/L]	30-Mar-07	09:24	< 0.01
Ammonia+Ammonium (N) [mg/L]	02-Apr-07	10:55	< 0.1
Mercury [mg/L]	05-Apr-07	07:39	< 0.0001
Aluminum [mg/L]	05-Apr-07	07:39	0.0049
Arsenic [mg/L]	05-Apr-07	07:39	< 0.0002
Silver [mg/L]	05-Apr-07	07:39	< 0.0001
Barium [mg/L]	05-Apr-07	07:39	0.272
Beryllium [mg/L]	05-Apr-07	07:39	< 0.0004
Boron [mg/L]	05-Apr-07	07:39	0.030
Calcium [mg/L]	10-Apr-07	10:10	9.62
Cadmium [mg/L]	05-Apr-07	07:39	0.00222
Cobalt [mg/L]	05-Apr-07	07:39	0.000911

OnLine LIMS

SGS Lakefield Research Limited
P.O. Box 4300 - 185 Concession St.
Lakefield - Ontario - KOL 2HO
Phone: 705-652-2038 FAX: 705-652-6441

SPLP1312 fluid #1

Project : CALR-11440-001

LR Report : **CA11636-MAR07**

Analysis	3: Analysis Approval Date	4: Analysis Approval Time	5: 13-Mar-07 LCT Tails Solids
Chromium [mg/L]	05-Apr-07	07:39	< 0.0003
Copper [mg/L]	05-Apr-07	07:39	0.0002
Iron [mg/L]	10-Apr-07	10:10	< 0.01
Potassium [mg/L]	10-Apr-07	10:10	0.88
Lithium [mg/L]	05-Apr-07	07:39	< 0.0007
Magnesium [mg/L]	10-Apr-07	10:10	0.235
Manganese [mg/L]	05-Apr-07	07:39	1.44
Molybdenum [mg/L]	05-Apr-07	07:39	< 0.00005
Sodium [mg/L]	10-Apr-07	10:10	12.5
Nickel [mg/L]	05-Apr-07	07:39	0.0062
Phosphorus [mg/L]	10-Apr-07	10:10	< 0.01
Lead [mg/L]	05-Apr-07	07:39	0.202
Antimony [mg/L]	05-Apr-07	07:39	0.0070
Selenium [mg/L]	05-Apr-07	07:39	< 0.001
Tin [mg/L]	05-Apr-07	07:39	< 0.0003
Silica [mg/L]	10-Apr-07	10:10	0.53
Titanium [mg/L]	05-Apr-07	07:39	0.0005
Vanadium [mg/L]	05-Apr-07	07:39	< 0.00006
Zinc [mg/L]	05-Apr-07	07:39	0.0909

Brian Graham B.Sc.
Project Specialist
Environmental Services, Analytical

OnLine LIMS

Stantec Consulting Ltd.
11B Nicholas Beaver Road RR3
Guelph ON N1H 6H9
Tel: (519) 763-4412 Fax: (519) 763-4419
stantec.com

TOXICITY TEST REPORT
Daphnia magna

Stantec

Work Order : 211064
Sample Number : 18124

SAMPLE IDENTIFICATION

Company :	SGS Lakefield Research Limited	Time Collected :	09:30
Location :	Lakefield ON	Date Collected :	2007-03-13
Substance :	11440-LCT Tails	Date Received :	2007-03-14
Sampling Method :	Composite	Date Tested :	2007-03-14
Sampled By :	J. LaBelle	Temp. on arrival :	11.0° C
Sample Description:	Cloudy, gray, mild odour.		

Test Method : Reference Method for Determining Acute Lethality of Effluents to *Daphnia magna.* Environment Canada EPS 1/RM/14 (Second Edition, December 2000).

TEST RESULTS

Effect	Value	95% Confidence Limits	Slope	Calculation Method
48-h LC50	37.6%	29.8-46.9	-	Probit

The results reported relate only to the sample tested.

SODIUM CHLORIDE REFERENCE TOXICANT DATA

Organism Batch :	Dm07-05		
Date Tested (y/m/d) :	2007-03-13	Historical Mean LC50 :	6.5 g/L
LC50 (95% Confidence Limits) :	6.4 g/L (6.0 - 6.7)	Warning Limits (± 2SD) :	5.8 - 7.3 g/L
Statistical Method :	Probit	Analyst(s) :	AS

Daphnia magna CULTURE HEALTH DATA

Time to First Brood :	8.6 days	Mean Young Per Brood :	30.7
Culture Mortality :	0 % (previous 7 days)		

TEST CONDITIONS

Sample Treatment :	None	Number of Replicates :	4
pH Adjustment :	None	Test Organisms / Replicate :	3
Test Aeration :	None	Total Organisms / Test Level :	12
Organism Batch :	Dm07-05	Organism Loading Rate :	16.7 mL/organism

Date: 2007-03-21

Approved by: _____
Project Manager

Daphnia magna TOXICITY TEST REPORT

Work Order: 211064
Sample Number: 18124

	Hardness (mg/L as $CaCO_3$)	Hardness Adjustment	pH	D.O. (mg/L)	Cond. (µs)	Temp. (°C)	O_2 Sat. (%)*	Total Pre-Aeration Time (h) @ 30 mL/min/L
Initial Water Chemistry:	220	None	8.4	8.6	4130	20.5	99	0:00

0 hours

Date & Time 2007-03-14 14:05
Technician: JP

Test Conc. (%)	Mortality	Immobility	pH	D.O.	Cond.	Temp.	O_2 Sat. (%)*	Hardness
100	0	0	8.4	8.6	4130	20.5	99	220
50	0	0	8.4	8.2	2354	21.0		
25	0	0	8.4	8.2	1391	21.0		
12.5	0	0	8.4	8.1	895	21.0		
6.25	0	0	8.3	8.2	639	21.0		
Control	0	0	8.4	8.5	404	21.0	99	190

Notes:

24 hours

Date & Time 2007-03-15 14:05
Technician: JP

Test Conc. (%)	Mortality	Immobility	pH	D.O.	Cond.	Temp.
100	0	12	–	–	–	21.0
50	0	6	–	–	–	21.0
25	0	0	–	–	–	21.0
12.5	0	0	–	–	–	21.0
6.25	0	0	–	–	–	21.0
Control	0	0	–	–	–	21.0

Notes:

48 hours

Date & Time 2007-03-16 14:05
Technician: FS

Test Conc. (%)	Mortality	Immobility	pH	D.O.	Cond.	Temp.
100	12	0	8.6	8.0	4100	21.0
50	10	2	8.5	8.3	2333	21.0
25	1	8	8.5	8.4	1340	21.0
12.5	0	0	8.5	8.7	860	21.0
6.25	0	0	8.4	8.8	633	21.0
Control	0	0	8.6	8.9	402	21.0

Notes:

# of control organisms showing stress: 0
Daphnia Batch #: Dm07-05

Number immobile does not include number of mortalities.

– = not measured
* adjusted for actual temp. & barometric pressure

Test Data Reviewed By: JP
Date: 2007-03-17

CHAIN OF CUSTODY RECORD

Stantec

Stantec Work Order No:

Shipping Address: Stantec Consulting Ltd.
11B Nicholas Beaver Road, RR #3
Guelph, Ontario Canada N1H 6H9

Voice: (519) 763-4412 **Fax:** (519) 763-4419

P.O. Number: TBC.
Field Sampler Name (print): -NA-
Signature: J. LaBelle
Affiliation: SGS (Lakefield)
Sample Storage (prior to shipping): ambient.
Custody Relinquished by: Jennifer LaBelle.
Date/Time Shipped: 13-Mar-07

Client: SGS Canada Inc - Lakefield
P.O. Box 4300, 185 Concession St.
Lakefield, Ontario, Canada K0L 2H0

Phone: 705-652-2148
Fax: 705-652-6365
Contact: Jennifer LaBelle

Sample Identification					Analyses Requested									Sample Method and Volume		
Date Collected (yyyy-mm-dd)	Time Collected (e.g. 14:30, 24 hr clock)	Sample Name	Stantec Sample Number	Temp. on arrival	Rainbow Trout Single Concentration	Rainbow Trout LC50	*Daphnia magna* Single Concentration	*Daphnia magna* LC50	Fathead Minnow Survival & Growth	*Ceriodaphnia dubia* Survival & Reproduction	*Lemna minor* Growth	*Selenastrum capricornutum* Growth	Other (please specify below)	Grab	Composite	# of Containers and Volume (eg. 2 x 1L, 3 x 10L, etc.)
2007-03-13	09:30	11440 - LCT Tails	19424	11.0				X							✓	1 x 20L

For Lab Use Only
Received By: MK
Date: 2007-03-14
Time: 1115
Storage Location:
Storage Temp.(°C)

SC 2007-03-14

Please list any special requests or instructions:

Quotation No.: 62702253-07 (S. Kirkpatrick)

Appendix 3 Chain of Custody Forms

SGS Lakefield Research Limited
Environmental Services

Request for Laboratory Services and Chain of Custody Form

P.O. Box 4300, 185 Concession St., Lakefield, ON. K0L 2H0, Phone (705) 652-2038, Fax (705) 652-6441

No 11440-001-01

Report Results to:	Name: Jenn LaBelle	LRL LIMS No.: Mar 13 07
	Company: SGS	Received by (Date & Time):
	Address:	Logged in by (Date):
	City	Lab Batch ID:
	Province, Postal Code	Project No.: CALR-11440-001
	Telephone Number: 2148 Fax:	Plant No.:
Send Invoice to:	Name: as above	Quote No.:
	Company:	Purchase Order No.:
	Address:	TAT (Turnaround Time) * Some exceptions apply, please contact lab
	City	Standard [X] RUSH [ ] Specify Date:
	Province, Postal Code	Time:
	Telephone Number: Fax:	**PLEASE CONTACT LAB PRIOR TO SUBMITTING RUSH PROJECTS**
Chain of Custody	Sampled by: J. LaBelle	Sample condition upon receipt: 11633 11633 11634 11635 11636 18.5
	Packed and Shipped by: Date /Time:	
	Shipment Method and WB#: Date /Time:	Temperature upon receipt: °C

Please specify any guideline or regulation that these samples may apply(I.e. ODWS, PWQO, Reg 558, GCSO, MISA, MMER, CBWA).

Guideline: **Regulation:** **initial:**

Liquid Effluent Analyses: pH, Eh (redox), acidity, alkalinity, conductivity, sulphate, chloride, nitrate, nitrite, flouride, total thiosalts, CNt, ammonia, TDS. Total metals by ICP-MS/OES: Ag, Al, As, B, Ba, Be, Ca, Cd, Co, Cr, Cu, Fe, Hg (CVAAS), Li, Mg, Mn, Mo, Na, Ni, Pb, P, K, Sb, Sn, Se, Si, Ti, V, Zn.

Analysis Requested (X) as Required
(Enter an "X" in the boxes to indicate which request(s) apply to each sample)

	Sample Matrix*	Sample Identifier	No. Bottles	Date Sampled	Time Sampled	Liquid Effluent Analysis	Modified ABA	NAG	Strong Acid ICP MS (see suite A)	SPLP pH 4.2 (Liquid effluent suite on leachate)		
1		13-Mar-07 LCT Tails Soln	3	Mar 13/07	09:30	X						
2		13-Mar-07 LCT Tails Solids	11	↓			X	X	X	X		
3												
4												
5												
6												
7												
8												
9												
10												

* **Matrix Codes:** GW-ground water, SW-surface water, RES -Residential Water, EFF -Effluent, PROC -Process Water, SOIL -Soil, SED-Sediment, SWAB-Swabs, FILT-Filters

* **Regulated Water Codes:** GRW-ground raw water, SRW-surface raw water, TDW-Treated Drinking Water, DDW-Distribution Drinking Water

Work Authorized by(Client or representative signature must accompany request): J. LaBelle **Date:** 13-Mar-07

Part No. CofC-2(Email/Fax Copy)

Appendix 4 Qualifications and Limitations

SGS Lakefield Research Limited – Qualifications and Limitations

Limited Warranty

In performing work on behalf of a client, SGS Lakefield relies on its client to provide instructions on the scope of its retainer and, on that basis, SGS Lakefield determines the precise nature of the work to be performed. SGS Lakefield undertakes all work in accordance with applicable accepted industry practices and standards. Unless required under local laws, other than as expressly stated herein, no other warranties or conditions, either expressed or implied, are made regarding the services, work or reports provided.

Reliance on Materials and Information

The findings and results presented in reports prepared by SGS Lakefield are based on the materials and information provided by the client to SGS Lakefield and on the facts, conditions and circumstances encountered by SGS Lakefield during the performance of the work requested by the client. In formulating its findings and results into a report, SGS Lakefield assumes that the information and materials provided by the client or obtained by SGS Lakefield from the client or otherwise are factual, accurate and represent a true depiction of the circumstances that exist. SGS Lakefield relies on its client to inform SGS Lakefield if there are changes to any such information and materials. SGS Lakefield does not review, analyze or attempt to verify the accuracy or completeness of the information or materials provided, or circumstances encountered, other than in accordance with applicable accepted industry practice. SGS Lakefield will not be responsible for matters arising from incomplete, incorrect or misleading information or from facts or circumstances that are not fully disclosed to or that are concealed from SGS Lakefield during the provision of services, work or reports.

Facts, conditions, information and circumstances may vary with time and locations and SGS Lakefield's work is based on a review of such matters as they existed at the particular time and location indicated in its reports. No assurance is made by SGS Lakefield that the facts, conditions, information, circumstances or any underlying assumptions made by SGS Lakefield in connection with the work performed will not change after the work is completed and a report is submitted. If any such changes occur or additional information is obtained, SGS Lakefield should be advised and requested to consider if the changes or additional information affect its findings or results.

When preparing reports, SGS Lakefield considers applicable legislation, regulations, governmental guidelines and policies to the extent they are within its knowledge, but SGS Lakefield is not qualified to advise with respect to legal matters. The presentation of information regarding applicable legislation, regulations, governmental guidelines and policies is for information only and is not intended to and should not be interpreted as constituting a legal opinion concerning the work completed or conditions outlined in a report. All legal matters should be reviewed and considered by an appropriately qualified legal practitioner.

Site Assessments

A site assessment is created using data and information collected during the investigation of a site and based on conditions encountered at the time and particular locations at which fieldwork is conducted. The information, sample results and data collected represent the conditions only at the specific times at which and at those specific locations from which the information, samples and data were obtained and the information, sample results and data may vary at other locations and times. To the extent that SGS Lakefield's work or report considers any locations or times other than those from which information, sample results and data was specifically received, the work or report is based on a reasonable extrapolation from such information, sample results and data but the actual conditions encountered may vary from those extrapolations.

Only conditions at the site and locations chosen for study by the client are evaluated; no adjacent or other properties are evaluated unless specifically requested by the client. Any physical or other aspects of the site chosen for study by the client, or any other matter not specifically addressed in a report prepared by SGS Lakefield, are beyond the scope of the work performed by SGS Lakefield and such matters have not been investigated or addressed.

No Reliance

SGS Lakefield's services, work and reports are provided solely for the exclusive use of the client which has retained the services of SGS Lakefield and to which its reports are addressed. SGS Lakefield is not responsible for the use of its work or reports by any other party, or for the reliance on, or for any decision which is made by any party using the services or work performed by or a report prepared by SGS Lakefield without SGS Lakefield's express written consent. Any party that relies on services or work performed by SGS Lakefield or a report prepared by SGS Lakefield without SGS Lakefield's express written consent, does so at its own risk. No report of SGS Lakefield may be disclosed or referred to in any public document without SGS Lakefield's express prior written consent. SGS Lakefield specifically disclaims any liability or responsibility to any such party for any loss, damage, expense, fine, penalty or other such thing which may arise or result from the use of any information, recommendation or other matter arising from the services, work or reports provided by SGS Lakefield.

Limitation of Liability

SGS Lakefield is not responsible for any lost revenues, lost profits, cost of capital, or any special, indirect, consequential or punitive damages suffered by the client or any other party in reliance on any SGS Lakefield work or report. SGS Lakefield's total liability and responsibility to the client or any other person for any and all losses, costs, expenses, damages, claims, causes of action or other liability whatsoever which do or may result or arise from or be in relation to SGS Lakefield's services, work (or failure to perform services or work) or reports shall be limited to the invoiced charges for the work performed by SGS Lakefield.

Fiscal Allowances in Canada for Organizations Conducting Experimental Research

SGS Lakefield may apply to CCRA (Canada Customs and Revenue Agency) for fiscal allowances permitted to Canadian laboratories undertaking accreditable experimental research and development within Canada. The high success rate of SGS Lakefield in meeting the technological objectives of its clients and in providing quality experimental work and results requires it to undertake internal experimental research. This is done to perfect its technological approaches and methodology, as well as overcome unanticipated or unavoidable technical challenges that occur in the course of much work undertaken for its clients.

It is implicit in this contract that the experimental work performed by SGS Lakefield may sometimes be cited, in an anonymous manner, for the purpose of requesting fiscal credits for risks assumed by SGS Lakefield Research in the course of performing services for its clients.

Notwithstanding the presence of an obligatory agreement of confidentiality between CCRA and SGS Lakefield any information used by the latter to support claims for the assumption of risk in experimental research, will be presented in an anonymous form. For example, no mention will be made of the names of companies, ore bodies or proprietary processes in these claims. Throughout this process, SGS Lakefield will fully respect the trust and the agreements of confidentiality that exist with all of its clients.

SILVER HART PROPERTY

PROJECT DESCRIPTION
APPLICATION FOR TYPE 'B' WATER USE LICENCE
APPLICATION FOR MINE PRODUCTION LICENCE

APPENDIX C
VEGETATION SURVEY RESULTS

March 2008

Prepared by:

ACCESS
CONSULTING GROUP

Vascular plant species observed at the CMC Metals Ltd project area during September 2006 survey

Closed Alpine Fir

Abies lasiocarpa	Alpine Fir
Achillea millefolium	Common Yarrow
Agoseris aurantiaca	Mountain Dandelion
Alnus crispa	Mountain Alder
Arnica chamissonis	Meadow Arnica
Artemisia norvegica	Mountain Sagewort
Betula glandulosa	Shrub Birch
Calamagrostis canadensis	Blue-joint Reed-grass
Cornus canadensis	Bunchberry
Empetrum nigrum	Crowberry
Epilobium angustifolium	Fireweed
Epilobium latifolium	Broad-leaved Willowherb
Equisetum arvense	Common Horsetail
Erigeron sp.	Fleabane
Festuca altaica	Northern Rough Fescue
Hierochloe alpine	Alpine Holy Grass
Juncus drummondii	Drummond's Rush
Juncus mertensianus	Merten's Rush
Abies lasiocarpa	Alpine Fir
Ledum groenlandicum	Labrador Tea
Lupinus arcticus	Arctic Lupine
Oxytropis campestris	Field Locoweed
Petasites frigidus	Sweet Coltsfoot
Picea glauca	White Spruce
Pinus contorta	Lodgepole Pine
Poa alpina	Alpine Bluegrass
Populus balsamifera	Balsam Poplar
Ribes hudsonianum	Black Currant
Rosa acicularis	Prickly Rose
Rubus idaeus	Raspberry
Salix bebbiana	Bebb's Willow
Salix glauca	Grey-leaved Wilow
Salix richardsonii	Richardson's Willow
Viburnum edule	Highbush Cranberry

Open Alpine Fir

Abies lasiocarpa	Alpine Fir
Arnica chamissonis	Meadow Arnica
Artemisia norvegica	Mountain Sagewort
Betula glandulosa	Shrub Birch
Calamagrostis canadensis	Blue-joint Reed-grass
Carex podocarpa	Graceful Mountain Sedge
Cassiope tetragona	Arctic White Heather
Empetrum nigrum	Crowberry
Eriophorum sp.	Cotton-grass
Festuca altaica	Northern Rough Fescue
Hieraceum triste	Mourning Hawkweed
Hierochloe alpina	Alpine Holy Grass
Juncus drummondii	Drummond's Rush
Juncus mertensianus	Merten's Rush

Luetkea pectinata	Partridgefoot
Luzula arcuata	Curved Alpine Woodrush
Lycopodium alpinum	Alpine Club-moss
Phleum alpinum	Alpine Timothy
Picea glauca	White Spruce
Pinus contorta	Lodgepole Pine
Salix barrattiana	Barratt's Willow
Salix glauca	Grey-leaved Willow
Salix polaris	Snow-bed Willow
Sanguisorba canadensis	Canadian Burnet
Senecio triangularis	Arrow-leaved Groundsel
Sibbaldia procumbens	Sibbaldia
Solidago multiradiata	Northern Goldenrod
Trisetum spicatum	Spike Trisetum

Dwarf Alpine Fir

Abies lasiocarpa	Alpine Fir
Luetkea pectinata	Partridgefoot
Betula glandulosa	Shrub Birch
Empetrum nigrum	Crowberry
Phyllodoce empetriformis	Pink Mountain Heather
Rubus pedatus	Five-leaved Bramble
Vaccinium caespitosum	Dwarf Bilberry

Alpine Shrub

Abies lasiocarpa	Alpine Fir
Arctostaphylos alpina	Alpine Bearberry
Artemisia norvegica	Mountain Sagewort
Betula nana	Dwarf Birch
Calamagrostis canadensis	Blue-joint Reed-grass
Carex sp.	Sedge
Cassiope tetragona	Arctic White Heather
Dryas integrifolia	Smooth-leaved Dryas
Empetrum nigrum	Crowberry
Epilobium angustifolium	Fireweed
Festuca altaica	Northern Rough Fescue
Festuca brach yphylla	Sheep Fescue
Lupinus arcticus	Arctic Lupine
Lycopodium alpinum	Alpine Club-moss
Lycopodium selago	Mountain Club-moss
Minuartia rubella	Boreal Sandwort
Picea glauca	White Spruce
Pinus contorta	Lodgepole Pine
Poa alpina	Alpine Bluegrass
Poa arctica	Arctic Bluegrass
Trisetum spicatum	Spike Trisetum
Potentilla hyparctica	Arctic Cinquefoil
Salix glauca	Grey-leaved Willow
Salix polaris	Snow-bed Willow
Salix reticulata	Net-veined Willow
Saxifraga sp.	Saxifrage
Senecio yukonensis	Yukon Groundsel
Silene acaulis	Moss campion
Vaccinium caespitosum	Dwarf Bilberry
Vaccinium vitis-idaea	Lingonberry

SILVER HART PROPERTY

PROJECT DESCRIPTION
APPLICATION FOR TYPE 'B' WATER USE LICENCE
APPLICATION FOR MINE PRODUCTION LICENCE

APPENDIX D
MOOSE AND CARIBOU POST RUT SURVEY RESULTS

March 2008

Prepared by:

ACCESS
CONSULTING GROUP

Wildlife Survey – CMC Metals

December, 2006

Helicopter: Bell 206 C-FG/U Pilot Doug Hladun

Observers: Paul Inglis, Grant Lortie

Helicopter Time: 10:10-11:07
11:26-12:08

Survey Time: 2 hours

Observation conditions: Good – very good,
broken overcast 7500' ASL
Wind West, 15-20 mph
New light snowfall overnight

Results and Discussion:
No evidence of recent moose activity was found on the CMC block of claims or the adjacent Archer Cathro and Associates claim block. Moose were found in mid to upper reaches of tributary streams flowing into and north of Meister River and one observation in the lower unnamed creek discharge into Northwind Lake, west of the CMC Property (see Figure XXX and Table XXX).

Caribou or their sign were not encountered on this survey.
Evidence (tracks) of furbearers (marten, lynx, fox, and wolverine) were absent, as was sign of prey species such as snowshoe hare and ptarmigan.

Prevailing weather conditions (3-4 inches of snow over night and drifting snow at higher elevations) may have eradicated small animal sign in the area. However, protected areas at lowere elevations were devoid of small animal activity as well. Below Northwind Lake, the fresh track of a river otter was observed on the upper Rancheria River.

Waypoint/ species	Mature Female	Calf	Mature Male	Immature Female	Immature Male	Track	Group Size	Notes
001								Edgar Lake
002 M						1 Old		
003 M						1 Old		
004 M	1	1					2	
005 M			1				1	
006 M						1 Old		
007								Camp-Weather Station
008 M						1 Old		
009 M			2				2	
010 M	1	1	1		1	Burn	4	
011 Otter						Fresh		Track on stream ice
Moose	1	2					3	At junction of access road and Alaska Highway

SILVER HART PROPERTY

PROJECT DESCRIPTION
APPLICATION FOR TYPE 'B' WATER USE LICENCE
APPLICATION FOR MINE PRODUCTION LICENCE

APPENDIX E
WATER AND SEDIMENT QUALITY TESTING RESULTS

March 2008

Prepared by:

ACCESS
CONSULTING GROUP

Sample Description:				CMC-01			CMC-02		CMC-03				CMC-03a			CMC-04			CMC-05		
Norwest Labs Number:		Detection Limits	CCME Guidelines for Freshwater Aquatic Life	491618-1	496018-10	569012-21	491618-2	496018-12	491618-3	496018-9	569012-2	569012-9	491618-3	496018-8	569012-3	491618-4	496018-7	569012-13	491618-5	496018-5	569012-13
Collected by:				PI	CSF	PI	PI	CSF	PI	PI	PI	PI	PI	CSF	PI	PI	CSF	PI	PI	CSF	PI
Sample Date:				06-Sep-06	22-Sep-06	21-Aug-07	06-Sep-06	22-Sep-06	06-Sep-06	22-Sep-06	21-Aug-07	21-Aug-07	06-Sep-06	22-Sep-06	21-Aug-07	07-Sep-06	22-Sep-06	21-Aug-07	########	22-Sep-06	21-Aug-07
Matrix:				Water	Water	Water	Water	Water	Water	Water	Water	Water	Water	Water	Water	Water	Water	Water	Water	Water	Water
Parameter	**Unit**																				
Internal Anaylsis																					
pH			6.5 - 9.0	7.6	7.1		7.5	7.4	7.9	7.8			7.8	7.9		7.9	8		7.9	8.1	
Temperature C	C			N/R	8.3		N/R	7.0	N/R	5.1			N/R	4.7		9.8	7.8		11.8	7.3	
Conductivity	µS/cm			110.1	106.3		95.7	101.8	112.4	123.5			116.8	126.9		107.9	108.8		104	100.6	
Total Dissolved Solids	mg/L			54.8	53.2		48.7	50.6	56.5	61.7			59.3	63.5		50.3	54.4		51.7	50.3	
Flow	m3/s			3.82	3.001		0.009	0.005	0.043	0.048			0.015	0.012		Too high	2.785		Too high	7.771	
Dissolved Oxygen	mg/L		5.5 - 9.5	8.02	8.57		8.00	8.49	7.89	8.63			7.97	8.66		9.46	9.15		8.68	9.64	
External Anaylsis Metals Dissolved (Trace)																					
Silicon	mg/L			2.73	2.94	3.25	3.63	3.71	4.06	4.32	4.76	2.96	4.21	4.47	4.76	2.75	2.91	3.21	2.71	2.92	3.15
Sulfur	mg/L			2.4	2.2	2.3	1.6	1.7	2.8	2.9	3.4	1.1	3.7	3.7	3.4	2.3	2.3	2.3	2.2	1.8	2.1
Aluminum	mg/L			0.011	0.006	0.025	0.01	<0.005	0.018	0.005	0.023	0.026	0.016	0.008	0.023	0.012	0.005	0.025	0.011	<0.005	0.031
Antimony	mg/L			<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002
Arsenic	mg/L			0.0002	0.0003	0.0002	0.0011	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	0.0002	0.0003	<0.0002	0.0002	0.0003	0.0002
Barium	mg/L			0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Beryllium	mg/L			<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001
Bismuth	mg/L			<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005
Boron	mg/L			0.003	<0.002	<0.002	<0.002	<0.002	<0.002	<0.002	<0.002	<0.002	<0.002	<0.002	<0.002	<0.002	<0.002	<0.002	<0.002	<0.002	<0.002
Cadmium	mg/L			<0.00001	<0.00001	<0.00001	<0.00001	<0.00001	0.00002	0.00003	0.00001	<0.00001	0.00001	0.00001	0.00001	<0.00001	<0.00001	<0.00001	<0.00001	<0.00001	<0.00001
Chromium	mg/L			<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	0.0029	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005
Cobalt	mg/L			<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001
Copper	mg/L			<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001
Lead	mg/L			0.0001	<0.0001	0.0001	0.0013	<0.0001	0.0002	<0.0001	<0.0001	<0.0001	0.0001	<0.0001	<0.0001	0.0002	0.0001	<0.0001	0.0005	<0.0001	<0.0001
Lithium	mg/L			0.002	0.002	0.001	0.002	0.002	0.002	0.002	0.002	<0.001	0.002	0.003	0.002	0.002	0.002	0.001	0.002	0.002	0.001
Molybdenum	mg/L			<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	0.001	0.001	0.003	<0.001	0.003	0.003	0.003	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001
Nickel	mg/L			<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	0.001	0.0006	<0.0005	<0.0005	<0.0005	0.0006	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005
Selenium	mg/L			<0.0002	0.0004	<0.0002	<0.0002	0.0002	<0.0002	0.0004	<0.0002	<0.0002	<0.0002	0.0002	<0.0002	<0.0002	0.0003	<0.0002	<0.0002	0.0004	<0.0002
Silver	mg/L			<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001
Strontium	mg/L			0.097	0.097	0.098	0.055	0.05	0.088	0.087	0.114	0.083	0.12	0.122	0.114	0.099	0.097	0.1	0.104	0.104	0.109
Thallium	mg/L			<0.00005	<0.00005	<0.00005	<0.00005	<0.00005	<0.00005	<0.00005	<0.00005	<0.00005	<0.00005	<0.00005	<0.00005	<0.00005	<0.00005	<0.00005	<0.00005	<0.00005	<0.00005
Tin	mg/L			<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001
Titanium	mg/L			<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	0.0011	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	0.0006
Uranium	mg/L			0.0009	0.0009	0.0009	<0.0005	<0.0005	0.0005	0.0006	<0.0005	0.0011	<0.0005	0.0006	<0.0005	0.0009	0.0009	0.0009	0.0009	0.0009	0.001
Vanadium	mg/L			0.0004	0.0001	0.0005	0.0003	<0.0001	0.0002	<0.0001	0.0004	0.0002	0.0003	0.0001	0.0004	0.0003	0.0001	0.0004	0.0003	0.0002	0.0004
Zinc	mg/L			0.001	0.003	0.007	0.002	0.002	0.004	0.004	0.007	0.006	0.004	0.004	0.007	0.002	0.003	0.006	0.002	0.003	0.004
Metals Total (Trace)																					
Calcium	mg/L			17	17	16.5	15	16	18	20.3	17.4	7.7	18	20.2	17.4	17	17	17.4	16	18	16.9
Iron	mg/L	0.1-0.2	0.3	<0.2	<0.2	<0.1	<0.2	<0.2	<0.2	<0.2	<0.1	<0.1	<0.2	<0.2	<0.1	<0.2	<0.2	<0.1	<0.2	<0.2	<0.1
Magnesium	mg/L			1	1	1.1	0.8	0.9	0.8	1	1.7	0.8	1	2	1.7	1	1	1.2	1	1	1.1
Manganese	mg/L			<0.01	<0.01	<0.005	<0.01	<0.01	<0.01	<0.01	<0.005	0.008	<0.01	<0.01	<0.005	<0.01	<0.01	<0.005	<0.01	0.023	<0.005
Potassium	mg/L			<0.8	<0.8	0.5	1	1	<0.8	<0.8	0.6	<0.4	<0.8	<0.8	0.6	<0.8	<0.8	0.5	<0.8	<0.8	0.5
Silicon	mg/L			2.87	2.38	3.12	3.66	3.08	4.13	3.23	4.76	2.81	4.46	4.19	4.76	2.97	2.71	3.13	2.82	2.36	3.02
Sodium	mg/L			1	1	1.3	1	1	1	1	2	1.5	1	1	2	1	1	1.4	1	1	1.4
Sulfur	mg/L			2.3	2	2.3	1	2	2.6	2.7	3.3	1.1	3.5	3.5	3.3	2.3	2.2	2.3	2.2	2.1	2.2
Mercury	mg/L					<0.02					<0.02	<0.02			<0.02			<0.02			<0.02
Aluminum	mg/L		0.1 [a]	0.02	0.025	0.036	0.01	0.01	0.021	0.02	0.168	0.038	0.024	0.02	0.168	0.023	0.022	0.056	0.02	0.02	0.036
Antimony	mg/L			<0.0004	<0.0004	<0.0002	<0.0004	<0.0004	<0.0004	<0.0004	<0.0002	<0.0002	<0.0004	<0.0004	<0.0002	<0.0004	<0.0004	<0.0002	<0.0004	<0.0004	<0.0002
Arsenic	mg/L	0.0004	0.005	<0.0004	<0.0004	<0.0002	<0.0004	<0.0004	<0.0004	<0.0004	<0.0002	<0.0002	<0.0004	<0.0004	<0.0002	<0.0004	<0.0004	<0.0002	<0.0004	<0.0004	<0.0002
Barium	mg/L			0.009	0.01	0.009	0.004	0.005	0.004	0.005	0.01	0.006	0.006	0.006	0.01	0.009	0.009	0.01	0.008	0.01	0.009
Beryllium	mg/L			<0.0002	<0.0002	<0.0001	<0.0002	<0.0002	<0.0002	<0.0002	<0.0001	<0.0001	<0.0002	<0.0002	<0.0001	<0.0002	<0.0002	<0.0001	<0.0002	<0.0002	<0.0001
Bismuth	mg/L			<0.001	<0.001	<0.0005	0.002	<0.001	<0.001	<0.001	<0.0005	<0.0005	<0.001	<0.001	<0.0005	<0.001	<0.001	<0.0005	<0.001	<0.001	<0.0005
Boron	mg/L			<0.004	<0.004	<0.002	<0.004	<0.004	<0.004	<0.004	<0.002	0.002	<0.004	<0.004	<0.002	<0.004	<0.004	<0.002	<0.004	<0.004	<0.002
Cadmium	mg/L	0.00001-0.00002	0.000017 [a]	<0.00002	<0.00002	<0.00001	<0.00002	<0.00002	<0.00002	<0.00002	0.00001	<0.00001	<0.00002	<0.00002	0.00001	<0.00002	<0.00002	<0.00001	<0.00002	<0.00002	<0.00001
Chromium	mg/L	0.0005-0.001	0.001 [a]	<0.001	<0.001	<0.0005	<0.001	<0.001	<0.001	<0.001	0.0055	<0.0005	<0.001	<0.001	0.0055	0.001	<0.001	0.0005	<0.001	<0.001	<0.0005
Cobalt	mg/L			<0.0002	<0.0002	0.0001	<0.0002	<0.0002	<0.0002	<0.0002	0.0003	0.0002	<0.0002	<0.0002	0.0003	<0.0002	<0.0002	0.0002	<0.0002	<0.0002	<0.0001
Copper	mg/L	0.002	0.002 - 0.004 [b]	<0.002	<0.002	<0.001	<0.002	<0.002	<0.002	<0.002	<0.001	<0.001	<0.002	<0.002	<0.001	<0.002	<0.002	<0.001	<0.002	<0.002	<0.001
Lead	mg/L	0.0002	0.001 - 0.007 [b]	<0.0002	<0.0002	<0.0001	<0.0002	<0.0002	<0.0002	<0.0002	0.0002	<0.0001	<0.0002	<0.0002	0.0002	<0.0002	<0.0002	<0.0001	<0.0002	<0.0002	<0.0001
Lithium	mg/L			<0.002	<0.002	0.001	<0.002	0.002	<0.002	<0.002	0.002	0.001	0.002	0.002	0.002	<0.002	<0.002	0.002	<0.002	<0.002	0.002
Molybdenum	mg/L	0.002	0.073	<0.002	<0.002	<0.001	<0.002	<0.002	<0.002	0.003	0.003	<0.001	0.003	0.004	0.003	<0.002	<0.002	<0.001	<0.002	<0.002	<0.001
Nickel	mg/L	0.001	0.025 - 0.15 [b]	<0.001	<0.001	<0.0005	<0.001	<0.001	<0.001	<0.001	0.0011	<0.0005	<0.001	<0.001	0.0011	<0.001	<0.001	<0.0005	<0.001	<0.001	<0.0005
Selenium	mg/L	0.0004	0.001	<0.0004	<0.0004	<0.0002	<0.0004	<0.0004	<0.0004	<0.0004	<0.0002	<0.0002	<0.0004	<0.0004	<0.0002	<0.0004	<0.0004	<0.0002	<0.0004	<0.0004	<0.0002
Silver	mg/L	0.0002 [c]	0.0001	<0.0002	<0.0002	<0.0001	<0.0002	<0.0002	<0.0002	<0.0002	<0.0001	<0.0001	<0.0002	<0.0002	<0.0001	<0.0002	<0.0002	<0.0001	<0.0002	<0.0002	<0.0001
Strontium	mg/L			0.099	0.09	0.1	0.053	0.052	0.082	0.083	0.126	0.086	0.11	0.12	0.126	0.1	0.099	0.111	0.1	0.1	0.118
Thallium	mg/L	0.0001	0.0008	<0.0001	<0.0001	<0.00005	<0.0001	<0.0001	<0.0001	<0.0001	<0.00005	<0.00005	<0.0001	<0.0001	<0.00005	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.00005
Tin	mg/L			<0.002	<0.002	<0.001	<0.002	<0.002	<0.002	<0.002	<0.001	<0.001	<0.002	<0.002	<0.001	<0.002	<0.002	<0.001	<0.002	<0.002	<0.001
Titanium	mg/L			0.001	<0.001	<0.0005	<0.001	<0.001	<0.001	<0.001	0.0199	<0.0005	<0.001	<0.001	0.0199	<0.001	<0.001	0.0007	<0.001	<0.001	0.0009
Uranium	mg/L			0.001	<0.001	0.001	<0.001	<0.001	<0.001	<0.001	<0.0005	0.0012	<0.001	<0.001	<0.0005	<0.001	<0.001	0.001	0.001	<0.001	0.0011
Vanadium	mg/L			<0.0002	<0.0002	0.0002	<0.0002	<0.0002	<0.0002	<0.0002	0.0003	0.0002	<0.0002	<0.0002	0.0003	0.0002	<0.0002	0.0003	0.0002	<0.0002	0.0003
Zinc	mg/L	0.002	0.03	<0.002	0.002	0.006	<0.002	0.002	0.003	0.004	0.007	0.007	0.003	0.003	0.007	<0.002	0.002	0.005	<0.002	0.004	0.005
Zirconium	mg/L			<0.002	<0.002	<0.001	<0.002	<0.002	<0.002	<0.002	<0.001	<0.001	<0.002	<0.002	<0.001	<0.002	<0.002	<0.001	<0.002	<0.002	<0.001
Physical and Aggregate																					
Turbidity	NTU			0.4	N/R	<0.1	0.2	N/R	0.3		<0.1	<0.1	0.5	N/R	<0.1	0.4	N/R	0.2	0.5		<0.1
Total Suspended Solids	mg/L			<2	<2	<2	<2	<2	<2		<2	<2	<2	<2	<2	<2	<2	<2	<2		<2
Colour	Colour units					10					10	8			10			10			9
Total Dissolved Solids	mg/L					80					98	78			98			58			80
Routine Water																					
pH (@ 25 °C)	pH		6.5-9	N/R	7.35	7.7	N/R	7.34	N/R	7.32	7.72	7.32	N/R	7.29	7.72	N/R	7.26	7.75	N/R	7.05	7.76
Electrical Conductivity	uS/cm			105	101	96	97	96	112	114	105	50	116	118	105	106	102	96	105	102	94
Calcium	mg/L			17.5	18.1	17.5	16.2	16.9	19.4	21.3	18.7	8	19.2	20.6	18.7	17.8	18.3	17.5	17.2	17.9	17
Magnesium	mg/L			1.1	1.1	1.2	0.9	0.9	0.9	1	1.5	0.8	1.4	1.5	1.5	1.1	1.3	1.2	1.1	1.3	1.2
Sodium	mg/L			1.5	1.4	1.4	1.2	1.2	1.2	1.2	1.5	1.5	1.4	1.5	1.5	1.4	1.4	1.4	1.4	1.4	1.4
Potassium	mg/L			0.5	0.4	0.5	1	0.9	0.4	<0.4	0.4	<0.4	0.5	0.4	0.4	0.6	0.5	0.5	0.5	<0.4	0.4
Iron	mg/L			0.03	0.01	0.03	0.02	<0.01	0.02	<0.01	<0.01	0.04	0.02	<0.01	<0.01	<0.01	0.01	0.03	0.03	<0.01	0.03
Manganese	mg/L			<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005
Chloride	mg/L					0.1					<0.1	<0.1			<0.1			<0.1			<0.1
Nitrate - N	mg/L		13	N/R	<0.03	<0.1	N/R	<0.03	N/R	<0.03	<0.1	<0.1	N/R	<0.03	<0.1	N/R	<0.03	<0.1	N/R	<0.03	<0.1
Nitrite - N						<0.05					<0.05	<0.05			<0.05			<0.05			<0.05
Nitrate and Nitrite - N	mg/L			<0.02	0.03	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	0.02	<0.02	<0.02
Sulfate (SO4)	mg/L			N/R	6.9	7	N/R	5	N/R	8.8	10.6	3.2	N/R	12.2	10.6	N/R	7.1	7.1	N/R	6.8	6.5
Hydroxide	mg/L			N/R	<5	<5	N/R	<5	N/R	<5	<5	<5	N/R	<5	<5	N/R	<5	<5	N/R	<5	<5
Carbonate	mg/L			N/R	<6	<6	N/R	<6	N/R	<6	<6	<6	N/R	<6	<6	N/R	<6	<6	N/R	<6	<6
Bicarbonate	mg/L			N/R	56	58	N/R	55	N/R	62	60	33	N/R	62	60	N/R	56	60	N/R	54	59
P-Alkalinity	mg/L			N/R	<5	-	N/R	<5	N/R	<5	-	-	N/R	<5	-	N/R	<5	-	N/R	<5	-
T-Alkalinity	mg/L			N/R	46	48	N/R	45	N/R	51	49	27	N/R	50	49	N/R	46	50	N/R	44	48
Hardness	mg/L			48.2	49.8	48.5	44	46	52	57	52.9	23	53.8	57.6	52.9	49	51.1	48.4	47.4	50	47.2
Nutrients																					
Total Ammonium - N	mg/L		1.04 - 2.33*	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05
pKa (calculation constant)				N/R	9.78967	-	N/R	9.83468	N/R	9.90122	-	-	N/R	9.91534	-	9.73825	9.80693	-	9.67053	9.82425	-
alculated exceedance guideline				N/R	9.31766	-	N/R	5.18828	N/R	2.41766	-	-	N/R	1.98731	-	1.32818	1.23710	-	1.13917	1.02595	-
Kjeldahl Nitrogen	mg/L			0.11	0.12	0.11	0.08	0.19	0.08	0.11	0.09	0.17	0.08	0.12	0.09	0.08	0.16	0.1	0.06	0.16	0.12
Phosphorus	mg/L			<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	0.06	<0.05	<0.05	0.11	<0.05	<0.05	<0.05	<0.05
Orthophosphate-P	mg/L			0.01	0.03	0.04	0.01	0.03	0.01	0.03	0.05	0.03	0.01	0.03	0.05	<0.01	0.03	0.03	<0.01	0.03	0.03
TOC																					
Organic Carbon	mg/L			2.3	2.2	2.5	2.5	1.9	3.4	2.5	3.1	2.4	3.8	2.5	3.1	2.4	2	2.3	2.3	1.9	2.2
DOC																					
Organic Carbon	mg/L			1.5	2.1	2.4	1.6	1.5	1.6	2	3.1	2.8	3.1	2.5	3.1	1.6	1.7	2.1	1.9	1.8	2.6
TIC																					
Inorganic carbon	mg/L			11.6	10.6	10	11.1	10.2	11.8	11.7	10.2	5.4	11.4	11.3	10.2	11.4	10.5	10.1	11.3	10.5	10
Cyanide																					
Total Cyanide	mg/L		0.005	0.001	<0.001		0.001	<0.001	0.001	<0.001	-	-	0.001	<0.001	-	0.001	<0.001	-	0.001	0.001	-

[a] = 5 µg·L-1 at pH <6.5; [Ca2+] <4 mg·L-1; DOC <2 mg·L-1

[b] = 1 µg·L-1 at [CaCO3] =
= 2 µg·L-1 at [CaCO3] = 60–120 mg·L-1
= 4 µg·L-1 at [CaCO3] = 120–180 mg·L-1
= 7 µg·L-1 at [CaCO3] = >180 mg·L-1

[c] - detection limits above guidelines

Sample Description:				CMC-06			CMC-07				CMC-10			CMC-11					CMC-M1		
Norwest Labs Number:		Detection Limits	CCME Guidelines for Freshwater Aquatic Life	491618-6	496018-6	569012-8	491618-12	496018-1	559841-1	569012-5	491618-3	496018-11	569012-4	491618-3	496018-3	2104232-1	559841-2	569012-11	491618-10	496018-13	559841-3
Collected by:				PI	CSF	PI	PI	CSF	PI/JM	PI	PI	CSF	PI	PI	CSF	PI/JM	PI	PI	PI	CSF	PI/JM
Sample Date:				06-Sep-06	22-Sep-06	21-Aug-07	07-Sep-06	21-Sep-06	12-Jul-07	21-Aug-07	06-Sep-06	22-Sep-06	21-Aug-07	07-Sep-06	21-Sep-06	08-Dec-06	12-Jul-07	21-Aug-07	07-Sep-06	23-Sep-06	12-Jul-07
Matrix:				Water	Water	Water	Water	Water	Water	Water	Water	Water	Water	Water	Water	Water	Water	Water	Water	Water	Water
Parameter	**Unit**																				
Internal Anaylsis																					
pH			**6.5 - 9.0**	7.5	7.7		7.2	8			7.2	7.3		7.3	7.9	5.87			7.6	7.8	
Temperature C	C			12.1	7.9		N/R	9.7			N/R	6		5.4	4.5	3.1			10.2	3.4	
Conductivity	µS/cm			94.8	98.7		50.1	48			115.2	128.4		596	522	529			59.5	49.6	
Total Dissolved Solids	mg/L			47.6	49.3		24.1	24			56.9	64.2		289	261	265			29.4	24.6	
Flow	m3/s			1.149	0.492		0.449	0.319			0.222	0.165		Too low	Too low	0.0005514			0.699	0.26	
Dissolved Oxygen	mg/L		**5.5 - 9.5**	8.66	8.59		8.59	8.39			7.61	9.3		8.09	8.25	8.33			8.79	8.73	
External Anaylsis Metals Dissolved (Trace)																					
Silicon	mg/L			2.50	2.88	3.06	2.36	2.66	3.61	2.76	3.30	3.39	3.86	4.10	4.67	4.21	4.40	4.52	3.34	3.72	3.28
Sulfur	mg/L			1.7	1.8	1.8	0.7	0.8	1.1	0.8	4.7	5.7	4.1	40.5	42.5	28.3	39.9	41.8	1.3	1.9	1.2
Aluminum	mg/L			0.008	<0.005	0.016	0.019	0.008	0.037	0.038	0.014	0.006	0.026	<0.005	<0.005	<0.005	0.005	0.01	0.084	0.056	0.091
Antimony	mg/L			<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	0.0045	0.0049	0.005	0.0051	0.0047	<0.0002	<0.0002	<0.0002
Arsenic	mg/L			<0.0002	0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	0.0165	0.017	0.0164	0.0151	0.0164	<0.0002	<0.0002	0.0002
Barium	mg/L			0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.011	0.0	0.0	0.0
Beryllium	mg/L			<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001
Bismuth	mg/L			<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	0.0	<0.0005	<0.0005
Boron	mg/L			<0.002	<0.002	<0.002	<0.002	<0.002	<0.002	<0.002	<0.002	<0.002	<0.002	0.004	0.003	0.004	0.003	0.003	<0.002	<0.002	<0.002
Cadmium	mg/L			<0.00001	<0.00001	<0.00001	<0.00001	<0.00001	0.00002	<0.00001	0.00001	<0.00001	<0.00001	0.00628	0.0068	0.00614	0.0102	0.00942	0.00002	<0.00001	<0.00001
Chromium	mg/L			<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	0.0005	<0.0005	<0.0005	<0.0005	<0.0005
Cobalt	mg/L			<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	0.0002	0.0001	<0.0001	0.0003	0.0002	<0.0001	<0.0001	<0.0001
Copper	mg/L			<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	0.002	0.002	0.003	0.001	0.004	<0.001	<0.001	<0.001
Lead	mg/L			0.0001	<0.0001	<0.0001	0.0003	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	0.0014	0.001	0.0005	0.0008	0.0006	0.0002	<0.0001	<0.0001
Lithium	mg/L			0.001	0.002	0.001	0.001	0.001	<0.001	<0.001	0.002	0.002	0.001	0.011	0.012	0.011	0.01	0.011	0.001	0.001	<0.001
Molybdenum	mg/L			<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	0.001	0.001	0.001	0.005	0.005	0.004	0.004	0.004	0.001	<0.001	<0.001
Nickel	mg/L			<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	0.0009	<0.0005	0.0039	0.0029	0.0031	0.0042	0.0042	<0.0005	<0.0005	<0.0005
Selenium	mg/L			<0.0002	0.0004	<0.0002	<0.0002	0.0003	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	0.0005	<0.0002	<0.0002	<0.0002	<0.0002	0.0003	<0.0002
Silver	mg/L			<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001
Strontium	mg/L			0.12	0.116	0.126	0.064	0.062	0.079	0.062	0.092	0.096	0.089	0.41	0.384	0.392	0.42	0.398	0.066	0.066	0.05
Thallium	mg/L			<0.00005	<0.00005	<0.00005	<0.00005	<0.00005	<0.00005	<0.00005	<0.00005	<0.00005	<0.00005	<0.00005	<0.00005	<0.00005	<0.00005	<0.00005	<0.00005	<0.00005	<0.00005
Tin	mg/L			<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001
Titanium	mg/L			<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	0.0009	<0.0005	<0.0005	<0.0005	0.002	0.0031	0.0036	0.0021	0.0027	0.0016	0.001	0.0013
Uranium	mg/L			0.001	0.001	0.0012	0.0011	0.001	0.001	0.0012	0.0007	0.0008	0.0006	0.0217	0.0251	0.0233	0.0228	0.0227	0.0007	0.0005	0.0007
Vanadium	mg/L			0.0003	<0.0001	0.0004	0.0002	0.0002	<0.0001	0.0003	0.0003	<0.0001	0.0004	0.0005	<0.0001	0.0002	0.0012	0.001	0.0003	0.0001	0.0003
Zinc	mg/L			0.004	0.005	0.005	0.003	0.002	0.001	0.005	0.002	0.004	0.005	5.3	5.38	5.48	6.87	6.55	0.003	0.003	0.007
Metals Total (Trace)																					
Calcium	mg/L			14	15	15.6	5.9	6.6	6.8	6.2	19	21.1	18.3	74.2	79.8	86	74.8	77.1	5.8	6.4	4.9
Iron	mg/L	0.1-0.2	**0.3**	<0.2	<0.2	<0.1	<0.2	<0.2	<0.1	<0.1	<0.2	<0.2	<0.1	<0.2	<0.2	0.3	<0.1	<0.1	<0.2	<0.2	<0.1
Magnesium	mg/L			0.9	1	1.1	0.5	0.5	0.6	0.6	0.8	1	0.9	14	16	17.4	14.9	15.2	0.4	0.5	0.4
Manganese	mg/L			<0.01	<0.01	<0.005	<0.01	<0.01	<0.005	<0.005	<0.01	<0.01	<0.005	0.074	0.069	0.064	0.157	0.122	<0.01	<0.01	<0.005
Potassium	mg/L			<0.8	<0.8	0.4	<0.8	<0.8	<0.4	<0.4	<0.8	<0.8	0.6	0.9	1.1	1.3	1	1	<0.8	<0.8	<0.4
Silicon	mg/L			2.64	2.68	2.9	2.5	2.34	3.11	2.59	3.64	2.94	3.6	4.47	4.12	4.95	4.34	4.3	3.8	3.44	3.1
Sodium	mg/L			1	1	1.4	1	1	2.1	1.3	1	1	1.1	2	2.1	2.3	2.6	2.1	1	1	1.7
Sulfur	mg/L			2	2	1.8	0.6	0.6	1	0.8	4.6	5.5	4	39.5	38.2	44.1	39.5	41	1	2	1.1
Mercury	mg/L					<0.02				<0.02			<0.02					<0.02			
Aluminum	mg/L		**0.1** [a]	0.02	0.02	0.03	0.023	0.025	0.039	0.04	0.02	0.02	0.03	0.01	0.01	0.454	0.011	0.008	0.11	0.089	0.125
Antimony	mg/L			<0.0004	<0.0004	<0.0002	<0.0004	<0.0004	<0.0002	<0.0002	<0.0004	<0.0004	<0.0002	0.0044	0.0043	0.005	0.005	0.0046	<0.0004	<0.0004	<0.0002
Arsenic	mg/L	0.0004	**0.005**	<0.0004	<0.0004	<0.0002	<0.0004	<0.0004	<0.0002	<0.0002	<0.0004	<0.0004	<0.0002	0.015	0.016	0.0217	0.0165	0.0156	<0.0004	<0.0004	<0.0002
Barium	mg/L			0.007	0.008	0.008	0.004	0.005	0.006	0.005	0.005	0.005	0.005	0.01	0.01	0.013	0.012	0.011	0.008	0.01	0.007
Beryllium	mg/L			<0.0002	<0.0002	<0.0001	<0.0002	<0.0002	<0.0001	<0.0001	<0.0002	<0.0002	<0.0001	<0.0002	<0.0002	<0.0001	<0.0001	<0.0001	<0.0002	<0.0002	<0.0001
Bismuth	mg/L			<0.001	<0.001	<0.0005	0.001	<0.001	<0.0005	<0.0005	<0.001	<0.001	<0.0005	<0.001	<0.001	<0.0005	<0.0005	<0.0005	<0.001	<0.001	<0.0005
Boron	mg/L			<0.004	<0.004	0.002	<0.004	<0.004	0.004	<0.002	<0.004	<0.004	<0.002	0.004	0.004	0.004	0.006	0.005	<0.004	<0.004	<0.002
Cadmium	mg/L	0.00001-0.00002	**0.000017** [a]	<0.00002	<0.00002	<0.00001	<0.00002	<0.00002	0.00001	<0.00001	<0.00002	<0.00002	0.00002	0.00654	0.0064	0.00618	0.0106	0.00958	<0.00002	<0.00002	<0.00001
Chromium	mg/L	0.0005-0.001	**0.001** [a]	<0.001	<0.001	<0.0005	<0.001	<0.001	<0.0005	<0.0005	<0.001	<0.001	<0.0005	<0.001	<0.001	0.0005	<0.0005	<0.0005	<0.001	<0.001	<0.0005
Cobalt	mg/L			<0.0002	<0.0002	0.0003	<0.0002	<0.0002	<0.0001	<0.0001	<0.0002	<0.0002	0.0001	0.0002	<0.0002	0.0004	0.0005	0.0004	<0.0002	<0.0002	<0.0001
Copper	mg/L	0.002	**0.002 - 0.004** [b]	<0.002	<0.002	<0.001	<0.002	<0.002	<0.001	<0.001	<0.002	<0.002	<0.001	<0.002	<0.002	0.004	0.003	0.002	<0.002	<0.002	<0.001
Lead	mg/L	0.0002	**0.001 - 0.007** [b]	<0.0002	<0.0002	<0.0001	0.0006	<0.0002	0.0003	<0.0001	<0.0002	<0.0002	<0.0001	0.002	0.001	0.0055	0.0012	0.0009	0.0002	<0.0002	<0.0001
Lithium	mg/L			<0.002	<0.002	0.002	<0.002	<0.002	<0.001	<0.001	<0.002	<0.002	0.002	0.01	0.01	0.013	0.012	0.012	<0.002	<0.002	<0.001
Molybdenum	mg/L	0.002	**0.073**	<0.002	<0.002	<0.001	<0.002	<0.002	<0.001	<0.001	<0.002	0.002	0.001	0.004	0.006	0.004	0.005	0.004	<0.002	<0.002	<0.001
Nickel	mg/L	0.001	**0.025 - 0.15** [b]	<0.001	<0.001	<0.0005	<0.001	<0.001	<0.0005	0.0009	<0.001	<0.001	<0.0005	0.0039	0.004	0.0039	0.0066	0.0063	<0.001	<0.001	<0.0005
Selenium	mg/L	0.0004	**0.001**	<0.0004	<0.0004	<0.0002	<0.0004	<0.0004	0.0002	<0.0002	<0.0004	<0.0004	<0.0002	<0.0004	<0.0004	<0.0002	0.0008	0.0005	<0.0004	<0.0004	<0.0002
Silver	mg/L	0.0002 [c]	**0.0001**	<0.0002	<0.0002	<0.0001	<0.0002	<0.0002	<0.0001	<0.0001	<0.0002	<0.0002	<0.0001	<0.0002	<0.0002	<0.0001	<0.0001	<0.0001	<0.0002	<0.0002	<0.0001
Strontium	mg/L			0.12	0.11	0.136	0.06	0.063	0.074	0.062	0.092	0.094	0.094	0.406	0.41	0.436	0.423	0.45	0.065	0.067	0.048
Thallium	mg/L	0.0001	**0.0008**	<0.0001	<0.0001	<0.00005	<0.0001	<0.0001	<0.00005	<0.00005	<0.0001	<0.0001	<0.00005	<0.0001	<0.0001	<0.00005	<0.00005	<0.00005	<0.0001	<0.0001	<0.00005
Tin	mg/L			<0.002	<0.002	<0.001	<0.002	<0.002	<0.001	<0.001	<0.002	<0.002	<0.001	<0.002	<0.002	<0.001	<0.001	<0.001	<0.002	<0.002	<0.001
Titanium	mg/L			<0.001	<0.001	<0.0005	<0.001	<0.001	<0.0005	<0.0005	<0.001	<0.001	<0.0005	0.0022	0.0024	0.0231	0.0025	0.0022	0.0023	0.002	0.0027
Uranium	mg/L			0.001	0.001	0.0013	0.001	0.001	0.0012	0.0013	<0.001	<0.001	0.0007	0.0247	0.0255	0.0254	0.0245	0.0256	<0.001	<0.001	0.0007
Vanadium	mg/L			0.0002	<0.0002	0.0002	<0.0002	<0.0002	0.0002	0.0002	<0.0002	<0.0002	0.0002	<0.0002	<0.0002	0.0008	0.0001	0.0002	0.0003	<0.0002	0.0003
Zinc	mg/L	0.002	**0.03**	<0.002	0.002	0.005	<0.002	<0.002	0.004	0.005	<0.002	0.003	0.005	4.8	4.84	4.96	6.52	6.64	<0.002	0.003	0.005
Zirconium	mg/L			<0.002	<0.002	<0.001	<0.002	<0.002	<0.001	<0.001	<0.002	<0.002	<0.001	<0.002	<0.002	<0.001	<0.001	<0.001	<0.002	<0.002	<0.001
Physical and Aggregate																					
Turbidity	NTU			0.4	N/R	0.2	0.6		0.1	0.2	0.2	N/R	<0.1	0.4	N/R	0.4	<0.1	<0.1	0.8	N/R	0.3
Total Suspended Solids	mg/L			<2	<2	<2	<2	<2	3	<2	<2	<2	<2	2	<2	<2	<2	<2	<2	<2	<2
Colour	Colour units					6			13	7			7			<5	<5	<5			35
Total Dissolved Solids	mg/L					78			44	76			116			372	328	376			32
Routine Water																					
pH (@ 25 °C)	pH		**6.5-9**	N/R	7.22	7.66	N/R	6.41	6.66	7.35	N/R	7.51	7.72	N/R	7.84	7.88	7.58	7.68	N/R	6.74	6.95
Electrical Conductivity	uS/cm			94	93	90	45	48	47	40	118	120	104	517	515	538	496	489	41	44	33
Calcium	mg/L			15.5	16.3	16.2	6.5	7	7.2	6.5	20.1	21.6	19.3	78.1	82.7	84	75.5	78.9	5.9	6.9	5
Magnesium	mg/L			1	1	1.1	0.6	0.7	0.6	0.6	0.9	1	0.9	15	17.3	16.5	14.8	15.3	0.5	0.6	0.4
Sodium	mg/L			1.4	1.5	1.4	1.3	1.3	2.1	1.3	1.1	1.1	1.1	2.1	2.1	2	2.5	2.1	1.5	1.4	1.8
Potassium	mg/L			<0.4	0.4	<0.4	<0.4	<0.4	<0.4	<0.4	0.6	0.5	0.6	0.8	1.1	0.8	1	1	<0.4	<0.4	<0.4
Iron	mg/L			0.05	0.02	0.03	0.02	<0.01	0.01	0.01	0.02	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	0.07	0.03	0.05
Manganese	mg/L			<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	0.082	0.066	0.026	0.153	0.123	<0.005	<0.005	<0.005
Chloride	mg/L					0.1			0.1	<0.1			<0.1			0.25	<0.1	0.2			<0.1
Nitrate - N	mg/L		**13**	N/R	<0.03	<0.1	N/R	<0.03	0.2	<0.1	N/R	<0.03	<0.1	N/R	<0.03	<0.03	<0.1	<0.1	N/R	<0.03	<0.1
Nitrite - N						<0.05			<0.05	<0.05			<0.05			<0.03	<0.05	<0.05			<0.05
Nitrate and Nitrite - N	mg/L			0.04	0.04	0.03	<0.02	<0.02	0.03	<0.02	<0.02	<0.02	0.02	<0.02	<0.02	0.03	0.06	0.03	<0.02	<0.02	<0.02
Sulfate (SO4)	mg/L			N/R	5.3	5.5	N/R	2.3	2.9	2.2	N/R	17.7	12.9	N/R	128	128	3	129	N/R	4.8	3
Hydroxide	mg/L			N/R	<5	<5	N/R	<5	<5	<5	N/R	<5	<5	N/R	<5	<5	<5	<5	N/R	<5	<5
Carbonate	mg/L			N/R	<6	<6	N/R	<6	<6	<6	N/R	<6	<6	N/R	<6	<6	<6	<6	N/R	<6	<6
Bicarbonate	mg/L			N/R	52	57	N/R	24	25	28	N/R	52	56	N/R	186	184	184	188	N/R	21	15
P-Alkalinity	mg/L			N/R	<5	-	N/R	<5		-	N/R	<5	-	N/R	<5			-	N/R	<5	
T-Alkalinity	mg/L			N/R	42	47	N/R	20	21	23	N/R	43	46	N/R	153	151	151	154	N/R	18	12
Hardness	mg/L			43	45	45.2	19	20		19	54	58.1	52	257	278	277		260	17	20	
Nutrients																					
Total Ammonium - N	mg/L		**1.04 - 2.33** [a]	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05
pKa (calculation constant)				9.66045	9.80347	-	N/R	9.74166		-	N/R	9.86958	-	9.89065	9.92242			-	9.72463	9.96153	
Calculated exceedance guideline				2.76821	2.43016	-	N/R	1.06712		-	N/R	7.07141	-	7.42191	2.01965			-	2.55052	2.77500	
Kjeldahl Nitrogen	mg/L			0.07	0.12	0.19	0.09	0.48	0.31	0.09	0.06	0.13	0.07	<0.06	0.14	0.15	0.15	0.07	0.11	0.16	0.17
Phosphorus	mg/L			<0.05	<0.05	<0.05	<0.05	0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	0.1	<0.05	<0.05	<0.05	<0.05	<0.05
Orthophosphate-P	mg/L			<0.01	0.03	0.03	<0.01	0.03	0.02	0.03	<0.01	0.03	0.04	0.01	0.04	0.06	0.03	0.04	<0.01	0.03	0.02
TOC																					
Organic Carbon	mg/L			2.3	2.4	2.3	2.2	2.2	5	2.4	3.4	1.9	2.2	4.2	0.7	2.9	0.6	<0.5	4.5	3.5	5.3
DOC																					
Organic Carbon	mg/L			1.9	1.7	2.1	2	2.5	4.8	2.7	2	1.5	2.6	<0.5	0.6	<0.5	<0.5	<0.5	3.9	2.9	5
TIC																					
Inorganic carbon	mg/L			10.6	10.1	9.9	4.9	4.8	6	4.3	10.6	9.6	9.2	37.7	36.9	38.8	37.2	33.8	3.8	3.9	3.4
Cyanide																					
Total Cyanide	mg/L		**0.005**	0.002	<0.001	-	0.001	<0.001	-	-	0.001	<0.001	-	0.001	<0.001	<0.001	-	-	0.001	0.001	-

[a] = 5 µg·L-1 at pH <6.5; [Ca2+] <4 mg·L-1; DOC <2 mg·L-1

[b] = 1 µg·L-1 at [CaCO3] =
= 2 µg·L-1 at [CaCO3] = 60–120 mg·L-1
= 4 µg·L-1 at [CaCO3] = 120–180 mg·L-1
= 7 µg·L-1 at [CaCO3] = >180 mg·L-1

[c] - detection limits above guidelines

Sample Description:				CMC-M2					CMC-OC2				CMC-OC3			CMC-U1			CMC-U2
Norwest Labs Number:				569012-10	491618-11	496018-2	559841-4	569012-12	491618-8	496018-15	559841-5	569012-7	491618-9	496018-14	559841-6	496018-4	559841-7	569012-6	491618-7
Collected by:		Detection Limits	CCME Guidelines for Freshwater Aquatic Life	PI	PI	CSF	PI/JM	PI	PI	CSF	PI/JM	PI	PI	CSF	PI/JM	CSF	PI/JM	PI	PI
Sample Date:				21-Aug-07	07-Sep-06	21-Sep-06	12-Jul-07	21-Aug-07	07-Sep-06	23-Sep-06	12-Jul-07	21-Aug-07	07-Sep-06	23-Sep-06	12-Jul-07	21-Sep-06	12-Jul-07	21-Aug-07	07-Sep-06
Matrix:				Water	Water	Water	Water	Water	Water	Water	Water	Water	Water	Water	Water	Water	Water	Water	Water
Parameter	**Unit**																		
Internal Anaylsis																			
pH			6.5 - 9.0		7.3	7.5			7.3	7.5			7.2	7.4		7.9			7.5
Temperature C	C				11.2	6			7.1	6.7			8.4	6.5		5.4			10.6
Conductivity	µS/cm				52.4	56.2			101.8	59.2			51.8	60.4		146.4			87.3
Total Dissolved Solids	mg/L				26.2	28			50.8	29.5			25.8	30.1		73.2			43.1
Flow	m3/s				0.247	0.339			Too Low	0.543			0.61	1.211		Too low			Too low
Dissolved Oxygen	mg/L		5.5 - 9.5		8.79	8.09			7.51	8.38			8.36	9.23		7.41			N/R
External Anaylsis Metals Dissolved (Trace)																			
Silicon	mg/L			3.97	3.30	3.68	3.35	3.96	2.64	2.78	2.80	2.96	2.61	2.91	2.79	2.54	4.23	4.94	3.27
Sulfur	mg/L			1.4	1.5	2	1.4	1.7	1	1.1	1.1	1	1.1	1.2	1.1	4.6	3.9	5.4	5.3
Aluminum	mg/L			0.078	0.051	0.029	0.066	0.05	0.022	0.012	0.031	0.044	0.026	0.015	0.028	0.015	0.053	0.107	0.03
Antimony	mg/L			<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002
Arsenic	mg/L			<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	0.0003	<0.0002	0.0002	<0.0002	<0.0002	<0.0002	<0.0002
Barium	mg/L			0.008	0.0	0.0	0.0	0.008	0.0	0.0	0.0	0.008	0.0	0.0	0.006	0.0	0.0	0.011	0.006
Beryllium	mg/L			<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001
Bismuth	mg/L			<0.0005	0.0	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	0.0	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005
Boron	mg/L			<0.002	<0.002	<0.002	<0.002	<0.002	<0.002	<0.002	<0.002	<0.002	0.005	<0.002	<0.002	<0.002	<0.002	<0.002	<0.002
Cadmium	mg/L			<0.00001	<0.00001	0.00001	<0.00001	0.00001	<0.00001	<0.00001	<0.00001	<0.00001	0.00004	<0.00001	<0.00001	0.00002	0.00002	0.00003	<0.00001
Chromium	mg/L			<0.0005	0.0005	<0.0005	<0.0005	<0.0005	<0.0005	0.001	<0.0005	<0.0005	0.002	<0.0005	<0.0005	<0.0005	<0.0005	0.0012	0.0006
Cobalt	mg/L			<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	0.0001	<0.0001	<0.0001	<0.0001	0.0004	<0.0001	<0.0001
Copper	mg/L			<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	0.001	<0.001	<0.001	<0.001	0.001	0.001	0.001
Lead	mg/L			<0.0001	0.0002	<0.0001	<0.0001	<0.0001	0.0004	<0.0001	<0.0001	<0.0001	0.0003	0.0002	<0.0001	<0.0001	<0.0001	0.0002	0.0002
Lithium	mg/L			<0.001	0.001	0.001	<0.001	<0.001	<0.001	0.001	<0.001	<0.001	0.002	0.001	<0.001	0.002	0.001	0.002	0.001
Molybdenum	mg/L			<0.001	0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	0.002	<0.001	<0.001	0.011	0.011	0.013	0.003
Nickel	mg/L			<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	0.0011	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005
Selenium	mg/L			<0.0002	<0.0002	0.0003	<0.0002	<0.0002	<0.0002	0.0004	<0.0002	<0.0002	0.0003	0.0003	<0.0002	0.0004	<0.0002	<0.0002	<0.0002
Silver	mg/L			<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001
Strontium	mg/L			0.068	0.076	0.074	0.067	0.083	0.075	0.074	0.065	0.072	0.081	0.086	0.08	0.116	0.096	0.117	0.146
Thallium	mg/L			<0.00005	<0.00005	<0.00005	<0.00005	<0.00005	<0.00005	<0.00005	<0.00005	<0.00005	<0.00005	<0.00005	<0.00005	<0.00005	<0.00005	<0.00005	<0.00005
Tin	mg/L			<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001
Titanium	mg/L			0.0017	0.0009	0.0006	0.001	0.0006	<0.0005	<0.0005	<0.0005	0.0013	0.0008	<0.0005	<0.0005	0.0005	0.0008	0.0047	0.0006
Uranium	mg/L			0.0005	0.0007	0.0005	0.0006	0.0007	0.0008	0.0009	0.0011	0.0011	0.0014	0.001	0.0011	<0.0005	<0.0005	0.0005	0.0016
Vanadium	mg/L			0.0003	0.0002	0.0001	0.0007	0.0003	0.0002	<0.0001	0.0003	0.0002	0.0003	<0.0001	0.0002	<0.0001	0.0004	0.0006	0.0002
Zinc	mg/L			0.005	0.003	0.004	0.005	0.008	0.002	0.003	0.002	0.004	0.003	0.003	<0.001	0.004	<0.001	0.008	0.007
Metals Total (Trace)																			
Calcium	mg/L			6.3	6.5	7.6	6.3	7.9	6.5	7.4	6.7	6.7	7	8.2	7.6	24.6	18.4	24.9	15
Iron	mg/L	0.1-0.2	0.3	<0.1	<0.2	<0.2	<0.1	<0.1	<0.2	<0.2	<0.1	<0.1	<0.2	<0.2	<0.1	<0.2	<0.1	0.2	0.2
Magnesium	mg/L			0.5	0.5	0.7	0.6	0.8	0.5	0.7	0.6	0.7	0.6	0.9	0.7	0.9	0.7	0.9	1
Manganese	mg/L			<0.005	<0.01	<0.01	<0.005	<0.005	<0.01	<0.01	<0.005	<0.005	0.024	<0.01	0.006	0.02	<0.005	0.017	0.1
Potassium	mg/L			<0.4	<0.8	<0.8	<0.4	<0.4	<0.8	<0.8	<0.4	<0.4	<0.8	<0.8	<0.4	<0.8	<0.4	0.4	<0.8
Silicon	mg/L			3.76	3.57	3.41	3.23	3.84	2.86	2.5	2.82	2.72	2.93	2.73	2.84	3.79	4.2	4.88	3.7
Sodium	mg/L			1.5	1	2	1.7	1.6	1	1	1.8	1.4	1	2	1.9	1	1.7	1.2	1
Sulfur	mg/L			1.3	1	2	1.4	1.7	0.9		1	0.9	1	1	1.1	4.3	3.8	5.1	5.1
Mercury	mg/L			<0.02				<0.02				<0.02						<0.02	
Aluminum	mg/L		0.1 [a]	0.119	0.065	0.064	0.099	0.077	0.028	0.027	0.04	0.042	0.058	0.025	0.043	0.048	0.079	0.286	0.098
Antimony	mg/L			<0.0002	<0.0004	<0.0004	<0.0002	<0.0002	<0.0004	<0.0004	<0.0002	<0.0002	<0.0004	<0.0004	<0.0002	<0.0004	<0.0002	<0.0002	<0.0004
Arsenic	mg/L	0.0004	0.005	<0.0002	<0.0004	<0.0004	<0.0002	<0.0002	<0.0004	<0.0004	<0.0002	<0.0002	<0.0004	<0.0004	0.0002	<0.0004	<0.0002	<0.0002	<0.0004
Barium	mg/L			0.008	0.007	0.008	0.008	0.011	0.005	0.007	0.007	0.006	0.007	0.007	0.006	0.008	0.007	0.011	0.008
Beryllium	mg/L			<0.0001	<0.0002	<0.0002	<0.0001	<0.0001	<0.0002	<0.0002	<0.0001	<0.0001	<0.0002	<0.0002	<0.0001	<0.0002	<0.0001	<0.0001	<0.0002
Bismuth	mg/L			<0.0005	<0.001	<0.001	<0.0005	<0.0005	<0.001	<0.001	<0.0005	<0.0005	<0.001	<0.001	<0.0005	<0.001	<0.0005	<0.0005	<0.001
Boron	mg/L			<0.002	<0.004	<0.004	0.002	<0.002	<0.004	<0.004	<0.002	0.002	<0.004	<0.004	0.002	<0.004	0.003	0.003	<0.004
Cadmium	mg/L	0.00001-0.00002	0.000017 [a]	<0.00001	<0.00002	<0.00002	0.00001	0.00001	<0.00002	<0.00002	<0.00001	<0.00001	<0.00002	<0.00002	<0.00001	<0.00002	<0.00001	0.00002	<0.00002
Chromium	mg/L	0.0005-0.001	0.001 [a]	<0.0005	<0.001	0.001	<0.0005	<0.0005	<0.001	<0.001	<0.0005	<0.0005	<0.001	<0.001	<0.0005	<0.001	<0.0005	0.0008	<0.001
Cobalt	mg/L			0.0001	<0.0002	<0.0002	<0.0001	0.0003	<0.0002	<0.0002	<0.0001	<0.0001	<0.0002	<0.0002	<0.0001	<0.0002	<0.0001	0.0003	<0.0002
Copper	mg/L	0.002	0.002 - 0.004 [b]	0.006	<0.002	<0.002	0.002	<0.001	<0.002	<0.002	<0.001	<0.001	<0.002	<0.002	<0.001	<0.002	<0.001	0.001	<0.002
Lead	mg/L	0.0002	0.001 - 0.007 [b]	0.0002	0.0002	<0.0002	0.0001	<0.0001	<0.0002	<0.0002	<0.0001	<0.0001	0.0003	<0.0002	<0.0001	<0.0002	<0.0001	0.0003	0.0003
Lithium	mg/L			0.001	<0.002	<0.002	0.001	0.001	<0.002	<0.002	<0.001	<0.001	<0.002	<0.002	<0.001	<0.002	0.002	0.003	<0.002
Molybdenum	mg/L	0.002	0.073	<0.001	<0.002	<0.002	<0.001	0.001	<0.002	<0.002	<0.001	<0.001	<0.002	<0.002	<0.001	0.01	0.012	0.014	0.003
Nickel	mg/L	0.001	0.025 - 0.15 [b]	<0.0005	<0.001	<0.001	<0.0005	<0.0005	<0.001	<0.001	<0.0005	<0.0005	<0.001	<0.001	<0.0005	0.001	<0.0005	0.0012	<0.001
Selenium	mg/L	0.0004	0.001	<0.0002	<0.0004	<0.0004	0.0002	<0.0002	<0.0004	<0.0004	<0.0002	<0.0002	<0.0004	<0.0004	0.0002	<0.0004	0.0003	<0.0002	<0.0004
Silver	mg/L	0.0002 [c]	0.0001	<0.0001	<0.0002	<0.0002	<0.0001	<0.0001	<0.0002	<0.0002	<0.0001	<0.0001	<0.0002	<0.0002	<0.0001	<0.0002	<0.0001	<0.0001	<0.0002
Strontium	mg/L			0.069	0.072	0.073	0.069	0.094	0.071	0.075	0.063	0.074	0.076	0.083	0.075	0.12	0.094	0.124	0.15
Thallium	mg/L	0.0001	0.0008	<0.00005	<0.0001	<0.0001	<0.00005	<0.00005	<0.0001	<0.0001	<0.00005	<0.00005	<0.0001	<0.0001	<0.00005	<0.0001	<0.00005	<0.00005	<0.0001
Tin	mg/L			<0.001	<0.002	<0.002	<0.001	<0.001	<0.002	<0.002	<0.001	<0.001	<0.002	<0.002	<0.001	<0.002	<0.001	<0.001	<0.002
Titanium	mg/L			0.0016	0.001	0.001	0.0017	0.0011	<0.001	<0.001	<0.0005	<0.0005	0.002	<0.001	0.0006	0.002	0.0018	0.0068	0.0028
Uranium	mg/L			0.0006	<0.001	<0.001	0.0008	0.0008	<0.001	<0.001	0.0012	0.0012	0.001	0.001	0.0013	<0.001	<0.0005	0.0006	0.0021
Vanadium	mg/L			0.0003	0.0002	<0.0002	0.0003	0.0003	<0.0002	<0.0002	0.0002	0.0002	0.0002	<0.0002	0.0002	<0.0002	0.0002	0.0006	0.0003
Zinc	mg/L	0.002	0.03	0.004	<0.002	0.005	0.006	0.007	<0.002	0.002	0.004	0.005	<0.002	0.003	0.002	0.004	0.003	0.008	0.008
Zirconium	mg/L			<0.001	<0.002	<0.002	<0.001	<0.001	<0.002	<0.002	<0.001	<0.001	<0.002	<0.002	<0.001	<0.002	<0.001	<0.001	<0.002
Physical and Aggregate																			
Turbidity	NTU			0.6	0.5	N/R	<0.1	<0.1	0.5	N/R	<0.1	<0.1	1	N/R	<0.1	N/R	<0.1	1.4	0.5
Total Suspended Solids	mg/L			<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	4	<2
Colour	Colour units			17			29	14			17	8			17		36	22	
Total Dissolved Solids	mg/L			76			40	62			34	60			46		86	128	
Routine Water																			
pH (@ 25 °C)	pH		6.5-9	7.3	N/R	6.76	7.03	7.44	N/R	6.88	7.04	7.27	N/R	6.92	7.02	7.05	7.31	7.56	
Electrical Conductivity	uS/cm			41	48	52	42	52	48	50	44	46	51	55	49	134	106	132	101
Calcium	mg/L			6.6	6.9	7.8	6.4	8.2	7.1	8	6.8	7.1	7.6	8.6	7.6	24.8	19.4	26.8	15.8
Magnesium	mg/L			0.6	0.6	0.7	0.5	0.8	0.7	0.7	0.6	0.7	0.7	0.9	0.7	0.9	0.7	1	1.1
Sodium	mg/L			1.6	1.5	1.5	1.3	1.6	1.4	1.4	1.8	1.4	1.6	1.5	1.3	1.2	1.7	1.2	1.5
Potassium	mg/L			<0.4	<0.4	<0.4	<0.4	<0.4	<0.4	<0.4	<0.4	<0.4	<0.4	<0.4	<0.4	<0.4	<0.4	<0.4	<0.4
Iron	mg/L			0.04	0.03	0.01	<0.01	0.02	0.03	0.02	0.02	0.04	0.04	0.04	0.03	0.01	0.03	0.07	0.09
Manganese	mg/L			<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	0.006	0.012	<0.005	0.01	0.039
Chloride	mg/L			<0.1			0.2	<0.1			0.2	<0.1			0.1		<0.1	<0.1	
Nitrate - N	mg/L		13	<0.1	N/R	<0.03	<0.1	<0.1	N/R	<0.03	<0.1	<0.1	N/R	<0.03	<0.1	<0.03	<0.1	<0.1	
Nitrite - N				<0.05			<0.05	<0.05			<0.05	<0.05			<0.05		<0.05	<0.05	
Nitrate and Nitrite - N	mg/L			0.08	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	0.02	<0.02	<0.02	<0.02	<0.02	<0.02
Sulfate (SO4)	mg/L			4	N/R	5.6	3.9	5.2	N/R	3	2.8	2.9	N/R	3.4	3	13.9	12	16.4	
Hydroxide	mg/L			<5	N/R	<5	<5	<5	N/R	<5	<5	<5	N/R	<5	<5	<5	<5	<5	
Carbonate	mg/L			<6	N/R	<6	<6	<6	N/R	<6	<6	<6	N/R	<6	<6	<6	<6	<6	
Bicarbonate	mg/L			21	N/R	23	19	32	N/R	30	25	30	N/R	27	27	67	50	71	
P-Alkalinity	mg/L			-	N/R	<5		-	N/R	<5		-	N/R	<5		<5		-	
T-Alkalinity	mg/L			17	N/R	19	15	26	N/R	24	20	24	N/R	22	22	55	41	58	
Hardness	mg/L			19	20	23		24	20	23		21	22	25		66		71.1	44.2
Nutrients																			
Total Ammonium - N	mg/L		1.04 - 2.33*	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05
pKa (calculation constant)				-	9.69074	9.86958		-	9.83120	9.84512		-	9.78622	9.85210		9.89065		-	9.71105
alculated exceedance guideline				-	4.69095	4.46877		-	6.47484	4.22506		-	7.34683	5.39987		1.87853		-	3.10787
Kjeldahl Nitrogen	mg/L			<0.06	0.09	0.2	0.16	0.11	0.1	0.11	0.15	0.12	0.1	0.15	0.15	0.28	0.24	0.13	0.13
Phosphorus	mg/L			<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05
Orthophosphate-P	mg/L			0.04	<0.01	0.03	0.02	0.04	<0.01	0.03	0.02	0.03	<0.01	0.03	0.02	0.04	0.03	0.05	<0.01
TOC																			
Organic Carbon	mg/L			3.6	5.9	2.8	4.9	3.4	3.4	2.4	3.7	10.4	3.1	2.2	3.1	3.4	7.4	5.4	4.9
DOC																			
Organic Carbon	mg/L			4	3.3	2.8	5.2	3.8	2.3	1.9	4	3	2.2	1.9	3.5	3.3	6.7	5.7	4.5
TIC																			
Inorganic carbon	mg/L			3.8	4.5	4.5	4.3	5	5.5	5.3	5	4.7	5.8	5.7	5.9	12.8	5	12.2	7.7
Cyanide																			
Total Cyanide	mg/L		0.005	-	0.001	<0.001	-	-	0.001	0.001	-	-	0.001	0.001	-	<0.001	-	-	0.001

[a] = 5 µg·L-1 at pH <6.5; [Ca2+] <4 mg·L-1; DOC <2 mg·L-1

[b] = 1 µg·L-1 at [CaCO3] =
= 2 µg·L-1 at [CaCO3] = 60–120 mg·L-1
= 4 µg·L-1 at [CaCO3] = 120–180 mg·L-1
= 7 µg·L-1 at [CaCO3] = >180 mg·L-1

[c] - detection limits above guidelines

LOCATION		CMC-01		CMC-02		CMC-03		CMC-03A		CMC-04		CMC-05		CMC-06		CMC-07		CMC-10		CMC-11	
NWL Number		491618-16	496018-25	491618-20			496018-19		496018-29	491618-21	496018-30	491618-23	496018-17	491618-22	496018-28	491618-27	496018-18	491618-25	496018-26	491618-24	496018-16
Sample Date		6-Sep-06	22-Sep-06	6-Sep-06	21-Sep-06	6-Sep-06	21-Sep-06	7-Sep-06	23-Sep-06	6-Sep-06	23-Sep-06	7-Sep-06	21-Sep-06	7-Sep-06	23-Sep-06	7-Sep-06	21-Sep-06	6-Sep-06	22-Sep-06	7-Sep-06	21-Sep-06
Sampled by		PI	CSF	PI	CSF	PI	CSF	PI	CSF	PI	CSF	PI	CSF	PI	CSF	PI	CSF	PI	CSF	PI	CSF
Matrix		Soil	Soil	Soil	Soil	Soil	Soil	Soil	Soil	Soil	Soil	Soil	Soil	Soil	Soil	Soil	Soil	Soil	Soil	Soil	Soil
Units																					
Metals Strong Acid Digestion																					
Aluminum	ug/g	21600	25500	17700	N/R	N/R	18700	N/R	10200	9830	8290	14400	17800	14100	8580	18700	19300	19100	8010	8740	21100
Antimony	ug/g	0.6	1.4	0.7	N/R	N/R	<0.5	N/R	0.6	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	9.4	<0.5	<0.5	<0.5	<0.5
Arsenic	ug/g	**28.8**	**18.3**	4	N/R	N/R	8.3	N/R	2.4	2.2	1.7	4.4	5.1	3.6	2.4	**24.8**	**81.2**	10.8	7.3	1.7	8.4
Barium	ug/g	111	177	181	N/R	N/R	147	N/R	85.6	64.3	53.4	133	158	95.7	52.3	186	94.1	76.5	26.1	77.5	92.1
Beryllium	ug/g	1.37	2.26	1.14	N/R	N/R	1.08	N/R	0.84	0.71	0.65	1	1.47	1.3	0.9	2.47	1.48	1.1	0.55	1.09	3.37
Bismuth	ug/g	<0.5	<0.5	<0.5	N/R	N/R	<0.5	N/R	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5
Cadmium	ug/g	1.6	1.6	2.7	N/R	N/R	0.98	N/R	0.4	0.4	0.2	1	1.2	0.93	0.5	1.4	7.21	1.1	0.3	0.59	0.4
Calcium	ug/g	3130	8150	5010	N/R	N/R	7850	N/R	2550	3920	2450	7980	6060	5370	3190	13300	3620	8280	2120	10900	7260
Chromium	ug/g	26.9	70.2	15.5	N/R	N/R	18.4	N/R	25	11	6.99	32.2	**107**	32.4	8.7	77.2	31.2	30.5	14.6	16.8	28.4
Cobalt	ug/g	11.1	14.7	8.32	N/R	N/R	6.52	N/R	3.5	2.4	2.2	5.06	5.71	4.3	2.7	12.1	14.3	8.4	4.6	2	3.3
Copper	ug/g	28.9	39.2	36.6	N/R	N/R	23.4	N/R	9.34	13.3	8.01	19.8	133	27.3	13.1	42.2	63	29.8	10.1	26.5	35.8
Iron	ug/g	37800	39800	27600	N/R	N/R	24400	N/R	11700	10500	10300	22100	25200	20500	14100	36100	34400	27700	16800	11700	14000
Lead	ug/g	**101**	21.8	21.8	N/R	N/R	15.1	N/R	16.4	14.1	8.8	41.3	26	30.2	12.4	72	**293**	24.1	10.8	18.4	19.5
Lithium	ug/g	59.8	88.5	51.2	N/R	N/R	75.4	N/R	33.7	34.6	30.2	53.6	63.4	42.2	27.9	45.6	59.6	60.9	27.6	23.5	48.8
Magnesium	ug/g	6590	6100	3530	N/R	N/R	3700	N/R	3350	2690	2670	4080	3790	3420	2360	3190	6620	5320	3080	1890	2450
Manganese	ug/g	641	<0.3	958	N/R	N/R	494	N/R	213	147	134	884	976	562	308	391	1230	683	358	279	492
Mercury	ug/g	0.006	0.086	0.046	N/R	N/R	0.06	N/R	0.023	0.029	0.018	0.05	0.062	0.041	0.014	0.081	0.013	0.044	0.004	0.057	0.094
Molybdenum	ug/g	1.4	6.05	18.4	N/R	N/R	21.2	N/R	2.3	1.5	0.77	4.7	13	4.1	1.4	6.91	2.5	2.9	1	3.9	4.4
Nickel	ug/g	33.4	60.7	13.8	N/R	N/R	14.9	N/R	19.3	8.22	5.66	22.4	81.8	24.6	7.95	59.3	34.3	30.5	14.3	11	12.2
Phosphorus	ug/g	299	994	999	N/R	N/R	926	N/R	556	909	718	956	894	626	470	1210	476	868	392	615	1190
Potassium	ug/g	2020	3280	1990	N/R	N/R	1510	N/R	1110	975	714	2900	2610	1780	1190	2180	2730	2440	1120	1050	1250
Selenium	ug/g	<0.3	<0.3	<0.3	N/R	N/R	<0.3	N/R	<0.3	0.3	<0.3	<0.3	<0.3	<0.3	<0.3	<0.3	<0.3	<0.3	<0.3	<0.3	0.8
Silicon	ug/g	271	407	289	N/R	N/R	92	N/R	331	64	147	54	148	67	96	625	630	72	153	36	349
Silver	ug/g	1	0.4	0.5	N/R	N/R	0.5	N/R	<0.2	<0.2	<0.2	0.8	0.5	0.3	<0.2	0.2	9.7	0.4	<0.2	0.2	1.3
Sodium	ug/g	170	283	126	N/R	N/R	125	N/R	101	91	75	159	146	108	69	257	177	191	92	93	152
Strontium	ug/g	50.6	82.3	61	N/R	N/R	52.9	N/R	24.5	38.8	19.9	82	76.6	62.1	34.6	110	46.5	56.7	15.4	120	86.2
Thallium	ug/g	<0.3	4.2	4.2	N/R	N/R	<0.3	N/R	<0.3	<0.3	<0.3	<0.3	<0.3	<0.3	<0.3	4.3	2.1	<0.3	<0.3	<0.3	<0.3
Tin	ug/g	2	1.4	1.2	N/R	N/R	1.1	N/R	1	1.3	0.9	3.8	1.6	9.3	1.1	33.4	6.4	1.5	0.7	2.4	1.1
Titanium	ug/g	434	306	318	N/R	N/R	252	N/R	274	242	260	307	282	278	226	131	424	303	245	217	198
Vanadium	ug/g	41.6	44.8	35.4	N/R	N/R	30.1	N/R	19.9	20	18	35.2	36.1	33.3	23.3	39.6	39.4	30.8	15.6	22.7	22.2
Zinc	ug/g	**1140**	230	**549**	N/R	N/R	**339**	N/R	110	95.2	78.2	254	**393**	**523**	287	161	**4640**	**317**	131	70.6	95.4
Zirconium	ug/g	2	2.3	1.9	N/R	N/R	0.99	N/R	1.7	1.1	0.86	1.6	1.2	0.96	0.71	2.6	2.5	1.2	0.67	1.4	1.4
Soil Acidity																					
1:2 Soil:WaterpH	pH	7.2	7.4	6.5	N/R	N/R	5.9	N/R	6.6	6.5	5.5	6.4	7	6.6	7	7.2	7.1	7	7.2	6.4	6.6

[1] ISQG = Interim Sediment Quality Guidelines

[2] PEL = Probable Effect Level

ISQG exceedance

PEL exceedance

LOCATION		CMC-M1		CMC-M2		CMC-OC2		CMC-OC3		CMC-U1		CMC-U2		Detection Limits	CCME Guidelines for Freshwater Aquatic Life ISQG[1]	CCME Guidelines for Freshwater Aquatic Life PEL[2]
NWL Number		491618-19	496018-21		496018-20		496018-22	491618-26	496018-23	491618-18	496018-24	491618-17	496018-27			
Sample Date		6-Sep-06	6-Sep-06	06-Sep-06	22-Sep-06	07-Sep-06	22-Sep-06	6-Sep-06	22-Sep-06	6-Sep-06	22-Sep-06	6-Sep-06	22-Sep-06			
Sampled by		PI	CSF	PI	CSF	PI	CSF	PI	CSF	PI	CSF	PI	CSF			
Matrix		Soil	Soil	Soil	Soil	Soil	Soil	Soil	Soil	Soil	Soil	Soil	Soil			
Units																
Metals Strong Acid Digestion																
Aluminum	ug/g	18800	15900	N/R	11100	N/R	20700	18600	8970	20300	11800	16700	14200			
Antimony	ug/g	<0.5	<0.5	N/R	<0.5	N/R	<0.5	<0.5	<0.5	<0.5	<0.5	1.2	<0.5			
Arsenic	ug/g	8.6	8.3	N/R	8.1	N/R	15.7	11.8	7.3	10.6	7.6	11.3	10.5		**5.9**	**17**
Barium	ug/g	96	104	N/R	44.2	N/R	128	99.1	32.5	85.9	42.4	49.1	45.3			
Beryllium	ug/g	1.75	1.81	N/R	0.76	N/R	1.91	0.89	0.54	1.15	0.73	0.92	0.86			
Bismuth	ug/g	<0.5	<0.5	N/R	<0.5	N/R	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5			
Cadmium	ug/g	0.82	0.9	N/R	0.3	N/R	1.1	2.4	0.55	3.5	1.2	1.2	0.91		**0.6**	**3.5**
Calcium	ug/g	10800	17700	N/R	3290	N/R	9450	8760	2600	12000	5210	17200	12900			
Chromium	ug/g	23.4	22.4	N/R	17.7	N/R	87.4	**91.4**	19.4	73.8	25.1	62.9	27.3		**37.3**	**90**
Cobalt	ug/g	9.08	5.44	N/R	6.5	N/R	16.5	10.3	4.9	8.71	6.12	14.6	11.7			
Copper	ug/g	33	37.8	N/R	16.2	N/R	64.2	60.8	10.2	48.7	18	83	58.7		**35.7**	**197**
Iron	ug/g	25700	19300	N/R	22000	N/R	53700	30800	19300	29300	21700	32500	23700			
Lead	ug/g	32.7	34.1	N/R	9.6	N/R	19.3	72.6	17	51.8	17.1	43	12.9		**35**	**91.3**
Lithium	ug/g	59.2	49.1	N/R	40.8	N/R	63.8	61.3	33.8	57.8	41	46.7	50.5			
Magnesium	ug/g	4340	3300	N/R	4220	N/R	6050	5690	3340	4990	3870	4750	4510			
Manganese	ug/g	356	666	N/R	536	N/R	1530	1010	484	425	357	614	562			
Mercury	ug/g	0.088	0.102	N/R	0.014	N/R	0.073	0.052	0.007	0.094	0.026	0.091	0.086		**0.17**	**0.486**
Molybdenum	ug/g	1.5	1.6	N/R	0.9	N/R	7.58	11.6	2.7	7.54	2.2	5.63	1.4			
Nickel	ug/g	21	17.7	N/R	17.3	N/R	82.9	72.4	17.1	62.5	23	94.2	53.2			
Phosphorus	ug/g	912	958	N/R	577	N/R	1080	855	380	1180	519	1160	783			
Potassium	ug/g	1380	1260	N/R	1110	N/R	1780	2180	931	2520	1420	1140	1420			
Selenium	ug/g	1.4	0.9	N/R	<0.3	N/R	<0.3	0.3	<0.3	1.5	<0.3	5	1.6			
Silicon	ug/g	206	395	N/R	210	N/R	349	77	126	142	73	201	108			
Silver	ug/g	0.4	0.8	N/R	<0.2	N/R	<0.2	0.6	<0.2	1.3	0.2	0.5	0.5			
Sodium	ug/g	161	147	N/R	126	N/R	211	158	69	252	207	148	104			
Strontium	ug/g	98.1	145	N/R	27.6	N/R	77.8	64.1	16.1	76.4	42.4	61.8	49.1			
Thallium	ug/g	<0.3	<0.3	N/R	<0.3	N/R	2.3	<0.3	<0.3	<0.3	<0.3	1.2	<0.3			
Tin	ug/g	0.9	1	N/R	0.6	N/R	1.4	20.9	0.8	17.7	0.9	20.2	0.4			
Titanium	ug/g	100	148	N/R	246	N/R	139	219	191	184	231	121	148			
Vanadium	ug/g	24.8	19.1	N/R	21.2	N/R	32.7	29.1	16.9	28.3	20.5	18.7	16.3			
Zinc	ug/g	255	207	N/R	104	N/R	220	**496**	216	**571**	265	208	185		**123**	**315**
Zirconium	ug/g	2	1.1	N/R	0.88	N/R	2.6	1.4	0.84	1.7	0.9	2	1.5			
Soil Acidity																
1:2 Soil:WaterpH	pH	6.9	7	N/R	6.9	N/R	7.4	7	7.3	7.1	7.4	7.2	7.2			

[1] ISQG = Interim Sediment Quality G

[2] PEL = Probable Effect Level

ISQG e

PEL ex

SILVER HART PROPERTY

PROJECT DESCRIPTION
APPLICATION FOR TYPE 'B' WATER USE LICENCE
APPLICATION FOR MINE PRODUCTION LICENCE

APPENDIX F
HERITAGE ASSESSMENT

March 2008

Prepared by:

ACCESS
CONSULTING GROUP

Heritage Sites Inventory and Impact Assessment: Silver Hart Property, Southern Yukon

Final Report
06-13ASR

December 2006

Prepared by

Christian D. Thomas
of
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Whitehorse

For

Access Consulting Group

and

CMC Metals Ltd

Table of Contents

List of Figures

List of Plates

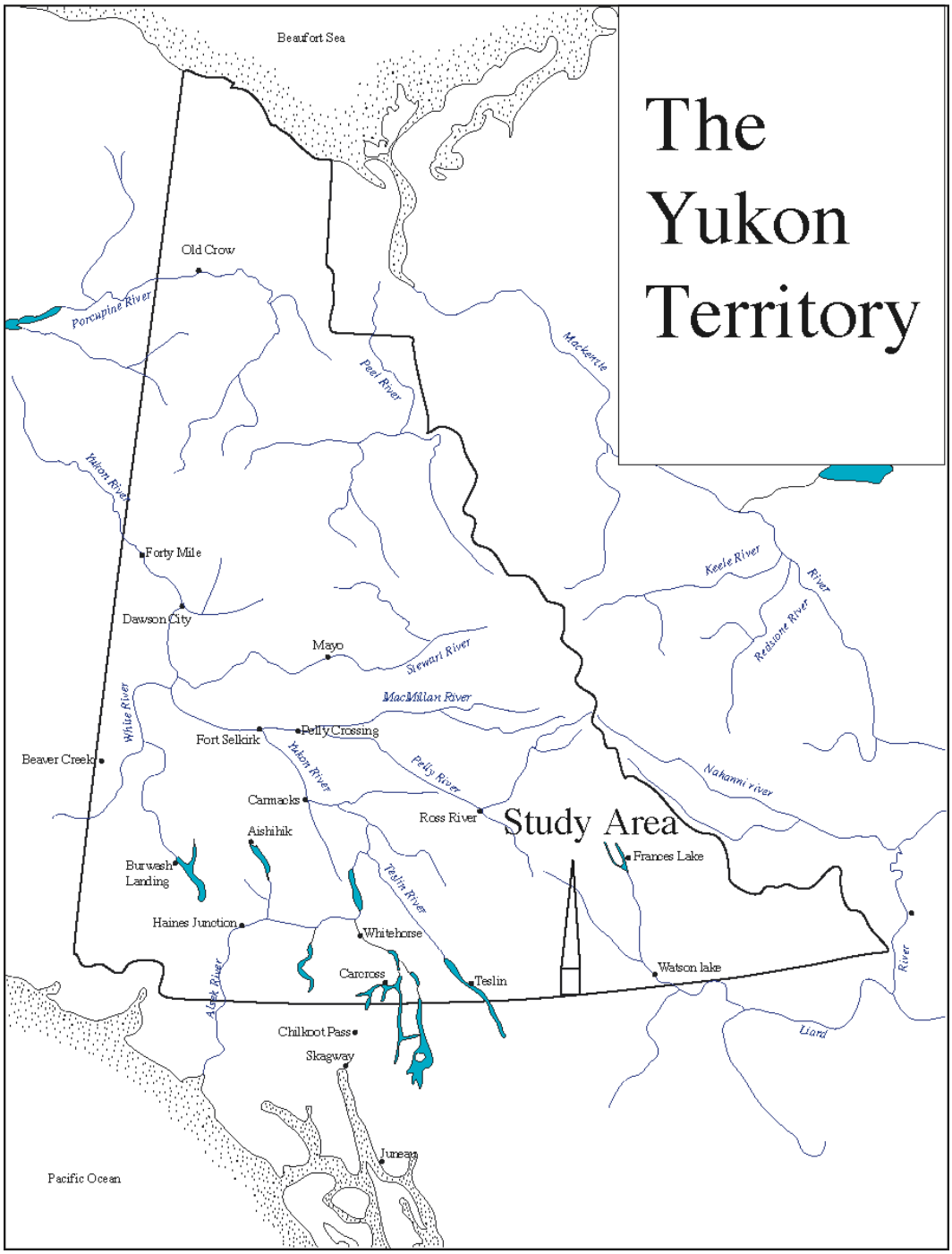

Figure 1: Map of the Yukon

Introduction

The following report documents the results of a heritage resource inventory and impact assessment of proposed development sites at CMC Metal's Silver Hart property. The mine is located in the upper Rancheria and Meister River drainages in the southern Yukon. CMC Metals proposes to reopen existing mine infrastructure at the Silver Hart property including a camp, a mill site, a tailings dump and an open pit mine quarry. The assessment focused on survey for historic era and archaeological sites in the mine's proposed impact zone. Fieldwork was completed during 6 and 7 September 2006. Recommendations regarding the results of the fieldwork can be found in the last section of this report.

Objectives

The objective of this survey was to identify heritage resources such as archaeological and historic sites within the proposed development impact zone of the Silver Hart property. In this instance, heritage resources are defined as historic or archaeological sites and gravesites or objects that have been abandoned for more than 45 years and are protected by the *Yukon Historic Resources Act* and annexed *Archaeological Sites Regulation*. Furthermore, the survey intended to identify First Nation traditional use sites that may be protected by the *Umbrella Final Agreement*. The intended result of this survey is to insure that any heritage resources located on the property are properly managed in light of the proposed development. Recommendations regarding the results of the survey will be presented at the end of this report.

Environmental and Cultural Background

Development Location

The study area is located in the Cassiar Mountains along the middle reaches of the Meister River Valley. The site can be accessed by driving approximately 30 km to the northern end of a small gravel road exiting the Alaska highway at historic mile post 720 and following it north along the Rancheria River to Pine and Daughney lakes and beyond. The mine facilities are centralized in the sub-alpine region of (5000ft asl) a small un-named mountain south of the Meister River and North of the Northwind, Edgar and Roy Lakes. The study area is located at lat/long 60°19'04.54N and 48°48'47.94W (Figure 2).

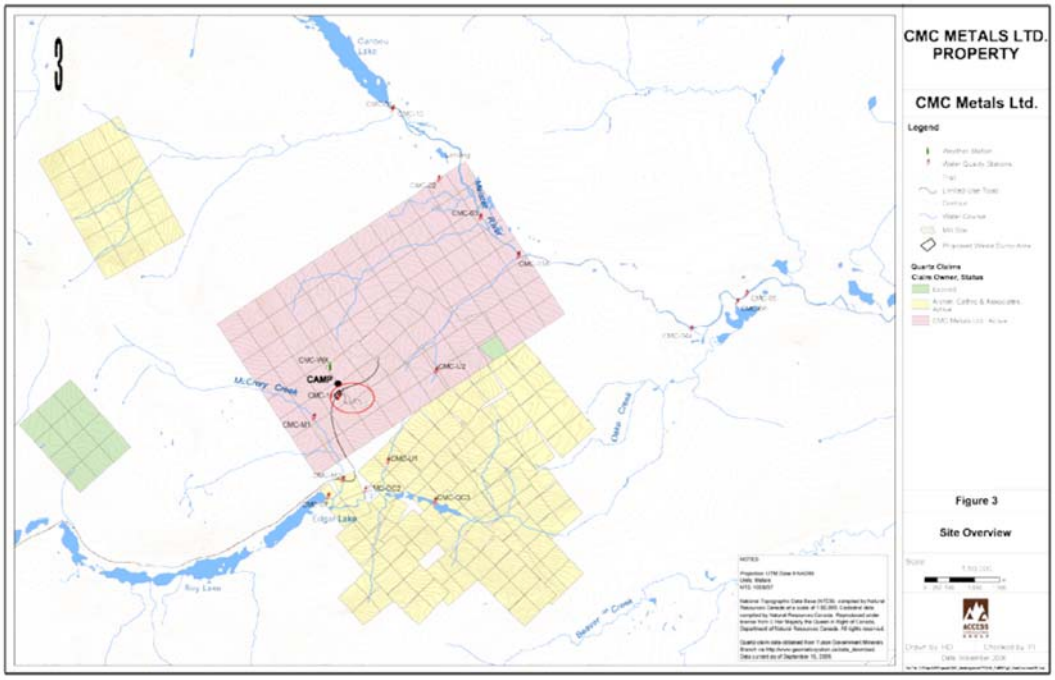

Figure 2: Claim map depicting the location of the Silver Hart property on the Meister River (105B/07). CMC Metal claims are highlighted in pink.

Plate 1: View to north of Silver Hart mine site.

Climate and Environment

The study area is located in the eastern portion of the Pelly Mountains Ecoregion in the northern Cassiar Mountains spanning the British Columbia-Yukon border. The mean annual temperature for the area is approximately -3°C with a summer mean of 10.5°C and a winter mean of -17.5°C. Mean annual precipitation is 500-1000 mm, varying with elevation. Boreal forests of white spruce, black spruce, lodgepole pine and aspen cover

the lower-elevation valley bottoms. Much of the ecoregion lies above the tree line and is characterized by alpine tundra communities of lichens, dwarf ericaceous shrubs, birch, and willows. Grasses, sedges, cotton grass, and some mosses occupy wet sites. Open-growing black and white spruce, and alpine fir are prevalent in the subalpine region. Some aspen and scrub birch occur in valleys and on lower, warmer slopes of the subalpine sections. Lodgepole pine is common following fires. Permafrost is sporadically distributed throughout the area. Representative wildlife includes moose, wolverine, snowshoe hare, black and grizzly bear, Stone's and Dall's sheep, ptarmigan, ground squirrel, and caribou. (Ecoregions Working Group 2003).

Human History

There are four recognized archaeological 'cultures' in the southern Yukon. The oldest of these cultures is known as the Northern Cordilleran tradition and is characterized by sites older than 7,000 to 8,000 years old (Clark 1983; Hare 1995). One site located near Beaver Creek has dated to as early as 10,670 radiocarbon years before the present (Heffner 2002). Site of this age have yet discovered within the greater study region. This archaeological culture is thought to pre-date the introduction microlithic technology from Alaska into the interior of the central and southern Yukon (Clark 1983; Hare 1995).

The Little Arm phase culture dates 7,000 to 5,000 years ago and is heralded by the appearance of microlithic technologies that appear to have diffused into the area from the interior of Alaska to the west (Clark and Gotthardt 1999; Workman 1978). During the Taye Lake phase, after 5,000 years BP, microblade technology becomes sparse if not absent in Yukon, being replaced by a technology characterized by notched projectile points and a diverse variety of scraping and carving tools (Hare 1995; Workman 1978). The latest archaeological culture identified in the southern Yukon is that of the Aishihik phase (Workman 1978). This phase is thought to be a cultural development from the earlier Taye Lake phase culture (ibid.) though there are some differences in technology. The most notable technological advance made during the Aishihik phase was the introduction of the bow and arrow, which replaced a type of throwing spear known as an atlatl (Hare, et al. 2001). All Aishihik phase sites are found stratigraphically above a layer of White River Volcanic Tephra dated to about 1,250 radiocarbon years BP (Clague, et al. 1995).

It is not known to what degree all of the aforementioned archaeological cultures represent developments or advances within a single culture. It can be stated that there are geographical commonalities in the locations of archaeological sites from different eras. A number of archaeological sites have multiple occupations spanning thousands of years suggesting that there is some form of cultural relatedness spanning many millennia of the Holocene. Certainly, the later archaeological cultures such as Taye Lake and Aishihik are the ancestors of modern First Nations people in the area. The indigenous inhabitants of the study area are the Kaska peoples that are now living in the modern communities of Watson Lake, Ross River, Faro, Lower Post, Upper Liard and Dease Lake. Five historic regional groups were identified by Honigmann (1964). They are as follows:

1. The Upper Liard Kaska were called *Natitu?a'gotena* which can be translated as the "dwellers at a high sharp mountain where a little river starts" (ibid.:19). Their territories encompassed the upper Liard River drainage and Liard Plain, and are bounded by the Cassiar Mountains to the west and the Simpson Range to the east.
2. The Dease River Kaska was called the *Ki'stagotena*, which is translated as "Mountain Dwellers" (ibid.: 19). These people inhabited the Dease River drainage to the head of Dease Lake and the border of Tahltan territory including portions of the cordillera to the east and west.
3. The Nelson Kaska were called *Tse'lona* or "point at which is located at the end of the world" (ibid.: 19) and were known to have occupied areas of the Kechika River and areas of the Liard river to the east of the *Ki'stagotena* people. This group is known to have traded at Fort Nelson, with the Nelson Slavey and Sekani, after it opened in 1800. They later resumed trading within Kaska territory with the opening of such posts as Chee House and Lower Post.
4. The Frances Lake Kaska was called *Tu'tcogotena* translated to mean the "Big water dwellers" (Honigmann 1964: 20). These people traditionally occupied the area surrounding Frances Lake and the Upper Frances River. The outward expanse of their territory also included the upper reaches of the Hyland and Smith rivers. *Tu'tcogotena* were known to also have used the upper Pelly basin (Gotthardt 1987).
5. The *(E)spa'totena*, "Goat Indians" or "Dwellers among the wild goats" (ibid.: 20) lived in the mountain drainages to the north and northeast of the *Tse'lona*. Their territory encompasses the Beaver, South Nahanni as well as portions of the upper Nahanni rivers. Traditionally this group is known to have traded at Fort Halkett, Lower Post and Fort Liard. Gotthardt (1987: 10) has suggested that the *Espa'totena* could be the same as Campbell's *Abba-hou-eta*, or "Knife Indians." A similar name is rendered as *Abbato-tena* by Dall et al. (1877) for the Kaska who inhabited portions of the upper Pelly and Macmillan rivers. If so, the *Espa'tptena* territory could be expanded to include regions of the upper Pelly River. When George Dawson passed through the area in the late 1800s he mentioned that the inhabitants of the Fort Halkett area called the Upper Pelly people the *Ta-koos-ooti-na* and the lower Pelly people called them the *Na-ai*. Dawson did not meet any inhabitants of the area and was unable to confirm the actual name by which the upper Pelly people described themselves. This group may be related to the "Pelly River Indians," described by Poole Field (MacNeish 1957), who were involved in a war with a group of "Mountain Indians" in the 1880s.

Summaries of Kaska land use patterns tend to suggest that local populations were composed of small highly mobile groups of people that travelled on seasonal cycles and tended to use fish lakes as central habitation/meeting places. Their principal economic activities tended to revolve around hunting, fishing and trapping activities that varied in importance depending on the season. Honigmann (1964) has described the Kaska annual cycle: hunting took place during all seasons though it was most intense during the late summer when game animals such as moose, caribou or sheep "had fattened" (Honigmann

1964: 31). Much summer hunting occurred in the high alpine where herd animals such as caribou went to pasture. In the winter, game animals tended to migrate and diffuse throughout the forested lowland valleys. Trapping was an important winter activity though it is stated that most Kaska peoples would congregate around the important fishing lakes where a steady supply of fresh fish was harvested in order to supplement the winter meat caches. Beaver ponds were utilized through out the year though it is thought that they were an important winter resource (the lodges were easier to access over the frozen ice), and thus, such locals were the focus of winter trapping and hunting. River fishing was common: arctic grayling would be harvested while running up the smaller streams after spring break-up, while whitefish could be trapped while spawning during the fall. Salmon would run in the Pelly River during the fall and was generally the focus of the year's most important fishing event.

It is likely that the North American Fur Trade first began to influence the Kaska by the 1700s when Russian traders began active trading on the Northwest Coast; demand for new fur sources may well have reached far into the interior at this time. By 1821 the Hudson's Bay Company and the Northwest Company merged and had began actively exploring and trading in the interior northwest. Euro-Canadian Traders first contacted the Kaska of Upper Liard River during the early 1800s. Before this time the trade of exotic goods, especially those of coastal or European origin, was very much controlled by Tahltan of the Stikine River who served as middlemen to the Tlingit trade (Wilson 1970). Direct contact was likely first established in the years from 1800 to 1820 during Kaska trade expeditions to Fort Simpson, Fort Liard or Fort Nelson (Honigmann 1949). The first trade post opened in Kaska Territory was Fort Halkett, at the mouth of the Smith River, in 1821. In 1838 a second post, Dease Lake Post, was opened but was quickly abandoned (1839) due to trade related hostilities from the Tahltan/Tlingit people to the south. Fort Halkett remained open until 1865 when low trade profits resulting from intense competition led Hudson's Bay Company managers to discontinue the operation. Subsequently, the Kaska people of the Liard drainage either traded indirectly with the coast or directly with HBC posts to the east (Fort Nelson, Fort Liard, Fort Simpson, Toad River Post etc.) Throughout the late 1840s and 1850s the HBC maintained several trade outposts throughout the Kaska territory but, for logistical reasons, many were abandoned later in the century.

It was not until around the turn of the twentieth century that direct trade was re-established in the area when free traders began moving back into the region. At this time fur prices were rising because the economic depression in Europe had recently ended (due in part to the discovery of rich gold deposits in the Yukon, Alaska and South Africa) (McCandless 1985). This led to the establishment of numerous small communities throughout the southeastern Yukon that who's economic prosperity relied largely on the fur trade. In the years 1919 and 1920 the price of furs had tripled and the international demand for Yukon furs was at its peak (McCandless 1985). Fur prices remained high throughout the 20s, 30s and early 40s but by the end of the Second World War the bottom had fallen out of the fur market. The major market furriers of Western Europe (particularly those in London) had sustained major wartime damage; the European post-

war economy focused much of its financial resources on rebuilding and not on consumer goods. In the southern United States furriers were using more farmed furs for the production of consumer goods. As a consequence, the demand for Yukon wild furs was greatly reduced.

By 1952, the depression of the fur market caused many in the Kaska population began relocating to the new Yukon population centres at Ross River and Watson Lake (Coates 1991). Since this time mining and highway projects have been the primary economic activity in the upper Liard drainage. However, the Kaska people continue to pursue their traditional subsistence activities throughout the southeast Yukon.

Methods

The main project methodology involved completing a historic and archaeological sites inventory in and adjacent to areas that were to be developed by CMC Metals. The location of development sites were documented through discussions of the CMC staff geologists present at the site during the fieldwork. The development area was stated to be confined to the subalpine region of the small mountain on the south side of the Meister River (Figure 3) and mine infrastructure would not be built adjacent to either the Rancheria or Meister River valley bottoms (areas considered to have moderate to high potential). Thus. The development site could be generally described as having low potential for the presence of heritage values. Regardless, the north side of the mountain does contain several small creeks draining into the Meister River that could be considered to have moderately elevated potential for the presence of archaeological sites because they could conceivably have been used as travel routes to hunting areas and some topographic features in the area provide excellent look outs of the surrounding territories.

The inventory was completed by walking transects and excavating test pits in areas that were considered to have moderate to high potential for the presence of historic or archaeological remains. In areas that were shovel tested for archaeological remains the consultant excavated tests on a 15 to 20 m grid throughout the area considered to have elevated potential. Because of the location of the proposed mine facilities, that being sub-alpine, soils in the study area proved to be no more 20 to 30 cm deep before hitting solid bedrock or weathered parent materials. All tests units were 40 by 40 cm wide.

Figure 3: Development locations within the Silver Hart property.

Results

Archaeological Inventory

During the inventory of the Silver Hart development area the consultant identified three specific areas (Figure 4; Table 1) that were considered to have moderately to elevated potential for the presence of archaeological remains. The first is area checked was a north draining creek valley on the south side of the mountaintop. The valley drains into the Meister River and is bordered by a series of ridges on both the west and east sides of the creek. Test sites were identified at five different locations that in the drainage roughly within one kilometre of the mine site. A total of 123 test units were excavated in shallow soils. Testing at these locations did not result in the location of heritage sites.

The second location tested was a high hill located in the centre of the property that possessed both a view of the Meister River and the Northwind Lakes. The hilltop had very little soil deposition therefore the majority of the inventory was completed by visually scanning gravel exposures. A total of 30 test units were excavated in addition to the aforementioned. No heritage sites were identified.

The final test site was a small hill on the south face of the mountain that overlooked a small wetland stream to the east and the Meister River Valley to the north. Testing of the location consisted of the excavation of 12 shovel tests and visual scanning for artifacts. No heritage resources were discovered. The remainder of the development area can be described as having extremely low potential for the presence of heritage sites or has been severely impacted by past development thus negating the possibility of heritage site survival.

Test site	Location (UTM NAD 83)	Site Description	Shovel Tests	Result
CMC 1	E0404236 N6690068 E0404375 N6689501	North draining valley leading to Meister River. Portions of the valley ridge overlooking the stream tested for 1km to north of development impact zone. Moderate soil development tests excavated 20-30cmBS.	123 at 5 specific localities	Nil
CMC 2	E0404144 N6689277	Prominent hill top overlooking both Meister River and Northwind Lakes and Mine Camp. Minimal soil deposition. Site inventory was largely visual. Some test units excavated 5-10 cmBS.	30 plus visual survey	Nil
CMC 3	E0405642 N6690069	Prominent hill on north side of the mountain with view of Meister River valley and a creek wetland to the east. Minimal soil deposition at the site. Some test units excavated 5-10 cmBS.	12 plus visual survey	nil

Table 1: Table describing locations of test sites surveyed at the Silver hart property.

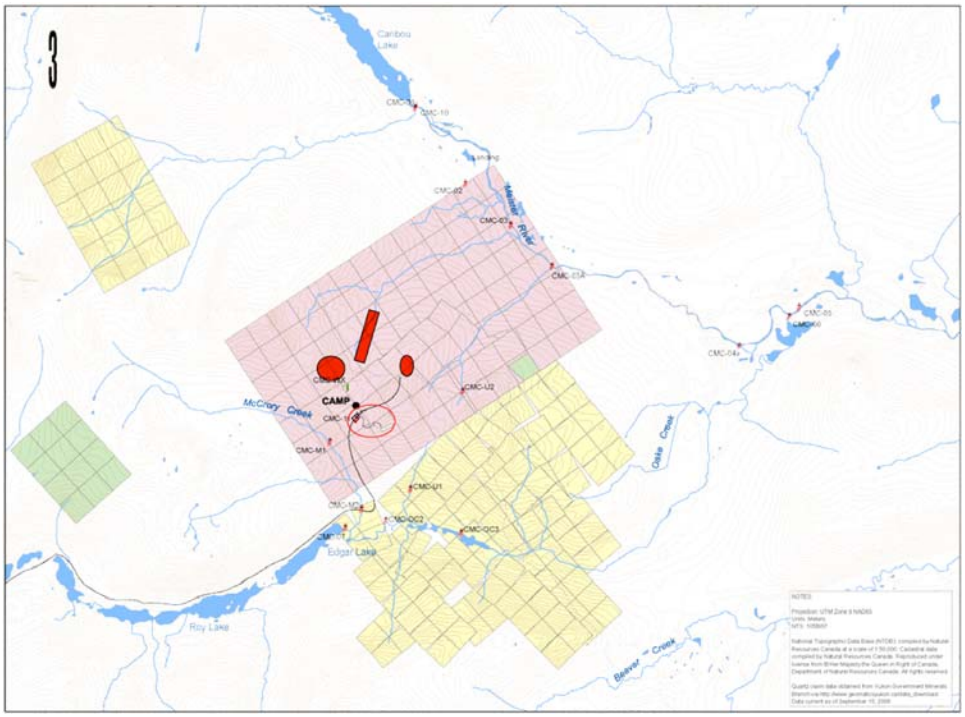

Figure 4: Map of the Silver Hart claim area depicting test sites. Areas tested are highlighted in red.

Recommendations and Conclusion

During the course of the present field survey we were unable to identify any historic or archaeological sites within the proposed development impact zone. Three broad localities were inventoried for heritage sites resulting in the discovery of no archaeological or historic remains. The consultant believes this can be attributed to the subalpine location of the development area rather than none use of the area by past populations. Due to the areas close proximity to significant lakes and water drainages it is more than likely that the development area was, in the past, used as a hunting site or a travel location. The area was likely also used as a key trapping area throughout the early half of the 20th century. However, significant sites related to past usages are more likely located in the valley bottoms around the Northwind Lakes (to the south) or Caribou Lake (to the north) than in the alpine and subalpine reaches of the Cassiar Mountains. CMC Metals has not presented any plans to develop locations in the Meister Valley (including tributaries thereof) and will therefore not be impacting locations considered to have high potential for the presence of heritage sites.

It should be noted the mine access road does closely follow the Rancheria River as well as some upper tributaries of the Meister River. The road does pass several areas that are considered to have moderate to high potential for the presence of heritage sites. As such, the consultant will recommend that a heritage sites inventory of the mine access road be completed if the following actions are to occur:

1. If the any section of the mine access road in the Rancheria or Meister River Valley bottoms are to be realigned.
2. If the road is to be upgraded significantly requiring the development of new gravel borrow sources within the aforementioned valley bottoms.

Furthermore, consultant will recommend that further assessment work would be required if the mine development plan is altered resulting in the construction of new mine facilities and access roads within 100 m of the Meister River at any location on the north end of the Silver Hart property. In regards to the proposed mine site itself, the consultant recommends that no further heritage sites inventory or assessment is required in advance of the development of the mine. No further recommendations or results are forthcoming.

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SILVER HART PROPERTY

PROJECT DESCRIPTION
APPLICATION FOR TYPE 'B' WATER USE LICENCE
APPLICATION FOR MINE PRODUCTION LICENCE

APPENDIX G
KLOHN LEONOFF GEOTECHNICAL STUDY

March 2008

Prepared by:

ACCESS
CONSULTING GROUP

GEOTECHNICAL REPORT

PROJECT: HART SILVER PROPERTY

LOCATION: WATSON LAKE, YUKON TERRITORY

CLIENT: SILVER HART MINES LTD.

OUR FILE: PB 3880 0101 NOVEMBER, 1987

TABLE OF CONTENTS

APPENDICES

DRAWINGS

1. INTRODUCTION

1.1 SCOPE OF WORK

Silver Hart Mines Ltd. has retained Klohn Leonoff Ltd. to undertake geotechnical investigations for mill, tailings impoundment and associated camp facilities at their Hart Silver property in the Yukon Territory. Field studies were undertaken between October 14 and October 17, 1987.

This report presents a site selection and preliminary geotechnical recommendations for the above structures together with a review of the feasibility of hydroelectric power generation and water supply requirements for the proposed mine.

The project is currently being investigated for a target startup in late 1988.

1.2 GENERAL PROJECT DESCRIPTION

The Hart Silver property of Silver Hart Mines Ltd. lies at latitude N 60 degrees, 20 minutes and longitude E 130 degrees, 43 minutes; approximately 35 km by gravel road north from Rancheria located on the Alaska Highway, Yukon Territory (Drawing A-1001). Rancheria is approximately 130 km west of Watson Lake.

The proposed mine is designed to produce silver and lead concentrate from a mill throughput of 200 tons of ore per day. The present study assumes that current reserves are sufficient to supply the mill at this rate for up to three years. Future development may increase the design life and additional tailings containment to accommodate further expansion is considered in this report.

An investigation for suitable mill and tailings disposal areas was made in the area surrounding the minesite. The preferred site for the mill

and related facilities is 1.8 km south of the mine at elevation 3,440 ft (1050 m), 2,000 ft (600 km) east of Edgar Lake. Ore will be hauled down a haul road from elevation 4,700 ft (1430 m) at the mine to an ore stockpile area close to the mill.

Tailings from the mill will be piped to containment ponds located just east of the millsite. Two sites have been identified as suitable for pond construction, with site No. 1 (Drawing No. D-1002) as the preferred site. Current field and engineering investigations have been directed towards feasibility of pond construction at site No. 1.

A review, within about a 10 mile radius of the mine, of the potential for developing hydroelectric power has been undertaken by Klohn Leonoff based on an estimated minimum site power requirement of 500 kW year round.

2. SITE DESCRIPTION

2.1 TOPOGRAPHY

The Hart Silver Property lies in an area of steep relief with ridge tops above 5,000 ft (1525 m) and valley bottoms at elevation 3,350 ft (1020 m). Tree-line lies approximately at elevation 4,500 ft (1370 m).

The main valley profiles are U-shaped with steep V-shaped tributary valleys dissecting the side slopes. Subsequent deposition, mainly glacial in origin, created low hummocky terrain along valley floors, and valley slopes have been smoothed by post-glacial deposition of colluvial (slope wash) deposits.

The main valley slopes vary from 25 degrees in the lower regions to 15 degrees around tree-line.

2.2 SURFICIAL GEOLOGY

The project area has been heavily glaciated. The retreating glaciers have formed sand and gravel terraces and sinuous eskers along the valley sides. The flat valley bottoms appear to be largely composed of granular materials redeposited by present day streams. Alluvial fans deposit have developed where active side valleys emerge onto the main valley floor. McQuarrie Creek is an example of such a deposit. The granular materials have all been deposited by water and are generally loose to medium dense. The composition varies from gravel to sand to some silt. Bedrock outcrop below elevation **3,430** ft is covered by these valley deposits and probably lies at depths in excess of **30 ft.**

Fine grained glacial deposits such as glacial till and lake sediments are generally absent except for thin silt horizons which have developed in moraine dammed depressions reflecting temporary impoundments by ice or water. Layers of laminated silt up to **5** ft thick were intersected in test pits TP **87-5** and **TP 87-6.**

Glacial till appears to be absent in valley bottoms but may remain on valley sides, generally reworked by slope action to form colluvium. Silty colluvium composed of silty sand with angular rock fragments up to **15** ft in thickness overlying bedrock was sampled in trench **8800** at approximate elevation 4,400 ft, **1** km north of the tailings area.

No evidence of permafrost in surficial materials was discovered either from surface features or in test trenches. Bedrock at the Edgar Lake site consists of a fresh, highly fractured coarse grained igneous rock of granodiorite composition.

3. FIELD INVESTIGATIONS

A site investigation of the Silver Hart property was completed by K. Macfadyen of Klohn Leonoff between October 14 and October **17,** 1987. **Preliminary** reconnaissance of potential tailings pond and millsites was

completed on October 14 and 15. Survey control was established into the pond area by Silver Hart surveyor, R. Harding during this period. On October 16 and 17, 14 test pits were excavated with a Hitachi VHO 75 track-mounted backhoe. Test pits were logged, photographed and sampled for grain size analysis. Test pit sites were surveyed together with selected section lines through proposed structures.

Additional locations inspected and sampled include:

- twositeson the accessroad at 32.5 km and 36.5 kmwere sampled as a source of clean gravel for concrete aggregate and road building purposes;
- Trench 8800 and the upper 'T' zone were sampled as possible sources of impervious borrow material.

4. PLANTSITE

4.1 GENERAL

The proposed plantsite will consist of a mill of design capacity 200 tons per day with ore bins, primary and secondary crushers, separation cells and ancillary structures such as fuel storage tanks, shop and generators. The mill location was selected on the basis of foundation conditions, and proximity to the mine haul road, ore storage area and tailings disposal areas. A preliminary layout for the proposed millsite is shown on Drawing D-1002. A new access road to the mine has been routed along this bench with a ramp at 10% grade rising to 3,475 ft elevation to the east.

The proposed millsite location is at about elevation 3,345 ft and some pumping of the tailings may be required to enable discharge of tailing around the impoundment perimeter at elevation 3,335 ft. An alternative millsite has been located about 400 ft northwest at elevation 3,375 ft. The site has not been investigated, however based an nearby data, we believe the foundations will consist of bedrock at about 5 ft deep. A

potential disadvantage of the alternative millsite is its proximity to the ore stockpile area where winter blasting may be a common occurrence which may be a safety consideration. The potential economic advantage of the alternative millsite location should be reviewed at the time detail engineering of the mill is in progress.

4.2 FOUNDATION RECOMMENDATIONS

The foundation conditions for the proposed millsite consist of about 4 ft of loose sand and gravel overlying bedrock. The bedrock consists of fresh highly fractured granodiorite and is an excellent foundation material for mill structures.

We recommend that spread footings or strip footings placed on bedrock have an average bearing pressure no greater than 600 kPa (12 ksf). Maximum bearing pressures of 800 kPa (16 ksf) may be used for short-term cyclic loading conditions and maximum bearing pressures of 300 kPa (6 ksf) should be used beneath foundations subjected to constant vibratory loads. The minimum footing width should be 450 mm regardless of bearing pressure.

The area has about 4,920 degree days of freezing and the depth of frost penetration is in the order of 12 ft. Footings should be on sound bedrock, below the 12 ft depth, or insulated. Highly fractured bedrock which contains more than 5% silt should be excavated within the frost penetration zone. Exterior footings placed on sound bedrock are not normally susceptible to frost heave. However, the backfill around the footings should be drained to reduce adfreezing on footings or columns. Perimeter drains should be installed around the footings and backfill should consist of clean sand and gravel. Perimeter drains should be independent of surface and roof drains. All perimeter drains should be

connected to a heated sump inside the buildings and water pumped to the sedimentation pond or tailings pond. Drains should not empty onto the site grading fill as the outlet would freeze during the winter.

Floor slabs and lightly loaded structures nay be supported on compacted structural fill placed over bedrock. The structural fill should consist of a clean well graded sand and gravel. The structural fill should be compacted to 100% of the maximum dry density as determined by the standard Proctor compaction test (ASTM D-698). We recommend that spread footings or strip footings placed on the structural fill have an average bearing pressure no greater than 200 kPa (4 ksf). Maximum bearing pressures of 260 kPa may be used for short-term cyclic loading conditions. Maximum bearing pressures of 100 kPa should be used beneath foundations subjected to constant vibratory loads. The minimum footing width should be 450 mm regardless of bearing pressures.

Site grading fill can consist of locally available sand and gravel and should be placed and compacted to a density equivalent to 97% of the maximum dry density as determined by ASTM test D-698.

We recommend that footing surfaces be prepared by ripping the rock surface to remove loose weathered rock which may be weakened by frost action. All drill and blast rock excavation required for footing construction or site grading should be by "controlled methods" to reduce overbreak and disturbance of the adjacent rock mass. In footing areas the rock surface should be scaled by hand and cleaned with compressed air. The prepared footing areas should be inspected and approved by a qualified geotechnical engineer or inspector prior to forming the footings.

5. ORE STOCKPILE AREA

An area of flat ground above the proposed mill was investigated for use as an ore stockpile. Two test pits (TP 87-10 and TP 87-11, Drawing No.-D-1002 and Appendix I) were excavated to investigate subsoil conditions. The area is underlain by a minimum of 5 ft of weak, saturated organic peat overlying sand and gravel (TP 87-10) and bedrock (TP 87-11).

Site preparation will include excavation of perimeter drainage trenches around the area to direct surface runoff away from the area. The weak peat deposits should be removed or measures taken to reduce settlement and disturbance due to stockpiling ore over the top of it. Such measures would include excavation of drainage trenches and placement of about 3 ft of sand and gravel over the peat surface. Placement of ore stockpiles should be limited in height and be spread uniformly to prevent local failures in the peat which would cause ore mixing and dilution with the foundation soils.

6. TAILINGS STORAGE

6.1 GENERAL

A suitable location for tailing storage hss been identified and is shown on Drawing D-1002. The potential for storing tailings elsewhere in the project area was assessed on the basis of 1:10,000 scale aerial photographs, 1:50,000 topography and 1 inch = 200 ft topography around the mine area. The site chosen is considered to be the most feasible and has the following advantages over other areas:

- it is topographically favourable for minimum dam building and maximum storage;
- climatic conditions in the valley bottom are less severe than at higher elevations, which will help with winter operation of the pond;

- a year-round water supply is assured in the valley bottom aquifers; mill or tailings ponds located at higher elevations may require pumping of fresh water and possibly tailings;

- the valley bottom is more accessible as a camp location and with the severe winters it is advantageous to minimize travel requirements; hence it is recommended that the campsite, millsite and tailings pond be located within close proximity to each other.

The proposed Tailings Pond No. 1 is located about 2,000 ft (600 m) east of Edgar Lake and will store approximately 200,000 tons of mine tailings or about three years of mine production at 200 tpd. Future increases in mine production could be accommodated by Tailings Pond No. 2, located 1,500 ft (460 m) east of Pond No. 1 which could store an additional 300,000 tons of tailings. The two pond sites were assessed on the basis of tailings storage and dam volumes required for various dam heights. Table 1 summarizes the results and indicates that Pond No. 1 is the most efficient location for tailings storage. Site investigations were conducted and dam design studies carried out for Pond No. 1. Pond No. 2 is identified as a potential site for future expansion of the mine.

TABLE 1

SUMMARY OF TAILINGS DAM ALTERNATIVES

Tailings Pond Dam Option	Crest Elevation (ft)	Maximum Tailings Elevation	Maximum Storage short tons	Dam Material Volume yd^3	Ratio Storage Volume / Dam Volume
Pond #1 - Low	3,430	3,425	140,000	20,000	7.0
Pond #1 - High	3,435	3,430	270,000	53,000	5.1
Pond #2 - Low	3,425	3,420	120,000	28,000	4.3
Pond #2 - High	3,450	3,445	325,000	160,000	2.0

6.2 SITE CONDITIONS - TAILINGS POND NO. 1

Tailings Pond No, 1 is shown in plan and section on Drawing D-1003. Six test pits were excavated to investigate soil conditions beneath the proposed pond and dike alignments.

The pond area is underlain by an undetermined thickness of loose, coarse sand and gravel with rounded cobbles and boulders. Occasional boulders up to 10 ft in diameter were encountered. The sand and gravel which forms the enclosing ridges of the pond, is well drained and has a permeability of about 10^{-3} cm/s. Typical grain size distribution curves for the sand and gravel are presented in Appendix II.

Test pits TP 87-6 and TP 87-8 were excavated in the base of the proposed tailings pond and indicated layers of sensitive, horizontally laminated lacustrine silt up to 5 ft thick. The silts are underlain by coarse sand and gravel similar to the material in the enclosing ridges. Silt was not present in TP 87-5 suggesting that the temporary ponding which deposited the silt, was localized in extent. The anticipated area of silt cover in Tailings Pond No. 1 is indicated on Section A in Drawing D-1002.

Test pits TP 87-4, TP 87-7 and TP 87-9 were located to investigate foundation conditions for the proposed dikes. The dike straddle the existing ridge to minimize dike volumes and span the low points in the ridges. Coarse, well drained sand and gravel were excavated, with no evidence of the sensitive silt horizons found inside the pond. During stripping of the organic layers from the ridges prior to construction, it is recommended that more detailed investigations be completed for the presence of these silt horizons. Bedrock was not encountered in the test pits.

6.3 WATER BALANCE

6.3.1 Hydrology

A preliminary review of the available hydrologic data was made to determine the annual water balance and design flood flows for the tailing ponds. The available data included the following:

- Streamflow stations in British Columbia. The most applicable would be Cottonwood River above Bass Creek, Station No. 10AC05, drainage area 880 km² and 20 years of data.

- Snow pack data. The most applicable would be Cassiar, British Columbia, (Station No. 4C04) at elevation 1390 m with 21 years of data.

- Watson Lake Airport has a first-class AES meteorological station. The Principal Station Data book was obtained.

- Intensity/Duration/Frequency data was obtained by phone from AES in Edmonton for Watson Lake. Rainfall intensity values were obtained for 10 and 15 minute durations for return periods of two, five, 10, 25, 50 and 100 years. These were extrapolated to 200 years.

  Due to the preliminary nature of this study and the lack of site data, the rational method was used to obtain a 200-year precipitation value. The times of concentration obtained for Pond Nos. 1 and Pond 2 were 13 minutes and 11 minutes, respectively. Therefore an intensity of 45 mm/hr (1.77 inches/hr) corresponding to a duration of 10 minutes and a return period of 200 years was used. Using a drainage area of 172 acres and 133 acres, for Pond Nos. 1 and 2, respectively and a coefficient of 0.5 for both ponds, a resulting peak rainfall inflow of 152 cfs and 118 cfs was obtained. Snowmelt during rainfall of 1.6 inches/day was assumed to contribute to the peak inflow.

  Data from Watson Lake has been used directly with no adjustment for this preliminary estimate. For detailed design, adjustments should be made to the data and perhaps a more detailed approach to estimating the 200-year inflow value. Wind data should be reviewed to see if it may be an important factor in freeboard.

6.3.2 Water Losses and Reclaim Water

The tailings will be transported to the pond as a slurry with an estimated 32% solids by weight. This would require a water flow rate of 7 L/s. Of the 7 L/s, about 15% water will be lost to the tailings or 1 L/s.

Seepage losses will occur through the sand and gravel foundations. The seepage losses will be reduced as tailings are spigotted around the pond perimeter forming a more impervious barrier. The spigotted tailings is estimated to have a permeability of less than 10^{-5} cm/s which would result in potential seepage losses of up to 1 L/s.

Precipitation has been estimated from the Hydrologic Atlas of Canada to be approximately 500 mm annually. Annual evaporation is estimated to be 300 mm. The resultant water gain for Pond No. 1 will be 200 mm annually or .2 L/s.

We recommend that an interceptor ditch be placed around the north side of the proposed tailings pond to catch and remove excess water from snow melt or from precipitation falling outside the pond. We recommend that a ditch 1 m deep and 2 m wide at the base with 2H:1V side slopes be used for preliminary design.

The water available for reclaim in the tailings pond, given the quantities calculated in the previous sections, is summarized below:

	Gain (L/s)	Loss (L/s)
Transport Water	7	
Precipitation	.4	
Evaporation		.2
Void Loss		1
Seepage Loss		1
Runoff (diverted)	0	0
	+7.4	-2.2
Maximum Available Reclaim	5.2 L/s	

The values given above are preliminary estimates only and will require finalization during the design stage. The seepage loss is dependent upon obtaining a uniform coverage of tailings over the pond to seal the basin. Losses without the tailings cover could well exceed all the gains resulting in zero reclaim water.

6.3 3 Freeboard and Spillway

The tailings pond is sized to provide adequate storage and spillway capacity for a 200-year rainfall plus snowmelt with at least 1.7 ft of freeboard. This assumes that surface diversion ditches become plugged and overflow during the design storm.

The spillways have been sized based on the 200-year rainfall plus snowmelt inflow. No flood routing has been carried out. This would attenuate the inflow to some extent. The broad crested weir formula with a coefficient of three (imperial) was used for sizing the spillways. A channel flow estimate should be used in the design stage to obtain the spillway capacity. Table 2 gives the important design data,

TABLE 2
SPILLWAY DESIGN SUMMARY

	Total Discharge (cfs)	Spillway Width (ft)	Head Necessary (ft)	200-yr Flood Level (ft)	Freeboard (ft)
Pond No. 1	164	40	1.23	el. 3,433.23	1.77
Pond No. 2	127	30	1.26	el. 3,423.26	1.74

6.4 DAM DESIGN

The tailings impoundment area is in a natural depressicn probably formed as a receding ice melt feature, glacial eskers and outwash, during the last period of glaciation. The base of the depression is at elevation 3,390 ft and the maximum dam crest is at elevation 3,435 ft. The impoundment will require some low dikes up to 10 ft high, a 30 ft high dam in the southwest corner, and a 20 ft high dam in the southeast corner.

The foundation for the dam will be stripped of all organic and deleterious soils. The dam will consist of a homogeneous compacted fill with the spigotted tailings placed on the upstream slope. The compacted sand and gravel fill is estimated to have an angle of internal shearing resistance of 36° and the foundation sand and gravel is estimated to have a strength of 32°. The structure is expected to be free-drainage and the phreatic level is estimated to be low as shown on Drawing D-1003. A preliminary stability analysis was done on the structure at its highest point using the BISHOP method of slices, and the static Factor of Safety is 2.3.

The project area is located between Earthquake Zones 1 and 2, as defined by the National Building Code, and the 475 return period peak ground acceleration is 0.1 g. The dams are stable under this earthquake load.

6.5 DAM CONSTRUCTION AND OPERATION

The dam can be constructed using locally available sand and gravel from inside the pond perimeter. The dam should be built in one stage to elevation 3,435 ft and the spillway constructed. The spillway is an open-channel cut as shown on Drawing D-1003.

The impoundment perimeter is very pervious and all tailings water will exfiltrate unless measures are taken to reduce the leakage. A dry pond may be acceptable for summer operation, however in the winter it will encourage ice buildup around the tailings discharge stream. The ice buildup can be very substantial and would reduce the life of the pond significantly. For winter operation, it is necessary to have a water pond which will allow the tailings discharge to be submerged below the ice cover. A water pond can be created by controlled spigotting of tailings around the perimeter of the pond. The tailings will form a semi-impervious barrier which will reduce seepage losses and allow water to collect.

7. CAMPSITE AND WATER SUPPLY

A preliminary layout by Orocon Ltd. has been used by Klohn Leonoff as the basis for a review on-site. The area proposed for camp location is shown on Drawing D-1002. Basic units are kitchen, bunkhouse, propane tank pad, security gate, water supply well and septic fields. It is recommended that water supply well(s) be developed in the gravel fan of McQuarrie Creek adjacent to the proposed campsite. The sand and gravel deposits in the valley are expected to act as a groundwater aquifer. Preliminary estimates indicate that one or two 6-inch wells may supply up to about 40 gpm (3 L/s). Make-up water for the mill may also be available year-round from wells in this area.

The proposed campsite is of similar morphology to that of the millsite. The area is hummocky and well-drained, probably underlain by sand and gravel to depths of 10 ft to 20 ft. Bedrock at surface immediately to the east of the proposed site would be avoided in this layout and one or two gravel pads at grades between 3,455 ft and 3,460 ft could be constructed. A septic field in sand and gravel can be located downslope from the camp and at least 300 ft from the water supply well.

8. CONSTRUCTION AGGREGATE

Samples of clean sand and gravel were taken from locations at 32.5 km and 36.5 ka, on the access road 6.5 km and 2.5 km west of McQuarrie Creek bridge. Grain size analyses are presented in Appendix II. Both samples were evenly graded and contained less than 2% silt by weight. The sample from 36.5 km was chosen for its accessibility and results of a laboratory visual analysis for suitability are presented in Appendix II. The coarse gravel fraction (greater than No. 4 mesh or 4.8 mm) was found to contain less than the allowable percentage of organic, reactive and friable materials (ASTM Spec C33-52T) as summarized in Table II-1 (Appendix II).

Gradation analysis and a mineralogical assessment indicate that absence of the aggregate appears acceptable for cleanliness, durability, strength and reactive minerals. Screening to remove oversize boulders may be necessary or the oversize fraction could be crushed. Crushing would increase the proportion of angular fragments and may be of benefit in haul road surfacing. A wash plant may likely be required to reduce the silt content in the aggregate.

Quality control tests should be run on samples at the design stage to confirm aggregate quality and the processing requirements. The available volume of gravel at 36.5 km is in the order of 10,000 yd^3.

9. HYDROELECTRIC POTENTIAL

A preliminary review was made of the project area to assess the feasibility of potential hydroelectric sites as a source of power for the mine development.

The power demand for a 200 t/day operation is estimated to be about 500 kW. There appears to be a potential hydro site just above the plantsite, on the McQuarrie Creek watershed, which could produce 500 kW for about three months of the year. The firm power available from this site is only about 10 kW and in fact the stream is likely to freeze up completely in the winter so that no power could be produced. A second site to the north of Northwind Lakes (about 9 km from the plantsite), on the Rancheria Creek watershed, could produce slightly more power with 600 kW for three months and 300 kW for six months. The firm power would be about 40 kW but at low flows ice would cause a problem.

The most promising hydro site is on the Meister River, about 8 km from the plantsite, and is shown on Drawing D-1001. The site could produce 8 MW for three months and 3 MW for six months. The firm power would be about 500 kW so there is a possibility that the site could produce all the necessary power required by the mine.

Components of the hydro project would consist of run-of-river intake, 3.5 km (2 miles) of penstock, a powerhouse and 8 km (5 miles) of transmission lines. Assuming that geologic conditions are favourable and using average construction costs, an "order of magnitude" cost for such a scheme could be in the order of $1 million.

10. CONCLUSIONS AND RECOMMENDATIONS

A preliminary review and site investigation program has been completed for the site. The main results of the study are summarized as follows:

1. A tailings pond site has been identified which will store three years of mine tailings at a mine production rate of 200 tpd. A second site has also been identified which might provide an additional four years of tailings storage.

2. The tailings impoundment perimeter consists of pervious sand and gravel. Tailings will need to be spigotted around the perimeter to reduce seepage and allow formation of a pond for winter operation. Without a pond for winter operation there would be excessive ice buildup which would significantly reduce the available storage. Seepage from the pond could vary from 1 L/s to 5 L/s depending on the effectiveness of spigotting the tailings over the basin.

3. The dam should be built in one stage to elevation 3,435 ft. A spillway is required at elevation 3,432 ft and is designed to pass the 200-year flood plus snowmelt with at least 1.7 ft of freeboard.

4. The tailings impoundment will use the existing favourable topography and dams can be constructed of locally available sand and gravel. The static Factor of Safety of the dam in the southwest corner is 2.3. The dam has a dynamic Factor of Safety greater than one during the 475 year return period, peak ground acceleration of 0.1 g. The stability of the natural ridges, which form part of the tailings dam, shsuld be assessed, during the detail design stage, on the basis of additional site investigations as discussed in '9' below.

5. The millsite is located near the tailings pond and foundations consist of bedrock near surface.

6. The ore stockpile area is over an existing swamp with up to 5 ft of peat. The swamp will need to be drained and covered with a pad of fill to minimize mixing with the ore. The ore stockpile should be

built up uniformly to prevent local shearing of the underlying peat.

7. The campsite location is near the mill and tailings pond and is located near McQuarrie Creek. A groundwater well should provide adequate water supply for the mine development.

8. A preliminary site on the Meister River (8 km northeast) has been identified as a potential hydroelectric source and could provide up to 500 kW firm power. The order of magnitude cost for such a scheme is about $1 million and further economic studies are required to assess its feasibility.

9. Additional site investigations work should be carried out during the detail design stage. We recommend that at least two boreholes be drilled at the tailings pond to confirm conditions at depth. The drilling could be scheduled with the water well drilling. Additional test pits should also be excavated to confirm the soil conditions in the ridge which acts as part of the dam. During construction, the foundations and dam construction should be monitored by a qualified geotechnical engineer. This will ensure compatability between the actual site conditions and the geotechnical design.

KLOHN LEONOFF LTD.

PROFESSIONAL ENGINEER
PROVINCE OF BRITISH COLUMBIA
H. N. McLEOD

Harvey N. McLeod, P.Eng.
Project Manager

Mark T. Olsen, P.Eng. (Yukon)
Principal Consultant

SILVER HART PROPERTY

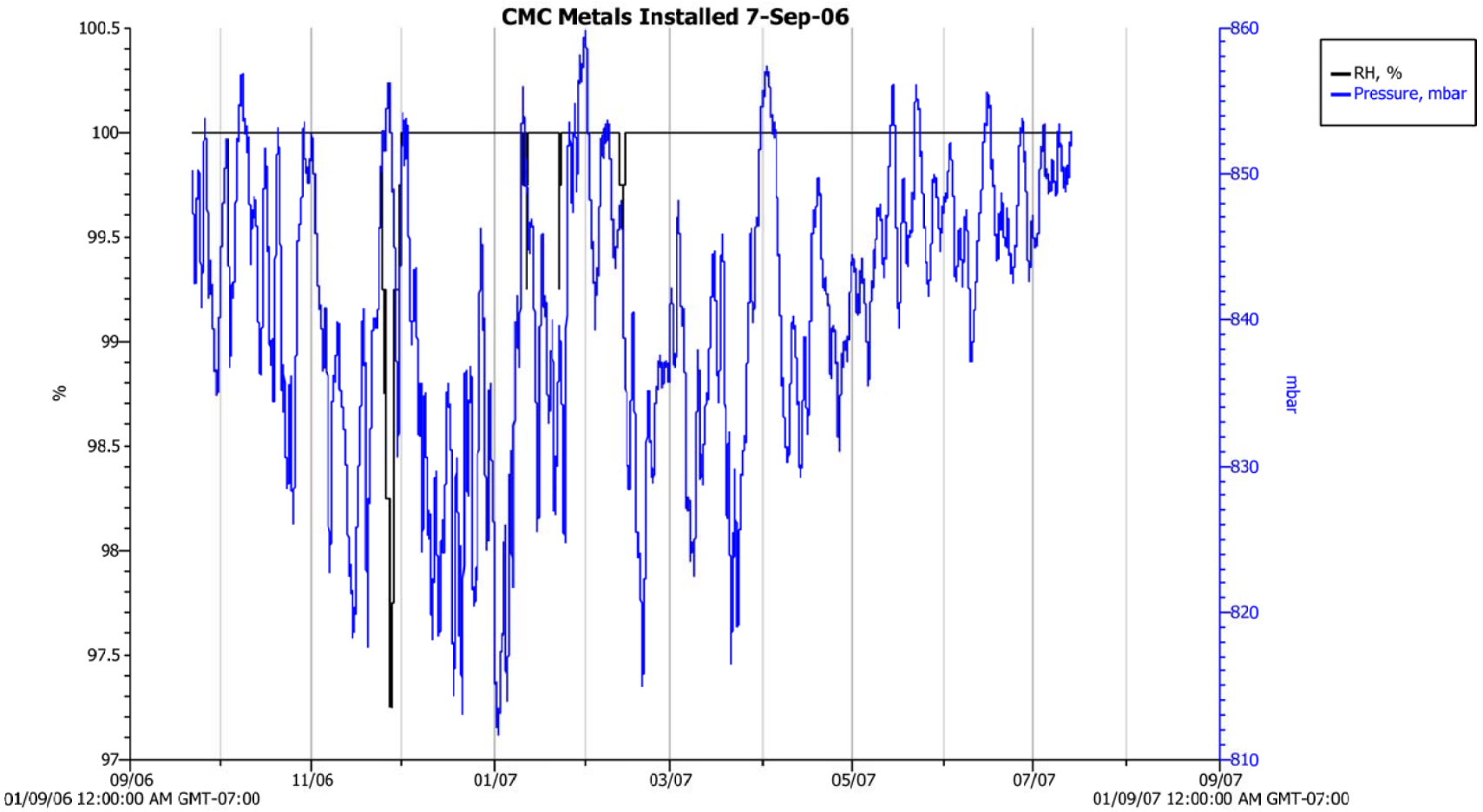
PROJECT DESCRIPTION
APPLICATION FOR TYPE 'B' WATER USE LICENCE
APPLICATION FOR MINE PRODUCTION LICENCE

APPENDIX H
SILVER HART WEATHER STATION SUMMARY

March 2008

Prepared by:

ACCESS
CONSULTING GROUP


CMC Metals Installed 7-Sep-06
RH, %
Pressure, mbar
%
mbar
100.5
100
99.5
99
98.5
98
97.5
97
860
850
840
830
820
810
09/06
11/06
01/07
03/07
05/07
07/07
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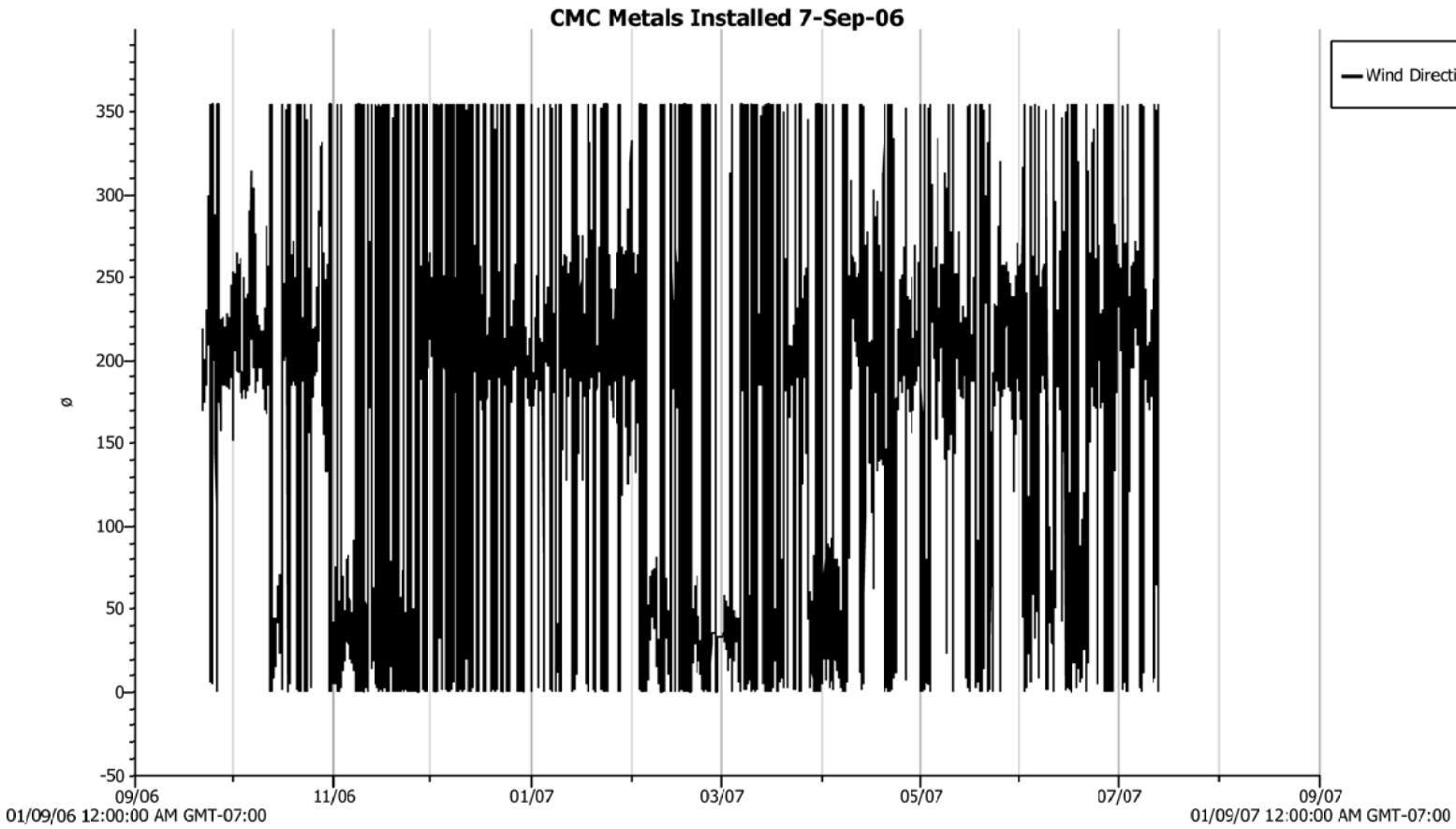
01/09/07 12:00:00 AM GMT-07:00


CMC Metals Installed 7-Sep-06
Wind Direction, ø
ø
350
300
250
200
150
100
50
0
-50
09/06
11/06
01/07
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07/07
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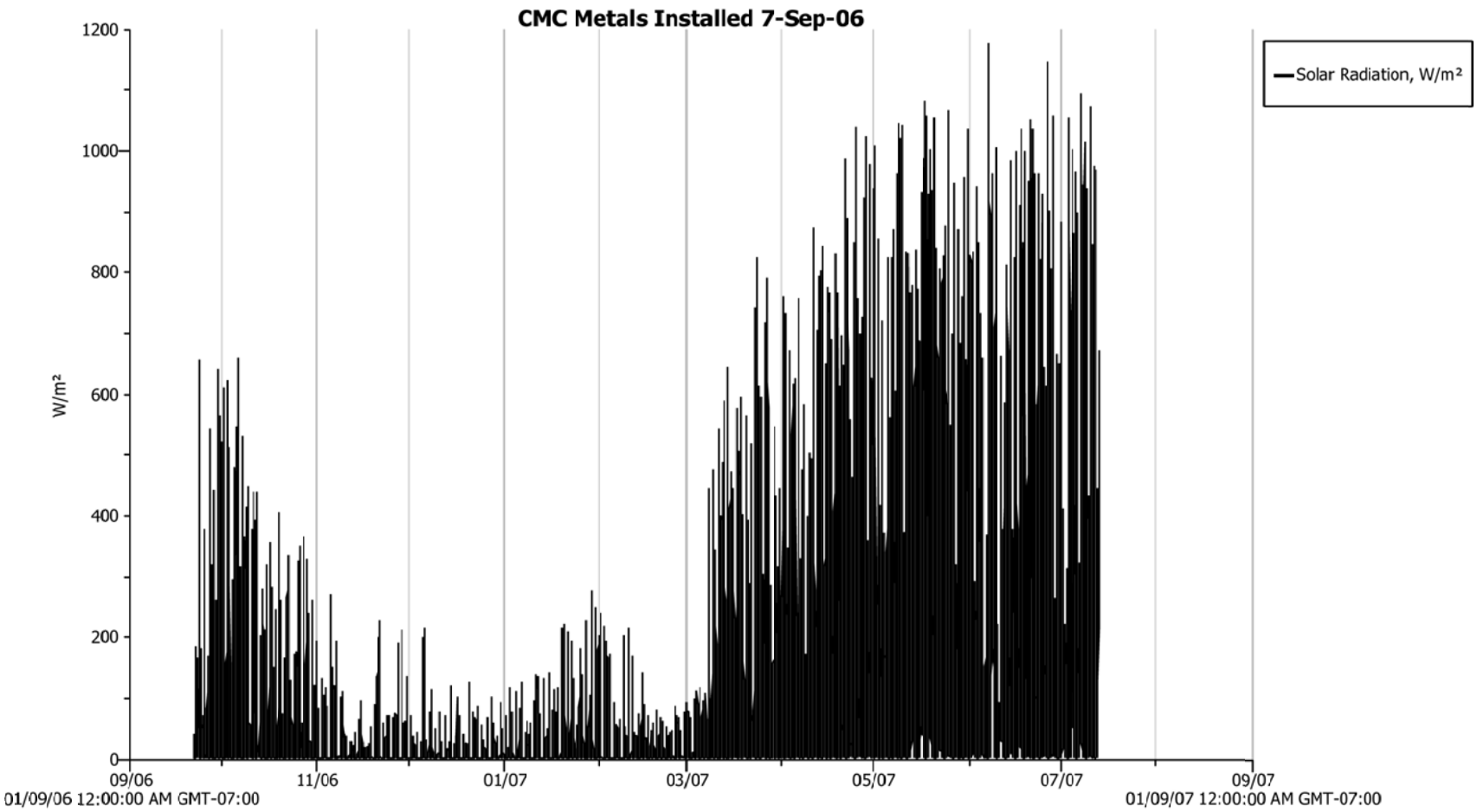
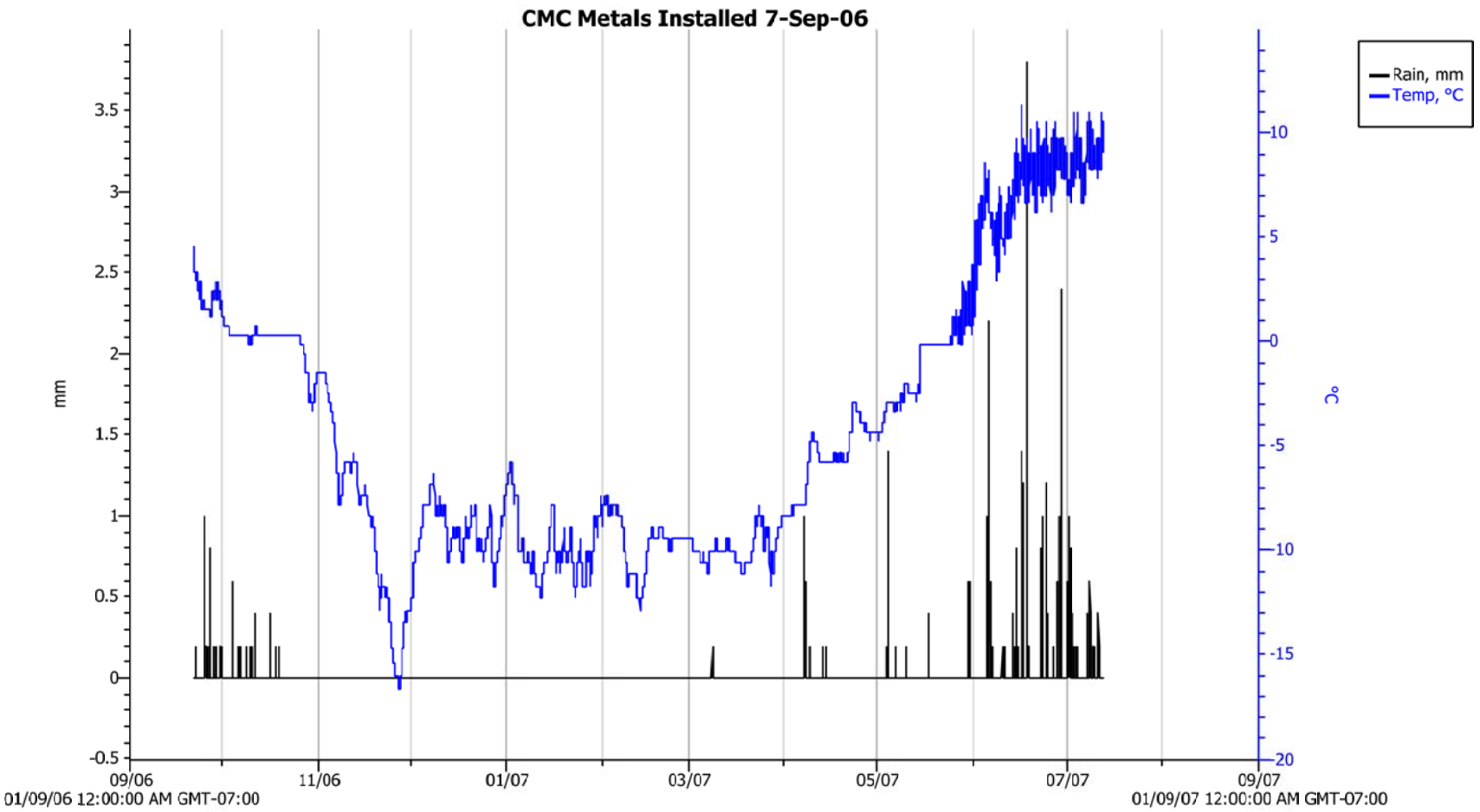
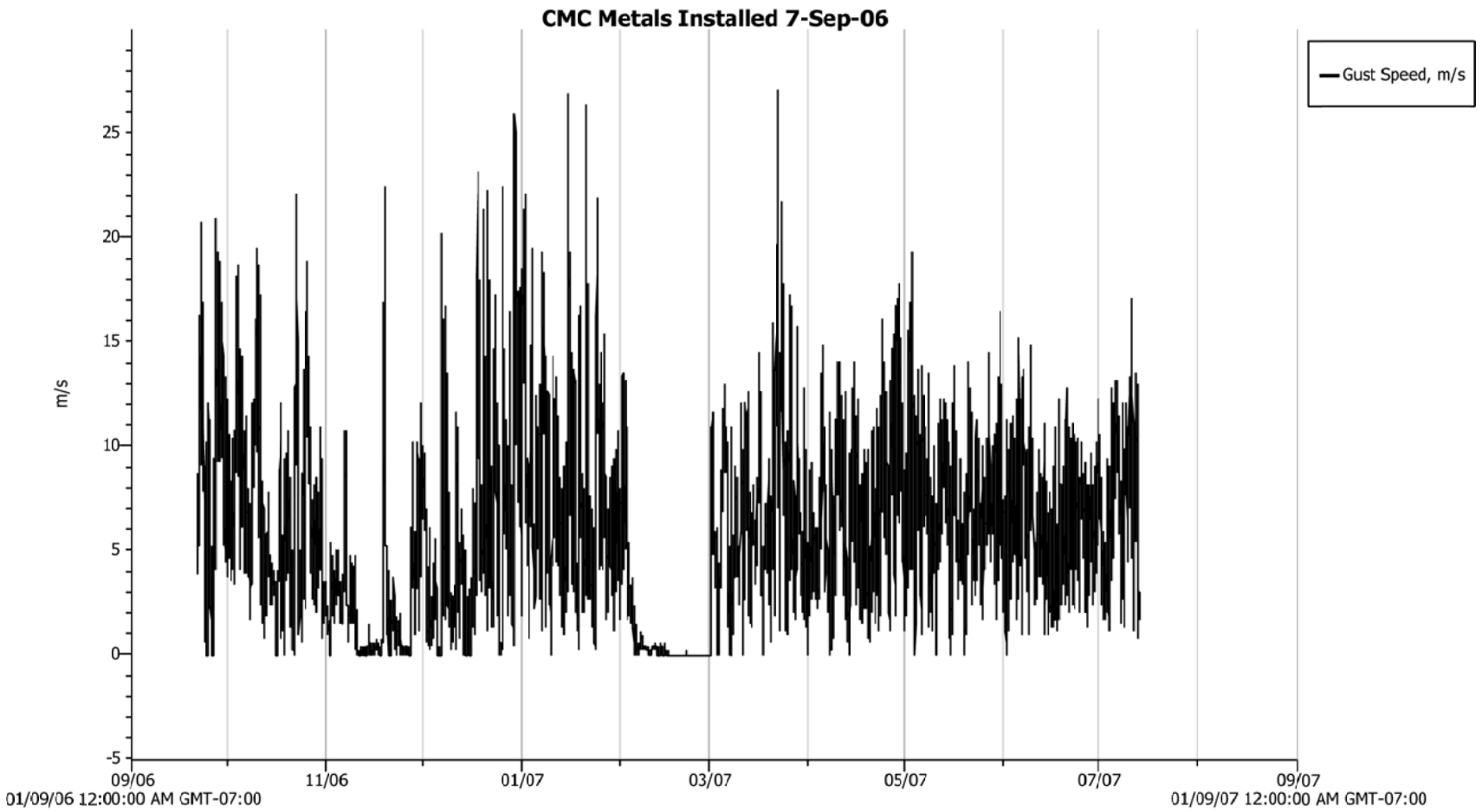
01/09/07 12:00:00 AM GMT-07:00


CMC Metals Installed 7-Sep-06
Solar Radiation, W/m²
W/m²
1200
1000
800
600
400
200
0
09/06
11/06
01/07
03/07
05/07
07/07
09/07
01/09/06 12:00:00 AM GMT-07:00
01/09/07 12:00:00 AM GMT-07:00


CMC Metals Installed 7-Sep-06
Rain, mm
Temp, °C
mm
°C
3.5
3
2.5
2
1.5
1
0.5
0
-0.5
10
5
0
-5
-10
-15
-20
09/06
11/06
01/07
03/07
05/07
07/07
09/07
01/09/06 12:00:00 AM GMT-07:00
01/09/07 12:00:00 AM GMT-07:00


CMC Metals Installed 7-Sep-06
Gust Speed, m/s
m/s
25
20
15
10
5
0
-5
09/06
11/06
01/07
03/07
05/07
07/07
09/07
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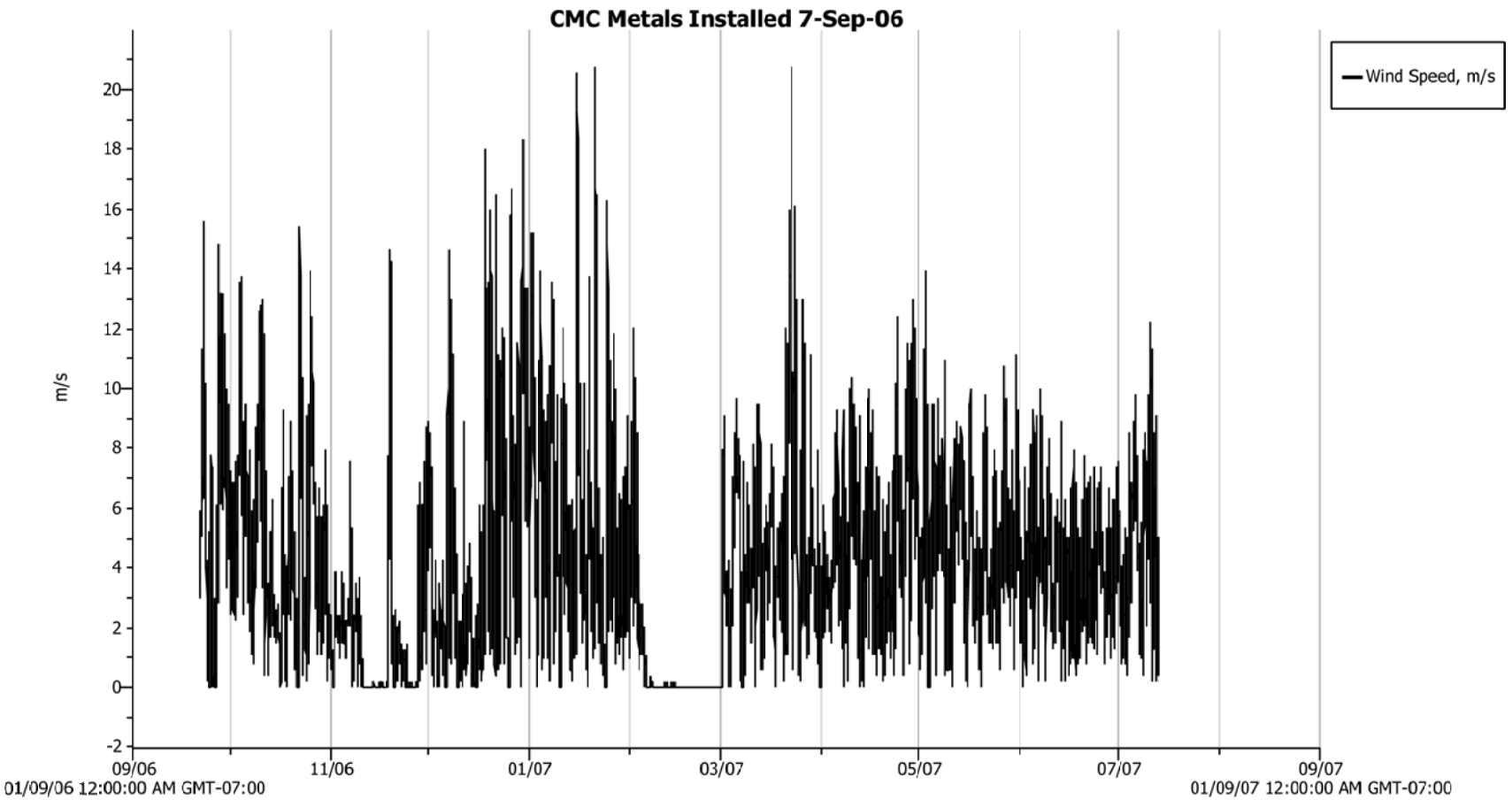

CMC Metals Installed 7-Sep-06
Wind Speed, m/s
m/s
20
18
16
14
12
10
8
6
4
2
0
-2
09/06
11/06
01/07
03/07
05/07
07/07
09/07
01/09/06 12:00:00 AM GMT-07:00
01/09/07 12:00:00 AM GMT-07:00

SILVER HART PROPERTY

PROJECT DESCRIPTION
APPLICATION FOR TYPE 'B' WATER USE LICENCE
APPLICATION FOR MINE PRODUCTION LICENCE

APPENDIX I
YESAB Review Process Documents

March 2008

Prepared by:

ACCESS
CONSULTING GROUP

YESAB
Yukon Environmental and Socio-economic Assessment Board

YESAB Online Registry
www.yesab.ca/registry

Re: Notice of Supplementary Information Required
YESAB Project Number: 2007-0206
Project Title: Silver Hart Mine Development and Production

Nov 07, 2007

Dear Inglis

Thank you for your submission of this project proposal to the Watson Lake Designated Office of the Yukon Environmental and Socio-economic Assessment Board (YESAB).

In order for your project proposal to be deemed complete and for the assessment to begin, it has been determined that additional information is required to supplement your project proposal. A list of this required information has been attached to this notice. Once your proposal has been deemed complete, the evaluation will begin as soon as possible.

All supplementary information related to your project proposal can be submitted via the YESAB On-line Registry or by contacting the Project Assessment Officer assigned to this project.

The Project Assessment Officer for this proposed project is Aliesha Narain and she can be contacted via email at aliesha.narain@yesab.ca, by phone at 867-536-4040, by fax at 867-536-4049 or by mail at the YESAB Watson Lake Designated Office, P.O. Box 294, Watson Lake Y0A 1C0.

In order to avoid having this project proposal being deemed withdrawn, you are required to submit the requested supplementary information, or advise the Project Assessment Officer in writing when you will be submitting the information, before the end of May 5, 2008.

For more information about this assessment under the Yukon Environmental and Socio-economic Assessment Act, please click here or see the YESAB On-line Registry at www.yesab.ca/registry.

Thank you.

Additional Information Request

The project description submitted for the proposed project provides a good overview of the project. We, however, require further information or clarification on some areas. The clarifications being sought will help to facilitate the public's review of the information pertaining to your project proposal. You can respond directly to these questions, or if the requested information already exists in other documents/applications you can submit those documents and reference the pages where the requested information can be found.

1. The information contained within the Project Proposal and Description gives conflicting distances of the project from the Town of Watson Lake and Teslin. Please clarify the approximate distance to Teslin from the project site and the approximate distance to Watson Lake.

2. The coordinates provided in the project proposal for the proposed project are:
   NW 60.3669N, 130.7134W
   NE 60.3407N, 130.6576W
   SE 60.3390N, 130.7844W
   SW 60.3126N, 136.7467W
   When plotted on a map, the SW coordinate does not appear to be accurate. Please confirm if this coordinate is correct, and if not, please provide the correct coordinate.

3. Please provide a list of the heavy equipment that will be used throughout the course of the project.

4. In the Project Description, page 20 – it is noted that "stope development will be by typical drill and blast techniques and with pneumatic jack hammers." The Summary of the Assessment of Potential Environmental Effects Resulting from the Proposed CMC Silver Project (page 66) and the mitigations for wildlife effects (page 68) do not specifically address any potential effects or disturbances from the use of pneumatic hammers or blasting on wildlife. Please provide further information on how these activities will affect wildlife and what measure you will take to offset any adverse effects.

5. In the Project Description, page 23 – you note that "it is anticipated that a minor amount of blasting of rock will be required". Please qualify what constitutes "a minor amount of blasting".

6. What is the anticipated blasting frequency?

7. Will any blasting be done within 100 m of a nearby watercourse?

8. The project proposal indicates that there will be excess moisture/water retention in the TM zone. What measures do you intend to take to prevent the excessive loss or release of ammonia into the environment as a result of incomplete combustion of the ANFO slurry.

9. In the Project Description, page 10 – reference is made to Figure 3 which is an estimated timeline for the permitting and development of the project. Figure 3, however, is titled as "Site Overview" and does not give any indication of timelines.

10. Please provide further information on camp waste management, particularly as it relates to the following:
    a. Will camp facilities or sewage/waste water be located or disposed of within 30 m of water bodies, or any sources of potable water?
    b. How do you plan to make water safe for drinking and domestic use?

11. What are the holding capacities of the thickener and silver leach tanks? Please describe how you will manage any accidental spills or overflows that may occur (for example will you have a containment berm or other structure in place, and if so, to what standard will it be built?).

12. Please describe the storage of milling reagents and conditioners. How will you manage any accidental spills that may occur?

13. We understand that a water well will be drilled for camp water use and that you intend to truck potable water from the nearest source to the site. Please indicate whether a secondary source of water has been identified, in the event that the well does not provide the amount of water required for the project. If water is to be extracted from a watercourse, please indicate the source and the average stream flow capacity of the watercourse(s).

14. In the Project Description, it is noted that the potential volume capacity of the tailings pond is 39,500 m^3 and that the tailings spillway will be sized to pass the peak flow from 100 year return storm period. Please quantify the estimated additional volume of water a 100 year flood event will contribute to the pond.

15. Please confirm whether that there will be an electricity/diesel generating system in place for the camp and mill facilities, and provide details on the size of the system - if applicable.

16. Section 7.2 of the Project Description is titled “Summary of Potential Environmental and Socioeconomic Effects and Proposed Mitigation”, however, the information contained within only speaks to mitigation measures for environmental components. Apart from what is contained in Table 12: Summary of the Assessment of Potential Environmental Effects Resulting from the Proposed CMC Silver Project, are there any other mitigation measures proposed for socio-economic valued components as identified in the table?

17. Please provide further details on the practices that will be observed to contain domestic garbage, particularly during bear season which occurs from April – October, and when there is a high likelihood for bear habituation and subsequent human-wildlife conflicts.

18. In the Project Description, it is noted that minor road upgrading will be required but this is applied for as part of the Class III Exploration Permit. Does this also include the road network shown on Figure 5? If not, please provide further information on the new roads that will be constructed on-claims, particularly with regards to:

    a. Total length and width of the roads?
    b. Will the roads be permanent or temporary?
    c. How will watercourses be crossed?
    d. You noted that overburden from the pit will be used for, among others, road base material. Will you also require additional material that may be sourced from, for example, burrow pits? If yes, please indicate the location (s) of the pits, total amount of material that will be removed, and the measures you will take to reclaim the area (s).

19. In the Project Description, page 73, as part of the post closure efforts, it is noted that CMC will “work towards a walk-away closure scenario for most or all mine components.” Please indicate whether this refers to progressive reclamation or other.

20. It seems unclear from the information provided in the project proposal as to whether or not there has been previous mining at the Silver Hart Property. Please confirm.

21. Can you please provide copies of the Phase I and Phase II Environmental Site Assessments that are referenced in section 7.4 of the Project Description?

22. In the Project Description, page 12, there is a list of plans and reports that you have indicated will be submitted in support of the application as required. The reference to the sections in the Project Description where some information on these plans can be found seems to be inaccurate, for example, there is no section 4.2.4, but section 4.2.1 deals with Waste Rock Management; section 5.1.2 does not at all give any information relevant to an ARD Management Plan; and finally the information contained within the sections referred to on page 12 does not seem to constitute plans as such. Please clarify.

23. You have noted the uncertainty in ARD potential and that ore zone material has been submitted for kinetic ARD testing. Furthermore, the Project Description notes that an ML/ARD plan will be created and implemented as required. We understand that in some cases, there may be some inconclusiveness around pre-mining ARD/ML prediction as compared to predictions based on testwork undertaken during the operational and post-mining phases of the development. However, we feel that an ARD/ML program should assess the consequences of events that could occur over the life of the project and beyond, and where there is uncertainty regarding future drainage chemistry, contingency planning - including monitoring and management of effects - is often critical in dealing with this uncertainty. Based on the information provided as part of your project proposal, we feel that we do not have enough details to understand the characterization of geological materials, the ARD/ML predictions, and the contingency measures you intend to implement should there be an issue. In this regard, we are seeking the following specific information:

    a. Please provide a full description of the property geology as well as geochemical investigations as they relate to the following:
        i. A plan map showing outcrop/subcrop geology including geological cross-sections representing each of the units in relation to the undertaking;
        ii. Plan and cross-sectional representations (maps) indicating sample locations for the geochemical testwork program;
        iii. An enumeration of each of the rock units [including acid generation potential (see item 23 (b) below), neutralization potential, and trace element content] expected to be encountered by the project, amounts of each rock unit, and final resting place for these materials. Include outlier data, not just averages;
        iv. Similar to item (iii) above, please describe the waste rock-quality as per standard geological/geotechnical investigations (core sample description).
        v. As the geochemical testing was limited to ore material from the TM zone only, we see this as a limitation given that the S zone is also suggested for development, and no further information is provided on whether the ore zones/assemblages are consistent. In addition, there is the need to conduct testing of all materials (waste rock) to be encountered by the project, including those materials suggested for use in the construction of roads and impoundments.
        vi. The discussion on ABA results as well at the ABA testwork lab certificate provides some insight into the “uncertainty” surrounding the capacity for the tailings waste to promoted ARD. Given the incomplete description/understanding of the geologic unit tested, further testing of this unit is required to enable us to understand the mineralogy that is expected to take part in acid generation and neutralization.
        vii. What physical changes will occur as a result of excavation and weathering, and how will they alter other weathering reactions, drainage conditions and the amount of mineral exposure?

viii. What are the critical weathering reactions? For example, is dissolution a concern? Will primary metal release occur almost entirely from sulphide oxidation?
ix. What are the expected present and future metal loadings from each mine component/geologic unit?
x. How long will it take for ARD and other important hydrological or weathering events to occur?
xi. Section 4.1.2 of the Project Description notes “It was observed that the overburden tends to not to be well draining, and the lower TM depression in the overburden maintains water throughout the summer months.” Please provide further information on the groundwater conditions at the TM pit. What is the grain-size analysis data for this material?
xii. In the Project Description, you have noted that water flowing from the existing adit has shown zinc, arsenic and cadmium levels in exceedance of the CCME guidelines. Is there any water that is presently impounded in the underground workings? If so, what is the water quality like? Is there any historical information to draw upon in understanding the potential geochemical evolution of the water generated from the underground workings?
xiii. What is the grade and geometry for presently-developed underground workings?
xiv. How much waste will be disposed of above ground versus backfilled and what is the ARD/ML nature for this waste?
xv. It is our understanding that depending on the ARD/ML release mechanisms, rates and other factors, a one metre lift of crushed limestone may have negligible or only short-term mitigation capacity. This suggested strategy seems preliminary. Please indicate whether further geochemical and treatability studies will be conducted and how the findings will be used.
xvi. The open pit intercepting the underground workings seem to suggest a flow-through scenario upon closure, with combined flow exiting present underground access points. We are unclear as to how water will be controlled from the combined open-pit/underground access at the end of mine life.

b. At a minimum, the following procedures are recommended for determining ARD potential:

<u>Static Testing</u>

1. Trace Element Content:
   - Total Concentration
   - Soluble Concentration

2. Acid Base Accounting:
   - Total Sulphur, Sulphate-Sulphur, and Sulphide-Sulphur
   - Bulk Neutralization Potential
   - Carbonate Neutralization Potential
   - pH

3. Mineralogy and Other Geological Properties:
   - Mineralogical Examination

4. Particle Size Separation and Determination (for unconsolidated and crushed materials)

<u>Kinetic Testing</u>

1. Reaction Rates and Drainage Chemistry:
   - Pre-Test and Post-Test Characterization

- Humidity Cell
- On-Site Test Pads
- Site Drainage Monitoring

c. Please provide an analysis of all possible outcomes or interpretations of monitoring and material characterization, and the consequences of events that could occur over the life of the project and beyond. Stemming from the analysis, details on contingency plans and monitoring/studies aimed at reducing uncertainty, as well as options for drainage treatment, should also be provided.

24. The following questions are specific to monitoring and management of potential environmental effects:
    a. Please describe your plans for monitoring potential project effects associated with water and/or air quality, soils, and any other environmental components during the duration of the project (construction, operation, decommissioning). This information should include details on the frequency of monitoring activities and the parameters that will be analysed- in the case of water, air and soil - and any adaptive management strategies that will be taken to monitor the occurrence of effects and the success of mitigation measures.

    b. Please provide further details on the treatment options you will use particularly with regards to the metals (zinc, lead, arsenic and cadmium) you have noted as exceeding certain standards (CCME and MMER).

    c. Have you identified possible factors or situations that could undermine the stability of the tailings pond (for example vibrations from blasting, natural events, etc.)? Please describe the emergency response measures you will implement should there be a failure of the tailings dam or pond?

25. Please provide details on the preliminary reclamation liability costs and the level of financial security estimated for mine closure.

YESAB
Yukon Environmental and Socio-economic Assessment Board

YESAB Online Registry
www.yesab.ca/registry

Re: Notice that Supplementary Information Submitted is Inadequate
YESAB Project Number: 2007-0206
Project Title: Silver Hart Mine Development and Production

Dec 28, 2007

Dear Inglis

Thank you for your submission of supplementary information for this project pursuant to the Notice of Supplementary Information Required sent to you on November 7, 2007. The Watson Lake Designated Office of the Yukon Environmental and Socio-economic Assessment Board (YESAB) has determined that the information submitted is not sufficient for the evaluation to begin. Please find, attached to this notice, a list of required information that must be submitted in order for the assessment to continue.

All supplementary information related to your project proposal can be submitted via the YESAB On-line Registry or by contacting the Project Assessment Officer.The Project Assessment Officer for this proposed project is Aliesha Narain who can be contacted via email at aliesha.narain@yesab.ca, by phone at 867-536-4040, by fax at 867-536-4049 or in person during most regular business hours at the Watson Lake Designated Office P.O. Box 294, Watson Lake.

In order to avoid having this project proposal deemed withdrawn, you are required to submit the requested supplementary information, or advise the Project Assessment Officer in writing when you will be submitting the information, before the end of June 25, 2008.

For more information about this assessment under the Yukon Environmental and Socio-economic Assessment Act, please see the YESAB On-line Registry at www.yesab.ca/registry.

Thank you.

Please update your supplementary information submission to address the questions and deficiencies identified below:

1. Question 10. No response given regarding whether camp facilities or infrastructure will be located within 30 m of waterbodies. Please provide this information.

2. Question 22. Response states that the plans mentioned in the proposal have not been completed (e.g. ARD Management Plan). Plans that are relevant to the assessment, must form part of the project proposal and need to be provided for consideration in the assessment. Without a waste rock management plan, the assumption of this assessment will be that all waste rock will be placed on the ground, and is a potential ARD concern.

3. Question 23(a)(i). Surface geological maps and underground geological maps not attached; not clear if referenced maps will be adequate to depict site geology (i.e., showing juxtaposition and distribution of all lithologies with associated structural features) of TM and S zones and vicinity. Provided vertical cross-sections are very difficult to read, decipher and interpret eliminate info/data that is not essential at a more workable scale, and provide a conceptual geologic interpretation that clearly depicts all rock-type units, corehole locations, sampled intervals, etc. These maps must be submitted in addition to maps for the S zone. All maps submitted must be clear, and contain suitable legends. If there is no outcrop, then conclusions will need to be extrapolated based on the data.

4. Question 23(a)(ii). Maps were not provided. Please update.

5. Question 23(a)(iii). An enumeration of each rock unit was requested, and the submitted table is incomplete. The table provided only includes 2 rock units. This table needs to include the overburdern/till mentioned in response to 23.a.i, other rock-types not on legend for vertical cross sections, ore depicted on cross sections, and carbonate/sedimentary lithologies noted on page 45 of project description. Also, the table eludes to an attached spreadsheet which is absent so cant evaluate ARD-related testing requests. Also, has the granodiorite been subdivided based on alterations? how were volumes calculated (are there maps and cross sections that delineate the zone(s) of excavation)? Why no geochemistry for the andesite? Please update the table accordingly. It is critical that detailed information be provided.

6. Question 23(a)(iv). Core logs were provided for only three cores, with two different kinds of logs, neither of which have a legend please standardize and update accordingly. Standard waste rock-quality characterization would require whole rock analyses and ABA tests have these characterizations been conducted systematically (e.g., representatively with sufficient sample numbers) and what will be potential waste rock? Describe sample and testing strategy (i.e., objectives, scope (limitations of sampling), methods, results, interpretations or limitations, conclusions, any recommendations for further testing).

7. Question 23(a)(v). The explanation for not sampling, for example, S zones is not valid the proposal must demonstrate that mineralization and resultant geochemistry of various rock-types in spatially different areas/zones is similar enough to be managed as one unit. Please update information accordingly. What is meant by typical threshold levels?

8. Please provide a detailed description of the sampling strategy undertaken/developed for this project, including layout

(i.e. sample locations and their rationale), rock type, analyses (including detailed description of static and kinetic tests planned/undertaken and rationale). For more information see bullet 16 (below).

9. Question 23(a)(vi). Regarding ARD testing/prediction, the response indicates that kinetic testing is currently being undertaken. Without these results, reaction rates cannot be determined and therefore any of the conclusions/presumptions made by the proponent regarding the likelihood of generating acid are adequately backed-up. See bullet 6 (above). We cannot determine with provided response where referenced samples (TM-OZ-01, TM-FW-01, TM-HW-01, TM-HW-02 and TM Zone LCT) were collected (or why)? or how the one modified ABA sample result for TM-OZ-01 can support the statement that the rock type is not expected to result in any acid generation potential? Where are the results for the other four samples? What is the basis for the statement, most of the sulphides in the ore sample will be extracted through the mill process? What will be the chemistry of the extracted effluent? What about the waste rock? Please provide the necessary information accordingly.

10. Question 23(a)(vii x). The intent of these questions was for the proponent to provide a preliminary prediction of mine effluent from each facility (e.g., waste rock pile, ore pile, tailings, ponds, etc.) prior to and after any required treatment (e.g., assuming Best Available Technologies). This response will require the proponent to, at a minimum: 1) conceptually describe all facilities that could affect the flow and water chemistry of surface water and groundwater once leaving the site (i.e., a water management plan), 2) provide hydrologic and hydrogeologic conceptual models, 3) provide baseline water chemistry data for surface and groundwater, and 4) provide the data, results and rationale for predicting water quality (e.g., a supporting ARD report of waste rock and tailings). The responses provided are very generic and suggest that the 4 steps noted above have not been sufficiently performed to proceed to the next level of assessment. Please update the answers to these questions accordingly.

11. Question 23(a)(xi). In the absence of groundwater characterization, please provide a hydrogeological model of the site (e.g., explaining hydrostratigraphic units, where groundwater occurs, potential perching conditions and/or barriers to groundwater movement) in the context of the future open pit and any facilities that might affect these conditions including the geological units that the water will have to pass through prior to discharge.

12. Question 23(a)(xii). The answer provided is not clear on why, when and where underground adit water was sampled? Why was this sample used to conclude that no significant acid generation is occurring? Given the pH of the water, how are elevated concentrations of Zn, As and Cd produced?

13. Question 23(a)(xiv). How will the ratio of ore to waste be determined (for example, where are the maps and cross sections to support these calculations)? Referenced geochemical results for three samples were not included please update accordingly.

14. Question 23(a)(xv). The response states: As the hydrogeology of the site may be altered by the mine development closure options will be finalized once a better understanding of predicted post-closure conditions is available. The assessment of this project will consider all phases of projects, and in this case that also includes closure/decommissioning to the extent practicable. It is important that the proponent demonstrate and provide the current thinking in this regard, with respect to the data/information on hand. What was scope of treatability study? Please provide a report summarizing objective, scope, methods, results, etc. Please explain the statement: the removal of the ore bodywill remove the potential for contamination

15. Question 23(a)(xvi). Please provide conceptual hydrogeologic model (as above).

16. Question 23(b). Proponent states that static testing was done for a number of samples and some kinetic testing is being undertaken.The response provided is inadequate. The proponent should provide data, information in acceptable standard of today, which would be a stand alone technical report provided by/or reviewed by a qualified professional (e.g., a P.Geo. with expertise in geochemistry) The report would, for example, 1) describe the sampling strategy for all

rock-types (by-products) that will form part of the waste rock pile, tailings, etc (with appropriate maps and cross sections); 2) describe reasoning for conducting various lab analyses, 3) provide summary of all static and kinetic results, and 4) provide interpretations, limitations, conclusions and recommendations.

17. Question 24(b). Please provide further details on the treatment options you will use, particularly with regards to zinc, lead, arsenic, and cadmium, in order to meet CCME and/or MMER standards.

18. Question 24(c). Please provide emergency measures/procedures with respect to the tailings dam.

December 21, 2007

Yukon Environmental and Socioeconomic Assessment Board
Watson Lake Designated Office
P.O. Box 294 Watson Lake, Yukon Y0A 1C0

Attention Ms. Aliesha Narain, Project Assessment Officer

Regarding: Silver Hart Mine Development YESAB Project Number 2007-0206

Dear Ms Narain,

Thank you for making the time to meet with our environmental consultants for this project and discussing your additional information requests to begin the environmental assessment of our Silver Hart Mine. We have prepared the following responses to your questions in blue type below your questions.

Additional Information Request
The project description submitted for the proposed project provides a good overview of the project. We, however, require further information or clarification on some areas. The clarifications being sought will help to facilitate the public's review of the information pertaining to your project proposal. You can respond directly to these questions, or if the requested information already exists in other documents/applications you can submit those documents and reference the pages where the requested information can be found.

1. *The information contained within the Project Proposal and Description gives conflicting distances of the project from the Town of Watson Lake and Teslin. Please clarify the approximate distance to Teslin from the project site and the approximate distance to Watson Lake.*

   By road: Teslin: 150km, Watson Lake: 180km
   Geographical distance: Teslin: approximately 120km, Watson Lake: approximately 80km

2. *The coordinates provided in the project proposal for the proposed project are:*
   NW 60.3669N, 130.7134W
   NE 60.3407N, 130.6576W
   SE 60.3390N, 130.7844W
   SW 60.3126N, 136.7467W
   When plotted on a map, the SW coordinate does not appear to be accurate. Please confirm if this coordinate is correct, and if not, please provide the correct coordinate.

   SW 60.3126N, 130.7467W

3. *Please provide a list of the heavy equipment that will be used throughout the course of the project.*

   During the construction phase, the heavy equipment that will or may be used includes an excavator, articulated dump trucks (2), dozer, grader, soil compactor, backhoe loader and a mobile crane.

On going operational heavy equipment will include a grader, ITC loader/forklift, mobile crushing plant, 3 ton flatbed truck, a bobcat, and 2-diesel electric gensets. Larger materials and supplies will be transported to the site via a contract truck hauler and concentrate transportation from the site will be by contractor haulage with one 25-tonne capacity tractor trailer. Mining will also be contracted and will require at least an excavator, articulated dump trucks (2), and a dozer. Underground contractor heavy equipment would include 2-LHD's, roof bolter, and a double boom jumbo drill for development drifts.

4. *In the Project Description, page 20 – it is noted that "stope development will be by typical drill and blast techniques and with pneumatic jack hammers." The Summary of the Assessment of Potential Environmental Effects Resulting from the Proposed CMC Silver Project (page 66) and the mitigations for wildlife effects (page 68) do not specifically address any potential effects or disturbances from the use of pneumatic hammers or blasting on wildlife. Please provide further information on how these activities will affect wildlife and what measure you will take to offset any adverse effects.*

   Standard mitigative measures for noise reduction will be observed at all times. These will include steps such as industry standard muffling equipment, well maintained and operating equipment, noise reducing blast locations. The property is partially overlapped by a Mountain Goat Wildlife Key Area that extends to the east from the property. The higher elevation areas across the river valley to the south are also identified as Mountain Goat Wildlife Key Area and a Thinhorn Sheep Wildlife Key Area (see figure 12 of the Silver Hart Project Description). No mountain goats or thinhorn sheep have been observed on the property or across the Oake Creek valley during the 2 years of seasonal (summer and fall) drilling. As the mountain goat and thinhorn mating season is during the winter no disturbance from the mining will occur. Blasting will be avoided whenever possible during the birthing season of May and June. With these mitigative measures the negative impacts to wildlife will be minimized.

5. *In the Project Description, page 23 – you note that "it is anticipated that a minor amount of blasting of rock will be required". Please qualify what constitutes "a minor amount of blasting".*

   Blasting would be dictated by the degree of difficulty that the dozer and excavator would experience in ripping/ hammer breaking the waste rock. Minor amount of blasting would entail blasting to fracture the waste rock on average once a month during the summer mining season or about 5 times a year. Rock fracturing to the .45m run-of-mine rock size would be less than 20 percent of the total waste rock proposed to be excavated.

6. *What is the anticipated blasting frequency?*

   Blasting frequency would be on average once a month for the summer mining season or up to 5 times a year during the surface mining phase.

7. *Will any blasting be done within 100 m of a nearby watercourse?*

   No blasting will occur within 100m of a watercourse.

8. *The project proposal indicates that there will be excess moisture/water retention in the TM zone. What measures do you intend to take to prevent the excessive loss or release of ammonia into the environment as a result of incomplete combustion of the ANFO slurry.*

   The volume of ANFO is very minor in perspective of the potential incomplete combustion. If it is assumed that five percent of the blast holes are incomplete, based on a common incomplete combustion rate for blasting, the amount of ANFO that would potentially be available for release would be equivalent to the fertilizer application rates to fertilize 1.6

hectares of a golf coarse on an annual basis, a low level of ammonia release. Water accumulation within the pit will be used as a source of water for the mill and eventually end up in the tailings pond. Therefore if the incomplete combustion of the ANFO slurry is identified as a systemic occurrence, the release of the ammonia would be retained in the tailings pond. Also, with the water quality monitoring program, an early detection of ammonia and nitrates would dictate the change of ANFO to a non-ammonia based explosive. As the blasting will not occur within 400m of a watercourse and all potentially contaminated water will be retained in the tailings pond, the potential for ammonia contamination of the surface water system is considered to be very low, and any release from the tailings pond will be monitored and treated as required.

9. *In the Project Description, page 10 – reference is made to Figure 3 which is an estimated timeline for the permitting and development of the project. Figure 3, however, is titled as "Site Overview" and does not give any indication of timelines.*

Please see the timeline figure in Appendix I of the Revised Project Description.

10. *Please provide further information on camp waste management, particularly as it relates to the following:*
    a. *Will camp facilities or sewage/waste water be located or disposed of within 30 m of water bodies, or any sources of potable water?*
    b. *How do you plan to make water safe for drinking and domestic use?*

A separate cistern at the camp facilities will hold potable water that will be trucked to the site from the Town of Watson Lake. Also, 19.8 liter water cooler stands will be placed within the mill facilities, office, lab, First Aid station, and camp facilities.

Domestic water will be groundwater from the proposed make-up water well. This well will be tested for potability prior to use.

11. *What are the holding capacities of the thickener and silver leach tanks? Please describe how you will manage any accidental spills or overflows that may occur (for example will you have a containment berm or other structure in place, and if so, to what standard will it be built?).*

The holding capacity will be based on available used tanks when the mill process facilities are being prefabricated. The tanks will be in the range of 15,000 litres (3.35 m diameter by 1.68 m height). Both the thickener and leach tanks will be located inside the mill facilities building. The building will have a concrete perimeter wall and slab floor with a collection sump for any spillage from the mill process, thickener tank or the leach tank. Any floor clean-up solids or liquids are pumped into the ball mill for reprocessing. Larger spills from the thickener or leach tank will require the source of the spill to be repaired and the material pumped back into the tank. The containment capacity of the concrete building walls and floor would be over 60,000 litres.

12. *Please describe the storage of milling reagents and conditioners. How will you manage any accidental spills that may occur?*

An adjoining building to the mill facilities with an explosive proof ventilation system will store the reagents and conditioners as per the standards described in the MSDS requirements. Spill clean-ups will follow the recommended procedures in the MSDS procedures. For most small solid spills the material can be swept up and disposed of in a contaminated waste barrel. For small liquid spills, an inert absorbent can contain the liquid and be swept up and disposed of in 205L drums. Larger spills will require the material to be shoveled into an appropriate container. Large liquid spills will require the containment of the spill by building a berm (if outside) and use of inert absorbent material and pads to absorb the

liquid. Within a building the liquid can be vacuumed into a container and inert absorbent material to clean-up the residual waste. All contaminated waste material barrels will be disposed of at a permitted waste disposal facility capable upon receipt of the necessary transportation permits. All personnel handling and working within the mill process facilities will be trained in the clean-up procedures, proper protective equipment to be used, documentation of spills, and will understand the MSDS requirements.

13. *We understand that a water well will be drilled for camp water use and that you intend to truck potable water from the nearest source to the site. Please indicate whether a secondary source of water has been identified, in the event that the well does not provide the amount of water required for the project. If water is to be extracted from a watercourse, please indicate the source and the average stream flow capacity of the watercourse(s).*

No secondary source of water has been identified. Should the water well not produce the necessary yields required another source of water will be assessed and the applicable permits and licences will be applied for.

14. *In the Project Description, it is noted that the potential volume capacity of the tailings pond is 39,500 m3 and that the tailings spillway will be sized to pass the peak flow from 100 year return storm period. Please quantify the estimated additional volume of water a 100 year flood event will contribute to the pond.*

The tailings pond has a run-on drainage ditch to divert the majority of the flood flow during a 1:100 year flood event. Based on the past work by third party consultants, it was estimated that a 1:200 year flood event would be 45mm/hr. corresponding to a 10 minute duration. This would contribute an additional 400.5m^3 to the tailings pond. Tailings pond operational protocols will use decant water from the pond for the mill and maintain a minimum 10 percent capacity volume. Therefore the 400.5m^3 flood occurrence contribution shouldn't require emergency spillage considering there would be a potential 3,950m^3 volume available.

15. *Please confirm whether that there will be an electricity/diesel generating system in place for the camp and mill facilities, and provide details on the size of the system - if applicable.*

Electrification of the project site is with two diesel fueled gensets located next to the fuel containment site. The two gensets were selected on the basis that during the summer mining phase both gensets would be utilized for the crushing plant and milling facilities. To minimize fuel consumption, only one genset is required during the winter milling phase. Genset size is one 260 kW unit and one 180 kW unit. This will depend on the availability of used gensets at the designated size and may vary slightly.

16. *Section 7.2 of the Project Description is titled "Summary of Potential Environmental and Socioeconomic Effects and Proposed Mitigation", however, the information contained within only speaks to mitigation measures for environmental components. Apart from what is contained in Table 12: Summary of the Assessment of Potential Environmental Effects Resulting from the Proposed CMC Silver Project, are there any other mitigation measures proposed for socioeconomic valued components as identified in the table?*

The socioeconomic valued components are not expected to be significantly impacted, thus the mitigation measures suggested in Table 12 are expected to be sufficient to minimize the impacts of the project to these.

17. *Please provide further details on the practices that will be observed to contain domestic garbage, particularly during bear season which occurs from April – October, and when there is a high likelihood for bear habituation and subsequent human-wildlife conflicts.*

All garbage will be stored in lockable containers to prevent odour from attracting bears until shipped off-site for disposal. This will be done on a weekly basis at a minimum. Employees will comply with Government of Yukon policy with respect to bear management and bear education programs.

18. *In the Project Description, it is noted that minor road upgrading will be required but this is applied for as part of the Class III Exploration Permit. Does this also include the road network shown on Figure 5? If not, please provide further information on the new roads that will be constructed onclaims, particularly with regards to:*
    a. *Total length and width of the roads?*
    b. *Will the roads be permanent or temporary?*
    c. *How will watercourses be crossed?*
    d. *You noted that overburden from the pit will be used for, among others, road base material. Will you also require additional material that may be sourced from, for example, burrow pits? If yes, please indicate the location (s) of the pits, total amount of material that will be removed, and the measures you will take to reclaim the area (s).*

The only road development is the TM pit road to the mill facility area that would require the development of less than 100 m in length. The road base would be 10 m wide with a running surface of 6 m. The road is a temporary road and will be removed at the end of the active life of the project. There are no watercourse crossings associated with the TM pit road and the construction materials will not require a borrow pit.

There will also be a trail from the mill facilities area to the tailings pond to provide access to the area for construction of the berm. This trail will eventually be the right-of-way for the tailings line and the return dewatering line. This trail will have a temporary 4 m wide road base that will be reclaimed at the end of the project. Total length of the trail is approximately 110 m.

19. *In the Project Description, page 73, as part of the post closure efforts, it is noted that CMC will "work towards a walk-away closure scenario for most or all mine components." Please indicate whether this refers to progressive reclamation or other.*

Progressive reclamation of the impacted areas of the site will be undertaken whenever possible. As the temporal and spatial impacts of this project are small the opportunities for progressive reclamation are considered to be very low aside from small measures such as reseeding berms and slopes when appropriate and recontouring and reseeding areas disturbed during construction.

20. *It seems unclear from the information provided in the project proposal as to whether or not there has been previous mining at the Silver Hart Property. Please confirm.*

There has been no mining at the Silver Hart property but an extensive underground exploration and bulk sampling program was undertaken in 1985-86.

21. *Can you please provide copies of the Phase I and Phase II Environmental Site Assessments that are referenced in section 7.4 of the Project Description?*

Please see the attached digital version of the Phase II Environmental Site Assessment. The Phase I Environmental Site Assessment was not located but the Phase I was summarized in the Phase II report.

22. *In the Project Description, page 12, there is a list of plans and reports that you have indicated will be submitted in support of the application as required. The reference to the sections in the Project Description where some information on these plans can be found seems to be inaccurate, for example, there is no section 4.2.4, but section 4.2.1 deals with*

Waste Rock Management; section 5.1.2 does not at all give any information relevant to an ARD Management Plan; and finally the information contained within the sections referred to on page 12 does not seem to constitute plans as such. Please clarify.

The plans have not been completed as yet but will be submitted to fulfill the requirements of the permits or licences that are being applied for should they be deemed to be required. The page references in the Project Description are intended to direct the reader to the relevant section of the report that discuss these topics but not the plans themselves.

23. *You have noted the uncertainty in ARD potential and that ore zone material has been submitted for kinetic ARD testing. Furthermore, the Project Description notes that an ML/ARD plan will be created and implemented as required. We understand that in some cases, there may be some inconclusiveness around pre-mining ARD/ML prediction as compared to predictions based on testwork undertaken during the operational and post-mining phases of the development. However, we feel that an ARD/ML program should assess the consequences of events that could occur over the life of the project and beyond, and where there is uncertainty regarding future drainage chemistry, contingency planning - including monitoring and management of effects – is often critical in dealing with this uncertainty. Based on the information provided as part of your project proposal, we feel that we do not have enough details to understand the characterization of geological materials, the ARD/ML predictions, and the contingency measures you intend to implement should there be an issue. In this regard, we are seeking the following specific information:*
    a. *Please provide a full description of the property geology as well as geochemical investigations as they relate to the following:*
        i. *A plan map showing outcrop/subcrop geology including geological cross-sections representing each of the units in relation to the undertaking;*

In the vicinity of the TM surface pit, there is a mantle of till that covers the rock interface. There were no natural outcrops/subcrops in the TM and S zone area. Surface geological mapping was conducted in the TM trench, but not for the outlying area. Attached are the surface geological maps and the underground geological maps prepared by Silver Hart Mines for the TM zone. The 2007 drill holes are plotted on the maps as reference drill holes Granodiorite/Altered Granodiorite, and Andesite Dyke.

        ii. *Plan and cross-sectional representations (maps) indicating sample locations for the geochemical testwork program;*

Please see the attached geological mapping.

Comment [MSOffice1]: ob please add your sample points to the map

        iii. *An enumeration of each of the rock units [including acid generation potential (see item 23 (b) below), neutralization potential, and trace element content] expected to be encountered by the project, amounts of each rock unit, and final resting place for these materials. Include outlier data, not just averages;*

Rock Units	Volume BCM	Geochemical Characteristics	Use Waste Dump BCM	Use Construction Material BCM
Granodiorite	145,483	See attached spreadsheet	138,834	6,649
Andesite Dyke	6,564	Not Available	6,564	0
Totals-	152,047		145,398	6,649

        iv. *Similar to item (iii) above, please describe the waste rock-quality as per standard geological/geotechnical investigations (core sample description).*

Please see Geological logs associated with the drill hole sample assays in iii above.

v. As the geochemical testing was limited to ore material from the TM zone only, we see this as a limitation given that the S zone is also suggested for development, and no further information is provided on whether the ore zones/assemblages are consistent. In addition, there is the need to conduct testing of all materials (waste rock) to be encountered by the project, including those materials suggested for use in the construction of roads and impoundments.

There was drilling conducted in 2005, 2006, and 2007 in the TM and S zone areas to define the vein continuation, confirm historical data, and to define the host rock assemblages. Both the TM and S zone that are designated for mining are hosted in same granodiorites. Both the TM and S mineralized vein depositional stages would have occurred at the same time and therefore be considered equivalent in geological and geochemical make-up. Any waste rock proposed to be used as a construction material would not contain sulphide minerals outside of the typical threshold levels seen in the Cassiar Batholith granodiorites.

vi. The discussion on ABA results as well at the ABA testwork lab certificate provides some insight into the "uncertainty" surrounding the capacity for the tailings waste to promoted ARD. Given the incomplete description/understanding of the geologic unit tested, further testing of this unit is required to enable us to understand the mineralogy that is expected to take part in acid generation and neutralization.

Kinetic testing of the ore zone is currently being undertaken. Static testing was undertaken for two samples of the hanging wall, one of the footwall, and an additional sample form the ore zone. The modified ABA data indicates that the sample TM-OZ-01 is the only sample with significant sulphide content and is potentially acid generating. As most of the sulphides in the ore sample will be extracted through the mill process, this rock type is not expected to result in any acid generation as tailings. The remaining four samples TM-FW-01, TM-HW-01, TM-HW-02 and TM Zone LCT are considered to be uncertain based on the low Net NP. However, this is due to the relatively low values for both AP and NP; hence with high NP/AP ratios these samples are unlikely to generate acidity.

vii. What physical changes will occur as a result of excavation and weathering, and how will they alter other weathering reactions, drainage conditions and the amount of mineral exposure?

Few physical changes are expected as a result of weathering beyond what would normally occur with exposed rock. The rock will be more fragmented during the excavation process and thus some fines will wash out into the surface soils under and immediately downgradient from the waste rock storage area. Over time the rock will smooth down on from weathering and some rock may crack as a result of the freeze-thaw process.

viii. What are the critical weathering reactions? For example, is dissolution a concern? Will primary metal release occur almost entirely from sulphide oxidation?

Based on our knowledge of current steady state groundwater, we have found that the groundwater has some elevated levels of zinc, which would infer that there has been dissolution of sulphide minerals within the host rock.

ix. What are the expected present and future metal loadings from each mine component/geologic unit?

The metal loadings are not calculable based on the geological unit but water quality testing, in combination with flow measurements, has shown current metal loading values for the receiving waters. There is not expected to be any appreciable difference in the metal loading of the receiving waters as a result of this project, due to its small size and the management plans to minimize potential contamination of the receiving waters from the operation of this mine. Metals loading limits are expected to be a requirement of the mine production licence and thus will be monitored through the life of the project.

x. How long will it take for ARD and other important hydrological or weathering events to occur?

Predicting ARD (should it occur) or other hydrological or weathering events is not possible at this time.

xi. Section 4.1.2 of the Project Description notes "It was observed that the overburden tends to not to be well draining, and the lower TM depression in the overburden maintains water throughout the summer months." Please provide further information on the groundwater conditions at the TM pit. What is the grain-size analysis data for this material?

There is no existing groundwater information for the TM pit or any surface water data from the water retained in the depressions. The TM zone is near surface bedrock and therefore significantly reducing the potential concern of water retention within overlying surficial materials. The TM zone is within the bedrock and therefore no grain-size analysis has been undertaken.

xii. In the Project Description, you have noted that water flowing from the existing adit has shown zinc, arsenic and cadmium levels in exceedance of the CCME guidelines. Is there any water that is presently impounded in the underground workings? If so, what is the water quality like? Is there any historical information to draw upon in understanding the potential geochemical evolution of the water generated from the underground workings?

We do not expect a significant impoundment of water in the underground workings, as the adit was constructed as a free-draining incline. The only information available to describe the geochemical processes occurring in the underground workings is a knowledge of the geological composition of the ore body and the condition of the water flowing from the adit. From this information it appears that the groundwater is in contact with the ore and as a result some dissolution of the metals is occurring, hence the elevation of arsenic, cadmium, and zinc levels. The pH value of approximately 7.5, well within the normal range for surface waters, indicates that there is no significant acid generation occurring.

xiii. What is the grade and geometry for presently-developed underground workings?

The presently-developed underground workings measure 3.6 to 4.9 meters wide by 3.0 meters high. Slusher drifts and raises were approximately 1.5 meters wide by 2.1 meters high. The adit has a positive grade of approximately 2 percent. Currently the adit opening is permanently closed but has a rock drain to allow the drainage of the workings.

xiv. How much waste will be disposed of above ground versus backfilled and what is the ARD/ML nature for this waste?

The amount of above ground waste disposal will be dictated by the ratio of ore to waste at the time of extraction and the swell factor of the underground fractured waste. Due to the variability of these factors, as additional waste needs to be disposed, the first priority will to

place the material underground. If it is not practical at the time the waste rock is being removed to the waste dump area or for reclaiming slopes of the TM pit. Refer to the geochemical core assays spreadsheet in iii above for typical assays to be encountered.

Static testing indicates that the ARD nature of the rock will be uncertain due to the very low levels of neutralization potential, even though the NP/AP ratio is considered to be outside of the PAG levels for 3 of the 3 samples. All of this rock will disposed of in the waste rock pile.

xv. It is our understanding that depending on the ARD/ML release mechanisms, rates and other factors, a one metre lift of crushed limestone may have negligible or only short-term mitigation capacity. This suggested strategy seems preliminary. Please indicate whether further geochemical and treatability studies will be conducted and how the findings will be used.

A treatability study of the water was undertaken in the fall of 2007 to determine what treatment would be required of the water to reduce the levels of some of the metals of concern. As the hydrogeology if the site may be altered by the mine development closure options will be finalized once a better understanding of predicted post-closure conditions is available. It is expected that the removal of the ore body from the hillside will remove the potential for contamination of the water and any flow from the adit will contain greatly reduced levels of metals.

xvi. The open pit intercepting the underground workings seem to suggest a flow through scenario upon closure, with combined flow exiting present underground access points. We are unclear as to how water will be controlled from the combined open-pit/underground access at the end of mine life.

See previous response (23.a.xvi.).

b. At a minimum, the following procedures are recommended for determining ARD potential:

Static Testing

1. Trace Element Content:
- *Total Concentration*
- *Soluble Concentration*

2. Acid Base Accounting:
- *Total Sulphur, Sulphate-Sulphur, and Sulphide-Sulphur*
- *Bulk Neutralization Potential*
- *Carbonate Neutralization Potential*
- *pH*

3. Mineralogy and Other Geological Properties:
- *Mineralogical Examination*

4. Particle Size Separation and Determination (for unconsolidated and crushed materials)

Kinetic Testing

1. Reaction Rates and Drainage Chemistry:
- *Pre-Test and Post-Test Characterization*
- *Humidity Cell*
- *On-Site Test Pads*
- *Site Drainage Monitoring*

Static testing was done for a number of samples and humidity cell testing is being undertaken on the ore sample based on the kinetic testing results.

c. Please provide an analysis of all possible outcomes or interpretations of monitoring and material characterization, and the consequences of events that could occur over

the life of the project and beyond. Stemming from the analysis, details on contingency plans and monitoring/studies aimed at reducing uncertainty, as well as options for drainage treatment, should also be provided.

A performance based adaptive management strategy will be adopted to manage such potential future events. The proposed Environmental Monitoring Program (attached) will be used to observe any changes that require management changes to deal with these issues.

24. The following questions are specific to monitoring and management of potential environmental effects:

a. Please describe your plans for monitoring potential project effects associated with water and/or air quality, soils, and any other environmental components during the duration of the project (construction, operation, decommissioning). This information should include details on the frequency of monitoring activities and the parameters that will be analysed in the case of water, air and soil - and any adaptive management strategies that will be taken to monitor the occurrence of effects and the success of mitigation measures.

Please see the attached proposed Environmental Monitoring Program.

b. Please provide further details on the treatment options you will use particularly with regards to the metals (zinc, lead, arsenic and cadmium) you have noted as exceeding certain standards (CCME and MMER).

Treatment options are currently being considered but will not be finalized until a more complete understanding of the requirements of treatment is determined. The existing water of concern (the flow from the adit) will be used in the milling process and is expected to be a fairly different composition upon completion of mining and the removal of the ore, thus any decisions on treatment options will be made when a release of water from the mine site that will exceed the relevant standards is expected.

c. Have you identified possible factors or situations that could undermine the stability of the tailings pond (for example vibrations from blasting, natural events, etc.)? Please describe the emergency response measures you will implement should there be a failure of the tailings dam or pond?

During the design stage of the tailings dam, several design features were incorporated to mitigate the potential undermining and stability of the dam. These include:

Design Feature	**Mitigation Criteria**
Rock core and toe drains	Eliminates hydrostatic pressures that can lead to catastrophic failure
Rock Slope Face	Minimizes erosion of dam slope faces
Freeboard/ Emergency Spill Channel	Eliminates overtopping of the dam during flash downpours.

As part of the environmental Policies and Procedures to be developed for on going data collection, monitoring, and mitigation, a Dam Safety Inspection Procedures with an Emergency Preparedness Procedure based on the principles of the Canadian Dam Safety Association, “Dam Safety Guidelines 2007” will be used.

25. Please provide details on the preliminary reclamation liability costs and the level of financial security estimated for mine closure.

It is our understanding that the accounting of reclamation costs is a regulatory tool and a determination of these costs will be made through the appropriate government agencies.

We trust the above response is adequate to answer your questions; however please do not hesitate to contact me or our agent in Yukon, Paul Inglis of Access Consulting Group, if you have any further questions.

Sincerely,

Don Wedman, P.Eng.,
President, CMC Metals Inc.

Attachments:

- Geological cross sections
- Amended project description information
- Environmental Monitoring Program

CC Paul Inglis, Access Consulting Group

CMC Metals Ltd.

Silver Hart Property

ENVIRONMENTAL MONITORING PROGRAM

CONSTRUCTION, PRODUCTION, AND

DECOMMISSIONING SILVER HART PROPERTY YUKON

TERRITORY

December 2007

Prepared by:

ACCESS
CONSULTING GROUP

www.accessconsulting.ca

TABLE OF CONTENTS

LIST OF TABLES

LIST OF FIGURES

LIST OF APPENDICES

ENVIRONMENTAL MONITORING PROGRAM

1.0 INTRODUCTION

This environmental monitoring program has been prepared for the Silver Hart Property (CMC Metals Ltd.) mine development and water licence application. This program is intended to be a stand alone document and will evolve based on the mine development, results of monitoring, water treatment system improvements and closure related studies.

This document describes the environmental monitoring programs that will be carried out to ensure that project development components are operated and maintained in a manner that ensures environmental and socio-economic protection. These programs are designed to monitor:

- site security and public health and safety;
- existing treatment facilities and their operational performance;
- site facilities and operations as a preventative measure for accidents and malfunctions;
- potential effects to the receiving environment through scheduled water quality and biological sampling and inspection tours of the local receiving water streams; and
- mitigation success.

Data will also be utilized for closure plan development and implementation as necessary. If monitoring indicates that treatment systems are not performing or stability issues with mine workings arise, then maintenance measures or contingency plans can be implemented following an adaptive management approach.

A baseline monitoring program is already in place for the Silver Hart Property. This program utilizes up to 16 environmental monitoring stations to undertake water and sediment quality monitoring. Some of these will be used for aquatic effects monitoring for benthic invertebrate populations and continued water quality and sediment monitoring as outlined in following sections. Table 2 outlines the overall receiving waters monitoring program.

The active mine site will be physically inspected on a regular basis during the operational life of the mine and the closure phase to ensure public health and safety and

environmental protection. Site personnel record will observations on an inspection check list form (Appendix A), which will be reviewed by management personnel for action as necessary.

1.1 HEALTH AND SAFETY

Considerable emphasis is placed on ensuring worker health and safety. The company has procedures in place for worker health and safety and follows all occupational requirements. Health and safety training, meetings, and briefings are to be undertaken for all employees on a routine basis. Scheduled environmental tours of the workplace will occur to look for environmental and safety hazards and potential accidents, and to assess waste management activities. This information will then be used for feedback in safety briefings and implementation of corrective action.

1.2 RECEIVING WATER SURVEILLANCE NETWORK

A water quality surveillance network is in place to monitor the surface receiving waters for quality and environmental effects purposes. These stations will be sampled for water, sediment, and benthic invertebrates. All of these monitoring stations have been sampled in the past.

Table 1 lists the current site location numbering system that will be monitored as part of the water quality surveillance network. Table 1 provides the site locations for the surface receiving waters surveillance network. The present sampling frequency and analytical schedule is outlined previously in Table 2, Overall Monitoring Program Summary.

1.3 PHYSICAL INSPECTIONS

The tailings dams, spillways, and diversion ditches are to be routinely inspected by site personnel for physical stability of these structures. The primary issues are settlement of the dams and erosion of flow channels. Table 1 outlines the physical inspection monitoring program for the tailings impoundments, waste rock storage area, diversion ditches, mill site, camp facilities, and fuel storage area. An inspection by a qualified geotechnical engineer of the tailings dams, settling ponds and diversion ditches will be undertaken for physical stability, if problems are identified. An annual engineering inspection of these areas will also be undertaken to ensure stability. A physical

inspection program for the production and waste disposal sites is presented in the Table 3

2.0 WATER QUALITY MONITORING

In September 2006 Access Consulting Group (ACG) initiated a baseline receiving water monitoring program for the Silver Hart Property. Water quality monitoring stations were chosen based on previous water quality sampling to ensure continuity and on the applicability of sample locations to the proposed project and potential future projects. The goal of this sampling was to create a baseline of data to facilitate the understanding of any future impacts to the aquatic environment of the development of the Silver Hart Property. Results of the 2006-2007 program are documented within the "*Silver Hart Property Project Proposal and YESAA Submission, 2007*" prepared by ACG for CMC Metals Ltd.

ACG performed the following activities during 2006/2007:

- Collecting four rounds of water quality samples from various receiving water sites during open water conditions;
- Conducting spot flow measurements at all water quality sites when safe to do so;
- Installing, monitoring and inspecting hydrological sensors/data loggers at CMC-M2 (McCrory Creek at the access road), to collect stage discharge and flow records and allow for more confident study area hydrologic modeling;
- Collecting three rounds of stream sediment samples;

2.1.1 Receiving Water Stations

Receiving water stations include the following listed sites, which are shown on Figure 1 and listed in Table 1. The regular monitoring program for receiving water stations using an external laboratory facility for analytical testwork is outlined in Table 2.

- CMC-04 – Meister River upstream of the confluence with Oake Creek: to be a final control site for all influences of the project via the Oake Creek system;

- CMC-05 – Meister River downstream of the confluence with Oake Creek: to monitor downstream effects from the project via the Oake Creek system;

- CMC-06 – Oake Creek upstream of the confluence with the Meister River: to monitor downstream effects from the project prior to the confluence with the Meister River;
- CMC-11 – Adit flow: for characterization of water flowing from existing underground workings;
- CMC-M1 - McCrory Creek upstream from unnamed tributary to the south: to provide a project control site for the potential influences of the mine site;
- CMC-M2 – McCrory Creek at the access road crossing; upstream from Edgar Lake confluence; downstream from unnamed tributary:
- CMC-OC2 – Oake Creek downstream of McCrory Creek: to monitor effects from McCrory Creek;
- CMC-OC3 – Oake Creek downstream of unnamed tributary: to determine any downstream effects from tributary creek to the Oake Creek system;
- CMC-U1 – Unnamed tributary to Oake Creek: to determine any effects of the project on the unnamed creek to the east of the project;
- CMC-T1 – Tailings pond: to be sampled to monitor the condition of the water from the tailings pond.

Table 1 Water Quality Sample Station Locations

EMS*	SITE DESCRIPTION	Northing	Easting
CMC-04	Meister River upstream from Oake Creek confluence	6690129	411208
CMC-05	Meister River just downstream of Oake Creek confluence	6690849	412312
CMC-06	Oake Creek just upstream of Meister River confluence	6690673	412137
CMC-07	Mouth of Oake Creek at Edgar Lake	6686763	403918
CMC-11	Adit just south of camp	6688769	404126
CMC-M1	McCrory Creek upstream from unnamed tributary to the south	6688350	403628
CMC-M2	McCrory Creek upstream from Edgar Lake confluence;	6687110	404215
CMC-OC2	Oake Creek, downstream from McCrory Creek and Edgar Lake	6686894	404668
CMC-OC3	Oake Creek, downstream from unnamed creek confluence	6686666	406063
CMC-U1	Tributary to Oake Creek	6688432	405458

CMC METALS LTD. PROPERTY

CMC METALS LTD

Legend

- Weather Station
- Water Quality Station
- Water Quality and Hydrology Station
- Trail
- Limited-Use Road
- Contour
- Water Course
- Environmental Assessment Project Spatial Boundary
- Infrastructure

Quartz Claims

Claim Owner, Status

- Expired
- Archer, Cathro & Associates, Active
- CMC Metals Ltd., Active

Caribou Lake
CMC-01
CMC-10
Landing
CMC-02
Meister River
CMC-03
CMC-03A
CMC-04
CMC-05
CMC-06
CMC-WX
TM Pit
Proposed Waste Dump Area
CMC-U2
McCrory Creek
CMC-11
Facilities
CMC-M1
Tailings Pond
Oake Creek
CMC-U1
CMC-M2
CMC-OC2
CMC-OC3
CMC-07
Edgar Lake
Roy Lake
Beaver Creek

NOTES:

Projection: UTM Zone 9 NAD83
Units: Meters
NTS: 105B/07

National Topographic Data Base (NTDB) compiled by Natural Resources Canada at a scale of 1:50,000. Cadastral data compiled by Natural Resources Canada. Reproduced under license from © Her Majesty the Queen in Right of Canada, Department of Natural Resources Canada. All rights reserved.

Quartz claim data obtained from Yukon Government Minerals Branch via http://www.geomaticsyukon.ca/data_download. Data current as of September 15, 2006.

Figure 1

Site Overview

Scale: 1:50,000

0 250 500 1,000 m

ACCESS CONSULTING GROUP

Drawn by: HD | Checked by: PI

Date: December 2007

Our File: D:\Project\AllProjects\CMC_Metals\gis\mxd\EMP\Fig1_AreaOverview_EMP.mxd

Table 2 Receiving Water Stations - Monitoring Schedule

Receiving Water Stations:		*in situ*					External - Lab									
		Inspect	Flow	pH	Temp.	Cond.	Total ICP[1] Metals	Dissolved ICP[1] Metals	Hardness	pH	Cond.	TSS	NUTR	LT50	Sediment Program	Benthos Program
Site No.	**Description**															
CMC-04	Meister River upstream from Oake Creek confluence	TA	TA	TA	TA	TA	TA	TA	TA	TA	TA	TA	TA		BA	BA
CMC-05	Meister River just downstream of Oake Creek confluence	TA	TA	TA	TA	TA	TA	TA	TA	TA	TA	TA	TA		BA	BA
CMC-06	Oake Creek just upstream of Meister River confluence	TA	TA	TA	TA	TA	TA	TA	TA	TA	TA	TA	TA		BA	BA
CMC-07	Mouth of Oake Creek at Edgar Lake	M	M	M	M	M	M	M	M	M	M	M	M		BA	BA
CMC-11	Adit just south of camp	M	M	M	M	M	M	M	M	M	M	M	M			
CMC-M1	McCrory Creek upstream from unnamed tributary to the south	M	M	M	M	M	M	M	M	M	M	M	M		BA	BA
CMC-M2	McCrory Creek upstream from Edgar Lake confluence; downstream from unnamed tributary	M	M	M	M	M	M	M	M	M	M	M	M		BA	BA
CMC-OC2	Oake Creek, downstream from McCrory Creek and Edgar Lake confluence	M	M	M	M	M	M	M	M	M	M	M	M			
CMC-OC3	Oake Creek, downstream from unnamed creek confluence	M	M	M	M	M	M	M	M	M	M	M	M			
CMC-U1	Tributary to Oake Creek	M	M	M	M	M	M	M	M	M	M	M	M			
CMC-T1	Tailings pond	W/M[1]	W[2]	W	W	W	W	W	W	W	W	W	W	W/M[1]		

Codes:
D = Daily
W = Weekly
M = Monthly
TA = Twice annually
A = Annually
BA = Every second year
Sampling frequency is dependant on site conditions (some locations may not contain water in winter months)

[1] ICP Metals include: Aluminum, Antimony, Arsenic, Barium, Beryllium, Bismuth, Boron, Cadmium, Calcium, Chromium Cobalt, Copper, Iron, Lead, Lithium, Magnesium, Manganese, Molybdenum, Nickel, Potassium, Selenium Silicon, Silver, Sodium, Strontium, Sulfur, Thallium, Tin, Titanium, Uranium, Vanadium, Zinc and Zirconium

[2] only applicable when the tailings pond is discharging

[3]Weekly from the pond decant if the pond is discharging, monthly from the pond if it is not

3.0 BENTHIC INVERTEBRATE MONITORING PROGRAM

The benthic invertebrate program is proposed to monitor local streams. No existing data has been collected and as such a program for the summer of 2008 is being proposed. This program will be undertaken every two years at stations located in the Oake Creek and McCrory Creek systems. The preliminary proposed sites are CMC-04, CMC-05, CMC-06, CMC-07, CMC-M1, and CMC-M2. The choice of these sites is based on their applicability of the site and the suitability of the site for benthic sampling. Site conditions may show that these sites are not suitable and result in changes to the benthic sampling program. Table 3 shows the benthic sampling sites and their schedules.

Three replicate samples will be collected at each station during the summer using serber samplers. Samples will be preserved in a 10% formalin solution and identified to the lowest possible taxa and counted. Water quality and sediment data will be collected at the same time.

Data will be analyzed using a variety of indices and compared with existing information and reported in an annual report.

4.0 SEDIMENT MONITORING PROGRAM

A sediment monitoring program is proposed to monitor impacts from the project on local stream sediment. The program will be conducted in conjunction with the benthic invertebrate monitoring program but will be sampled every year during summer low flow. Sample stations will be the same as the water quality sampling stations as show in Table 3.

Samples will be conducted in replicates from within the active stream channel using a teflon or stainless steel scoop. Samples will be dried and screened, using sieve sizes at ASTM mesh numbers, 10, 20, 40, 60, 100, 140, and 270 (ASTM -E11-61) and the fractions recorded. A sub-sample of the material passing through the 100 mesh sieve will be analyzed for ICP metals.

The results will be reported in an annual report and include an evaluation against existing stream sediment data.

5.0 PHYSICAL INSPECTION

The following stations (listed in Table 3) are intended to monitor physical aspects of the project.

- Fuel storage/refueling area
- Inspect for spills, leaks, and hydrocarbon staining along all the fuel lines and within the refueling area
- Generators
  - Inspect for spill and leaks around the generator and fuel storage areas
- Crushed ore and run-of-mill storage areas
  - Inspect for any ore spills outside of the lined and bermed storage area,
  - Inspect berms for stability
- Drainage and diversion ditches and berms
  - Inspect stability and integrity of all diversion ditches and berms
  - Ensure all ditches are free-flowing and note any sedimentation within the ditches for immediate removal
- Tailings pond
  - Inspect for stability, leakage
  - Monitor water levels, sedimentation levels
- Settling Ponds
  - Inspect for stability, stress fractures, leakage
  - Monitor water levels, sedimentation levels
- Downgradient for tailings ponds and settling ponds
  - Monitor for groundwater flow surfacing
- Waste rock storage area
  - Monitor for stability
- Existing adit and water line to mill
  - Monitor for leakage
- Solid Waste Storage Area
  - Ensure waste containers are closed

Table 3 Physical Inspection Sites and Monitoring Schedule

Site No.	Description	Physical Inspection						
		Inspection	Water Levels	Sediment Levels	Spills, Leaks,	Stability	Stress Cracks	Surface Flow
CMC-FS	Fuel storage/refueling area	W			W			
CMC-Gen	Generators	W			W			
CMC-Ore	Ore storage areas	W			W			
CMC-Ditche	Drainage and diversion ditches and berms	W[1]	W[1]	W	W	W	W	
CMC-TP	Tailings pond	D[1]	D[1]	W	W	W	W	
CMC-SP1	Mill pad settling pond	D[1]	D[1]	W	W	W	W	
CMC-SP2	Tailings pond settling pond	D[1]	D[1]	W	W	W	W	
CMC-SP3	Waste rock area settling pond	D[1]	D[1]	W	W	W	W	
CMC-WR	Waste rock storage area	W				W	W	
CMC-Adit	Existing adit and water line	W			W			W
CMC-DG	Downgradient from settling ponds and tailings pond	W						M
CMC-SW	Solid waste storage area	D						

Codes: D = Daily W = Weekly M = Monthly

[1] These sites will also be inspected during and after any major storm event

CMC Metals Ltd.

Silver Hart Property.

ENVIRONMENTAL MONITORING PROGRAM

MINE CONSTRUCTION, PRODUCTION, AND DECOMMISSIONING

APPENDIX A INSPECTION

CHECKLISTS

December 2007

ACCESS
CONSULTING GROUP

Silver Hart Property Site Inspection Form **Inspection Conducted the Week of:**

CMC-FS			**Fuel Storage Area and Fuel Lines**
1) Are there any visible fuel leaks?	Y	N	Action taken:
2) Is there any visible hydrocarbon staining?	Y	N	Describe:
CMC-Gen			**Generators**
1) Are there any visible fuel leaks?	Y	N	Action taken:
2) Is there any visible hydrocarbon staining?	Y	N	Describe:
CMC-Ore			**Ore storage Piles**
1) Are there any visible spills?	Y	N	Describe:
2) Are there any stress cracks in the berms?	Y	N	Describe:
3) Are there any signs of erosion?	Y	N	Describe:
CMC-Ditches			**Diversion Ditches and Berms**
1) Are there any signs of sedimentation or objects affecting flow in the ditches?	Y	N	Describe:
2) Are there any stress cracks in the berms?	Y	N	Describe:
3) Are there any signs of erosion of the berms?	Y	N	Describe:
CMC-TP			**Tailings Pond**
1) Is there any water flow over the decant?	Y	N	Describe:
2) Is there a noticeable change in flow (since last inspection)?	Y	N	Describe:
3) Do you observe an ice plug?	Y	N	Describe:
4) Is there any leakage from the adit or water line to the mill?	Y	N	Describe:
5) Water level (reading from stadia rod)			Describe:
6) Sediment level (depth to sediment from fixed point)			Describe:
CMC-SP1			**Mill Pad Settling Pond**
1) Is there any seepage along downstream side of structure?	Y	N	Describe:
2) Checked culverts/decants (free of blockages, damage, etc)?	Y	N	Describe:
3) Is there evidence of up-welling downstream?	Y	N	Describe:
4) Are there any new slumps, cracks, etc.?	Y	N	Describe:
5) Water level (reading from stadia rod)			Describe:
6) Sediment level (depth to sediment from fixed point)			Describe:

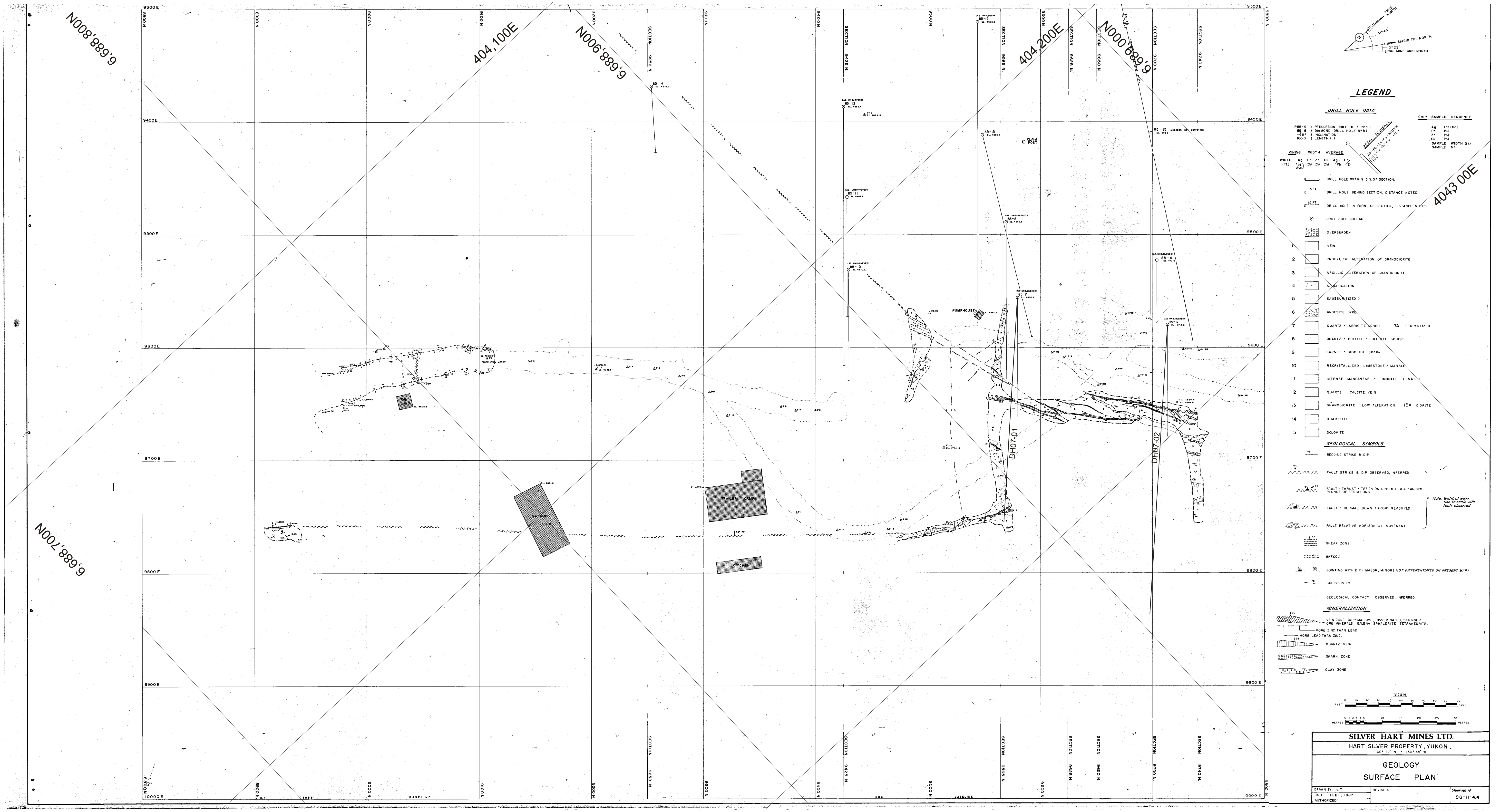
CMC-SP2			Tailings Pond Settling Pond
1) Is there any seepage along downstream side of structure?	Y	N	Describe:
2) Checked culverts/decants (free of blockages, damage, etc)?	Y	N	Describe:
3) Is there evidence of up-welling downstream?	Y	N	Describe:
4) Are there any new slumps, cracks, etc.?	Y	N	Describe:
5) Water level (reading from stadia rod)			Describe:
6) Sediment level (depth to sediment from fixed point)			Describe:
CMC-SP3			**Facilities Area Settling Pond**
1) Is there any seepage along downstream side of structure?	Y	N	Describe:
2) Checked culverts/decants (free of blockages, damage, etc)?	Y	N	Describe:
3) Is there evidence of up-welling downstream?	Y	N	Describe:
4) Are there any new slumps, cracks, etc.?	Y	N	Describe:
5) Water level (reading from stadia rod)			Describe:
6) Sediment level (depth to sediment from fixed point)			Describe:
CMC-WR			**Waste Rock Storage Area**
1) Is there any evidence of instability or erosion?	Y	N	Describe:
2) Are there any new slumps, cracks, etc.?	Y	N	Describe:
CMC-Adit			**Existing Adit and Water Line**
1) Is there any evidence of leakage?	Y	N	Describe:
CMC-SW			**Solid Waste Storage Area**
1) Is there any loose or visible garbage ?	Y	N	Describe:
2) Are the storage containers sealed?	Y	N	Describe:
3) Are there strong odours of garbage?	Y	N	Describe:

Name of Inspector:	Date and Time of Inspection:

Note: Please Provide Comments/Concerns/Observed Changes, if Necessary:

Last updated - December 2007

ACCESS CONSULTING GROUP



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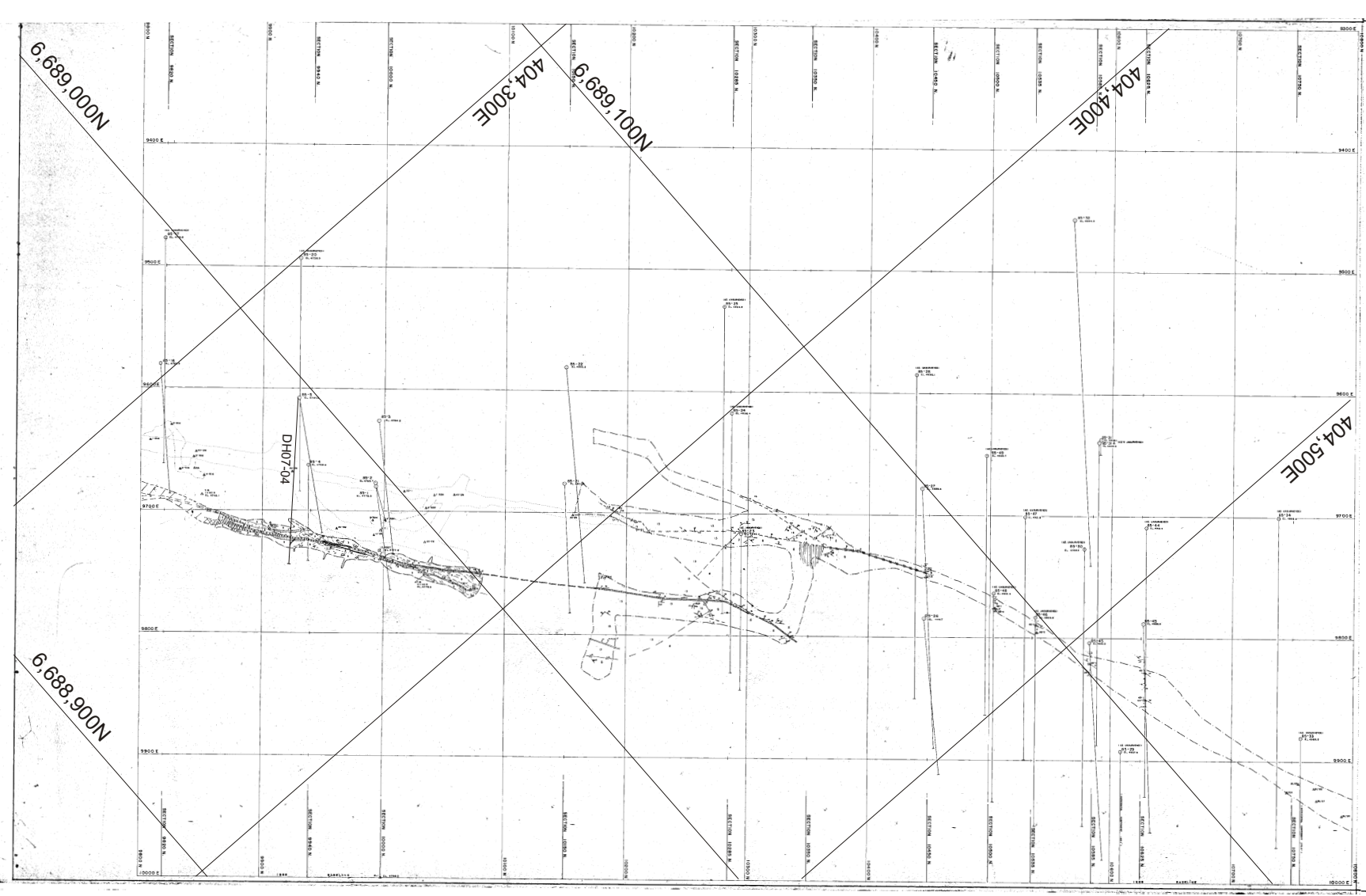
SECTION 9425 N
SECTION 9565 N
SECTION 9625 N
SECTION 9650 N
SECTION 9700 N
SECTION 9740 N
9300 E
9400 E
9500 E
9600 E
9700 E
9800 E
9900 E
10000 E
8800 N
8900 N
9000 N
9100 N
9200 N
9300 N
9400 N
9500 N
9600 N
9700 N
9800 N
BASELINE
85-14
85-12
85-11
85-10
85-13
85-15
85-8
85-9
85-7
85-6
85-19
CLAIM POST
PUMPHOUSE
FAN SHED
MACHINE SHOP
TRAILER CAMP
KITCHEN
DH07-01
DH07-02
TRUE NORTH
MAGNETIC NORTH
10° 03'
MINE GRID NORTH
LEGEND
DRILL HOLE DATA
P85-9 (PERCUSSION DRILL HOLE Nº 9)
85-8 (DIAMOND DRILL HOLE Nº 8)
-45° (INCLINATION)
160.0 (LENGTH ft.)
ASSAY SEQUENCE
Ag - Pb - Zn - Cu - WIDTH (oz/ton) (%) (%) (%) (ft.)
CHIP SAMPLE SEQUENCE
Ag (oz/ton)
Pb (%)
Zn (%)
Cu (%)
SAMPLE WIDTH (ft.)
SAMPLE Nº
MINING WIDTH AVERAGE
WIDTH (ft.) Ag (oz/ton) Pb (%) Zn (%) Cu (%) Ag/Pb Pb/Zn
DRILL HOLE WITHIN 5 ft. OF SECTION.
15 FT.
DRILL HOLE BEHIND SECTION, DISTANCE NOTED.
15 FT.
DRILL HOLE IN FRONT OF SECTION, DISTANCE NOTED.
DRILL HOLE COLLAR
OVERBURDEN
1 VEIN
2 PROPYLITIC ALTERATION OF GRANODIORITE
3 ARGILLIC ALTERATION OF GRANODIORITE
4 SILICIFICATION
5 SAUSSURITIZED ?
6 ANDESITE DYKE
7 QUARTZ - SERICITE SCHIST. 7A SERPENTIZED
8 QUARTZ - BIOTITE - CHLORITE SCHIST
9 GARNET - DIOPSIDE SKARN
10 RECRYSTALLIZED LIMESTONE / MARBLE
11 INTENSE MANGANESE - LIMONITE HEMATITE
12 QUARTZ CALCITE VEIN
13 GRANODIORITE - LOW ALTERATION. 13A DIORITE
14 QUARTZITES
15 DOLOMITE
GEOLOGICAL SYMBOLS
BEDDING STRIKE & DIP
FAULT STRIKE & DIP OBSERVED, INFERRED
FAULT - THRUST - TEETH ON UPPER PLATE - ARROW PLUNGE OF STRIATIONS
FAULT - NORMAL DOWN THROW MEASURED.
FAULT RELATIVE HORIZONTAL MOVEMENT.
Note: Width of wavy line to scale with fault observed.
SHEAR ZONE
BRECCIA
JOINTING WITH DIP (MAJOR, MINOR) NOT DIFFERENTIATED ON PRESENT MAP)
SCHISTOSITY
GEOLOGICAL CONTACT - OBSERVED, INFERRED.
MINERALIZATION
VEIN ZONE, DIP - MASSIVE, DISSEMINATED, STRINGER
ORE MINERALS - GALENA, SPHALERITE, TETRAHEDRITE.
MORE ZINC THAN LEAD.
MORE LEAD THAN ZINC.
QUARTZ VEIN
SKARN ZONE
CLAY ZONE
Scale
0 10 20 30 40 50 60 70 80 90 100 FEET
0 1 2 3 4 5 10 15 20 25 30 METRES
SILVER HART MINES LTD.
HART SILVER PROPERTY, YUKON.
60° 19' N. - 130° 45' W.
GEOLOGY
SURFACE PLAN
DRAWN BY: J.T.
DATE: FEB., 1987.
AUTHORIZED:
REVISED:
DRAWING Nº
SG-H-4.4



LEGEND

DRILL HOLE DATA

CHIP SAMPLE SEQUENCE

- DRILL HOLE WITHIN 5m OF SECTION
- DRILL HOLE BEHIND SECTION, DISTANCE NOTED.
- DRILL HOLE IN FRONT OF SECTION, DISTANCE NOTED.
- DRILL HOLE COLLAR
- OVERBURDEN
- 1 VEIN
- 2 PROPYLITIC ALTERATION OF GRANODIORITE
- 3 ARGILLIC ALTERATION OF GRANODIORITE
- 4 SILICIFICATION
- 5 SAUSSURITIZED ?
- 6 ANDESITE DYKE
- 7 QUARTZ - SERICITE SCHIST TR SERPENTINIZED
- 8 QUARTZ - BIOTITE - CHLORITE SCHIST
- 9 GARNET - DIOPSIDE SKARN
- 10 RECRYSTALLIZED LIMESTONE / MARBLE
- 11 INTENSE MANGANESE - LIMONITE HEMATITE
- 12 QUARTZ GALETTE VEIN
- 13 GRANODIORITE - LOW ALTERATION ISA BIOTITE
- 14 QUARTZITES
- 15 DOLOMITE

GEOLOGICAL SYMBOLS

- BEDDING STRIKE & DIP
- FAULT STRIKE & DIP OBSERVED, INFERRED
- FAULT - THRUST - TEETH ON UPPER PLATE - ARROW PLUNGE OF LINEATIONS
- FAULT - NORMAL DOWN THROW MEASURED
- FAULT RELATIVE HORIZONTAL MOVEMENT

Note: Width of wide line to scale with fault observed

- SHEAR ZONE
- BRECCIA
- JOINTING WITH DIP (MAJOR, MINOR) NOT DIFFERENTIATED ON PRESENT MAPS
- SCHISTOSITY
- GEOLOGICAL CONTACT - OBSERVED, INFERRED.

MINERALIZATION

- VEIN ZONE, DIP, MASSIVE, DISSEMINATED, STRINGER ORE MINERALS: GALENA, SPHALERITE, TETRAHEDRITE.
- MORE ZINC THAN LEAD
- MORE LEAD THAN ZINC
- QUARTZ VEIN
- SKARN ZONE
- CLAY ZONE

Scale

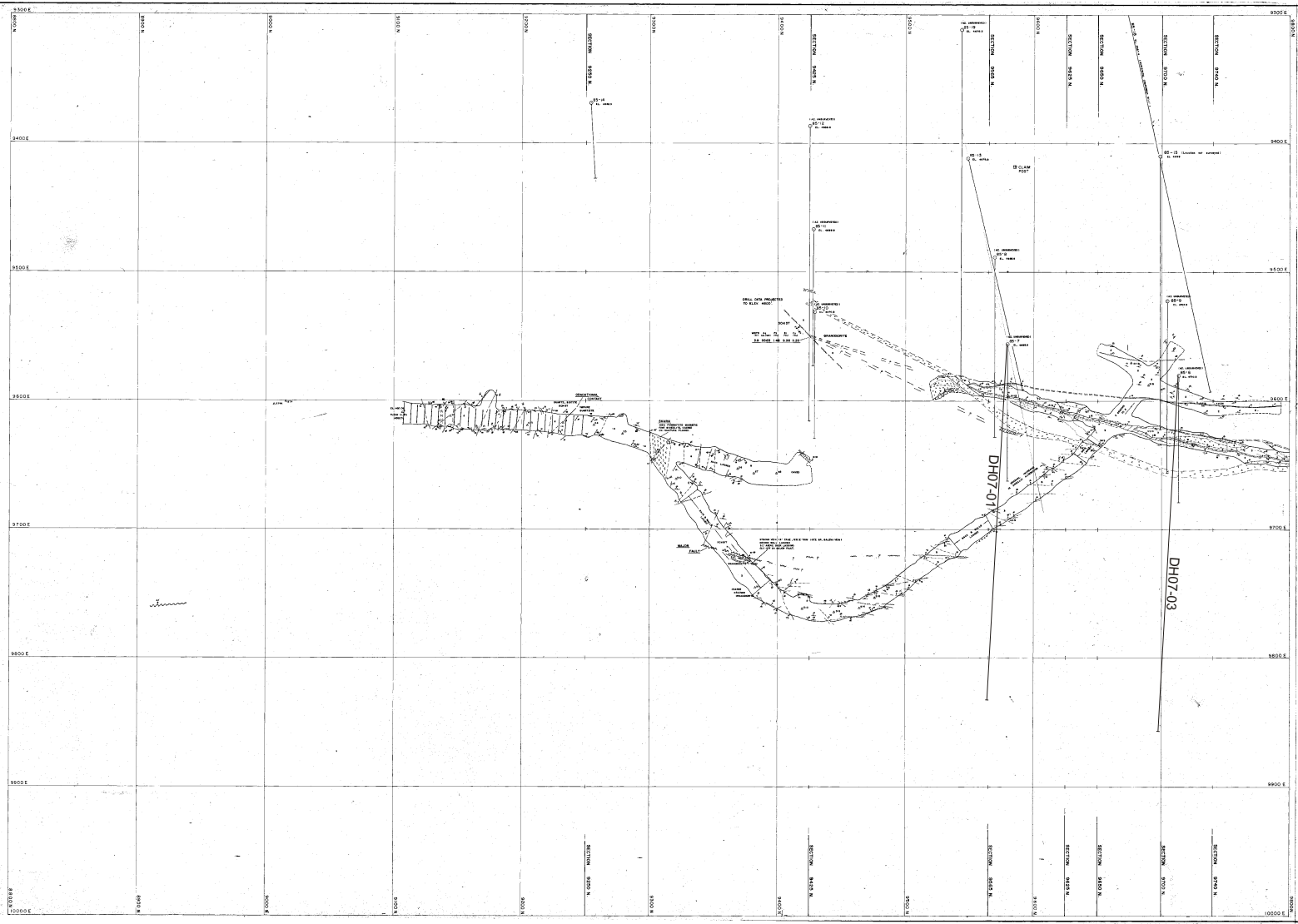
SILVER HART MINES LTD.

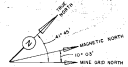
HART SILVER PROPERTY, YUKON.

GEOLOGY

SURFACE PLAN

DRAWING NO. SG-H-S4





LEGEND

DRILL HOLE DATA

85-8 | DIAMOND DRILL HOLE N°8 |
-45° | INCLINATION |
160·0 | LENGTH IN... |

CHIP SAMPLE SEQUENCE

Au (oz/ton)
Pb (%)
Zn (%)
Cu (%)
Ag (oz/ton)
SAMPLE WIDTH (FT.)
SAMPLE NO.

MINING WIDTH AVERAGE

WIDTH (ins.) | Au (oz/ton) | Pb (%) | Zn (%) | Cu (%) | Ag (oz/ton) | Zn (%)

- DRILL HOLE WITHIN 5m OF SECTION.
- DRILL HOLE BEHIND SECTION, DISTANCE NOTED.
- DRILL HOLE IN FRONT OF SECTION, DISTANCE NOTED.
- DRILL HOLE COLLAR
- OVERBURDEN
- 1 VEIN
- 2 PROPYLITIC ALTERATION OF GRANODIORITE
- 3 ARGILLIC ALTERATION OF GRANODIORITE
- 4 SILICIFICATION
- 5 SOUSSURITIZED ?
- 6 ANDESITE DYKE
- 7 QUARTZ - SERICITE SCHIST. 7A SERPENTIZED
- 8 QUARTZ - BIOTITE - CHLORITE SCHIST
- 9 GARNET - DIOPSIDE SKARN
- 10 RECRYSTALLIZED LIMESTONE / MARBLE
- 11 INTENSE MANGANESE - LIMONITE HEMATITE
- 12 QUARTZ CALCITE VEIN
- 13 GRANODIORITE - LOW ALTERATION 13A DIORITE
- 14 QUARTZITES
- 15 DOLOMITE

GEOLOGICAL SYMBOLS

- BEDDING STRIKE & DIP
- FAULT STRIKE & DIP OBSERVED, INFERRED
- FAULT - THRUST - TEETH ON UPPER PLATE - ARROW PLUNGE OF STRIATIONS
- FAULT - NORMAL DOWN THROW MEASURED.
- FAULT RELATIVE HORIZONTAL MOVEMENT.

Note: Width of zone One ft scale with fault observed.

- SHEAR ZONE
- BRECCIA
- JOINTING WITH DIP (MAJOR, MINOR) NOT DIFFERENTIATED ON PRESENT MAP).
- SCHISTOSITY
- GEOLOGICAL CONTACT - OBSERVED, INFERRED.

MINERALIZATION

- VEIN ZONE, DIP - MASSIVE, DISSEMINATED, STRINGER ORE MINERALS - GALENA, SPHALERITE, TETRAHEDRITE.
- MORE ZINC THAN LEAD.
- MORE LEAD THAN ZINC.
- QUARTZ VEIN
- CLAY ZONE
- SKARN ZONE

COMPILATION OF PROPERTY DATA AS OF 20 APRIL, 1988 BY W.S. READ P. Eng.
1905 SURFACE WORK BY L.W. CARLYLE, P. Geol., GRAIG FOWLER, P. Geol., R. JONES TECHNOLOGIST, 1905 - 88 UNDERGROUND WORK BY BRIAN FOWLER, R. JONES & W.S.READ.
SURVEY CONTROL BY NORTHWEST SURVEY GROUP WHITEHORSE, Y.T.

Scale

FEET 0 50 100 150 200 250 300 350 400 450 500 FEET
METRES 0 10 20 30 40 50 60 70 80 90 100 METRES

SILVER HART MINES LTD.

HART SILVER PROPERTY, YUKON.
60° 11' N. - 130° 45' W.

GEOLOGY
UNDERGROUND PLAN
(4600 FT. LEVEL)

DRAWN BY: W.H.P. LTD.
DATE: APRIL 17, 1989.

REVISED: MAR. 01, 1991 - J.F.

DRAWING NO.
UG-H-4.4

S Zone Hangingwall Rock

ELEMENT	Mo	Cu	Pb	Zn	Ag**	Ni	Co	Mn	Fe	As	Sr	Cd	Sb	Bi	Ca	P	Cr	Mg	Al	Na	K	W	Hg	Au**	Sample
SAMPLES	%	%	%	%	gm/mt	%	%	%	%	%	%	%	%	%	%	%	%	%	%	%	%	%	%	gm/mt	kg
DH05-01 S																									
25501	0.002	0.003	<.01	0.06	<2	0.001	<.001	0.07	0.68	<.01	0.001	<.001	0.001	<.01	0.09	0.021	0.001	0.03	0.53	0.01	0.26	<.001	0.001	<.01	2.8
25502	0.016	0.008	0.13	0.62	7	0.001	0.001	1.44	6.08	0.01	0.008	0.002	0.002	<.01	0.11	0.023	<.001	0.02	0.5	0.01	0.39	<.001	0.001	0.01	0.54
25503	0.001	0.002	<.01	0.07	<2	<.001	<.001	0.06	0.89	<.01	0.001	<.001	<.001	<.01	0.11	0.028	0.001	0.07	0.62	<.01	0.28	<.001	<.001	<.01	2.81
25504	0.005	0.003	0.02	0.22	<2	0.001	<.001	1.25	5.16	<.01	0.007	0.001	0.001	<.01	0.14	0.042	<.001	0.02	0.55	0.04	0.45	<.001	<.001	<.01	0.58
25505	0.001	0.001	<.01	0.07	<2	<.001	<.001	0.09	1.3	<.01	0.003	<.001	0.001	<.01	0.74	0.071	0.001	0.05	0.64	0.01	0.32	<.001	0.001	0.01	6.53
25506	0.001	0.002	<.01	0.09	<2	<.001	<.001	0.08	1.58	<.01	0.002	<.001	<.001	<.01	0.21	0.064	0.001	0.13	1	0.03	0.33	<.001	<.001	0.01	5.07
25507	<.001	0.001	<.01	0.1	<2	<.001	<.001	0.06	1.46	<.01	0.002	<.001	0.001	<.01	0.32	0.063	<.001	0.12	0.86	0.06	0.3	<.001	<.001	0.01	5.34
25508	0.002	0.001	<.01	0.09	<2	<.001	<.001	0.08	1.82	<.01	0.003	<.001	<.001	<.01	0.64	0.064	0.001	0.08	0.84	<.01	0.35	<.001	<.001	<.01	5.97
25509	<.001	0.002	<.01	0.19	<2	<.001	<.001	0.04	1.62	<.01	0.001	<.001	<.001	<.01	0.21	0.057	0.001	0.14	0.91	0.07	0.36	<.001	<.001	<.01	5.9
25510	<.001	0.004	<.01	0.25	<2	0.001	0.001	0.04	1.5	<.01	0.001	0.001	<.001	<.01	0.15	0.046	0.001	0.12	0.94	0.06	0.31	0.001	<.001	<.01	6.1
25511	0.005	0.001	<.01	0.2	<2	<.001	<.001	0.03	1.34	<.01	0.001	<.001	0.001	<.01	0.13	0.033	<.001	0.08	0.85	0.03	0.29	<.001	<.001	<.01	5.25
25512	0.001	0.004	0.01	0.08	8	0.001	<.001	0.02	1.31	<.01	0.001	<.001	<.001	<.01	0.07	0.03	0.001	0.02	0.5	0.01	0.38	<.001	<.001	0.01	2.4
25513	0.002	0.002	0.11	0.31	6	0.001	<.001	0.58	2.06	<.01	0.002	0.001	0.002	<.01	0.06	0.036	0.001	0.01	0.49	<.01	0.45	<.001	<.001	<.01	4.29
25514	<.001	0.008	0.26	0.62	39	0.001	<.001	1.25	3.9	<.01	0.001	0.002	0.003	<.01	0.11	0.037	<.001	0.06	0.39	<.01	0.4	<.001	<.001	0.01	2.98
25515	0.001	0.008	0.05	1.24	15	0.001	<.001	1.69	5.91	<.01	0.002	0.003	<.001	<.01	0.11	0.046	<.001	0.08	0.48	0.04	0.47	<.001	<.001	0.02	3.15
25516	<.001	<.001	0.14	0.16	<2	<.001	<.001	0.43	1.94	<.01	0.003	<.001	<.001	<.01	0.67	0.056	0.001	0.15	0.7	0.09	0.43	<.001	<.001	<.01	3.57
25519	0.002	0.003	0.28	0.22	20	0.001	<.001	1.42	3.77	<.01	0.001	0.001	0.001	<.01	0.22	0.052	<.001	0.13	0.47	<.01	0.47	<.001	<.001	<.01	2.72
25520	<.001	<.001	<.01	0.06	<2	<.001	<.001	0.05	1.52	<.01	0.002	<.001	<.001	<.01	0.68	0.058	0.001	0.28	0.86	0.04	0.34	<.001	<.001	<.01	6.06
25521	<.001	0.001	0.01	0.05	<2	0.001	<.001	0.1	1.51	<.01	0.002	<.001	0.001	<.01	0.56	0.062	<.001	0.12	0.67	0.04	0.33	<.001	<.001	0.01	5.16
25522	<.001	0.001	0.02	0.15	<2	<.001	<.001	0.06	3.17	0.01	0.001	0.001	0.001	<.01	0.29	0.058	<.001	0.1	0.71	0.04	0.36	<.001	<.001	<.01	5.74
25525	<.001	<.001	<.01	<.01	<2	0.001	0.001	0.06	1.53	<.01	0.006	<.001	<.001	<.01	1.1	0.062	<.001	0.27	0.76	0.03	0.35	<.001	<.001	<.01	5.7
25526	<.001	<.001	<.01	0.01	<2	<.001	<.001	0.05	1.56	<.01	0.006	<.001	0.001	<.01	1.16	0.06	0.001	0.27	0.79	0.06	0.3	<.001	<.001	<.01	3.01
25527	0.001	<.001	<.01	0.21	<2	<.001	0.001	0.09	1.53	<.01	0.003	0.001	<.001	<.01	0.87	0.073	0.001	0.16	0.8	0.02	0.35	<.001	<.001	<.01	7.38
25528	0.001	0.001	0.05	0.36	<2	<.001	<.001	0.21	1.68	<.01	0.002	0.001	0.001	<.01	0.47	0.073	0.001	0.1	0.78	<.01	0.38	<.001	<.001	<.01	6.15
25529	<.001	0.001	0.12	0.46	<2	0.001	<.001	0.89	2.85	<.01	0.001	0.002	0.002	<.01	0.3	0.058	<.001	0.11	0.54	0.06	0.47	<.001	<.001	<.01	5.93
25530	<.001	0.001	<.01	0.33	<2	0.001	<.001	0.06	1.87	<.01	0.003	0.001	0.001	<.01	0.48	0.072	0.001	0.19	0.92	0.03	0.32	<.001	<.001	0.01	5.83
25531	<.001	<.001	<.01	0.13	<2	0.001	<.001	0.07	1.5	<.01	0.01	<.001	0.001	<.01	1.18	0.068	<.001	0.17	0.56	0.07	0.44	<.001	<.001	<.01	6.52
25532	<.001	<.001	<.01	0.02	<2	<.001	<.001	0.05	1.54	<.01	0.011	<.001	<.001	<.01	1.51	0.066	0.001	0.25	0.57	0.01	0.33	<.001	<.001	<.01	5.67
25533	<.001	<.001	<.01	<.01	<2	<.001	<.001	0.04	1.57	<.01	0.007	<.001	<.001	<.01	1.12	0.061	0.001	0.33	0.61	0.04	0.29	<.001	<.001	0.01	4.85
25534	<.001	0.001	0.01	0.04	<2	<.001	<.001	0.17	1.95	<.01	0.008	<.001	<.001	<.01	1.3	0.06	0.001	0.3	0.67	0.02	0.34	<.001	<.001	0.01	6.7
25535	0.001	0.006	0.08	1.41	10	<.001	<.001	0.71	2.89	0.02	0.001	0.005	0.001	<.01	0.25	0.052	<.001	0.09	0.5	0.01	0.47	<.001	<.001	0.01	2.72
DH05-02 S																									
25537	0.001	0.002	<.01	0.14	<2	<.001	<.001	0.06	1.61	<.01	0.002	<.001	0.001	<.01	0.49	0.068	<.001	0.12	0.71	<.01	0.33	<.001	<.001	0.01	2.7
25541	<.001	0.003	0.01	0.42	23	<.001	<.001	0.09	0.96	<.01	0.002	0.001	0.004	<.01	0.38	0.07	0.001	0.07	0.67	0.01	0.2	<.001	<.001	<.01	2.62
25542	<.001	0.001	0.01	0.1	4	<.001	<.001	0.07	1.45	<.01	0.003	0.001	0.002	<.01	0.73	0.069	0.001	0.15	0.56	<.01	0.29	<.001	<.001	<.01	4.58
25543	<.001	0.004	<.01	0.16	22	<.001	<.001	0.07	1.63	<.01	0.003	0.001	0.002	<.01	0.67	0.068	0.001	0.17	0.69	0.01	0.26	<.001	<.001	<.01	5.62
25544	<.001	0.001	<.01	0.04	<2	<.001	<.001	0.05	2.05	<.01	0.005	<.001	<.001	<.01	1.01	0.07	0.001	0.38	1.12	0.02	0.3	0.001	<.001	<.01	5.22
25545	<.001	0.001	<.01	0.04	<2	<.001	<.001	0.04	2.34	<.01	0.004	<.001	<.001	<.01	0.75	0.067	0.001	0.48	1.33	0.03	0.42	<.001	<.001	<.01	5.61
25546	<.001	0.001	0.01	0.04	3	<.001	<.001	0.09	1.83	<.01	0.006	<.001	<.001	<.01	1.15	0.068	0.001	0.31	0.86	0.01	0.3	<.001	<.001	<.01	5.88
25547	<.001	<.001	<.01	0.03	<2	<.001	<.001	0.05	1.79	<.01	0.007	<.001	<.001	<.01	1.4	0.065	0.001	0.37	0.89	0.03	0.34	<.001	<.001	<.01	4.13
25549	<.001	<.001	<.01	0.01	<2	<.001	<.001	0.04	1.74	<.01	0.01	<.001	<.001	<.01	1.46	0.067	0.001	0.36	0.78	0.03	0.32	<.001	<.001	<.01	6.03
25550	<.001	0.001	0.01	0.02	<2	<.001	<.001	0.07	1.94	<.01	0.007	<.001	0.001	<.01	1.48	0.071	0.001	0.3	0.86	0.01	0.37	<.001	<.001	<.01	4.72
25552	<.001	0.002	0.04	0.1	3	<.001	<.001	0.4	1.9	<.01	0.003	<.001	<.001	<.01	0.84	0.072	<.001	0.19	0.51	<.01	0.4	<.001	<.001	<.01	5.59
DH05-03 S																									
25560	<.001	<.001	0.02	0.09	2	<.001	<.001	0.08	1.64	<.01	0.004	<.001	0.001	<.01	0.83	0.07	0.001	0.27	0.81	0.02	0.33	<.001	<.001	<.01	4.6
25561	<.001	0.001	0.01	0.19	<2	<.001	<.001	0.11	2.23	<.01	0.002	0.001	<.001	<.01	0.28	0.07	0.001	0.33	1.19	0.02	0.38	<.001	<.001	<.01	3.58
25562	0.001	0.001	0.06	0.07	7	<.001	<.001	0.18	1.7	<.01	0.003	<.001	<.001	<.01	0.76	0.065	<.001	0.15	0.55	<.01	0.47	<.001	<.001	<.01	3.62
25563	0.001	<.001	<.01	0.01	<2	<.001	<.001	0.08	1.27	<.01	0.004	<.001	<.001	<.01	1.08	0.079	<.001	0.18	0.53	<.01	0.42	<.001	<.001	<.01	4.07
25564	0.007	0.001	0.01	0.03	<2	<.001	<.001	0.12	1.6	<.01	0.004	<.001	<.001	<.01	0.91	0.076	0.001	0.18	0.48	<.01	0.4	<.001	<.001	<.01	3.93
25565	0.001	<.001	<.01	0.02	<2	<.001	0.001	0.05	1.46	<.01	0.001	<.001	<.001	<.01	0.3	0.081	<.001	0.09	0.76	<.01	0.14	<.001	<.001	0.01	3.94
DH06-02																									
308551	<.001	0.001	0.06	0.21	5	<.001	<.001	1.19	3.58	<.01	0.001	<.001	<.001	<.01	0.42	0.065	<.001	0.16	0.59	<.01	0.54	<.001	<.001	0.01	
308553	<.001	0.001	0.09	0.38	6	<.001	<.001	1.17	3.38	<.01	0.001	0.001	<.001	<.01	0.23	0.063	<.001	0.14	0.53	<.01	0.48	<.001	<.001	<.01	
308555	<.001	<.001	0.02	0.1	<2	<.001	<.001	0.51	2.34	<.01	0.008	<.001	0.001	<.01	1.34	0.068	<.001	0.24	0.52	0.01	0.44	<.001	<.001	<.01	
308556	<.001	<.001	<.01	0.02	<2	<.001	<.001	0.05	1.96	<.01	0.007	<.001	<.001	<.01	1.15	0.071	0.001	0.33	0.76	0.04	0.33	<.001	<.001	0.01	
308557	<.001	<.001	0.12	0.28	4	<.001	<.001	0.61	2.45	<.01	0.003	0.001	<.001	<.01	0.89	0.07	0.001	0.16	0.6	<.01	0.52	<.001	<.001	0.01	
Min.	<.001	<.001	<.01	<.01	<2	<.001	<.001	0.02	0.68	<.01	0.001	<.001	<.001	<.01	0.06	0.021	<.001	0.01	0.39	<.01	0.14	<.001	<.001	<.01	
Max.	0.016	0.008	0.28	1.41	39	0.001	0.001	1.69	6.08	0.02	0.011	0.005	0.004	<.01	1.51	0.081	0.001	0.48	1.33	0.09	0.54	0.001	0.001	0.02	
Average	0.001	0.002	0.03	0.19	3	<.001	<.001	0.31	2.11	<.01	0.004	<.001	0.001	<.01	0.64	0.06	<.001	0.17	0.70	0.02	0.36	<.001	<.001	<.01	

ELEMENT	Mo	Cu	Pb	Zn	Ag**	Ni	Co	Mn	Fe	As	Sr	Cd	Sb	Bi	Ca	P	Cr	Mg	Al	Na	K	W	Hg	Au**	
SAMPLES	%	%	%	%	gm/mt	%	%	%	%	%	%	%	%	%	%	%	%	%	%	%	%	%	%	gm/mt	

TM Zone Hangingwall Rock

ELEMENT	Mo	Cu	Pb	Zn	Ag**	Ni	Co	Mn	Fe	As	Sr	Cd	Sb	Bi	Ca	P	Cr	Mg	Al	Na	K	W	Hg	Au**	Sample
SAMPLES	%	%	%	%	gm/mt	%	%	%	%	%	%	%	%	%	%	%	%	%	%	%	%	%	%	gm/mt	kg
DH05-10TM																									
25901	<.001	0.001	<.01	0.07	<2	0.001	<.001	0.03	0.9	<.01	0.001	<.001	<.001	<.01	0.2	0.051	0.001	0.14	0.52	0.03	0.22	<.001	<.001	<.01	6.39
25902	<.001	0.001	<.01	0.05	<2	<.001	<.001	0.02	0.92	<.01	0.001	<.001	<.001	<.01	0.17	0.051	<.001	0.09	0.54	0.04	0.24	<.001	<.001	<.01	5.03
25903	<.001	0.001	<.01	0.03	<2	<.001	<.001	0.03	0.81	<.01	0.001	<.001	<.001	<.01	0.18	0.046	<.001	0.11	0.55	0.03	0.19	<.001	<.001	<.01	4.55
25904	<.001	0.001	<.01	0.06	<2	<.001	<.001	0.03	0.93	<.01	0.001	<.001	<.001	<.01	0.16	0.049	<.001	0.07	0.53	0.03	0.24	<.001	<.001	<.01	4.19
25905	<.001	0.006	0.02	0.15	14	<.001	<.001	0.16	1.24	0.01	0.001	<.001	0.002	<.01	0.15	0.052	0.001	0.07	0.62	0.01	0.27	<.001	<.001	<.01	2.83
25906	<.001	0.006	0.07	0.24	25	<.001	<.001	0.72	2.6	0.01	0.002	0.001	0.002	<.01	0.09	0.058	<.001	0.03	0.34	<.01	0.31	<.001	<.001	<.01	2.11
DH05-11TM																									
25929	<.001	0.001	<.01	0.02	<2	<.001	<.001	0.02	0.96	<.01	0.001	<.001	0.002	<.01	0.12	0.037	<.001	0.1	0.56	0.04	0.21	0.001	<.001	<.01	2.37
25930	<.001	0.004	<.01	0.05	<2	<.001	<.001	0.06	0.9	<.01	0.001	<.001	<.001	<.01	0.15	0.047	<.001	0.06	0.58	0.02	0.24	0.001	<.001	<.01	1.52
25931	0.001	0.005	0.08	0.2	22	<.001	<.001	0.86	2.84	0.01	0.003	0.001	0.001	<.01	0.1	0.045	<.001	0.02	0.39	<.01	0.38	<.001	<.001	<.01	3.85
25932	<.001	0.002	0.02	0.18	6	<.001	<.001	0.14	0.92	<.01	0.001	<.001	<.001	<.01	0.09	0.027	0.001	0.03	0.39	0.01	0.31	<.001	0.001	<.01	4.55
25933	<.001	0.001	<.01	0.21	2	<.001	<.001	0.06	1.12	<.01	0.001	<.001	<.001	<.01	0.12	0.031	<.001	0.09	0.69	0.02	0.25	<.001	<.001	<.01	4.29
25934	<.001	<.001	0.02	0.15	<2	<.001	<.001	0.51	1.73	<.01	0.002	<.001	0.001	<.01	0.44	0.053	<.001	0.06	0.41	0.01	0.36	<.001	<.001	<.01	10.27
25935	0.001	0.009	0.01	0.37	22	<.001	<.001	0.38	1.85	<.01	0.001	0.001	0.003	<.01	0.16	0.048	<.001	0.04	0.4	0.01	0.37	<.001	<.001	0.01	5.48
25936	<.001	0.002	0.01	0.1	<2	<.001	<.001	0.11	0.92	<.01	0.003	<.001	0.001	<.01	0.61	0.055	<.001	0.04	0.37	0.01	0.36	<.001	<.001	<.01	8.85
25937	0.001	0.002	0.02	0.15	6	<.001	<.001	0.32	1.19	<.01	0.003	<.001	0.001	<.01	0.39	0.053	<.001	0.07	0.38	<.01	0.36	<.001	<.001	<.01	7.22
25938	<.001	0.003	0.01	0.12	7	<.001	<.001	0.08	0.85	<.01	0.003	<.001	0.001	<.01	0.58	0.051	<.001	0.06	0.37	<.01	0.36	<.001	<.001	<.01	5.96
25939	<.001	0.002	0.01	0.2	<2	<.001	<.001	0.07	0.86	0.01	0.001	<.001	0.001	<.01	0.13	0.047	0.001	0.02	0.39	<.01	0.36	<.001	<.001	<.01	5.85
25940	<.001	0.001	0.04	0.44	<2	<.001	<.001	0.35	1.12	<.01	0.002	0.001	0.001	<.01	0.35	0.055	0.001	0.07	0.37	<.01	0.37	<.001	<.001	<.01	5.35
25943	0.001	0.007	0.04	0.13	16	<.001	<.001	0.51	1.97	0.01	0.001	0.001	0.003	<.01	0.14	0.057	<.001	0.06	0.4	<.01	0.4	<.001	<.001	<.01	3.19
25946	<.001	0.001	0.01	0.06	<2	<.001	<.001	0.15	0.92	<.01	0.001	<.001	0.001	<.01	0.13	0.036	<.001	0.06	0.3	<.01	0.31	<.001	<.001	0.01	3.07
25947	0.001	0.002	0.02	0.39	<2	0.001	<.001	0.17	0.86	<.01	0.002	<.001	0.001	<.01	0.23	0.053	0.001	0.07	0.38	<.01	0.38	0.001	<.001	<.01	7.22
25948	0.001	<.001	0.01	0.39	<2	<.001	<.001	0.14	0.88	<.01	0.003	<.001	<.001	<.01	0.44	0.056	0.001	0.08	0.38	<.01	0.37	0.001	<.001	<.01	7.62
25949	0.001	0.001	0.07	0.39	<2	<.001	<.001	0.62	1.67	<.01	0.001	0.001	0.001	<.01	0.25	0.059	<.001	0.08	0.39	<.01	0.36	<.001	<.001	<.01	2.65
25950	0.001	0.001	0.03	0.23	<2	<.001	<.001	0.77	2.35	<.01	0.001	0.001	<.001	<.01	0.17	0.057	<.001	0.08	0.41	<.01	0.38	<.001	<.001	<.01	1.85
DH05-12TM																									
25815	0.001	0.007	0.22	0.35	42	<.001	<.001	0.57	2.34	0.02	<.001	0.002	0.003	<.01	0.13	0.05	<.001	0.04	0.29	<.01	0.28	<.001	<.001	0.16	6.44
25816	<.001	0.007	0.06	1.1	33	<.001	<.001	0.52	2.17	0.02	<.001	0.003	0.002	<.01	0.09	0.031	<.001	0.05	0.32	<.01	0.3	<.001	<.001	0.02	3.59
25818	<.001	0.003	0.04	0.76	4	<.001	<.001	0.06	0.8	<.01	<.001	0.002	0.001	<.01	0.02	0.012	<.001	0.01	0.21	<.01	0.23	<.001	<.001	0.01	1.73
DH05-14TM																									
25861	<.001	0.005	0.01	0.05	<2	<.001	<.001	0.04	0.74	<.01	0.001	<.001	<.001	<.01	0.2	0.057	0.001	0.06	0.48	<.01	0.24	<.001	<.001	<.01	5.82
25862	<.001	0.007	0.01	0.05	4	<.001	<.001	0.03	0.81	<.01	0.001	<.001	0.001	<.01	0.2	0.045	<.001	0.08	0.48	0.01	0.22	0.001	<.001	<.01	4.81
25864	<.001	0.003	<.01	0.03	2	<.001	<.001	0.03	0.87	<.01	0.003	<.001	0.001	<.01	0.54	0.038	0.001	0.11	0.46	0.02	0.23	<.001	<.001	<.01	6.17
25865	<.001	0.005	<.01	0.03	3	<.001	<.001	0.03	0.94	<.01	0.004	<.001	<.001	<.01	0.63	0.026	<.001	0.11	0.39	0.02	0.24	<.001	<.001	<.01	4.53
25866	0.001	0.013	0.02	0.14	18	<.001	<.001	0.24	1.42	<.01	0.001	0.001	0.001	<.01	0.07	0.025	0.001	0.03	0.32	<.01	0.36	<.001	<.001	<.01	5.14
25867	0.001	0.009	0.04	0.1	52	<.001	<.001	0.09	1.16	<.01	0.001	<.001	0.001	<.01	0.05	0.033	0.001	0.01	0.31	0.01	0.3	<.001	<.001	<.01	5.22
25869	0.001	0.014	0.06	0.11	36	<.001	<.001	0.2	1.85	<.01	0.001	<.001	0.005	<.01	0.07	0.046	<.001	0.03	0.35	<.01	0.37	<.001	<.001	<.01	2.63
25870	<.001	0.004	0.02	0.79	5	<.001	<.001	0.1	0.92	<.01	0.001	0.001	0.002	<.01	0.12	0.044	0.001	0.03	0.4	0.01	0.34	<.001	<.001	<.01	6.45
25871	<.001	0.002	0.04	0.26	8	<.001	<.001	0.49	1.44	<.01	0.001	0.001	0.001	<.01	0.14	0.053	<.001	0.04	0.36	<.01	0.39	<.001	<.001	<.01	8.22
25872	<.001	0.002	0.05	0.09	13	<.001	<.001	0.15	1.13	<.01	0.001	<.001	0.002	<.01	0.07	0.03	0.001	0.02	0.3	<.01	0.31	<.001	<.001	0.01	1.85
25873	<.001	0.001	0.02	0.19	3	<.001	<.001	0.37	1.72	<.01	0.001	0.001	<.001	<.01	0.12	0.048	<.001	0.05	0.37	<.01	0.41	<.001	<.001	<.01	2.05
25874	0.001	0.001	0.04	0.22	4	<.001	<.001	0.27	1.69	0.01	0.001	0.001	0.002	<.01	0.1	0.041	<.001	0.03	0.32	<.01	0.33	<.001	<.001	0.01	1.01
DH07-01TM																									
305901	0.002	0.003	0.03	0.14	7	<0.001	<0.001	0.46	2.27	0.03	0.001	<0.001	0.003	<0.01	0.13	0.046	<0.001	0.04	0.49	<0.01	0.43	<0.001	<0.001		
305902	0.003	<0.001	0.03	0.14	<2	<0.001	<0.001	0.47	1.64	<0.01	0.001	<0.001	<0.001	<0.01	0.18	0.052	<0.001	0.07	0.37	<0.01	0.39	<0.001	<0.001		
305903	0.003	0.001	0.05	0.15	4	<0.001	<0.001	0.45	1.54	<0.01	<0.001	<0.001	<0.001	<0.01	0.14	0.047	<0.001	0.06	0.36	<0.01	0.38	<0.001	<0.001		
305904	0.001	0.002	0.04	0.12	5	<0.001	<0.001	0.33	1.31	<0.01	<0.001	<0.001	0.004	<0.01	0.13	0.049	<0.001	0.04	0.36	<0.01	0.38	<0.001	<0.001		
305906	0.003	0.009	0.02	1.09	10	<0.001	<0.001	0.18	0.83	<0.01	<0.001	<0.001	<0.001	<0.01	0.16	0.046	<0.001	0.05	0.34	<0.01	0.33	0.003	<0.001		
305907	0.003	0.009	0.08	0.21	31	<0.001	<0.001	0.79	2.43	<0.01	<0.001	<0.001	0.004	<0.01	0.18	0.047	<0.001	0.09	0.42	<0.01	0.38	<0.001	<0.001		
DH07-03TM																									
305938	<0.001	0.007	0.01	0.15	3	<0.001	<0.001	0.13	1.22	<0.01	0.001	<0.001	<0.001	<0.01	0.23	0.053	<0.001	0.07	0.51	0.01	0.3	<0.001	<0.001		
305939	<0.001	0.002	0.02	0.15	5	<0.001	<0.001	0.35	1.32	<0.01	0.005	<0.001	<0.001	<0.01	0.96	0.051	<0.001	0.09	0.34	<0.01	0.33	<0.001	<0.001		
305941	<0.001	0.002	0.02	0.1	<2	<0.001	<0.001	0.11	1.11	<0.01	0.003	<0.001	<0.001	<0.01	0.51	0.06	<0.001	0.06	0.34	<0.01	0.34	<0.001	<0.001		
305942	<0.001	0.003	0.03	0.17	3	<0.001	<0.001	0.2	1.09	<0.01	0.001	<0.001	<0.001	<0.01	0.17	0.059	<0.001	0.02	0.32	<0.01	0.32	<0.001	<0.001		
305943	<0.001	0.003	0.02	0.24	17	<0.001	<0.001	0.91	3.07	<0.01	<0.001	<0.001	0.002	<0.01	0.16	0.056	<0.001	0.08	0.31	<0.01	0.31	<0.001	<0.001		
305944	<0.001	0.007	<0.01	0.05	47	<0.001	<0.001	0.78	2.78	<0.01	<0.001	<0.001	0.004	<0.01	0.13	0.052	<0.001	0.05	0.28	<0.01	0.3	<0.001	<0.001		
305946	<0.001	0.007	0.06	1.15	23	<0.001	<0.001	0.63	2.31	<0.01	<0.001	0.003	0.001	<0.01	0.15	0.044	<0.001	0.08	0.27	<0.01	0.3	0.001	<0.001		
305947	<0.001	<0.001	0.01	0.2	<2	<0.001	<0.001	0.76	2.55	<0.01	<0.001	<0.001	<0.001	<0.01	1.24	0.051	<0.001	0.72	0.3	<0.01	0.33	<0.001	<0.001		
305949	<0.001	0.002	0.08	1.54	4	<0.001	<0.001	0.78	2.4	0.02	<0.001	0.004	<0.001	<0.01	0.15	0.052	<0.001	0.06	0.33	<0.01	0.35	0.002	<0.001		
305951	<0.001	0.003	0.02	1.22	4	<0.001	<0.001	0.56	2.16	<0.01	<0.001	0.004	<0.001	<0.01	0.1	0.04	<0.001	0.03	0.3	<0.01	0.31	0.002	<0.001		
305953	<0.001	0.002	0.02	0.73	<2	<0.001	<0.001	0.69	2.49	<0.01	<0.001	0.002	<0.001	<0.01	0.08	0.034	<0.001	0.04	0.26	<0.01	0.32	<0.001	<0.001		
DH07-04TM																									
305981	<0.001	<0.001	0.01	0.07	<2	<0.001	<0.001	0.16	0.99	<0.01	0.006	<0.001	<0.001	<0.01	0.92	0.034	<0.001	0.14	0.37	<0.01	0.3	<0.001	<0.001		
305982	<0.001	<0.001	<0.01	0.06	<2	<0.001	<0.001	0.05	1.14	<0.01	0.005	<0.001	<0.001	<0.01	0.83	0.026	<0.001	0.19	0.57	0.04	0.27	<0.001	<0.001		
305983	<0.001	<0.001	0.04	0.55	<2	<0.001	<0.001	0.47	1.24	<0.01	0.001	<0.001	0.002	<0.01	0.32	0.041	<0.001	0.09	0.41	<0.01	0.33	<0.001	<0.001		
305986	<0.001	0.002	<0.01	1.39	5	<0.001	<0.001	1.2	3.35	<0.01	<0.001	0.003	0.002	<0.01	0.15	0.048	<0.001	0.12	0.38	<0.01	0.35	<0.001	<0.001		
305987	<0.001	0.001	<0.01	0.69	3	<0.001	<0.001	0.64	2.03	<0.01	<0.001	0.001	<0.001	<0.01	0.32	0.05	<0.001	0.15	0.39	<0.01	0.38	<0.001	<0.001		
305988	<0.001	0.001	<0.01	0.99	<2	0.004	0.002	0.09	6.28	<0.01	0.009	<0.001	<0.001	<0.01	1.81	0.252	0.007	1.52	5.84	0.01	0.18	<0.001	<0.001		
305991	<0.001	<0.001	0.02	0.2	<2	<0.001	<0.001	0.37	1.97	<0.01	<0.001	<0.001	<0.001	<0.01	0.13	0.053	<0.001	0.06	0.46	<0.01	0.36	<0.001	<0.001		
305993	<0.001	0.003	<0.01	1.01	4	<0.001	<0.001	0.27	1.35	0.02	<0.001	0.002	<0.001	<0.01	0.07	0.029	<0.001	0.03	0.25	<0.01	0.25	<0.001	<0.001		
Min	<0.001	<0.001	<0.01	0.02	<2	<0.001	<0.001	0.02	0.74	<0.01	<0.001	<0.001	<0.001	<0.01	0.02	0.012	<0.001	0.01	0.21	<0.01	0.18	<0.001	<0.001		
Max	0.003	0.014	0.22	1.54	52	0.004	0.002	1.2	6.28	0.03	0.009	0.004	0.005	<0.01	1.81	0.252	0.007	1.52	5.84	0.04	0.43	0.003	0.001		
Average	<0.001	0.003	0.03	0.33	8	<0.001	<0.001	0.33	1.60	<0.01	0.001	0.001	0.001	<0.01	0.27	0.05	<0.001	0.10	0.48	0.01	0.32	<0.001	<0.001		

ELEMENT	Mo	Cu	Pb	Zn	Ag**	Ni	Co	Mn	Fe	As	Sr	Cd	Sb	Bi	Ca	P	Cr	Mg	Al	Na	K	W	Hg	Au**	Sample
SAMPLES	%	%	%	%	gm/mt	%	%	%	%	%	%	%	%	%	%	%	%	%	%	%	%	%	%	gm/mt	kg

SILVER HART PROPERTY

PROJECT DESCRIPTION
APPLICATION FOR TYPE 'B' WATER USE LICENCE
APPLICATION FOR MINE PRODUCTION LICENCE

APPENDIX J
Waste Rock Management Plan
(forthcoming)

March 2008

Prepared by:

ACCESS
CONSULTING GROUP

SILVER HART PROPERTY

PROJECT DESCRIPTION
APPLICATION FOR TYPE 'B' WATER USE LICENCE
APPLICATION FOR MINE PRODUCTION LICENCE

APPENDIX K
SITE HYDROLOGY
(forthcoming)

March 2008

Prepared by:

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