RUDDOCK CREEK MINE PROJECT
Project Description

Submitted to:

British Columbia Environmental Assessment Office
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Victoria BC V8W 9V1

and

Canadian Environmental Assessment Agency
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May 20, 2014

TABLE OF CONTENTS

LIST OF FIGURES

LIST OF TABLES

LIST OF PHOTOS

UNITS

%	percent
°C	Celsius
ha	hectares
H:V	horizontal to vertical
km	kilometres
kv	kilovolt
m	metres
m^3	cubic metres
masl	metres above sea level
mg/L	miligrams per litre
mm	millimetres
m/s	metres per second
Mm^3	million cubic metres
MW	megawatt
pH	-log10 c, where c is the hydrogen ion concentration in moles per liter
t	tonne
t/d	tonnes per day
t/y	tonnes per year
$\mu g/m^3$	micrograms
Yr	Year

ABBREVIATIONS

Ag	Silver
AIR	Application Information Requirements
ATunp	Alpine Tundra Undifferentiated Parkland
BC	British Columbia
BCEAA	*British Columbia Environmental Assessment Act*
CEAA 2012	*Canadian Environmental Assessment Act 2012*
C	construction
DC	decommissioning and closure
DFO	Fisheries and Oceans Canada
DMS	dense media separation
EAC	Environmental Assessment Certificate
EAO	Environmental Assessment Office
EC	Environment Canada
EIS	Environmental Impact Statement
EIS Guidelines	Environmental Impact Statement Guidelines
ESSFvc	Engelmann Spruce-Subalpine Fir Very Wet Cold
ESSFvcp	Engelmann Spruce-Subalpine Fir Very Wet Cold Parkland
FeS	pyrrhotite
FSR	Forest Service Road
ICHvk	Interior Cedar Hemlock Very Wet Cool
KLRMP	Kamloops Land and Resource Management Plan
NAG	Non-Acid Generating (or Non-Potentially Acid Generating)
NRCan	Natural Resources Canada
NTS	National Topographic System
O	operations
PAG	Potentially Acid Generating
Pb	lead
PC	post-closure
RMZ	Resource Management Zones
ROW	Right-of-Way
SARA	*Species at Risk Act*
the Agency	the Canadian Environmental Assessment Agency
the mine site	the footprint of the Project's surface components with a buffer of 500 m around the greatest extent of surface infrastructures
the Project	Ruddock Creek Mine Project
The Project area	the area including the mine site and beyond to the extent of the furthest point of new linear components
the Proponent	Ruddock Creek Mining Corporation
TNRD	Thompson-Nicola Regional District
TPM	total particulate matter
TSX	Toronto Stock Exchange
RCMC	Ruddock Creek Mining Corporation
WRSA	waste rock storage area
UTM	Universal Transverse Mercator
Zn	Zinc

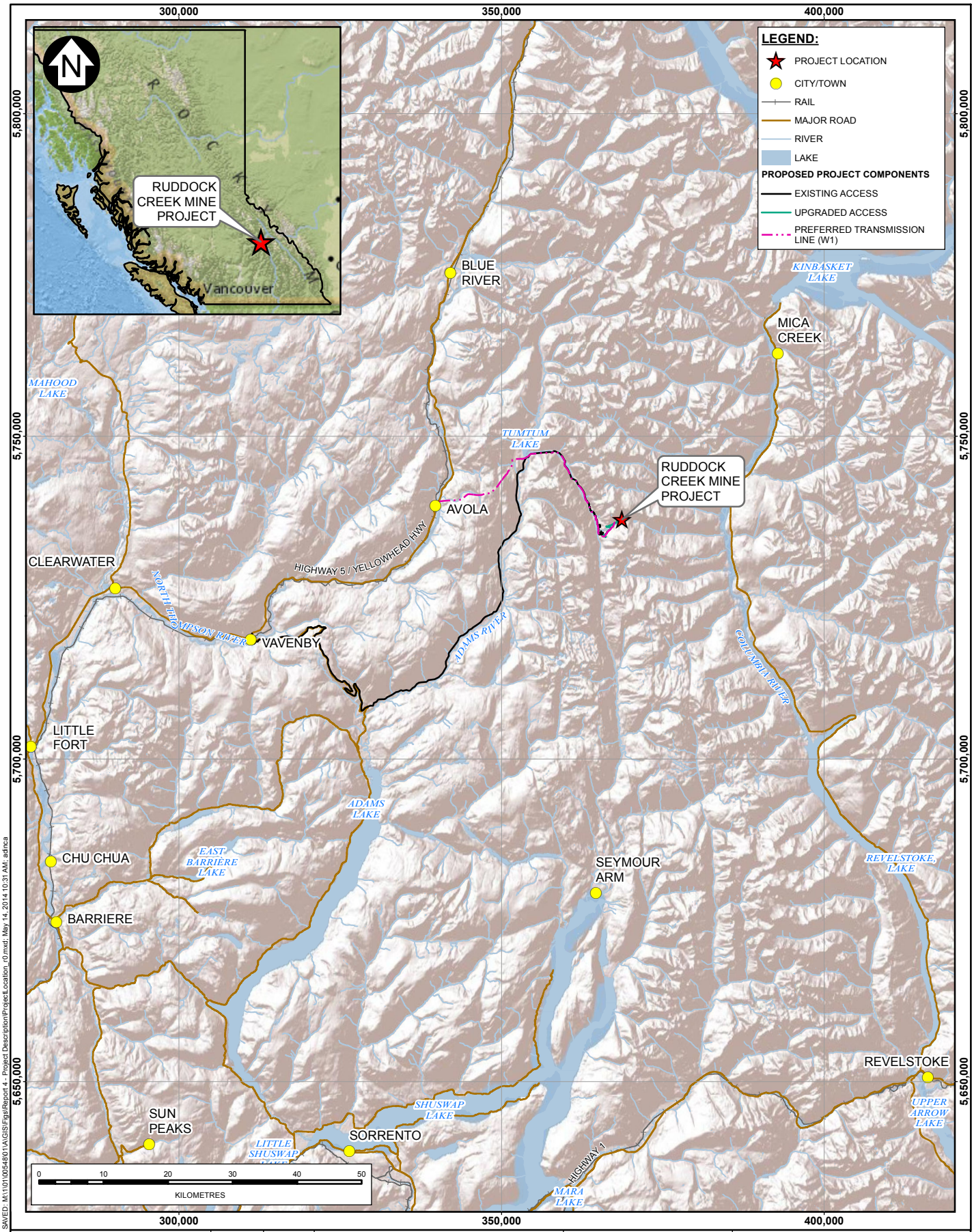
1 GENERAL INFORMATION

1.1 Introduction

Ruddock Creek Mining Corporation (herein referred to as “RCMC” or the “Proponent”) proposes to construct, operate and decommission a 3,000 t/d zinc-lead underground mine over an anticipated mine life of eight years. The Project includes underground mining activities for four ore deposits, referred to as the Upper E, Lower E, V, and Creek Zone, and the development of associated surface and underground components and activities. For the purposes of the Project Description, the proposed Project will be referred to as the “Ruddock Creek Mine Project” or simply “the Project”.

The Project is located between the headwaters of Ruddock Creek and Oliver Creek in the Scrip Range of the Monashee Mountains in southeast British Columbia (BC), approximately 155 km northeast of Kamloops, 100 km north northwest of Revelstoke, 28 km east of Avola and 6 km west of Gordon Horne Peak. See Figure 1–1 for the location of the Project within BC.

Detailed information on proposed Project components and activities is presented in Section 6 and Section 7, while Section 1.1.1 is a high level description to introduce the Project. Similarly, detailed information on the biophysical and socioeconomic setting is presented in Section 7.2 and Section 8.11, respectively, and Section 1.1.2 and Section 1.1.3 provide high level overviews as part of the introduction to the Project.



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PREPARED BY:

Knight Piésold CONSULTING

DESIGNED	CAH
DRAWN	CAC
CHK'D	CAH
APP'D	GLS
REV	0
DATE	08MAY'14

NOTES:
1. BASE MAP: ESRI ARCGIS ONLINE MAPPING; BC GOVERNMENT DATA.
2. PROJECTION: NAD 1983 UTM ZONE 11N
3. COORDINATE GRID: METRES.

Ruddock
an Imperial Metals company

RUDDOCK CREEK MINE PROJECT

PROJECT LOCATION

FIGURE 1-1

REF REPORT 4
P/A VA101-548/01

1.1.1 *Project Components and Activities Overview*

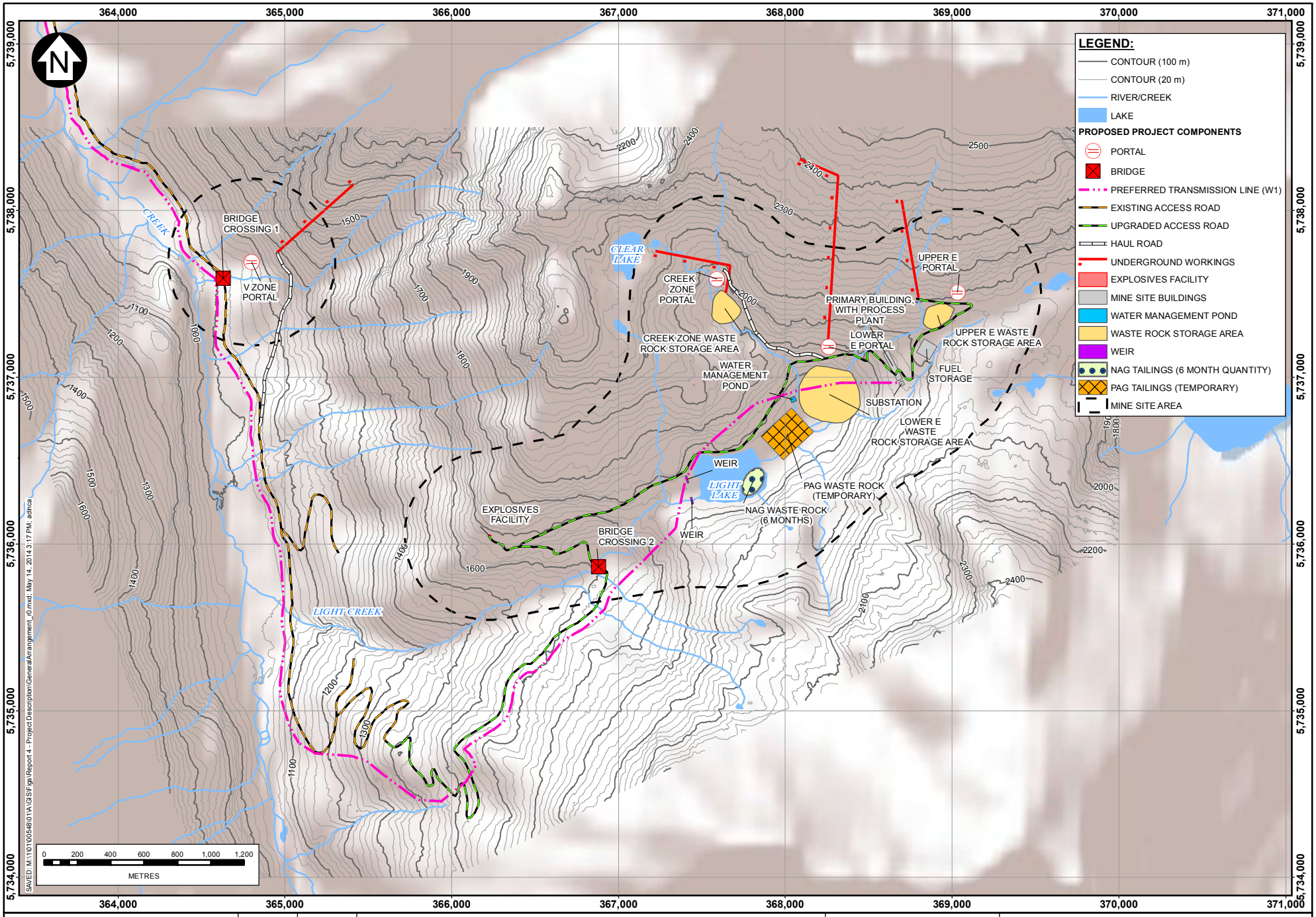
The Project, centered at the Primary Building that houses the Processing Plant is located at UTM coordinates X: 368650 and Y: 5737061 within UTM Zone 11, latitude 51º 46’ 8.43”N and longitude 118º 54’ 13.00”W. At this location, the Project is at an elevation of approximately 1,950 masl. The principal mineral tenures for the Project are situated on NTS map sheet 82M/15W and B.C. Geographic System map sheet 082M.076.

The Project can be considered as the mine site and the Project area as outlined in Table 1–1. In general, the mine site is considered as the footprint of the Project’s surface components with a buffer of 500 m around the greatest extent of surface infrastructures as shown in Figure 1–2. The Project area is defined as the area including the mine site and beyond to the extent of the furthest point of new linear components.

Table 1–1 Project Components

Areas	Components
Mine Site (approximately 644 ha with a surface facilities footprint of 33 ha)	• Underground mine with five portals • Underground infrastructure including ventilation and conveyor • Dense media separation plant and mill • Processing plant • Paste backfill into underground mined areas • Concentrate shed • Maintenance facilities • Assay lab • Accommodation camp and offices • Water management structures • Storage of non-acid generating (NAG) or non-potentially acid generating (Non-PAG) thickened tailings, generated in the first six months of operations, in the southeast corner of Light Lake • Temporary storage of potentially acid generating (PAG) thickened tailings in a lined surface containment structure for the first six months of operations until it can be used as paste backfill in the underground mined areas • Waste rock storage areas • Site haul roads • Explosives storage facility • Fuel storage • Equipment lay down area
Project Area	• Mine site components listed above • Upgrade existing access road and existing bridges • New transmission line with preferred routing from the mine site to an existing substation in Avola • Transport of concentrate by truck to Vavenby

The Project is anticipated to employ approximately 300 people during construction and will create 200 permanent positions during operations.



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NOTES:

1. BASE MAP: RUDDOCK CREEK MINING CORP; ESRI ARCGIS ONLINE MAPPING.
2. PROJECTION: NAD 1983 UTM ZONE 11N
3. COORDINATE GRID: METRES.

Ruddock
an Imperial Metals company

RUDDOCK CREEK MINE PROJECT

PROJECT GENERAL ARRANGEMENT

FIGURE 1-2

REF	REPORT 1
P/A	VA101-548/01

1.1.2 *Biophysical Setting Overview*

The climate in the area can be characterized as temperate with generally warm summers and cool, wet winters. Regional data indicate that both precipitation and runoff generally increase with elevation.

Air temperature in the Project area is relatively cool with a mean annual temperature between 3°C to 7°C. Mean monthly temperatures are below 0°C for three to five months and above 10°C for four to five months. The mean annual precipitation is estimated to be in the order of 850 mm in drier portions and up to 1,400 mm in wetter areas. Substantial snow accumulations of 3 m to 5 m are the norm and permanent snow cover exists on some of the higher areas of the Project site.

Regional runoff patterns are characterized by low flows during the winter months when precipitation falls almost exclusively as snow, high flows during the spring and early summer snowmelt freshet, low flows during the dry late summer months, and moderate flows during the fall months, as precipitation increases. The change in runoff with elevation is also quite evident, with lower runoff from lower elevation watersheds and an earlier onset of the spring freshet resulting from warm spring temperatures arriving earlier at the lower elevations. The annual hydrograph in the Project area has a uni-modal shape, with the majority of runoff occurring in May and June during the snowmelt freshet.

The Project is situated in extremely mountainous terrain between the drainages of the Columbia River and Fraser River systems. The terrain in the area is characterized by heavily timbered lower slopes and steeper alpine-glaciated upper slopes. Elevations range from 950 masl at the western edge of the Project area in the Oliver Creek drainage to 2854 m above sea level on an unnamed peak at the northern edge. The terrain is extremely steep in some areas making access to the site potentially difficult. A number of small alpine lakes or tarns dot the area. Water from streams fed by glacial and snow melt varies according to elevation and time of year.

The Project area lies within four biogeoclimatic subzones: Interior Cedar Hemlock Very Wet Cool (ICHvk), Engelmann Spruce-Subalpine Fir Very Wet Cold (ESSFvc), Engelmann Spruce-Subalpine Fir Very Wet Cold Parkland (ESSFvcp) and Alpine Tundra Undifferentiated Parkland (ATunp). Within the Project area, the predominant tree cover is coniferous over most of the terrain with minimal deciduous cover adjacent to lakes and in riparian areas. Vegetation consists primarily of subalpine Balsam Fir, Spruce, Hemlock and Western Red Cedar. Vegetation is limited to heather and stunted shrubs in the lower alpine regions above the tree-line and in the upper areas the ground is either barren rock or is covered by permanent snow, small glaciers or glacial moraine and rock talus.

The Project's deposits lay within the metasedimentary rocks of the Shuswap metamorphic complex on the northwest flank of the Frenchman Cap Gneiss Dome. The Dome is elongate with the long axis trending north-northwest, parallel to the Columbia River. In the northern area of the "Dome" the core gneisses lay beneath gently northerly dipping metasedimentary rocks which grade upward into metasedimentary rocks containing abundant pegmatite. This pegmatite rich zone covers wide areas between the Columbia River and Oliver Creek.

Provincially listed species that potentially exists in the Project area include the red-listed Woodland caribou, Southern Mountain population, blue-listed grizzly bear, blue-listed bighorn sheep and blue-listed wolverine. Federally listed species, under Schedule 1 of the *Species at Risk Act* (SARA), which potentially exists in the Project area, include the western toad and Woodland caribou, Southern Mountain population, Columbia North subpopulation. The subpopulation and local population unit of Woodland caribou, Southern Mountain population will be confirmed through consultations with the Ministry of Environment and Environment Canada as part of the environmental assessment. There is currently a draft proposed recovery strategy for the Woodland caribou, Southern Mountain population, developed and proposed by Environment Canada (Environment Canada, 2014).

Other regionally important large mammals that also have the potential to exist in the Project area include the Rocky Mountain goat, moose, Rocky Mountain elk, mule deer, white-tailed deer, black bear and cougar, as well as birds of prey such as prairie falcons.

Very little or no fisheries resource data existed for the Project area and surrounding waterways prior to baseline works undertaken by RCMC in preparation for the environmental assessment. Completed surveys from 2006 to 2007 confirmed the presence of fish in Oliver Creek and the lower reach of Light Creek. Historically, Bull Trout has been known as the Dolly Varden, but was reclassified as a separate species in 1980. Bull Trout occurred within Oliver Creek to approximately 3 km upstream of the confluence of Light Creek where a gradient barrier (moraine) is present; upstream of the barrier fish presence is unlikely.

Light Creek is likely to be fish-bearing only in the lower reach because there is a gradient barrier upstream and waterfall located upstream of the confluence with Oliver Creek that forms obstructions to upstream fish passage. Light Creek above Light Lake and Light Lake itself are likely non-fish bearing, due to the fact that no fish were captured in surveys over two years of sampling.

1.1.3 *Socioeconomic Setting Overview*

The Project is located in Area "A" of the Thompson-Nicola Regional District (TNRD). The nearest communities to the Project are the District of Clearwater and Vavenby. The District of Clearwater is located 124 km north of Kamloops. It is the largest community in the region with a population of 2,331 (Statistics Canada, 2011). Forestry is the largest employer although tourism is also a major industry, with Wells Gray Provincial Park within close proximity to the District of Clearwater. The community of Vavenby is located 27 km east of Clearwater and has a population of approximately 700 people (NTValley, 2014).

The most active land and resource use in the Project area other than mineral exploration has been periodic logging on the slopes of Oliver Creek. The high elevation and limited access has deterred other land and resource uses other than mineral exploration and occasional heli-skiing activity. The mine site is located at the extreme south end of the Mike Wiegle heli-skiing area of operations and they have been observed to the east of the Project site on the glacier during the winter. Agriculture and livestock production is not practiced in the Project site, most likely due to the high elevation, harsh winter, short growing seasons and alpine conditions.

The Project is not located on provincial parks or wilderness reserves. The Upper Adams River Provincial Park is located 17 km northwest of the Project area and overlaps with a very small portion of RCMC's mineral claims near Tumtum Lake; this area of overlap is not included as part of the Project being proposed. The Upper Seymour River Provincial Park is situated approximately 10 km south of the Project site. The outlines of these parks can be viewed in the Claim Map of the Property.

1.2 Purpose of the Project Description

The Project Description has been prepared and submitted in support of RCMC's application to the BC Environmental Assessment Office (EAO) for an Environmental Assessment Certificate (EAC) and to the Canadian Environmental Assessment Agency (the Agency) for an Environmental Assessment Decision Statement.

The primary purpose of the Project Description is to present a detailed description of the proposed Project to enable the EAO and Agency to determine whether an environmental assessment is required. An additional objective is to provide interested parties, including provincial and federal authorities, local governments, Aboriginal groups, and the public, with an understanding of the proposed Project components and activities and the Project's potential interactions with the environment and local communities. Consultation on the Project Description provides an early opportunity for interested parties to determine their level of engagement in the review process.

As required by the Agency, RCMC has prepared this Project Description to satisfy the requirements of the *Prescribed Information for the Description of a Designated Project Regulations* (2012). In addition, a summary of the Project Description, in both English and French, that summarizes the information identified in the Agency's guidance document titled "*Guide to Preparing a Description of a Designated Project under the Canadian Environmental Assessment Act, 2012*" has been submitted to the Agency (Canadian Environmental Assessment Agency, 2012). The Agency will post the Summary of the Project Description on the Agency's internet site to consult the public and potentially affected Aboriginal groups on the Project.

2 REGULATORY FRAMEWORK

2.1 Environmental Assessment

Ruddock Creek Mine Corporation has submitted this Project Description to the EAO pursuant to the *British Columbia Environmental Assessment Act* (BCEAA) and to the Agency pursuant to the *Canadian Environmental Assessment Act 2012* (CEAA 2012).

The Proponent anticipates that the Project will be subject to the BCEAA because the Project has an estimated production rate of 1,050,000 t/y of ore which exceeds the prescribed threshold under the *Reviewable Projects Regulation* for mining projects of 75,000 t/y of mineral ore. The EAO will lead the environmental assessment process pursuant to the BCEAA.

In 2008, the Proponent filed a project description with the EAO and a provincial environmental assessment commenced in 2009. In 2013, RCMC requested that former provincial environmental assessment be cancelled due to the extensive changes to the proposed Project and RCMC informed the EAO that it intended to submit a new Project Description.

The Proponent anticipates that the Project will be subject to CEAA 2012; though a determination will be made by the Agency as to whether an environmental assessment is required. The Project is a "designated activity" as per Section 16(a) of the *Regulations Designating Physical Activities* for the construction, operation, decommissioning and abandonment of new metal mine, other than a rare earth element mine or gold mine, with an ore production capacity of 3,000 t/d or more; submission of a project description to the Agency is required. If an environmental assessment pursuant to CEAA 2012 is required, the Agency will lead the process.

If an environmental assessment of the Project is required under both BCEAA and CEAA 2012, the provincial and federal processes will be conducted in accordance with the *Canada-British Columbia Agreement for Environmental Assessment Cooperation* (*2004*). A cooperative environmental assessment will be undertaken to generate the information required by all parties making decisions on the basis of the cooperative environmental assessment and to avoid duplication, enhance timeliness and predictability.

2.2 Provincial Permits

In addition to RCMC's application for an Environmental Assessment Certificate (EAC) pursuant to the BCEAA, the Project will require a number of other provincial authorizations, licenses, and permits to construct and operate the Project. The anticipated provincial permits to construct and operate the Project are listed in Table 2–1. The exact requirements will be defined by the permitting agencies through the environmental assessment and permitting process.

Table 2–1 Anticipated Provincial Permits

Requirement	Statute	Ministry	Purpose of Authorization
Environmental Assessment Certificate	*Environmental Assessment Act*	Environmental Assessment Office	A certificate is required before any decisions can be made on permits and other approvals that are required to construct and operate a reviewable project in BC.
Notice of Work	*Mines Act*	Energy and Mines	Exploration permits
Mine Plan and Reclamation Program Permit	*Mines Act*	Energy and Mines	Approval of mining projects with respect to the Mines Act and its accompanying Health, Safety and Reclamation Code for Mines in BC
Mining Lease	*Mineral Tenure Act*	Energy and Mines	Required before production on a mineral tenure
Licence of Occupation	*Land Act*	Forest, Lands and Natural Resource Operations	For Borrow and Gravel Pits; Staging Areas, Transmission Line prior to issuance of right of way
Occupant Licence to Cut	*Forest Act*	Forest, Lands and Natural Resource Operations	The right to harvest timber on Crown Land (transmission line ROW and Road Corridors)
Special Use Permit, Road Use Permit, Forest Service Road	*Forest Act*	Forest, Lands and Natural Resource Operations	Access road construction For use of existing road
Highway Access Permit	*Highway Act*	Transportation and Infrastructure	Highway access permits are required for accesses
Crown Land Tenure	*Land Act*	Forest, Lands and Natural Resource Operations	Authorization to conduct work on Crown Land
Right of Way	*Land Act*	Forest, Lands and Natural Resource Operations	For transmission line after construction
Explosives Magazine Storage and Use Permit	*Mines Act; Health, Safety, and Reclamation Code for Mines in British Columbia*	Energy and Mines	For explosive use and storage during construction
Accommodations Camp - Approval and operation permit	*Health Act*	Health	Regional health permits for food handling and drinking water. Permit for drinking water, sewage disposal, sanitation and food
Archaeology - Heritage Investigation Permit - Heritage Inspection Permit - Site Alteration Permit	*Heritage Conservation Act*	Forest, Lands and Natural Resource Operations	Conduct a archaeological field study. Conduct systematic data recovery (excavation) to recover information. Authorizes the removal of archaeological deposits.
Fish Collection	*Wildlife Act*	Forest, Lands and Natural Resource Operations	Fish salvage for data collection
Waste Management - Waste	*Environmental Management Act*	Environment	Authorization to discharge waste under the Environmental Management Act for mining effluent (sediment, tailings and

Requirement	Statute	Ministry	Purpose of Authorization
Discharge Permit - Special Waste Generator Permit (Waste Oil) - Open Burning Permit			sewage, discharge from filter plant), air emissions (crushers, concentrator), refuse, and incinerator. Authorization to store, handle and dispose of waste oil generated by mining activities. Open Burning Permit for land clearing activities
Water Management - Notifications - Approvals - Short Term Water Use Approval - Water Licence	*Water Act*	Environment	Notifications for works. Approval for changes in and about a stream that are of a complex nature. Short Term Water Use. Authority to divert and use surface water.
Wildlife Permits - Wildlife Salvage Permit - Permit to Possess, Take or Destroy Bird Nest and/or Egg	*Wildlife Act*	Forest, Lands and Natural Resource Operations	For possessing, taking or destroying a bird / nest. For amphibian / small mammal capture and release

2.3 Federal Permits

In addition to RCMC's request for an Environmental Assessment Decision Statement pursuant to CEAA 2012, the Project will require a number of other federal authorizations, licenses, approvals and permits to construct and operate the Project. The anticipated federal permits to construct and operate the Project are listed in Table 2–2. The exact requirements will be defined by the permitting agencies through the environmental assessment and permitting process.

Of particular interest to Transport Canada, the Proponent does not anticipate that an approval pursuant to the *Navigation Protection Act* (that came into force April 2014) will be required for the Project. The preferred transmission line route will connect from the west of the Project site from Avola, across the Adams River and North Thompson River following an existing access road, while the three lesser preferred alternate transmission line options crosses the Columbia River (north of Lake Revelstoke Reservoir) located 16 km east of the mine site. The potential crossings (identified in Section 5.2.2) will be designed and constructed to follow Transport Canada's minor works and waters order for Aerial Cables – Power and Communications projects. Even so, the possible requirement has been added to Table 2–2 for Transport Canada's determination.

Of particular interest to Fisheries and Oceans Canada (DFO) and Environment Canada (EC), the Proponent does not anticipate that a Schedule 2 Amendment under the *Metal Mining Effluent Regulations (*under the enabling legislation of the *Fisheries Act)* will be required for the Project. Even so, the possible requirement has been added to Table 2–2 for DFO`s review and EC's determination.

The Proponent is not seeking federal funding for the Project.

Table 2–2 Anticipated Federal Permits

Requirement	Statute	Department	Purpose of Authorization
Environmental Assessment Decision Statement [1]	*Canadian Environmental Assessment Act, 2012*	Canadian Environmental Assessment Agency	A positive Environmental Assessment Decision Statement is required before any decisions can be made on permits and other approvals that are required to construct and operate a designated project in Canada.
Fish - Permit for Scientific Licence - Authorization for Works or Undertakings Affecting Fish Habitat	*Fisheries Act*	Fisheries and Oceans Canada	Fish salvage for data collection. Preventing serious harm to fish defined in the *Fisheries Act* as "the death of fish or any permanent alteration to, or destruction of, fish habitat."
Radio Licenses	*Radio Communication Act*	Industry Canada	Licence for radio frequencies for the Project
Explosives User Magazine Licence	*Explosives Act*	Natural Resources Canada	Storage of blasting explosives and other types of industrial explosives (required permits and/or licences to be obtained by explosives vendor)
Approval of works built in, on, over, under, through or across any scheduled waterways[2]	*Navigation Protection Act*	Transport Canada	Authorizes the construction, placement, repairing or modification of work which will substantially interfere with navigation in, over, under, through or across scheduled navigable waterways.
Authorization for a regulatory amendment to list the water body on Schedule 2 of the *Metal Mining Effluent Regulations*[3]	*Metal Mining Effluent Regulations (*under the *Fisheries Act)*	Environment Canada, with Fisheries and Oceans Canada	Authorization to use a natural water body that is frequented by fish, to dispose of mine waste by a metal mine .

NOTE 1: The Proponent anticipates that the Project will be subject to Canadian Environmental Assessment Act, 2012 (CEAA 2012); though a determination will be made by the Agency as to whether an environmental assessment is required.
NOTE 2: The Proponent does not anticipate that a formal approval for the aerial crossing of the transmission line will be required for the Project but has added this for Transport Canada`s determination.
NOTE 3: The Proponent does not anticipate that a Schedule 2 amendment of the MMER will be required for the Project because Light Lake is not frequented by fish but has added this for Fisheries and Oceans Canada's review and Environment Canada`s determination.

3 PROPONENT

The Proponent of the Project is Ruddock Creek Mining Corporation (RCMC), a wholly owned subsidiary of Selkirk Metals Corp., itself a wholly owned subsidiary of Imperial Metals Corporation.

Imperial Metals Corporation is a TSX-listed Canadian exploration, mine development and operating company based in Vancouver, BC. Imperial Metals Corporation's exploration and operations are located primarily in BC where it owns and operates the Red Chris copper-gold mine (operations anticipated to commence in mid-2014) and the Mount Polley copper-gold mine. Imperial Metals Corporation also has a 50% interest in the Huckleberry copper-molybdenum mine.

3.1 Ownership of the Project

The Ruddock Creek Project is a joint venture between four subsidiary companies as shown in Table 3–1: IMC (at 50% between Selkirk Metals Corp. and Mount Polley Mining Corporation), Mitsui Mining & Smelting Proponent Limited (at 30%) and Itochu Corporation (at 20%).

Table 3–1 Project Ownership

Subsidiary Company	A Wholly Owned Subsidiary of:	Interest in the Project
Selkirk Metals Corp.	Imperial Metals Corporation	10%
Mount Polley Mining Corporation	Imperial Metals Corporation	40%
MK Mining Canada, Corporation	Mitsui Mining and Smelting Co. Ltd.	30%
ICM Mining (Canada) Inc.	Itochu Corporation	20%

For the purposes of the environmental assessment, the Proponent of the Project is Ruddock Creek Mining Corporation, a wholly owned subsidiary of Selkirk Metals Corp., located at:

Ruddock Creek Mining Corporation
200-580 Hornby Street
Vancouver, BC V6C 3B6
Telephone: 604-669-8959
Fax: 604-687-4030
Website: www.imperialmetals.com

3.1.1 *Key Proponent Contacts*

President

The President of the Ruddock Creek Mining Corporation (and of Imperial Metals Corporation) is Mr. Brian Kynoch. Mr. Kynoch's career in mining has encompassed all aspects of exploration, permitting, development, commissioning, operation and reclamation of numerous mines and mineral properties including Mount Polley, Huckleberry, Sterling, Red Chris, Nickel Plate, Goldstream and Castle Mountain Mines. He is a Civil Engineer (B.Ap.Sc. UBC), a member of the Association of Professional Engineers and Geoscientists of BC and a member of the Canadian Institute of Mining and Metallurgy. Mr. Kynoch's contact information is:

Brian Kynoch
President, Ruddock Creek Mining Corporation
Email: bkynoch@imperialmetals.com
Telephone: 604-669-8959

Principal Contact for Environmental Assessment

Jim Miller-Tait is the principal contact person for the environmental assessment of the Project. He is also, the Exploration Manager for the Project and has been directly involved in the Project since 2004. Mr. Miller-Tait's contact information is:

Jim Miller-Tait
Exploration Manager, Ruddock Creek Mining Corporation
Email: jmillertait@imperialmetals.com
Telephone: 604-669-8959

Other Executive Officers and the Board of Directors

Other executive officers for the Ruddock Creek Mining Corporation include:

- Andre Deepwell, Chief Financial Officer and Corporate Secretary;
- Kelly Findlay, Vice President, Finance;
- Gordon Keevil, Vice President, Corporate Development; and
- Patrick McAndless, Vice President, Exploration.

The Board of Directors for the Ruddock Creek Mining Corporation includes:

- Andre Deepwell;
- Brian Kynoch; and
- Pierre Lebel.

3.1.2 *Corporate Policies*

RCMC is committed to developing the Project to meet regulatory requirements in BC and Canada and in a manner consistent with industry best practices. This includes implementing corporate environmental and health and safety policies that minimize adverse effects and maximizes Project benefits.

The Proponent adheres to the sustainable mining principles and practices as set out by the Mining Association of Canada and is committed to working with local communities where they work and operate and where their employees live. RCMC will continue to build and maintain mutually beneficial relationships with local community members and Aboriginal groups.

Environmental Policy

The Proponent is committed to responsible resource development and will apply current research to protect the environment and develop tools and technologies to mitigate for adverse potential effects. Through research and monitoring activities, RCMC strives for continuous improvement of both its own practices and the practices of the mining community.

Thorough steps are taken to ensure that commitments are followed through on each of the Proponent's project sites, including surface and groundwater quality monitoring, re-vegetation methods, and remediation of mine affected water.

Health and Safety Policy

The Proponent is proactive and progressive in providing safety education and a safe working environment for all of the employees. Safety is a priority for RCMC and occupational health and safety management practices which are in the best interests of employees, business partners and the communities in which they operate will be implemented.

3.2 Pre- Submission of the Project Description Consultations

During the preparation of the Project Description for the Project, the Proponent consulted with representatives from provincial and federal authorities, potentially affected Aboriginal groups, the public and local governments to help inform the contents of the document.

The Proponent, worked closely with the EAO and Agency to incorporate their recommendations and requirements into the development of the Project Description. Pre-submission meetings with the EAO and Agency have been held to re-introduce the Project with its "new" updated design since the original submission of the previous project description in 2008.

The results of the consultations undertaken by RCMC to date are provided in Section 11, 12 and 13 of the Project Description including the issues and interests that have been identified by representatives during the pre-submission consultations and RCMC's preliminary responses. This section of the Project Description lists the provincial and federal authorities, potentially affected Aboriginal groups, the public and local government organizations RCMC consulted with prior to the submission of the Project Description.

3.2.1 *Governments*

The following provincial and federal authorities were engaged in 2008 to 2009, and more recently in 2013 prior to the submission of the Project Description:

- BC Environmental Assessment Office

- Canadian Environmental Assessment Agency
- Other Federal departments
    - Natural Resources Canada;
    - Environment Canada;
    - Fisheries and Oceans Canada;
    - Transport Canada;
    - Health Canada; and
    - Aboriginal Affairs and Northern Development Canada.
- Other Provincial ministries and organizations
    - Environmental Assessment Office;
    - Ministry of Energy and Mines;
    - Ministry of Environment;
    - Interior Health;
    - Ministry of Transportation and Infrastructure;
    - Ministry of Community, Sport and Cultural Development;
    - Ministry of Forests, Lands and Natural Resource Operations;
    - Ministry of Aboriginal Relations and Reconciliation;
    - Ministry of Advanced Education;
    - Ministry of Agriculture; and
    - BC Hydro and Power Authority.

The Proponent has held several meetings with local and regional government representatives to discuss and understand their issues and concerns, since exploration activities for the Project began in 2004. RCMC has consulted with the following local and regional governments prior to the submission of the Project Description:

- Regional District of Clearwater;
- Columbia Shuswap Regional District;
- Community of Chase; and
- Community of Vavenby.

The results of pre-submission consultation activities with government representatives identified above are presented in Section 10.11.

Future consultation opportunities are anticipated with relevant government agencies through the environmental assessment working group, led provincially by the EAO and federally by the Agency. These future opportunities for consultation with government agencies will focus on guidance for data collection programs, presentation of impact assessment results, and ideas to avoid or mitigate for potential adverse Project effects.

3.2.2 *Aboriginal Groups*

Note that for the Project Description, the term Aboriginal groups refers to the indigenous inhabitants of Canada when describing in a general manner the Inuit, First Nations, and Métis people; this is consistent with the definition under Section 35(2) of the *Constitution Act*, 1982 (Ministry of Supply and Services Canada, 1996). Following accepted practice and as a general rule for the Project Description, the term Aboriginal group is used as an all-encompassing term that includes First Nations and Métis in BC.

RCMC has commenced consultations with six Aboriginal groups that may be potentially affected by the Project:

- Adams Lake Indian Band;
- Neskonlith Indian Band;
- Little Shuswap Lake Indian Band;
- Simpcw First Nation;
- Okanagan Indian Band; and
- Shuswap Indian Band.

The results of pre-submission consultation activities with the potentially affected Aboriginal groups listed above are presented in Section 12.2.

The Agency and EAO have provided preliminary advice regarding the Aboriginal groups that may be potentially affected by the Project components and activities (including the alternate transmission line routes). These Aboriginal groups are listed in Sections 5.2.4.

RCMC is committed to consulting with all potentially affected Aboriginal groups about the potential impacts of the Project on their interests and asserted Aboriginal rights. Consultation with Aboriginal groups will inform the consideration of Aboriginal interests in the environmental assessment and allow the environmental assessment process to explore opportunities to mitigate potential effects on interests and asserted rights. Requirements for Aboriginal consultation during the environmental assessment process will be set out by the EAO and Agency.

3.2.3 *Public Stakeholders*

RCMC has commenced consultations with potentially interested public stakeholders including:

- Thompson Nicola Regional District;
- District of Clearwater;
- Community of Chase;
- Community of Vavenby;
- Community of Avola;
- City of Revelstoke;
- BC Hydro;
- Mike Wiegle heli-skiing area operators;
- Recreational fishing guides; and
- Logging companies in the Project area.

The results of pre-submission consultation activities with the potentially interested public stakeholders are presented in Section 13.

4 PROJECT INFORMATION

4.1 Project History

Exploration activities in the Project area began before the 1960s with the discovery of massive sulphide mineralization. Since the first exploration activities, the property has changed ownership between 1975 and 2005 and different exploration and drilling programs were carried out by the owners. Selkirk Metals Corp., a corporation formed in 2005 and a current owner of the Project, continued exploration work on the property from 2005-2008.

In 2008 Selkirk Metals Corp. initiated the environmental assessment process under the BCEAA with the submission of a project description and a Section 10 Order and Section 11 Order were issued by the EAO. At that time, under the former CEAA legislation (of 2003), the Agency had not determined if an environmental assessment was required.

In 2010 Selkirk Metals Corp. signed a Joint Venture Agreement with Mitsui Mining and Smelting Co. Ltd. and Itochu Corporation to share ownership of the Project. With additional exploration programs

completed since 2010, the mine plan and Project have changed to reflect a better understanding of the Project setting and resources. Due to these reasons, in 2013, RCMC in consultation with the EAO and Agency requested that the former project description and procedural orders be cancelled, so that RCMC may submit a new project description and initiate a new environmental assessment process.

A summary of the history of the Project is presented in Table 4–1.

Table 4–1 Project History

Year(s)	Category	Description of Activities
Before 1960's and from 1961-1963	Exploration, Staking and Ownership Changes	Discovery of massive sulphide mineralization. The property was subsequently staked by Falconbridge in the 1961 to 1962. Extensive historic exploration programs were conducted by Falconbridge over the period of 1961-1963. Cominco Ltd. optioned the property from Falconbridge in 1975 and completed additional exploration.
1975-2005	Ownership Changes and Exploration	Different exploration and drilling programs were carried out by different owners. Doublestar Resources Ltd. acquired Falconbridge's interest in 2000 and carried out additional exploration programs. In 2004, Cross Lake Minerals Ltd. acquired an option on the property from Doublestar and completed additional exploration.
2005-2008	Exploration and Formation of Selkirk Metals Corp.	Selkirk Metals Corp., a corporation formed in 2005 as a base metals spinoff of Cross Lake Minerals Ltd., continued exploration work from 2005-2008. A 50 person exploraion camp was established at Light Lake in 2008 as well as an access road was established from the termination of the Oliver Creek Forest Service Road towards Light Lake.
2006-2008	Baseline Environmental Surveys	Enkon Environmental Ltd. initiated baseline environmental studies for stream flow, water quality, wildlife, vegetation, fisheries and meteorology. Golder Associates provided geotechnical mapping of the underground workings, evaluated the environmental work completed, and assessed the potential mill and tailings sites.
2008	Environmental Assessment	Selkirk Metals Corp. submits a project description for the project to the EAO and Agency.
June 2009	Environmental Assessment	EAO determined that the project constituted a reviewable project under the BCEAA with the isuance of a Section 10 Order and a Section 11 Order. Under the former CEAA legislation (of 2003), the Agency had not determined if an environmental assessment was required.
2010	Ownership Changes and Exploration	Mitsui Mining and Smelting Co. Ltd. and Itochu Corporation join as owners. Surface and underground drilling programs were completed.
March 2012	Exploration	Selkirk Metals Corp. completed a revised Mineral Resource Estimate.
2013	Environmental Assessment	RCMC advises the EAO and Agency that the mine plan for the Project has been substantially revised to reflect a better understanding of the Project setting and resources. Through consultation with the EAO and Agency, RCMC requested that the 2008 Project Description and the corresponding Procedural Orders be cancelled due to the extensive changes to the former project description.
May 2014	Environmental Assessment	RCMC submits Project Description to EAO and Agency for review and determination under BCEAA and CEAA 2012. An Executive Summary of the Project Description in both English and French is submitted to the Agency.

4.2 Estimated Resources

The resources quoted in the Project Description are based on preliminary economic assessments and include inferred resources that should not be considered a mining reserve; there is no certainty that the preliminary economic assessment will be realized and the resource models for indicated and inferred mineral resources may be updated. The mineral resource estimate for the Project as of January 2013 is

shown in Table 4–2 (Selkirk Metals Corp., 2012). These resources are predicated on approximately eight years of operation at an average throughput of 3,000 t/d.

Table 4–2 Mineral Resources

Cutoff Grade % Pb+Zn	Indicated				Inferred			
	Tonnes 000's	% Zn	% Pb	% comb Pb+Zn	Tonnes 000's	% Zn	% Pb	% comb Pb+Zn
3.0	7,083	6.07	1.25	7.32	8,048	5.74	1.08	6.81
4.0	6,246	6.50	1.33	7.83	6,678	6.33	1.20	7.52
5.0	5,131	7.10	1.45	8.55	5,350	6.99	1.31	8.30
6.0	**4,121**	**7.73**	**1.57**	**9.30**	**4,258**	**7.62**	**1.43**	**9.04**

NOTE: The cutoff grade of 6% for Pb and Zn was used to calculate the Project's mineral resources.

4.3 Project Context and Objectives

The objectives of the Project include optimizing benefits to all stakeholders and avoiding or minimizing Project-related potential adverse effects on the environment and people. The anticipated benefits of the Project on the local region, BC, Canada and globally include:

- Employment opportunities;
- Government revenues;
- Contribution to community developments; and
- Meeting global demand for zinc and lead.

The Proponent anticipates that the Project will have substantial positive socioeconomic effects on the region, especially the neighbouring community of Vavenby and the District of Clearwater. The Project is anticipated to employ approximately 300 people during construction and will create 200 permanent positions during operations. The capital cost of the project financially modelled in the Preliminary Economic Assessment is approximately $144.7M; this estimate does not include operating cost or sustaining capital (Selkirk Metals Corporation, 2013). This estimate is based on the total cash cost of mining at $1,503 per tonne Zn equivalent, or $0.697 per pound using prices of $0.9878 for zinc and $1.0925 for lead. As well, contingencies are applied to the items used for the Preliminary Economic Assessment capital cost estimate and varied from 5% to as high as 30%.

The Project will generate provincial and federal government revenues through corporate income and revenue taxes as follows:

- Stage I: 2.00% Tax on net current proceeds from operation;
- Stage II: 13.00% Tax on cumulative net revenue from less capital cost;
- Federal Income Tax rate: 15.00%; and
- Provincial Income Tax rate: 11.00%.

The Proponent anticipates that the Project will bring training opportunities for local community members and increased investment in services to the local population and all of BC. The Project is located in what can be generally described as a semi-rural resource region of BC with slightly higher levels of unemployment than the provincial average but greater levels of employment in the natural resource sector (Statistics Canada, 2011). RCMC anticipates that the Project will have a substantial positive impact on the region and especially the neighbouring communities of Vavenby and the District of Clearwater. The Project already sources, where possible, employees, contractors, services and supplies from local providers for exploration activities.

On a national level, development of the Project will contribute to Canada's role as a producer of zinc and lead in the world economy. This purpose is consistent with the Government of Canada's overall strategy of encouraging private corporations to generate national export commodities and tax revenues from natural resource development.

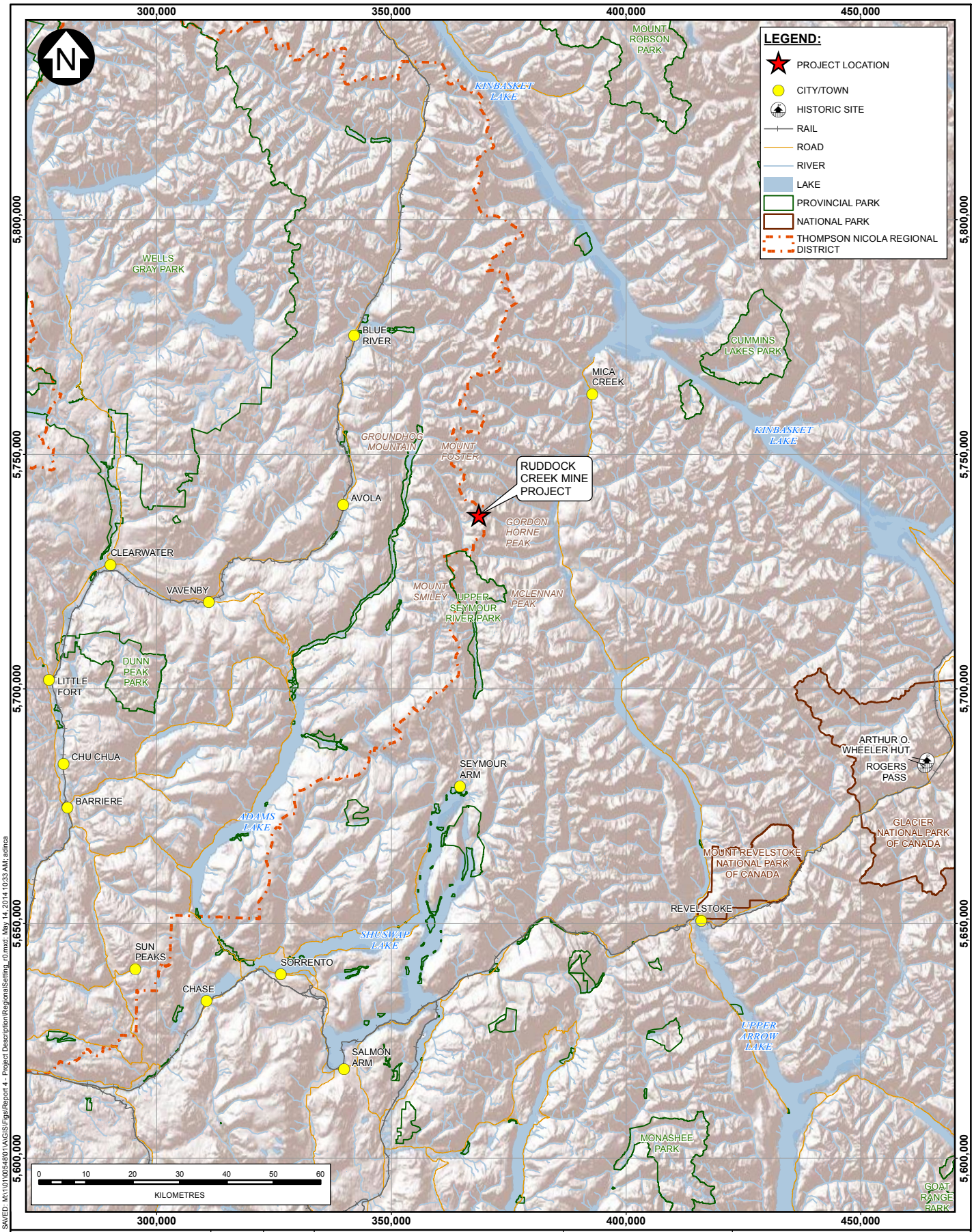
New mine production in recent years has only replaced that of closed mines and future production is expected to be flat or declining. There is increasing difficulty in finding new deposits, increased costs of mine production, and the long lead times required to develop new mines while zinc and lead are used in many industrial and consumer applications worldwide and the global demand for these metals continues to grow. The Project will help meet the current and forecasted global demand for zinc and lead.

The review process for the Project will involve a continuous exchange of information between RCMC, governments and regulatory agencies, Aboriginal groups and the public. This process will contribute to improvements in the Project plan and design, mitigation measures, to avoid, and/or minimize potential adverse effects. The Project will not be based solely on engineering or economic determinants, but rather on a balanced approach that guides the sustainable development of the Project while meeting the Project objectives.

5 PROJECT LOCATION

5.1 Coordinates

The Project is located between the headwaters of Ruddock Creek and Oliver Creek in the Scrip Range of the Monashee Mountains in southeast BC, approximately 155 km northeast of Kamloops, 100 km north northwest of Revelstoke, 28 km east of Avola and 6.5 km west of Gordon Horne Peak as shown on Figure 5–1. The Project, centered at the Primary Building that houses the Processing Plant is located at UTM coordinates X: 368650 and Y: 5737061 within UTM Zone 11, and latitude 51º 46' 8.43"N and longitude 118º 54' 13.00"W. At this location, the Project is at an elevation of approximately 1,950 masl. The principal mineral tenures for the Project are situated on NTS map sheet 82M/15W and B.C. Geographic System map sheet 082M.076.



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NOTES:
1. BASE MAP: ESRI ARCGIS ONLINE MAPPING; BC GOVERNMENT DATA.
2. PROJECTION: NAD 1983 UTM ZONE 11N
3. COORDINATE GRID: METRES.

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RUDDOCK CREEK MINE PROJECT

REGIONAL SETTING

FIGURE 5-1

REF REPORT 4

P/A VA101-548/01

5.2 Site Features

5.2.1 *Nearby Communities*

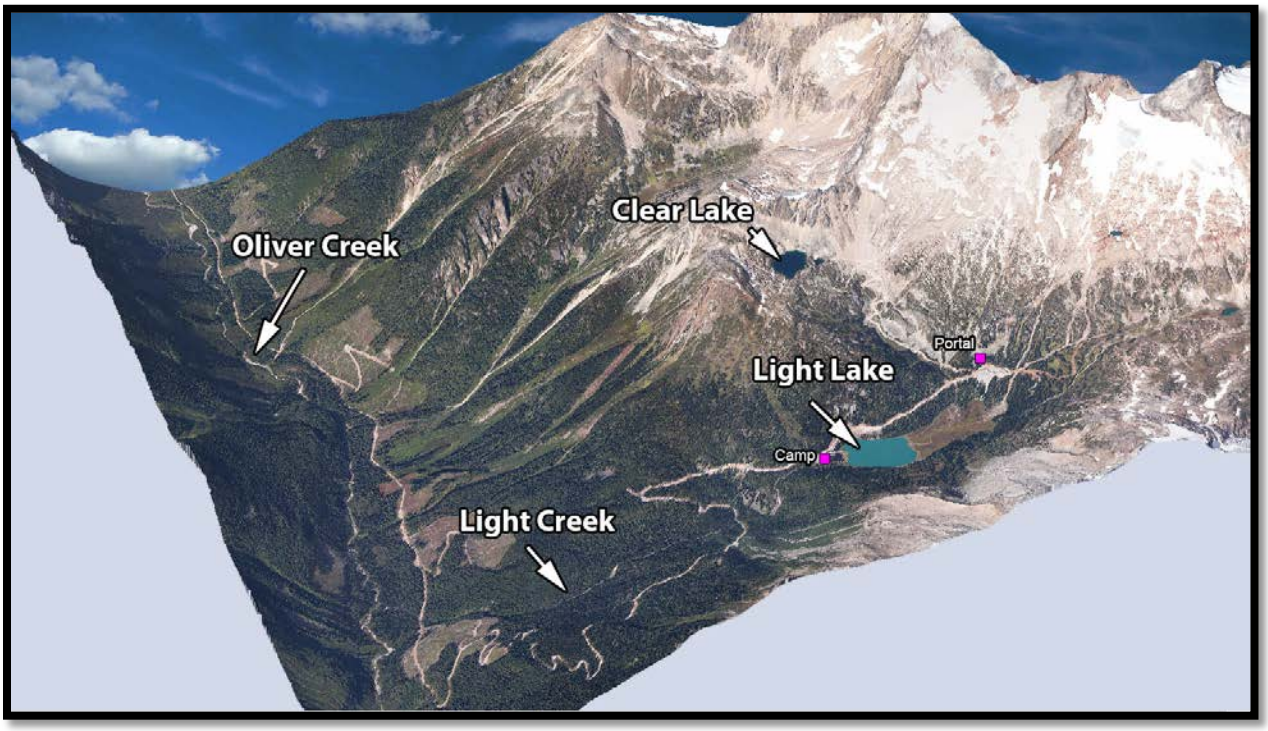
The mine site is approximately 155 km northeast of Kamloops, 100 km north northwest of Revelstoke, 28 km east of Avola and 6.5 km west of Gordon Horne Peak as shown in Figure 5–1. The Project is located in Area "A" of the Thompson-Nicola Regional District (TNRD) and the nearest communities in relation to the Project are:

- District of Clearwater, approximately 79.2 km southwest of the Project;
- Vavenby, approximately 60.4 km southwest of the Project;
- Avola, approximately 30.0 km west of the Project; and
- Revelstoke, approximately 98.6 km southeast of the Project.

5.2.2 *Water Courses and Water Bodies*

Figure 5–2 identifies the named water courses and water bodies at the mine site. Oliver Creek is an official geographic name but Clear Lake, Light Creek and Light Lake are unofficial names that were bestowed by previous owners of the property. As well there are several un-named tributaries of Light Creek and Oliver Creek at the mine site; two un-named tributaries of Oliver Creek are proposed to be crossed by Bridge Crossing 1 and Bridge Crossing 2 as shown on Figure 1–2 and referenced in Table 5–1.

Figure 5–2 Water Courses and Water Bodies



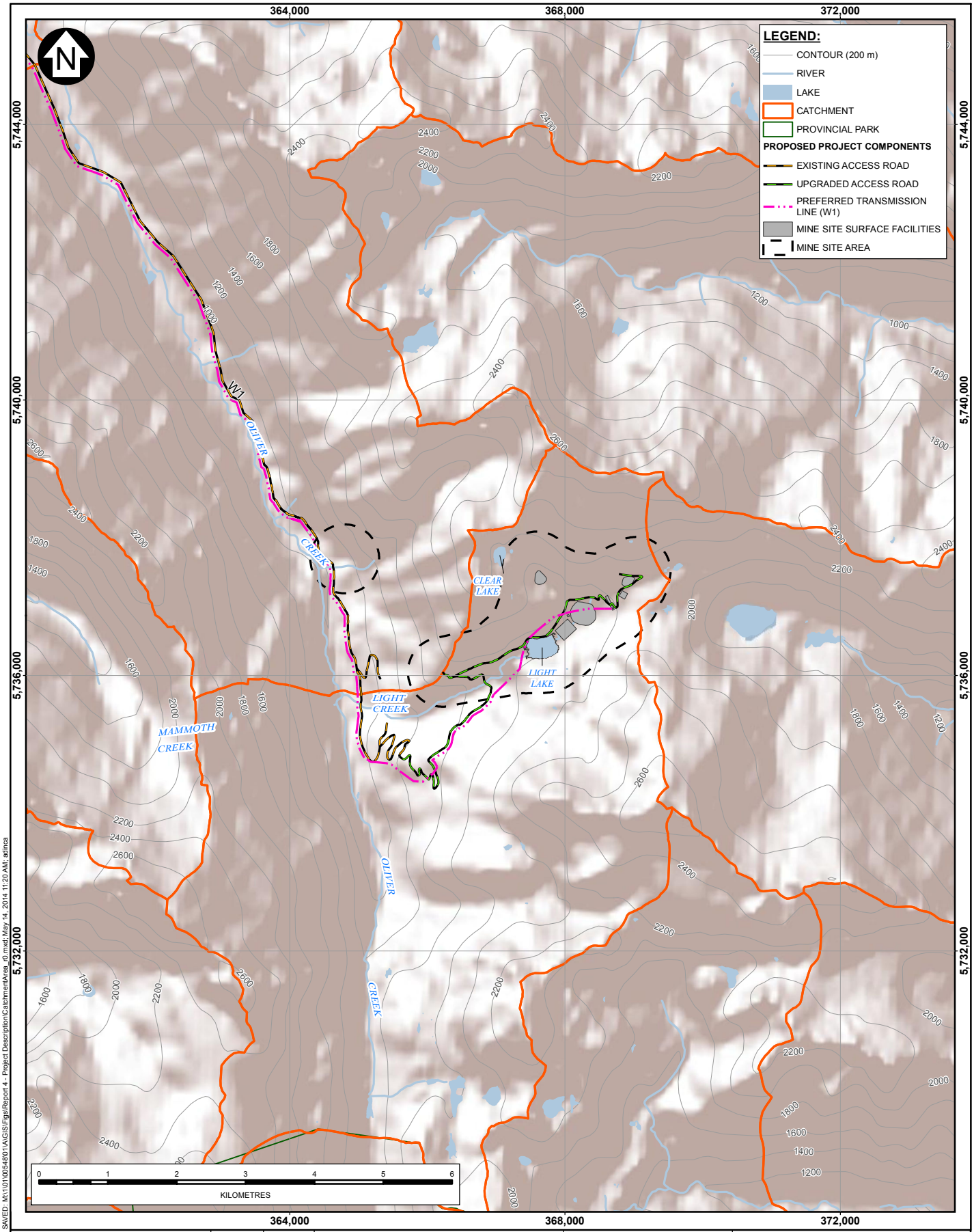
Note: The camp shown in Figure 5–2 is the existing exploration camp.

The proposed bridges (Bridge Crossing 1 and Bridge Crossing 2), preferred transmission line (W1) and alternate transmission lines (E1, E2, and E3) will cross the water bodies identified in Table 5–1.

Table 5–1 Crossing of Water Bodies by Proposed Project Components

Project Component	Water Body	Type of Crossing
Bridge Crossing 2	Un-named Oliver Creek Tributary	Existing bridge will be replaced with new 10m clear span bridge
Bridge Crossing 1	Un-named Oliver Creek Tributary	Existing bridge will only require decking to be replaced
W1 Preferred Transmission Line	Un-named Oliver Creek Tributary, Oliver Creek, Adams River, North Thompson River	Aerial crossing following Transport Canada`s minor works and waters order for Aerial Cables – Power and Communications projects.
E1, E2 and E3 Lesser Preferred Transmission Line Alternatives	Columbia River (north of Lake Revelstoke Reservior)	Alternate aerial crossing following Transport Canada`s minor works and waters order for Aerial Cables – Power and Communications projects.

As shown on Figure 5–3, the majority of the surface facilities of the mine site are located within one catchment area. The access road and preferred transmission line, as well as the underground workings of V-Zone are located in adjacent catchment areas.



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NOTES:
1. BASE MAP: ESRI ARCGIS ONLINE MAPPING; BC GOVERNMENT DATA.
2. PROJECTION: NAD 1983 UTM ZONE 11N
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RUDDOCK CREEK MINE PROJECT

CATCHMENT AREAS

FIGURE 5-3

REF REPORT 4

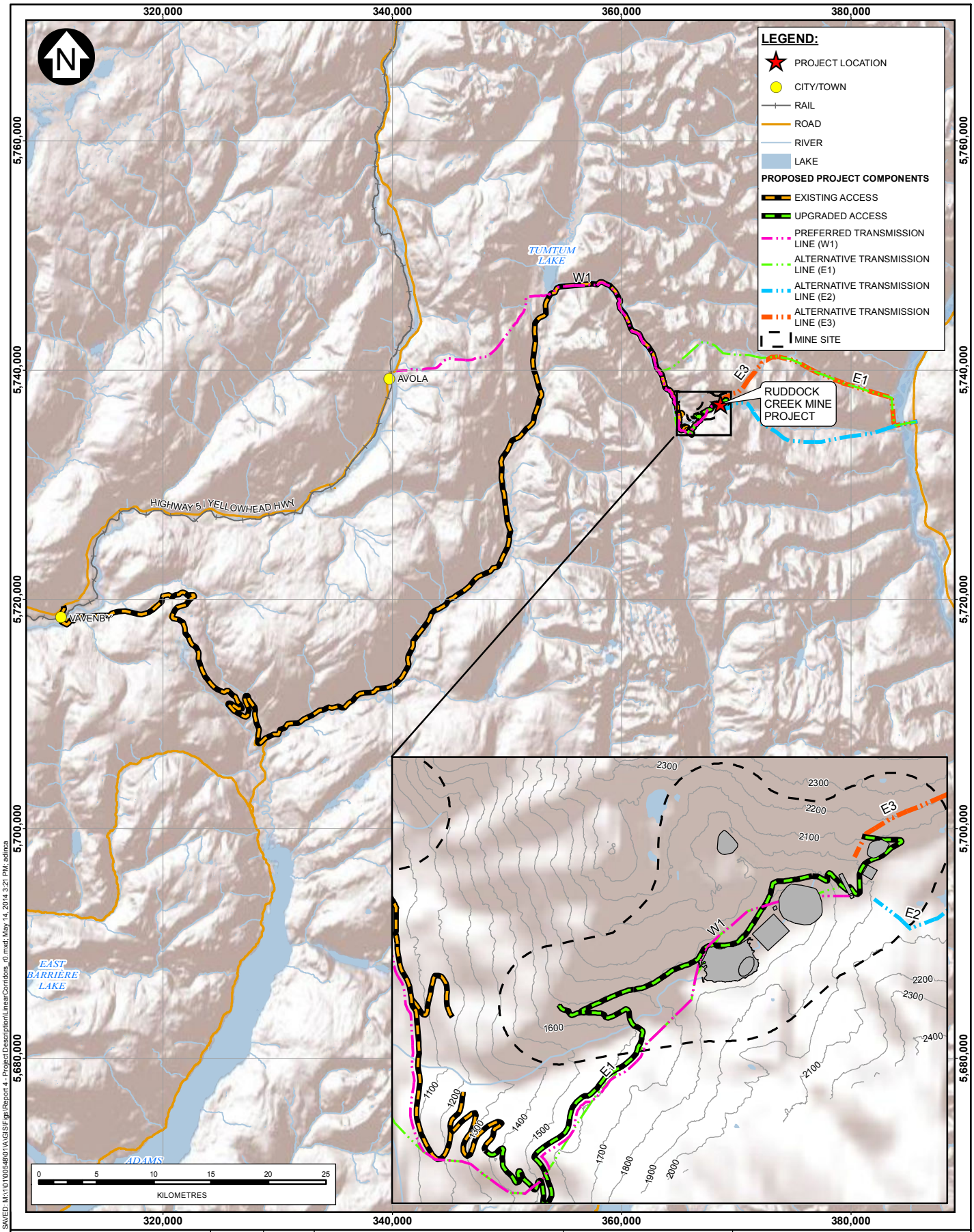
P/A VA101-548/01

5.2.3 *Linear and Transportation Components*

The mine site is currently road accessible using existing Forest Service Roads from the Yellowhead Highway #5 (at Vavenby) to the existing access road at the mine site (Figure 1–2 and Figure 5–4). Access to the mine site will be established by upgrading a portion of the access road (for approximately 6.2 km), replacing one bridge and upgrading the decking on another bridge (identified on Figure 1–2) to establish reliable all-weather access. The upgraded access road for the Project will follow the alignment of the existing access road and be built according to Ministry of Transportation and Infrastructure design standards. The existing bridge (labelled in Figure 1–2 as Bridge Crossing 1), will be upgraded with new decking. The other existing bridge (labelled in Figure 1–2 as Bridge Crossing 2), will be replaced with a 10 m clear span bridge.

There are four preliminary route options for a transmission line, three from the east of the mine site as well as one option from the west. The preferred transmission line option is from the west of the mine site (W1 on Figure 5–4), which would require a transmission line to be built from an existing sub-station in Avola along the Thompson River, following existing roads to a new substation located at the mine site. The Right of Way (ROW) width for the transmission line is anticipated to be 60 m wide. This option is preferred because the transmission line and ROW follows existing road and has easy access for maintenance and repairs. BC Hydro has not guaranteed availability and timing of availability of the preferred transmission line W1 with changing load conditions in the area; therefore, RCMC will continue to have discussions with BC Hydro and will continue to explore the three alternate route options from the east of the mine site. From the east, it may be possible to use the existing 69 kV line from the Mica Dam down the east side of Revelstoke Lake and construct a new 69 kV line to the substation at the processing plant. The ROW width for the transmission line is anticipated to be 40 m wide. These options are labelled E1, E2 and E3 on Figure 5–4.

The closest commercial airport is located in Kamloops, BC, approximately 215 km southwest of the Project site. This facility has regularly scheduled flights to Vancouver and other points in BC and Calgary.



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NOTES:
1. BASE MAP: ESRI ARCGIS ONLINE MAPPING; BC GOVERNMENT DATA.
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3. COORDINATE GRID: METRES.

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RUDDOCK CREEK MINE PROJECT

LINEAR CORRIDORS

FIGURE 5-4

REF REPORT 4

P/A VA101-548/01

5.2.4 *Aboriginal Groups, Settlement Land, and Traditional Territories*

The following Aboriginal groups have been identified to RCMC as Aboriginal groups that may be potentially affected by Project components and activities within the mine site:

Secwepemc Nation bands:

- Adams Lake Indian Band;
- Little Shuswap Lake Indian Band;
- Neskonlith Indian Band; and
- Simpcw First Nation.

Other Aboriginal groups potentially affected by the Project, which have been identified to RCMC, include:

Secwepemc Nation bands:

- Bonaparte Indian Band;
- Shuswap Indian Band;
- Skeetchestn Indian Band;
- Splatsin (Spallumcheen) First Nation;
- Tk'emlups Indian Band; and
- Whispering Pines/Clinton Indian Band.

Okanagan Nation Alliance:

- Okanagan Indian Band ;
- Upper Nicola Indian Band;
- Westbank First Nation;
- Penticton Indian Band;
- Osoyoos Indian Band;
- Lower Similkameen Indian Band; and
- Upper Similkameen Indian Band.

Ktunaxa Nation:

- St. Mary's Indian Band;
- Lower Kootenay Indian Band;
- Tobacco Plains Indian Band; and
- Akisq'nuk First Nation.

Stoney Nakoda Nation, signatory of Treaty 7

Métis Nation BC

Through consultation with Aboriginal groups during the course of the environmental assessment, RCMC will seek to clarify its understanding of how the Project can affect Aboriginal interests and/or asserted Aboriginal rights. RCMC will also seek to clarify the extent to which the other Aboriginal groups identified above may be potentially affected by the Project.

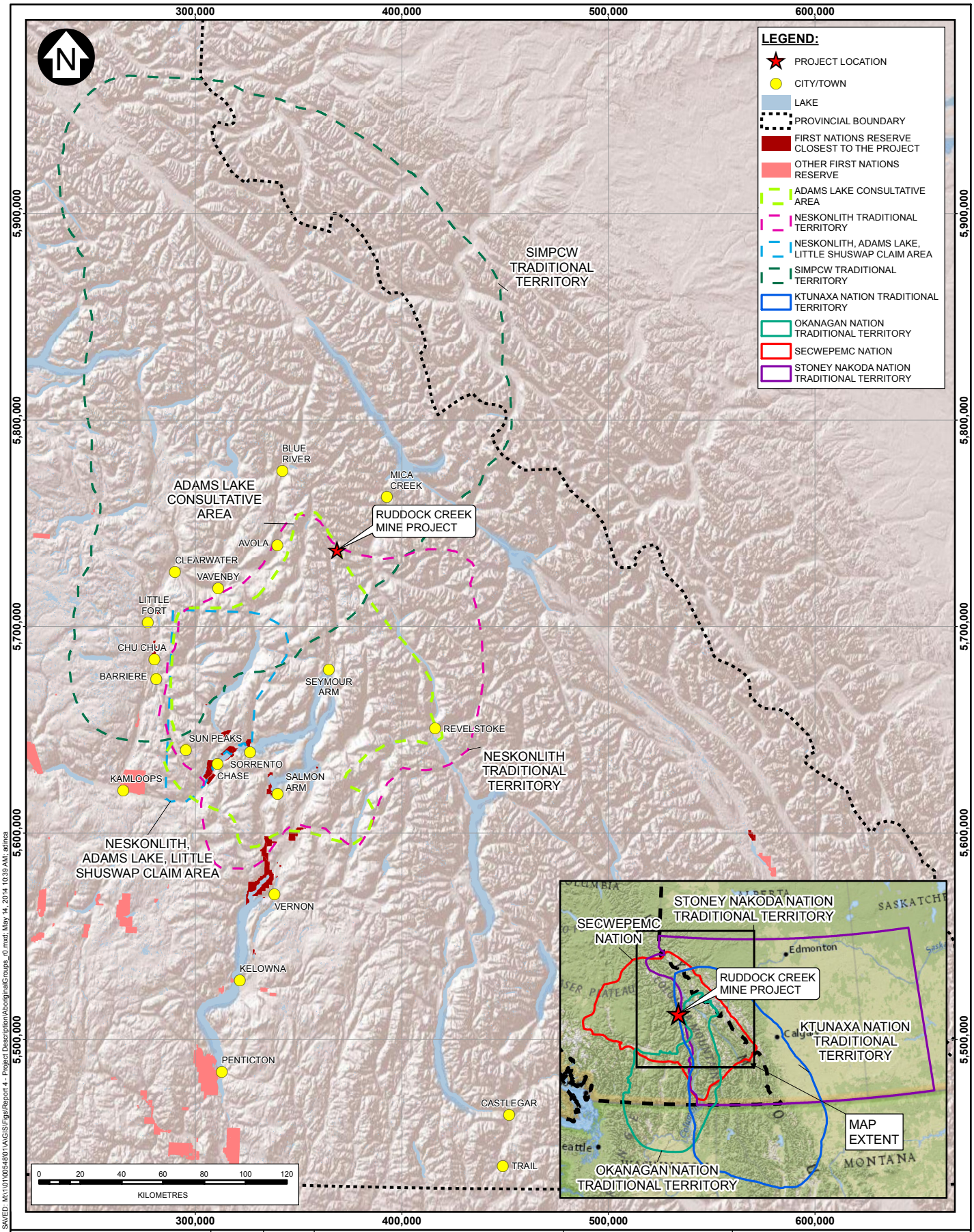
Based on the information publically available in the BC Consultative Area Database with respect to the Aboriginal groups identified above, the mine site, existing access road and the preferred transmission line (W1) are located within the asserted traditional territories of the Adams Lake Indian Band, Neskonlith Indian Band, Little Shuswap Lake Indian Band, and Simpcw First Nation (GeoBC, 2014). Portions of the transmission line alternatives (E1, E2, and E3) are located within the asserted traditional territories of the Okanagan Indian Band, Shuswap Indian Band and the Splatsin First Nation. The approximate distances of their closest reserves to the mine site (centered at the processing plant) are presented in Table 5–2.

Table 5–2 Aboriginal Groups in Relation to the Project

Aboriginal Groups	Reserves (and closest Reserve to the Project)[1]	Distance from the Project (km)	Traditional Territory (or Asserted Area) Available	Project Component(s) within Traditional Territory (or Asserted Area)
Simpcw First Nation	07190 - BOULDER CREEK 5[1] 07188 - BARRIERE RIVER 3A 07189 - LOUIS CREEK 4 07187 - NEKALLISTON 2 07186 - NORTH THOMPSON 1	90	Yes[2]	Mine site, access road, and transmission line (W1)
Adams Lake Indian Band	07153 - SQUAAM 2[1] 07152 - HUSTALEN 1 07155 - SAHHALTKUM 4 07156 - STEQUMWHULPA 5 07157 - SWITSEMALPH 6 07158 - SWITSEMALPH 7 07154 - TOOPS 3	98	Yes[3]	Mine site, access road, and transmission line (W1)
Little Shuswap Lake Indian Band	07181 - SCOTCH CREEK 4[1] 07179 - CHUM CREEK 2 07180 - MEADOW CREEK 3 07182 - NORTH BAY 5 07178 - QUAAOUT 1	100	Yes[3]	Mine site, access road, and transmission line (W1)
Neskonlith Indian Band	07185 - SWITSEMALPH 3[1] 07183 - NESKONLITH 1 07184 - NESKONLITH 2	12	Yes[4]	Mine site, access road, and transmission line (W1)
Okanagan Indian Band	07390 - OKANAGAN 1[1] 07394 - DUCK LAKE 7 07392 - HARRIS 3 07391 - OTTER LAKE 2 07393 - PRIEST'S VALLEY 6 00122 - SWAN LAKE 4	146	Yes[5]	A portion of the alternate transmission line (E1,E2, E3)
Shuswap Indian Band	07428 – SHUSWAP[1] 07437 - ST. MARY'S 1A	240	No	A portion of the alternate transmission line (E1,E2, E3)
Splatsin First Nation	07418 -SICAMOUS 3[1] 07417- ENDERBY 2 07416- SALMON RIVER 1	105	No	A portion of the alternate transmission line (E1,E2, E3)

NOTES:
1. The closest reserve was used to calculate the distance from the Project.
2. Area digitized from http://www.simpcw.com/.
3. Area estimated from historic claim data; areas are approximate.
4. Area digitized from Forest Tenure Opportunity Agreement A89989 FTOA, 2011Nov25.
5. Area digitized from http://www.syilx.org/.

Where publicly available, the traditional territories (or asserted areas) of these and other potentially affected Aboriginal groups are shown in Figure 5–5. For the purpose of the Project Description, the term asserted areas includes in general, traditional territories, statement of intents, traditional harvesting areas and writ of summons. Where publicly available (primarily through the Aboriginal group's website or the BC Treaty Commission) or shared with the Proponent, asserted areas are shown on Figure 5–5.



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NOTES:
1. BASE MAP: ESRI ARCGIS ONLINE MAPPING; BC GOVERNMENT DATA.
2. PROJECTION: NAD 1983 UTM ZONE 11N
3. COORDINATE GRID: METRES.

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RUDDOCK CREEK MINE PROJECT

ABORIGINAL GROUPS

FIGURE 5-5

REF REPORT 4

P/A VA101-548/01

A brief overview of the seven Aboriginal groups, identified by the BC Consultative Area Database is provided below and based on information from the Ministry of Aboriginal Relations and Reconciliation, the department of Aboriginal Affairs and Northern Development Canada or an Aboriginal groups' website.

Adams Lake Indian Band

The Adams Lake Indian Band is a member of the Shuswap Nation Tribal Council. The Band is situated on seven reserves, totaling 2,885.5 ha and has a membership of 728 as of December 2007 (Aboriginal Affairs and Northern Development Canada, 2008). The main community is on the Sahkaltum Indian Reserve #4, on the Thompson River near Chase, BC, though the closest reserve to the mine site is Squaam Reserve #2 which is approximately 98 km away. The majority of the administrative offices are located on Sahkaltum IR#4. The Adams Lake Indian Band is not involved in the BC Treaty process.

Neskonlith Indian Band

The Neskonlith Indian Band is a member of the Shuswap Nation Tribal Council. The main community of the Band is on Neskonlith Indian Reserve #1, on the South Thompson River just below Little Shuswap Lake, near Chase, though the closest reserve to the mine site is Switsemalph #3 which is approximately 12.0 km away. The Band is situated on three reserves, totaling 2,786.7 ha and has a membership of 591 as of December 2007 (Aboriginal Affairs and Northern Development Canada, 2008). The Neskonlith Indian Band is not involved in the BC Treaty process.

Little Shuswap Lake Indian Band

The Little Shuswap Lake Indian Band is a Secwepmec Nation band that is no longer affiliated with the Shuswap Nation Tribal Council. The main communities of the Band are located along the eastern end of the Little Shuswap Lake, along the western and northern end of the Big Shuswap Lake, and follow along the Adams River and Little River. The closest reserve to the mine site is Scotch Creek #4 which is approximately 100 km away. The Band is situated on five reserves, totaling 3,112.7 ha and has a membership of 309 as of December 2007 (Aboriginal Affairs and Northern Development Canada, 2008). The Little Shuswap Lake Indian Band is not involved in the BC Treaty process.

Simpcw First Nation

The Simpcw First Nation is a member of the Shuswap Nation Tribal Council. The main community of the Band is located on the North Thompson Indian Reserve #1, on the North Thompson River, approximately 70 km north of Kamloops. The closest reserve to the mine site is Boulder Creek #5, which is approximately 90 km away. The Band is situated on five reserves, totaling 1,500.7 ha and has a membership of 640 as of December 2007 (Aboriginal Affairs and Northern Development Canada, 2008). The Simpcw First Nation is not involved in the BC Treaty process.

Okanagan Indian Band

The Okanagan Indian Band is a member of the Okanagan Nation Alliance, which has an office in Westbank, BC. The main community of the Band is on the Okanagan #1 reserve, north of Vernon, BC, between the north end of Okanagan Lake and the Salmon River. The closest reserve to the mine site is Okanagan #1 which is approximately 146 km away. The Band is situated on six reserves, totaling 11,282.5 ha and has a membership of 1,818 as of May 2011 (Aboriginal Affairs and Northern Development Canada, 2008). The Okanagan Indian Band is not involved in the BC Treaty process.

Shuswap Indian Band

The Shuswap Indian Band is a member of the Shuswap Nation Tribal Council. The main community of the Band is located on the left bank of the Columbia River, one mile north of Invermere. The closest reserve to the mine site is Shuswap Reserve located approximately 240km away. The Band is situated on two reserves, totaling 1,246.1 ha and has a membership of 231 as of December 2007 (Aboriginal Affairs

and Northern Development Canada, 2008). The Shuswap Indian Band was part of the Ktunaxa Kinbasket Treaty Council but made the decision to withdraw from the group and the BC Treaty process in 2009.

Splatsin First Nation

The Splatsin (Spallumcheen) First Nation is a member of the Shuswap Nation Tribal Council. The main community is on Enderby Reserve #2 located at Enderby on the Shuswap River at the mouth of Fortune Creek. The closest reserve to the mine site is Sicamous #3 which is located approximately 105 km away from the Project. The Band is situated on three reserves totaling 3,905.2 ha and has a membership of 757 as of December 2007 (Aboriginal Affairs and Northern Development Canada, 2008).

5.2.5 *Federal Lands*

The Project components and activities are not located on federal lands and will not cross federal lands and the Proponent is not seeking federal funding for the Project. The closest national parks and national historic sites to the mine site are listed below. Reserve lands are listed in Table 5–2.

National Parks

- Mount Revelstoke National Park, approximately 84.4 km southeast of the Project;
- Glacier National Park, approximately 77.0 km southeast of the Project;
- Yoho National Park, approximately 151.3 km southeast of the Project; and
- Kootenay National Park, approximately 187.0 km southeast of the Project.

National Historic Sites

- Arthur O. Wheeler Hut (Federal Heritage Building), approximately 110 km southeast of the Project;
- Rogers Pass (National Historic Site of Canada), approximately 110 km southeast of the Project; and
- Myra Canyon Section of the Kettle Valley Railway (National Historic Site of Canada), approximately 210 km south of the Project.

5.2.6 *Fisheries and Fishing Areas*

Within the mine site, RCMC is not aware of any commercial or Aboriginal fisheries or fishing areas. Some recreational fishing may occur in the Project area, most likely in Oliver Creek and will be assessed as part of the studies completed for the environmental assessment.

5.2.7 *Provincial and International Boundaries*

The mine site is located 85 km from the BC-Alberta provincial border and 310 km from the Canada-United States international border.

5.2.8 *Other Site Features*

The Proponent is not aware of any environmentally sensitive areas within the mine site. In general, environmentally sensitive areas include wetlands, protected areas including migratory bird sanctuary reserves, marine protected areas, and National Wildlife areas.

There are no provincial parks or wilderness reserves within the mine site. The Upper Adams River Provincial Park is located approximately 17 km northwest of the Project and overlaps with a very small portion of the Proponent's mineral claims near Tumtum Lake, though this portion of the Proponent's mineral claims is not part of the Project. The Upper Seymour River Provincial Park is situated approximately 10 km south of the Project.

At the time of preparing this Project Description, RCMC is not aware of other features of existing past land uses such as archaeological sites, commercial development, houses, industrial facilities, residential areas or any waterborne structures at the mine site.

The Proponent is not aware of any permanent, seasonal or temporary residences at the mine site.

5.3 Photographs of Proposed Work Locations

Photographs taken at the proposed mine site are shown as Photo 5–1, Photo 5–2 and Photo 5–3.

Photo 5–1 Existing Ruddock Creek Mine Project Exploration Camp

Photo 5–2 View Southwest towards the Existing Exploration Camp

Photo 5–3 View of the Lower E-Zone Portal

5.4 Land and Water Use

The following subsections describe the ownership and zoning of land and water that may interact with the Project components and activities including information on zoning designations, land ownership and sub-surface rights, management plans, local community land use and any information on land and resources currently used by Aboriginal peoples for traditional purposes.

5.4.1 *Zoning Designations*

The mine site is located on Crown Land; RCMC anticipates applying for the following land tenures and permits related to development of the Project on Crown land after receipt of an EAC from the EAO and required Provincial permits. These subsequent land tenures and permits are in addition to the required Provincial and Federal permits, licenses and approvals identified in Section 2.

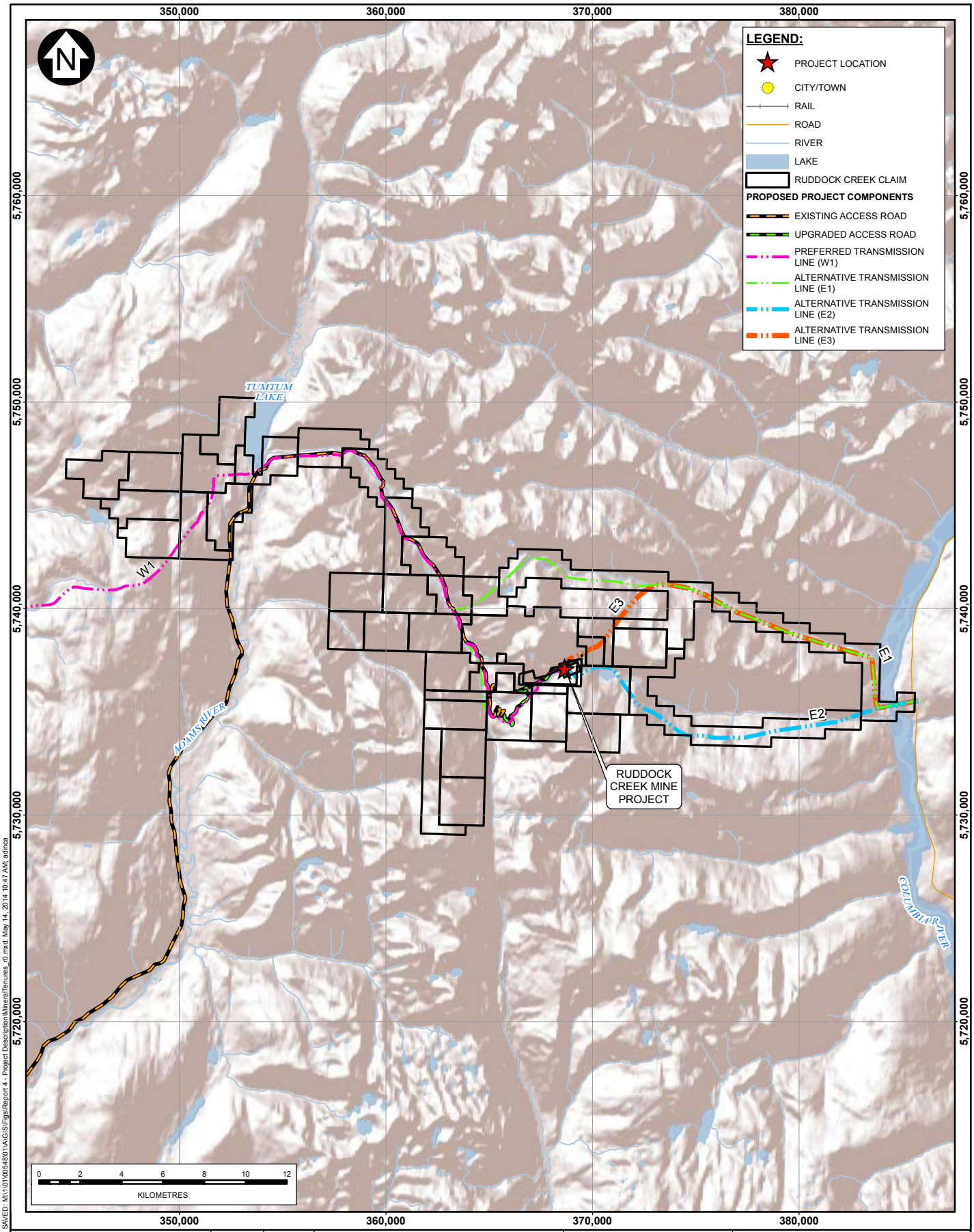
- Government of BC (Ministry of Forest Lands and Natural Resource Operations under the *Lands Act*): licenses for mine site facilities, construction camp, and transmission line.
- Government of BC (Ministry of Energy and Mines under the *Mineral Tenure Act*): application for a mining lease.

5.4.2 *Land Ownership, Including Sub-Surface Rights*

The legal description of the land that will be used for the Project including the title, deed and/or document is provided below. There are no authorizations required for use of a water lot.

Under the *Mineral Tenure Act of British Columbia*, a titleholder is granted the use of the surface for mineral exploration purposes only. A property is defined by the cells that make up the claim tenure which are derived from an electronic map database maintained by the Ministry of Energy and Mines and administered by the Mineral Titles Branch. These cells legally define the boundaries of the property. A mining lease tenure is required prior to the commencement of production from a property.

The mine site is located on Crown Land. The Project is located on a small portion of a property comprised of 42 cell claims containing an aggregate of 1,055 cells and covering a gross area of 21,155.56 ha (Figure 5–6 The claims are located primarily in the Kamloops Mining Division although a portion of the Property extends eastward into the Revelstoke Mining Division. The principal claim is Tenure No. 516624 and all the claims are registered in the names of Selkirk Metals Corp. (10%), Mount Polley Mining Corporation (40%), MK Mining Canada, Corporation. (30%) and ICM Mining (Canada) Inc. (20%).



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PREPARED BY:

Knight Piésold CONSULTING

DESIGNED	CAH
DRAWN	CAC
CHK'D	CAH
APP'D	GLS
REV	0
DATE	08MAY'14

NOTES:
1. BASE MAP: ESRI ARCGIS ONLINE MAPPING; BC GOVERNMENT DATA.
2. PROJECTION: NAD 1983 UTM ZONE 11N
3. COORDINATE GRID: METRES.

Ruddock
an Imperial Metals company

RUDDOCK CREEK MINE PROJECT

MINERAL TENURES

FIGURE 5-6

REF REPORT 4
P/A VA101-548/01

5.4.3 *Land and Resource Use Management Plans*

The Project is located in the central part of the provincial sub-region covered by the Kamloops Land and Resource Management Plan (KLRMP) which encompasses 2.2 million hectares of terrain, characterized by transitional mountainous terrain (Ministry of Forests, Lands and Natural Resource Operations, 1996). The KLRMP has been in place since 1996 as a high-level sub-regional plan providing policy for the management of Crown land in the plan area. The Ministry of Forests, Lands and Natural Resources Operations (FLNRO) uses the KLRMP as a basis for statutory and management decisions regarding environmental values, including fish, wildlife, forests, lands, parks, energy, mines, and petroleum resources for areas within the plan's boundaries.

The KLRMP area is organized into Resource Management Zones (RMZ), which include: General, Settlement, Protection, Community Watershed, Habitat/Wildlife Management Areas, and Recreation and Tourism RMZs. A summary of the types of RMZs included as part of the KLRMP and their management objectives is presented in Table 5–3. As part of the environmental assessment, RCMC will determine in consultation with Government representatives if the Project overlaps with any RMZs and ensure consideration of their management objectives.

Table 5–3 Resource Management Zones and their Objectives

Type of RMZ	Management Objectives
General RMZs	The General RMZs provide policy for the management of any Crown land and resources not covered by the other RMZ's mentioned above, and also include objectives and strategies that apply to all resource management zones. In addition to the policies set out in General RMZs, the KLRMP also includes objectives and strategies that are specific to each of the other RMZs.
Settlement RMZs	Settlement RMZs apply to settlement use of Crown lands, primarily managed by local governments under the *Municipal Act*. The principal uses of these areas are residential, commercial, industrial, agricultural, and institutional.
Protection RMZs	Protection RMZs are areas that have been identified for their natural, cultural, heritage and recreational values. The objective of Protection RMZs is to protect viable, representative examples of British Columbia's natural diversity and recreational opportunities, and to protect special natural, cultural, heritage and recreational features. Logging, mining and energy exploration and developments are not allowed within Protection RMZ boundaries, but may occur in areas adjacent to Protection RMZs.
Special Feature Protection RMZs	As well as larger areas, the KLRMP also protects smaller areas with unique, rare or scarce features. The primary objective for these Special Feature Protection RMZs is protection and preservation.
Community Watersheds RMZs	Community Watershed RMZs are focused on conserving water quality and quantity and time of flow within the KLRMP.
Habitat and Wildlife Management Areas RMZs	The primary goal of Habitat/Wildlife Management Area RMZs is to ensure the long-term viability of regionally or provincially significant wildlife habitat.
Recreation and Tourism RMZs	Recreation and Tourism RMZs include areas that have been identified for their significant recreational and tourism potential. The RMZs primary objectives are to maintain and enhance a diverse range of recreational values and uses across the KLRMP, and maintain and enhance tourism opportunities. Areas categorized as recreation and tourism RMZs within the KLRMP include: higher use, natural environment, backcountry, and remote areas.

5.4.4 *Regional Environmental Studies*

The Proponent is not aware of any regional environmental studies within the area of the Project that may be relevant to the environmental assessment for this Project.

5.4.5 *Local Community Land Uses*

Within the mine site, RCMC is not aware of any existing local community land uses; this is most likely due to the lack of accessibility and high elevation of the site.

The most active local community uses in the Project area other than mineral exploration has been periodic logging on the slopes of Oliver Creek and the occasional heli-skiing activity. The mine site is located at the extreme south end of the Mike Wiegle heli-skiing area of operations and they have been observed to the east of the mine site on the glacier during the winter. Within the Project area, some recreational fishing has been known to occur in Oliver Creek.

At the time of submitting the Project Description, the Proponent is not aware of any adverse potential effects of the Project on current local community land users. The Proponent will continue to consult with local community land users as part of the environmental assessment to determine if the Project will have an impact on their current use of the area and how adverse impacts can be avoided or mitigated.

5.4.6 *Lands and Resources Currently Used for Traditional Purposes*

At the time of the Project Description submission, the Proponent is not aware of any land or resources currently used for traditional purposes by Aboriginal peoples at the mine site or in the Project area. Additional information regarding potential land and resources currently used for traditional purposes by Aboriginal peoples may be gathered through consultation as part of the environmental assessment.

6 MINE PLAN AND SCHEDULE

The mine planning process is a forward-looking exercise designed to develop an optimal mine plan and production schedule that consists of consecutively more detailed studies to address project construction, operation, decommissioning and closure, and the final site reclamation. The Project mine plan and schedule presented in the Project Description is based on the best current available information. Some Project details will be confirmed as new information becomes available through additional characterization, trade-off and feasibility studies, or discussions with decision makers.

The Project's mine plan and schedule presented in this Project Description is based on the best current available information from many years of exploration, investigation, and data collection activities. Some Project details, such as the transmission line route, will be confirmed as new information is available either through additional characterization, tradeoff and feasibility studies or discussions with decision makers. In general, the Project's mine plan has the following fundamental characteristics:

- An anticipated production of 3,000 t/d over eight years of operation is anticipated based on estimated resources;
- The mine will operate as an underground mine based on the characteristics of the four ore deposits and will include step room and pillar and longhole stope mining techniques;
- Ore will be crushed (primary and secondary) underground and conveyed to the surface for tertiary crushing at the dense media separation (DMS) plant located at the Primary Building;
- The DMS circuit will separate the "light" fraction (waste minerals) from the "heavy" fraction (ore minerals);
- Ore processing will include a lead flotation circuit to produce Pb concentrate, a zinc flotation circuit to produce Zn concentrate and a pyrrhotite flotation circuit to produce separate thickened tailings streams of NAG and PAG tails;
- Waste rock management includes using waste rock from mine development as loose waste fill for backfill in the underground workings and storage of excess waste rock at surface waste rock storage areas;

- Tailings management includes storage of NAG tailing (approximately the first six months quantity from operations) in Light Lake, and temporary storage of PAG tailings (approximately the first six months quantity from operations) in a lined surface impoundment until it can be used as backfill for the underground workings; and
- Transportation of Zn and Pb concentrates by trucks to Vavenby to market.

Details of the Project components and activities listed above are presented in Section 7 and Section 7.2. Table 6–1 presents the timing of Project phases from construction, operation (or mine production), decommissioning and closure and the beginning of post-closure. The Project will begin construction only after receipt of a provincial EAC, a positive federal Environmental Assessment Decision Statement and provincial and federal permits, authorizations and approvals. As well, the duration of the post-closure phase will be determined through consultation with the *Ministry of Energy and Mines* and set out in the *Mines Act* permit.

Table 6–1 Project Schedule

Project Phase	Year										
	-1	1	2	3	4	5	6	7	8	9	10
Construction											
Operation											
Decommissioning and Closure											
Post Closure (begins)											

NOTE: The duration of the post closure phase will be determined through consultation with the Ministry of Energy and Mines and set out in the *Mines Act* permit.

7 PROJECT COMPONENTS, PHASES AND ACTIVITIES

7.1 Project Components

Three primary design principles have been applied by RCMC for the selection and placement of Project components:

- Minimize the surface footprint from components and activities (in this manner avoiding or minimizing potential adverse effects of the Project);
- Maximize functionality through all seasons; and
- Minimize personnel travel between the camp and all workplaces.

For example, the Project will employ cemented paste generated in the Processing Plant from the thickened tailings to backfill the mined underground workings to reduce the requirement to deposit tailings above ground or in Light Lake.

The Project, as a whole, can be considered as the mine site and the Project area as outlined in Table 1–1. In general, the mine site is the footprint of the Project's surface components with a buffer of 500 m around the greatest extent of surface infrastructures as shown in Figure 1–2. The Project area is defined as the area including the mine site and beyond to the extent of the furthest point of new linear components.

Mine site components include:

- Underground workings
    - Adits
    - Step Room and Pillar Mining

    - Longhole Stope Mining
    - Mine Ventilation
    - Secondary Egress
    - Power Supply and Distribution
    - Backfill of Underground Workings
- Ore Processing
    - Underground Crushing and Conveying
    - Dense Media Separation Plant
    - Primary Grinding
    - Lead (Pb) Flotation Circuit
    - Zinc (Zn) Flotation Circuit
    - Pyrrhotite (FeS) Flotation Circuit
- Tailings Management
    - PAG (first six month quantity from operations temporarily in lined surface impoundment) and NAG (first six month quantity from operations in Light Lake)
    - Backfill (from month six to end of operations)
- Water Management
- Waste Rock Management
- Primary Building
    - Processing Plant
    - Concentrate Shed
    - Assay Lab
    - Maintenance Shop
    - Warehouse
    - Accommodations Facilities
    - Administration and Technical Offices
- Haul Roads
- Reagent Mixing and Distribution
- Borrow Sources
- Fuel Storage
- Explosives Storage Facility
- Communications Network
- Workforce
- Solid, Liquid, Gaseous or Hazardous Wastes

Off site (or ancillary) components and activities in the Project area include:

- Access Road and Bridges;
- Concentrate Transport; and
- Transmission Line.

7.1.1 *Underground Workings*

The Project will consist of four ore zones (or underground workings) referred to as:

- Upper E
- Lower E
- Creek
- V-Zone

The prevalent geometries of the ore zones have been considered in the selection of entry, preferred mining methods, air supply and ventilation, and other activities associated with the underground workings. The prevalent geometries of the four ore zones can be generally characterized as:

- Almost all of the Upper E-Zone is thick and dips at ~45°
- The Lower E-Zone and Creek-Zones are thinner, varying from 2m to 12m, and moderately dipping at ~ 26°
- The V-Zone and the lowest portions of the Upper E-Zone are of moderate thickness (3m to 6m thick) and dips at ~ 60°

For the underground workings, step room and pillar mining will be used in stopes with an ore thickness less than 6 m. All other ore will be mined using longhole stoping methods.

Adits

Access to the underground working will be by level entry adits using five separate portals for the extraction of ore from four zones. The ramps from the portal to access the ore will vary between +15° and -15°.

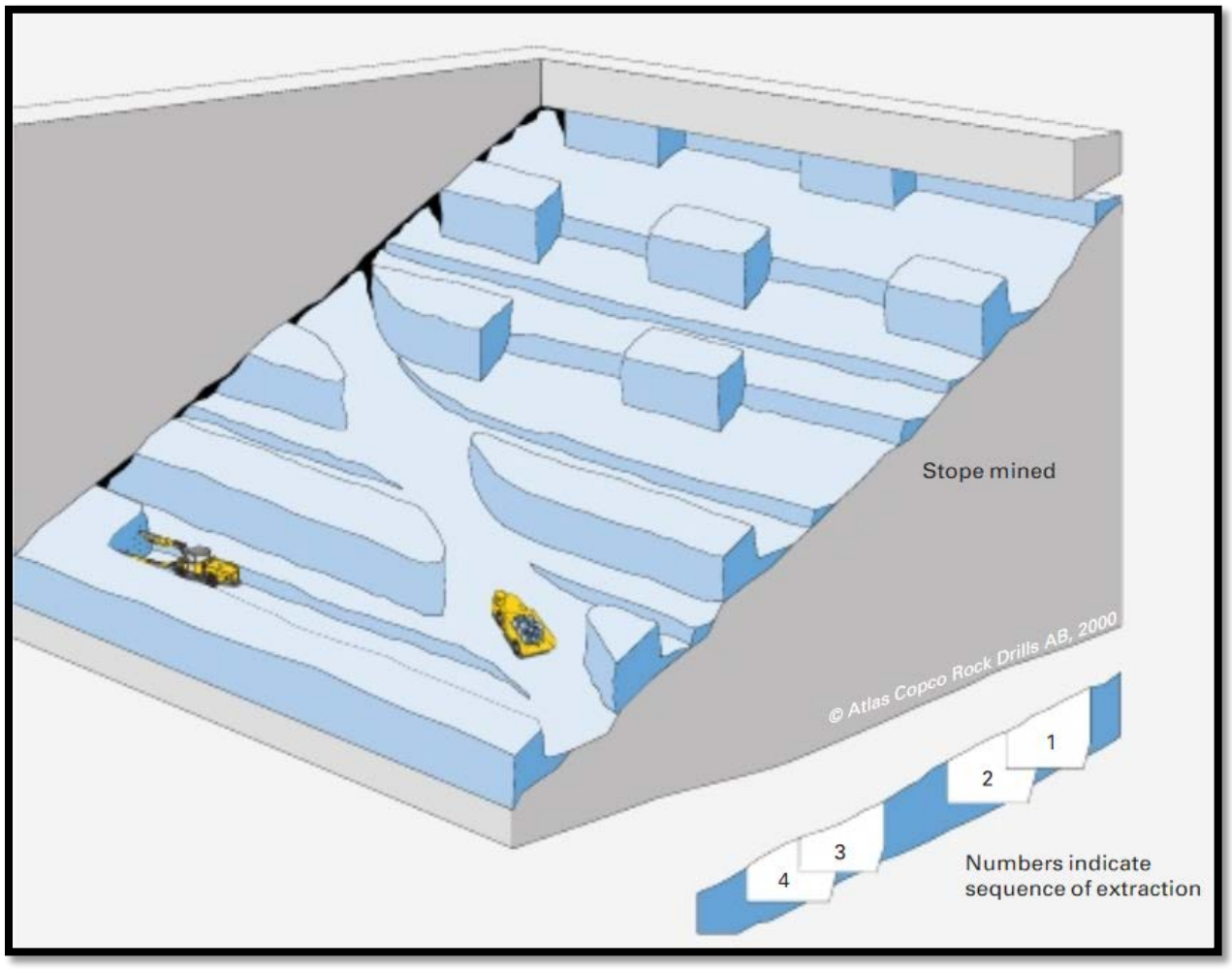
Step Room and Pillar Mining

For step room and pillar mining, an initial ore drift will be driven parallel to the strike of the orebody for the extent of the stope, exposing the hanging wall. A second parallel drift will then be slashed beside initial drift, stepped down in elevation to follow the contact. Both drifts will be pattern bolted. A third drift will then be slashed down-dip, widening to the maximum allowable span. This third drift will only be bolted as required. This pattern will then be repeated, nominally every 8 vertical m of the ore body. Mining will generally proceed on an up-dip direction. The step room and pillar mining method is shown in orthogonal view on Figure 7–1 and on cross-sectional views in Figure 7–2 for 3m and in Figure 7–3 for 5m true ore thicknesses.

Upon completion of the three ore drifts, windows will be mined in the up-dip direction from the initial drive. Some windows will be mined early in the stope's life to provide return ventilation and secondary egress for the longer stope drifts. Recovery of ore will be maximized by strategic pillar recovery, starting at the ore body extents and retreating to the stope access. Benching will be required in the thicker stopes and elevation changes for the various drifts will be achieved using steep ramps inside the stope in ore.

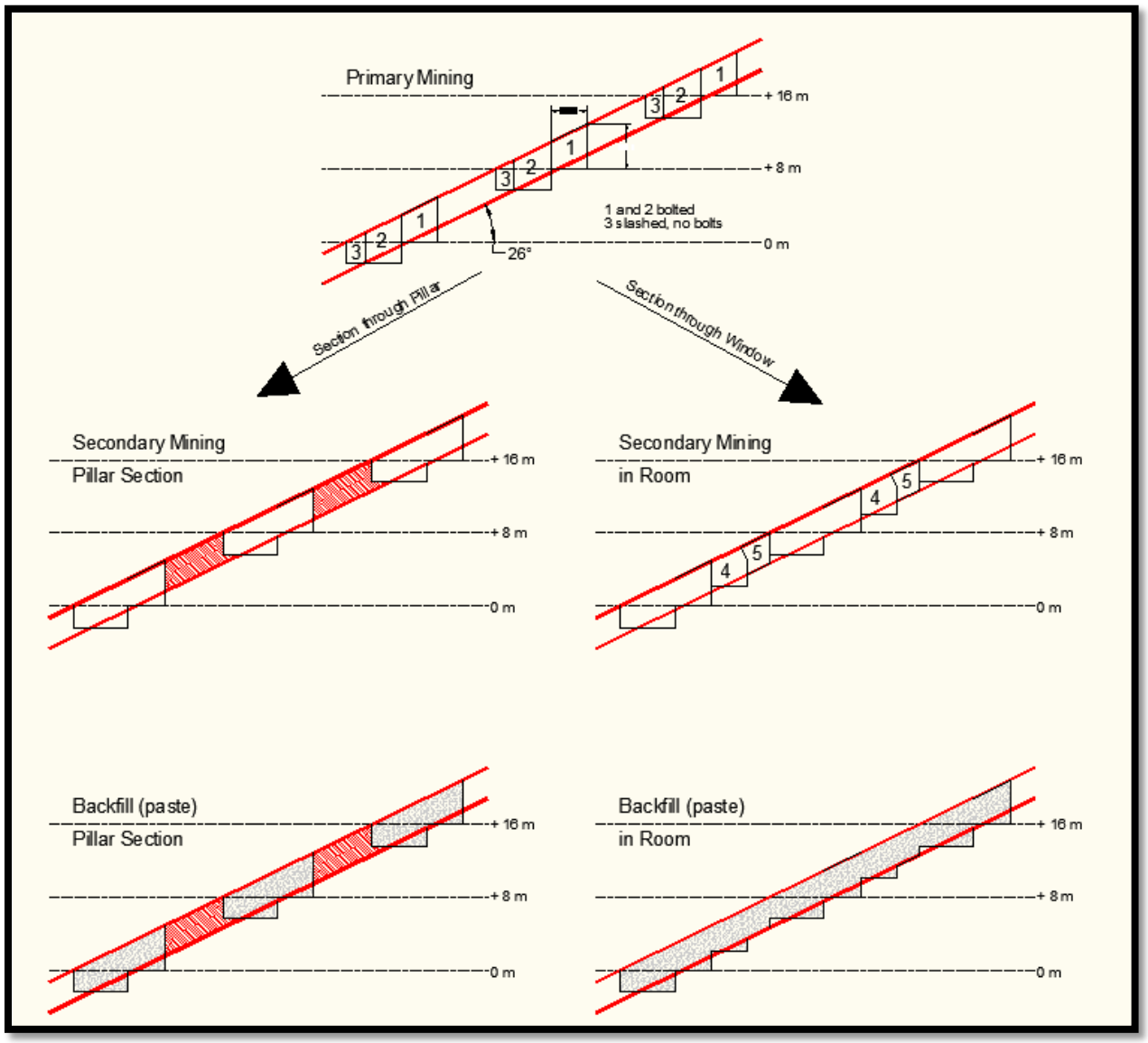
The stopes that remain from step room and pillar mining will be backfilled with paste backfill on the completion of mining.

Figure 7–1 Step Room and Pillar Mining Method



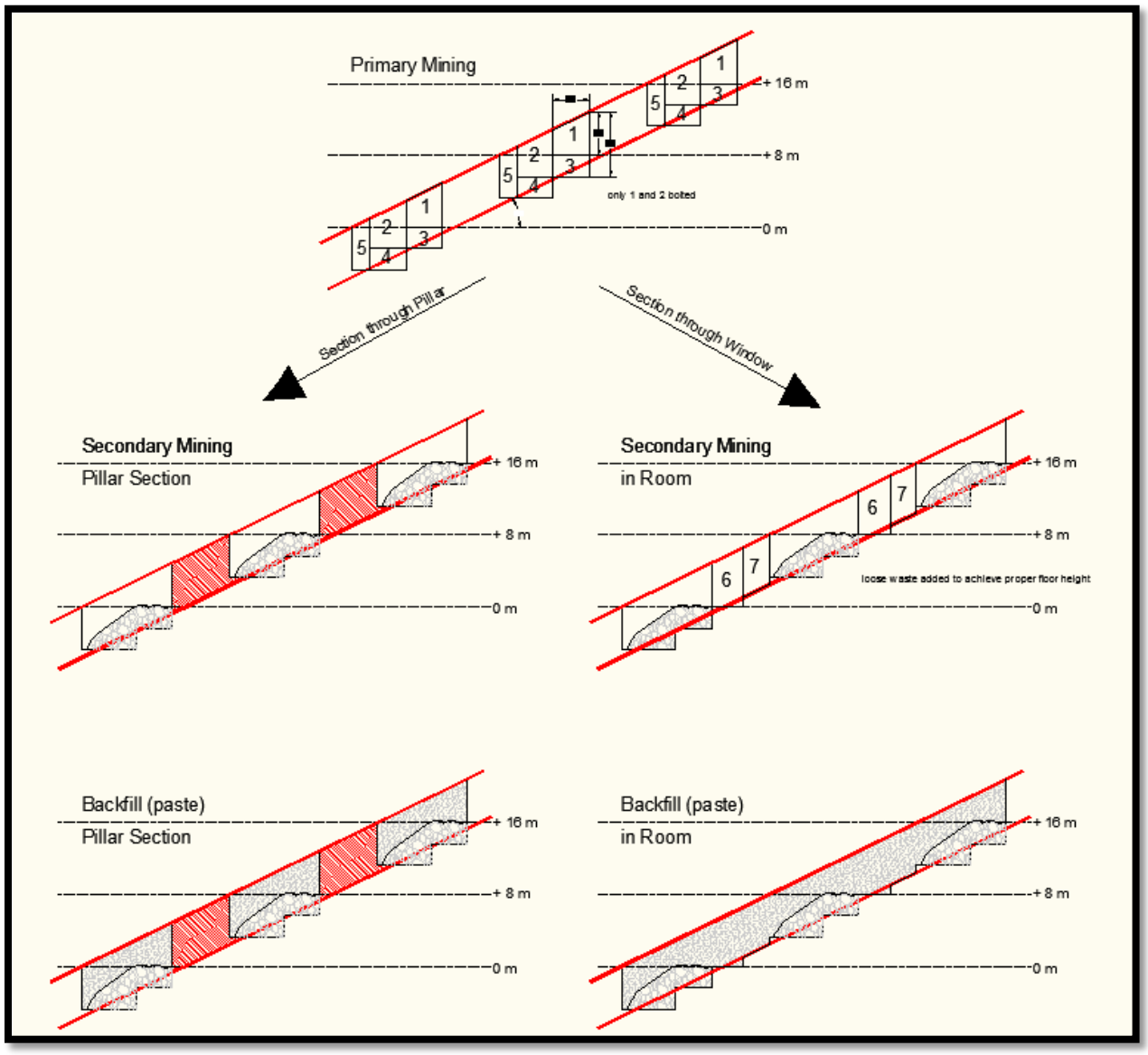
Source: Atlas Copco 2000

Figure 7–2 Cross Section of Step Room and Pillar Stope at 3 m True Thickness



Source: Selkirk Metals Corp. 2012.

Figure 7–3 Cross Section of Step Room and Pillar Stope at 5 m True Thickness

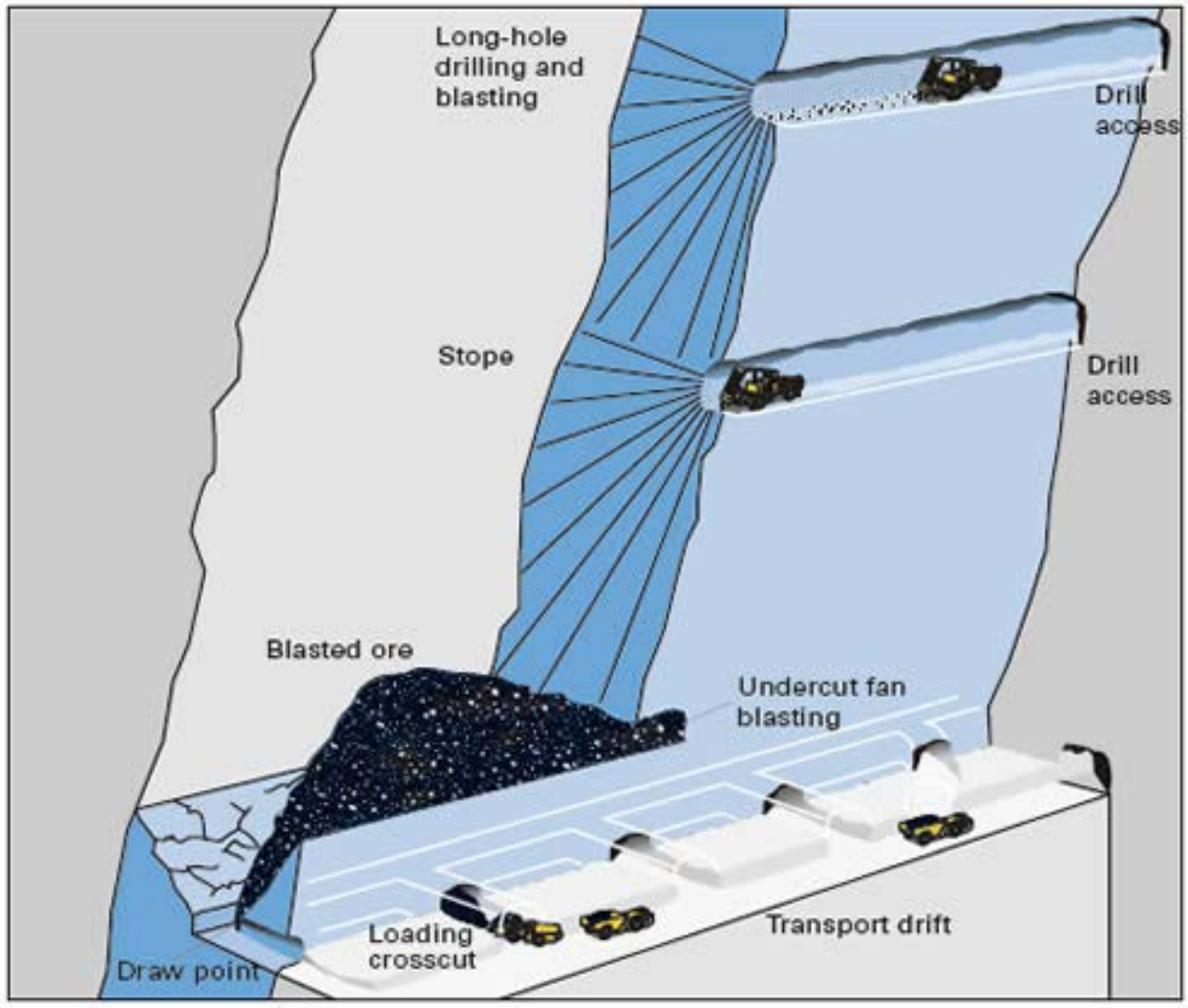


Source: Selkirk Metals Corp. 2012.

Longhole Stope Mining

For longhole stope mining, stope accesses will be located in the center of the ore body. An ore sill will be driven on each the upper and lower levels of each stope to the extents of mining, exposing the full width of mineralization. These will be nominally sized at 6 to 10 m wide by 5 m high so that drill holes can be located on the hangingwall and footwall contacts. A representation of the longhole stoping method is shown on Figure 7–4.

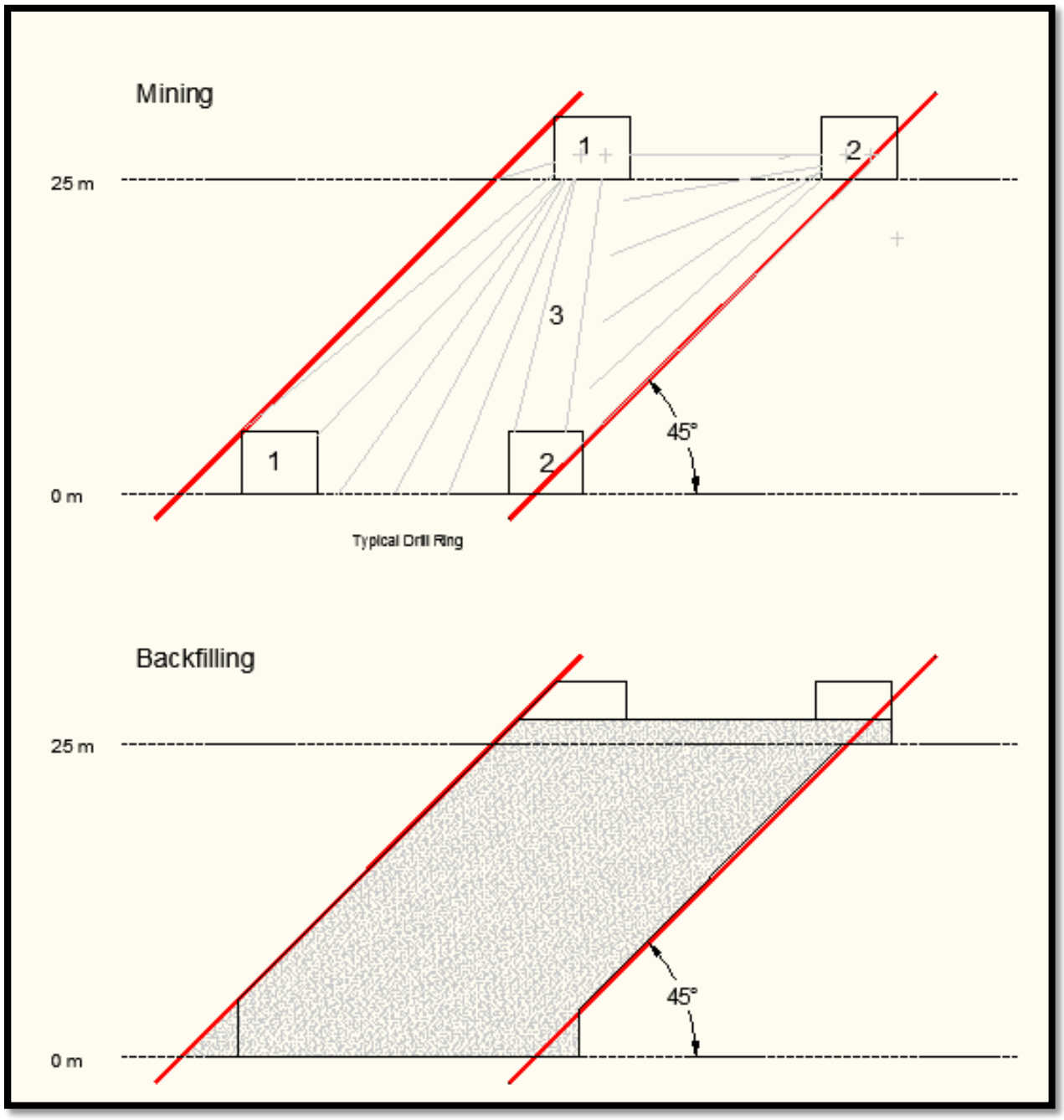
Figure 7–4 Longhole Stoping Mining Method



Source: Atlas Copco 2000

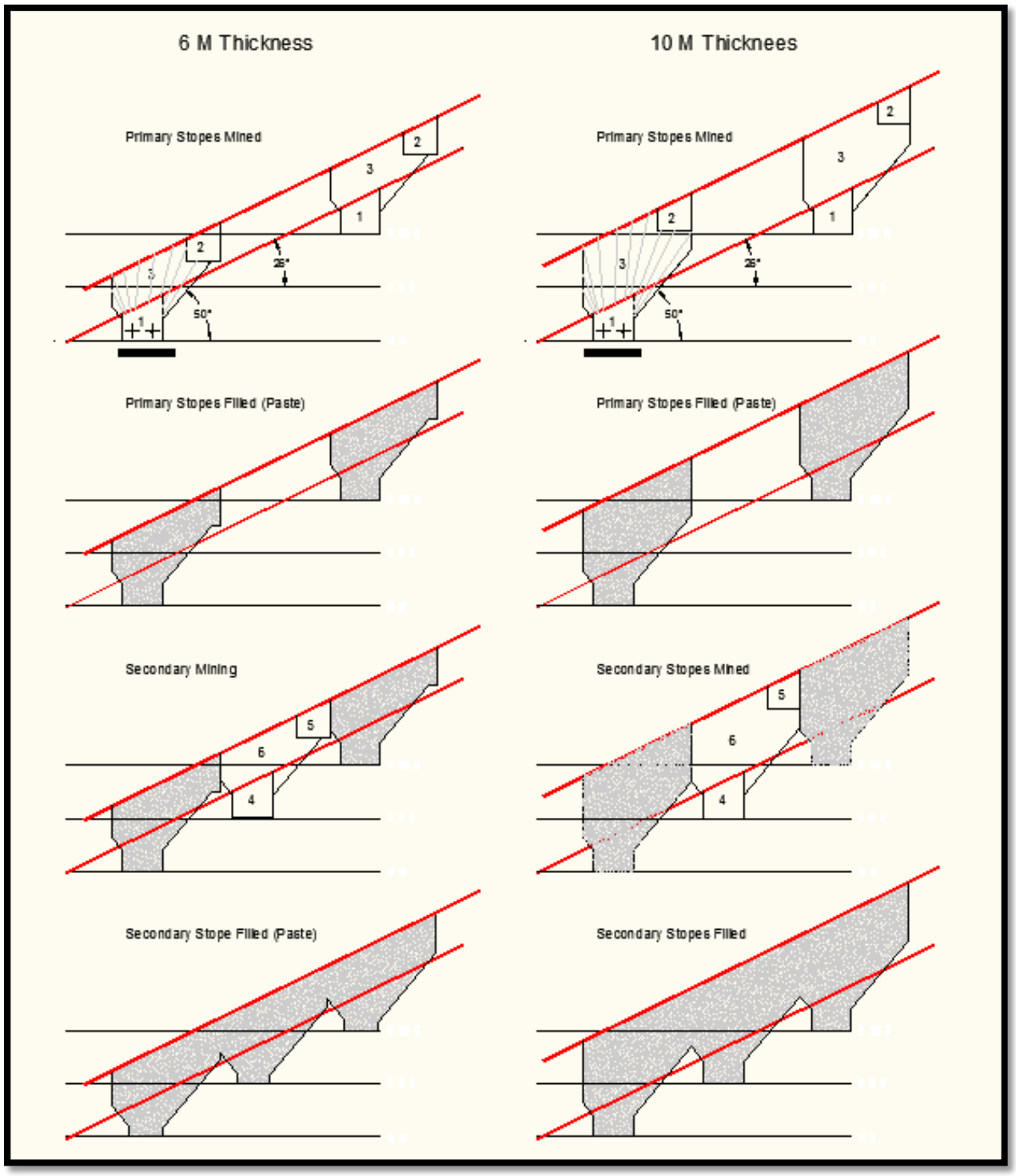
Drilling will be completed using downholes with a maximum hole length of 40m. Drop raises and slots will be established between sublevels and longhole rings will then be blasted into the open slot to break the ore for mucking on the lower drill sills. Stope sequencing will be done from the extents of the orebody retreating toward the stope accesses. Vertically, the stopes will be extracted in an up-dip sequence, eliminating the need to mine under exposed backfill or permanent ore sill pillars. Up-dip mining will be done atop the backfill of the prior (lower) stope. The longhole stope mining method is shown as cross-sectional views on Figure 7–5 for the Upper E-Zone, Figure 7–6 for the Lower E and Creek Zones and Figure 7–7 for the V-Zone.

Figure 7–5 Longhole Stoping in the Upper E-Zone



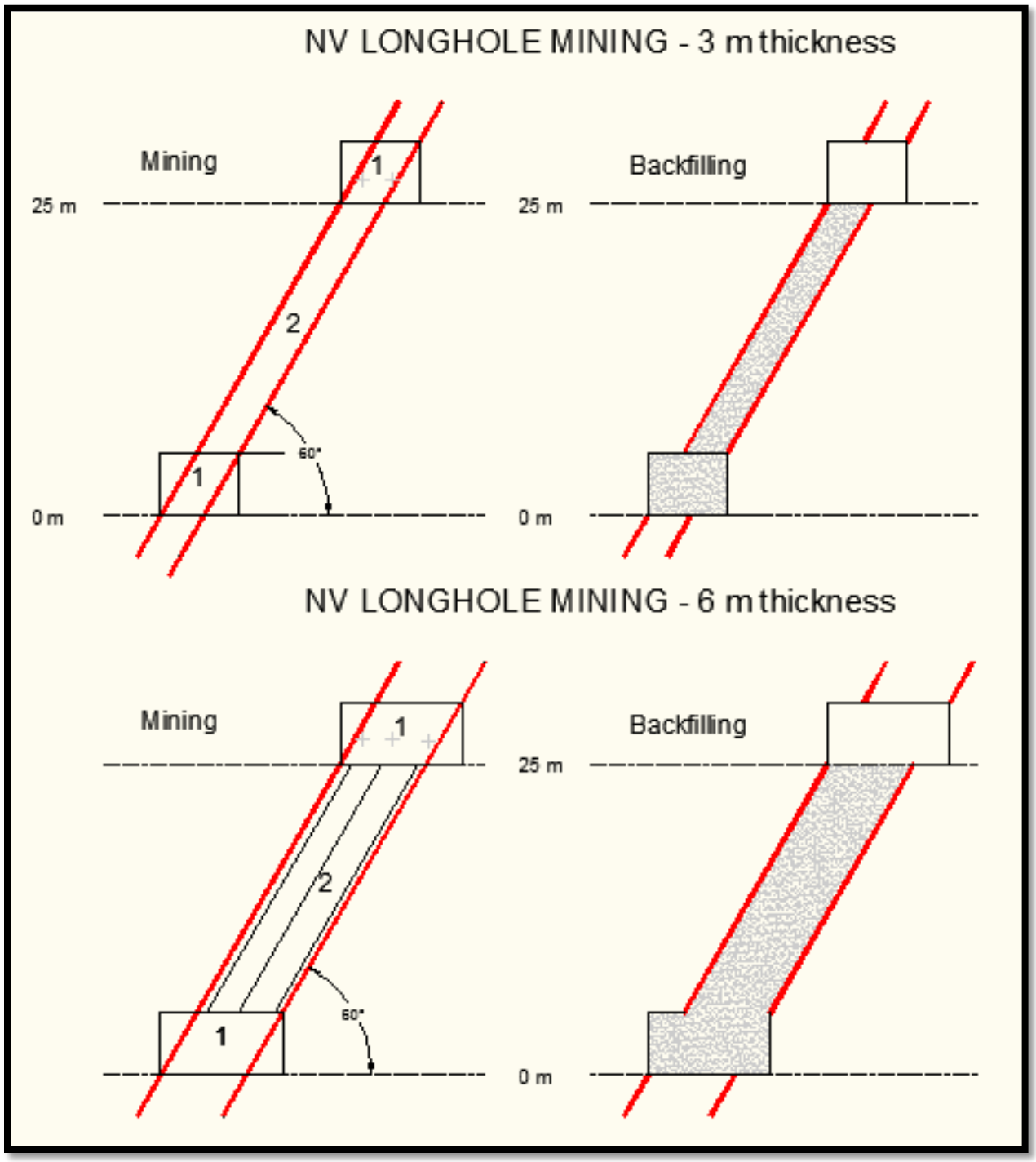
Source: Selkirk Metals Corp. 2012.

Figure 7–6 Longhole Mining in the Upper E and Creek-Zones



Source: Selkirk Metals Corp. 2012.

Figure 7–7 Cross Section of V-Zone Mining



Source: Selkirk Metals Corp. 2012.

Mine Ventilation

One main fan will be used to exhaust both the Upper E and Lower E-Zone. A damper on the access drift will be used to regulate the airflow from both mining zones. Fresh air will be fed into both the Lower E

and Upper E-Zones via their portals, which will be equipped with heaters for the winter months. All fan sizing will be based on the volumes and the mine layout at the maximum extents of its development.

When the Creek-Zone is mined, its portal will also be used as a fresh air feed, exhausting to the one main exhaust. When V-Zone is mined, it will be provided with a ventilation (exhaust) raise to surface. Fresh air to the V-zone will be obtained from the Creek-Zone portal.

Compressed air will be generated on surface using a dedicated compressor. The compressed air line will be routed through the conveyor gallery to the Lower E-Zone. A second compressor will be located near the Upper E-Zone portal, providing it with a separate system. Distribution through both underground workings will be via victaulic-style pipe.

Secondary Egress

Secondary egress will be established for all underground workings throughout the life of the operations by equipping all ventilation raises with manways. When the Creek-Zone is developed and connected to the Lower E-Zone, its portal will provide a secondary egress for the Lower E-Zone and vice-versa.

Power Supply and Distribution

Power from surface to underground will be supplied to the Lower E-Zone from the new main substation on surface via the conveyor gallery. A new overhead line will convey power to the Upper E-Zone, elevated sufficiently for vehicular traffic to pass beneath the line.

The underground electrical system consists of separate underground transformers and systems for each ore zone plus an additional electrical feed for the underground crusher and conveyor installation.

On start up the total estimated underground connected load is approximately 4.4 MW, increasing to 6.6 MW with the addition of Creek and V-Zones.

Backfill of Underground Workings

The mine will employ cemented paste backfill as the primary fill system for mined underground workings. The main benefits of paste backfill will be lower operating costs and a reduction of the amount of tailings and water sent to Light Lake for disposal. The decrease of the amount of waste generated by ore processing will reduce the environmental impact of the Project.

For the Project, paste will be generated in the processing plant using the thickened tailings from the Zn and Pb flotation circuits. Paste backfill will have a cement-like composition, like concrete, and will be composed of primarily tailings mixed with hydraulic binder and water. The role of the binding agents will be to develop cohesion and strength within the paste backfill so that the exposed fill faces will be self-supporting and stable when adjacent stopes are extracted.

Paste will be pumped into the underground workings from the processing plant at a flow rate of approximately 2 m/s by distribution lines. Pumping stations and booster stations will be installed inside the underground workings as required to lift the paste to the final pour site. To minimize lengths and friction of distribution lines, the line will be routed through the ventilation raises. As paste backfill does not generate a hydrostatic head, bulkheads will not be required to contain it in place, instead paste fills will be contained by muck berms placed in the drifts.

7.1.2 *Ore Processing*

At a high overview level, the processing of ore mined from the underground workings into Pb concentrate and Zn concentrate involves five key steps:

- Underground crushing and conveying;
- Tertiary crushing and DMS;
- Primary grinding;

- Pb flotation circuit; and
- Zn flotation circuit.

An additional step, the pyrrhotite flotation system, will separate the PAG fraction of the tailings stream from the NAG fraction.

Underground Crushing and Conveying

All ore mined from the underground workings will be crushed underground prior to being conveyed to the surface by transfer conveyors. Haulage trucks will be used to transfer mined ore to the crushing and conveying system that will be installed in a stope of the underground workings. The system will consist of a vibrating grizzly feeder, jaw crusher, apron feeder, secondary cone crusher and a series of enclosed transfer conveyors. The transfer conveyors will feed the tertiary crusher located in the processing plant.

Dense Media Separation Plant

From the underground workings, the crushed ore (approximately ½ inch size), will be conveyed to surface and crushed in the tertiary crusher at the DMS plant located at the processing plant. The DMS circuit will separate the "light" fraction (waste minerals) from the "heavy" fraction (ore minerals).

The light fraction, which is non-acid generating, will be transferred to the surface waste storage areas or mixed with paste backfill for backfill of underground workings. The heavy fraction will be sent to primary grinding in the form of slurry for further concentrating.

Primary Grinding

The slurry from the DMS circuit will be pumped to the primary ball mill and pass through cyclones for sizing. Flocculent will be added to the feed of the primary ball mill in order to depress the zinc in the ore. Oversize ore from the cyclones will discharge into the ball mill for grinding and undersize ore will be sized. The product of primary grinding will feed the lead flotation circuit.

Lead (Pb) Flotation Circuit

The Pb flotation circuit will consist of mechanical rougher flotation cells that make up the rougher circuit. A collector and frother will be added to the slurry from the primary grinding circuit prior to being fed to the rougher circuit to increase recovery. The tailings of the rougher circuit will form the majority of the feed for the Zn flotation circuit.

The cleaning circuit will consist of five column cells operating in series to produce the final Pb concentrate. The final Pb concentrate is thickened to 65% solids and then pumped to an agitated stock tank to dewater the Pb concentrate to a desired moisture content of 8%. The dewatered Pb concentrate is discharged onto a conveyor and transported to a load-out for transport by truck to market.

The Pb concentrate from the Project is also anticipated to contain credit (or small) quantities of silver (Ag), so it is also referred to as Pb-Ag concentrate.

Zinc (Zn) Flotation Circuit

Tails from the Pb rougher circuit will be fed to the Zn rougher circuit. Copper sulphate, lime, a Zn collector and a frother will be added to slurry to activate the zinc and maximize recovery. The Zn flotation circuit will consist of mechanical rougher flotation cells, a regrind mill with cyclones and a cleaning circuit of 4 column cells operating in series. The final Zn concentrate will be thickened to 65% solids and filtered press in order to dewater the product to the desired moisture content of 8%. The dewatered Zn concentrate product is discharged onto a conveyor that transports the material to a load-out for truck transport to market.

The tailings of the Zn rougher circuit combined with the Zn cleaner scavenger tails will form the tails for the pyrrhotite flotation circuit. Test work has shown that the combined tailings have a low capacity to be

potentially acid generating, though the acid generating potential will be further reduced by the pyrrhotite flotation circuit. Further static Acid Base Accounting test work will be conducted on each stream in order to determine which or if both are potentially acid generating.

Pyrrhotite (FeS) Flotation Circuit

A pyrrhotite flotation system will separate the PAG fraction of the tailings stream from the NAG fraction. The flotation circuit will remove pyrrhotite (FeS) from the tailings which may prevent acid generation from tailings by removing one of the agents of acid drainage.

Pyrrhotite flotation will include a desulfurization process and will involve reducing the pH of the tailings from the alkaline (pH > 10) conditions that resulted from the use of lime in the previous Zn and Pb flotation circuits. Pyrrhotite surface activation will be induced by oxygen and oxidation of ferrous iron to ferric hydroxides or oxyhydroxides. Carbon dioxide dissolution will lead to calcium carbonate precipitation and adsorption onto pyrrhotite surfaces.

The products of the pyrrhotite flotation circuit are a NAG tailings stream and a PAG tailings stream.

7.1.3 *Tailings Management*

The tailings management approach is based on best available current information. The Proponent intends to conduct additional testing (including acid base accounting and acid consuming, metal leaching characteristics studies) for the different fractions of tailings to help inform the management approach. In general, tailings management will involve a two stage approach:

- For the first six months of operations: storage of NAG thickened tailings in the northeast corner of Light Lake (acting as a tailings storage area) and temporary storage of PAG thickened tailings in a lined surface impoundment; and
- From month 6 of operations to Year 8: underground storage of thickened tailings as paste backfill.

An alternatives assessment, tradeoff study and feasibility study, will be conducted to determine the preferred method(s) and location(s) for tailings disposal for the Project. The potential effects of the preferred tailings disposal method(s) and associated components and activities will be fully assessed during the environmental assessment.

First Six Months Quantities of PAG and NAG

Storage of the NAG and PAG thickened tailings streams from the pyrrhotite flotation circuit is required for the first 6 months quantities from operations until there is room in the underground workings for permanent disposal as paste backfill.

The PAG fraction of the tailings stream will be separated from the NAG fraction with the implementation of a pyrrhotite flotation system in the processing plant; removing pyrrhotite may prevent acid generation from tailings by removing one of the agents of acid drainage.

The NAG thickened tailings will be transferred by pipeline from the Processing Plant to the northeast corner of Light Lake for disposal, this area of Light Lake is identified on Figure 1–2 and Photo 7–1 shows the existing area. Two weirs will be constructed at the outflow of Light Lake to contain the six months quantity of NAG tailings. Overflow from Light Lake to Light Creek is anticipated to be active; water quality modelling during the environmental assessment and additional Acid Base Accounting of the NAG tailings stream will reaffirm water quality expectations in Light Lake during operations.

The PAG thickened tailings will be temporarily stored in a lined surface impoundment in the flat area near the Processing Plant for approximately 6 months until it can be used as backfill in the underground workings.

Month 6 of Operations to Year 8 as Backfill

The tailings management approach for the Project will maximize the use of paste backfill, and therefore reduce the overall requirement to store tailings from ore processing in Light Lake or in the surface impoundment. RCMC anticipates that paste backfill will be the most efficient and environmentally friendly method for tailings disposal for the Project. Paste backfill will be generated in the processing plant using the thickened tailings from the pyrrhotite flotation circuit, as described in Section 7.1.1, to progressively back fill the mined areas of the underground workings.

Photo 7–1 Light Lake, Proposed Storage Site for NAG Tailings (Six Months Quantity from Operations)

7.1.4 *Water Management*

The objectives of water management for the Project will be to:

- Maximize the use of mine contact or previously disturbed water in the processing plant as makeup water;
- Prevent unintended release of mine contact water into the environment;
- Minimize the need to withdraw water for the Project;
- Minimize potential effects on existing water sources; and
- Protect the environment from potential adverse effects from the Project.

The processing plant will require make-up water for its operation. Mine contact water will be diverted around facilities and captured and used as make-up water for the processing plant or stored in two surface water ponds located on the gravel plain east of Light Lake. The ponds will remove any suspended solids with the overflow passively flowing into Light Lake. A water reclaim system for Light Lake will be installed to pump water to the processing plant for make-up water.

The water management objective for Light Lake is to operate as a passive system with (non-contact) surface water allowed to flow into Light Lake from the various streams and continuing to overflow to Light Creek and to feed Oliver Creek. Water quality modelling will be completed as part of the

environmental assessment to support this process and regular water quality sampling will be incorporated as monitoring measures to ensure compliance with water quality standards downstream.

Separate independent de-watering systems will be installed for each mining zone to manage groundwater flow. A main sump will be established at the bottom of each mining zone with dirty and clean cells for settling suspended solids prior to pumping. A main reservoir will be established in the Upper E-Zone and drill holes will be projected from this location into the E-Zone fault to collect as much groundwater as possible, keeping it from continuing on to the Lower E-Zone underground workings. The groundwater collected from these drill holes will passively recharge the reservoir with the excess gravity flowing out of the Upper E portal. The water from the reservoir will supply the underground workings with drill water.

7.1.5 *Waste Rock Management*

The Project will generate two different sources of waste rock: development of the underground workings and the float rock from the DMS circuit. The total surface waste rock storage requirements for the Project have been estimated and are presented in Table 7–1. Generated waste rock will either be used in the underground workings as loose waste fill or stored on the surface in three waste rock storage areas (WRSA):

- Creek Zone WRSA, located near the Creek Zone access portal;
- Upper E Zone WRSA, located near the Upper E Zone access portal; and
- Lower E Zone (and Processing Plant) WRSA, located at the upper end of the Light Lake basin.

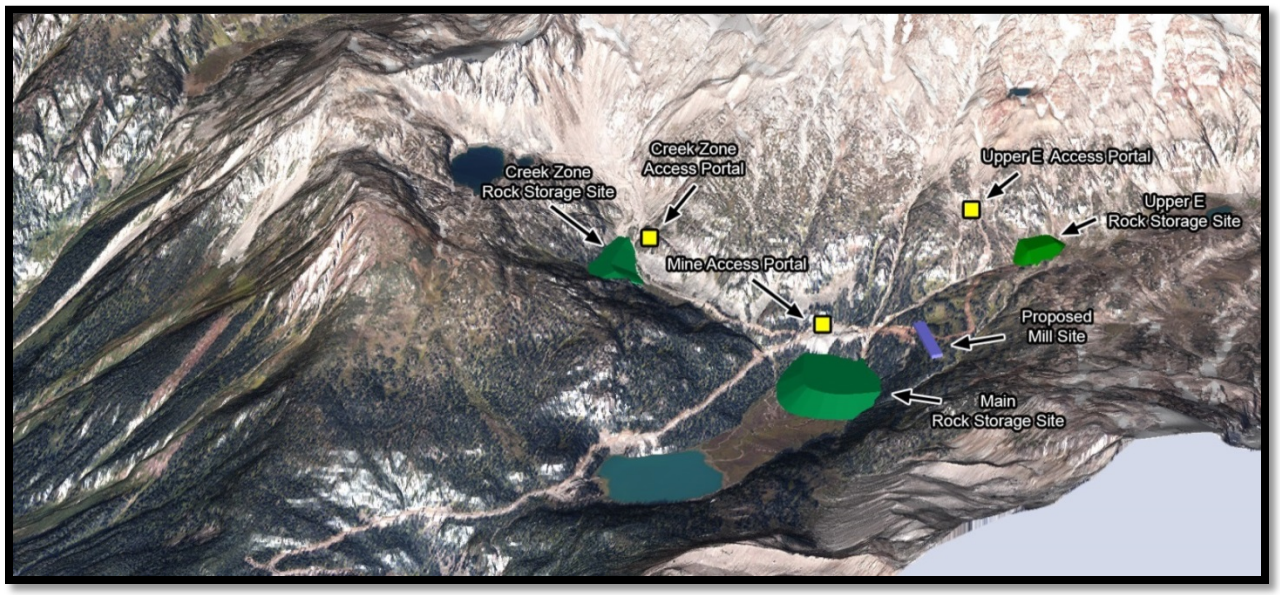
The majority of waste rock from the development of the underground workings will be used underground as loose waste fill and the excess will be hauled from the underground workings and placed on the surface in waste rock storage areas located near the portals. Waste rock will be hauled using 50 t trucks that will be loaded by scooptrams.

Table 7–1 Surface Waste Rock Storage Requirements

Waste Rock Storage Areas	Tonnes	m^3
Lower E Zone (including V-Zone) WRSA, located at the upper end of the Light Lake basin	1,792,112	896,056
Upper E Zone WRSA, located near the Upper E Zone access portal	352,928	16,464
Creek Zone WRSA, located near the Creek Zone access portal	327,790	163,895
DMS Float Rock	2,202,920	1,101,460
Total	**2,202,920**	**2,337,875**

The DMS float rock will be disposed of by means of a conveyor from the Processing Plant. The float rock will be placed on the hillside towards Light Lake. The locations for the proposed waste rock storage areas are shown on Figure 7–8.

Figure 7–8 Waste Rock Storage Areas



The Creek Zone WRSA will store approximately 0.25 Mm^3 of waste rock, and will either be 39m high at a repose of 1.3H:1V shown in red or 44 m high with a repose of 2H:1V as shown in blue in Figure 7–9. The Upper E Zone WRSA will store approximately 0.18 Mm^3 of waste rock and will be about 32m high with either a repose of 1.3H:1V, shown in red or a reclaimable slope (2H:1V) as shown in blue in Figure 7–10. Both the Lower E Zone Portal and processing plant areas lack suitable terrain for surface waste storage areas. Both operations transport waste rock to the upper end of the Light Lake basin to the Lower E WRSA. The Lower E Zone WRSA will store approximately 2.5 Mm^3 of combined waste rock and DMS float rock. The 1.3H:1V sloped WRSA (shown in red) is approximately 55m high and the 2H:1V WRSA (shown in blue) is 53 m high. The Lower E WRSA has potential for expansion if additional waste rock is generated.

Figure 7–9 Creek Zone Portal Waste Rock Storage Area

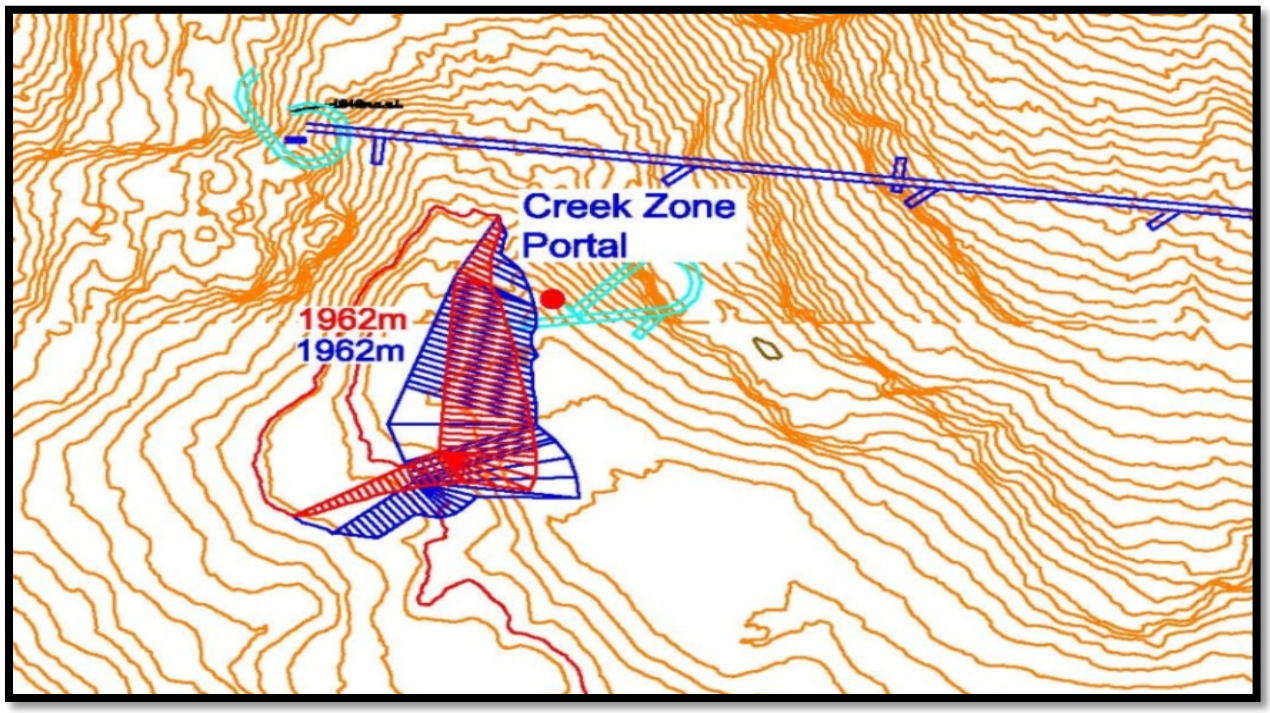


Figure 7–10 Upper E Zone Waste Rock Storage Area

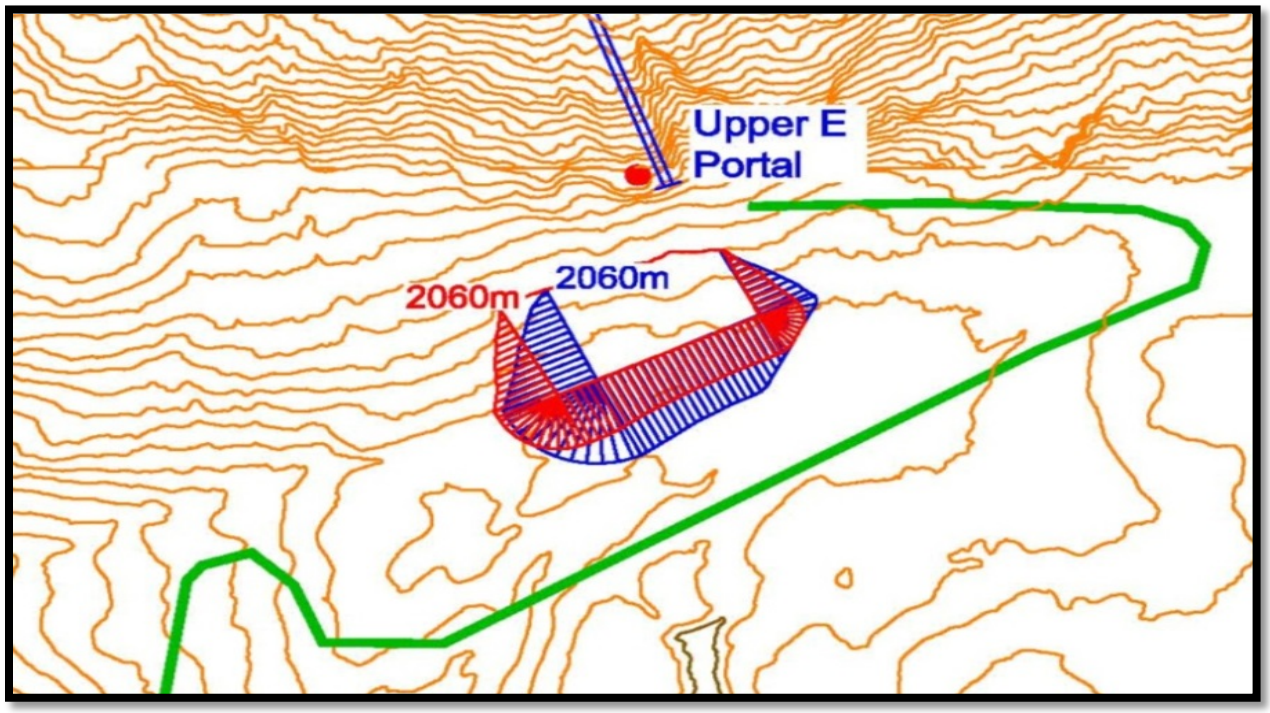
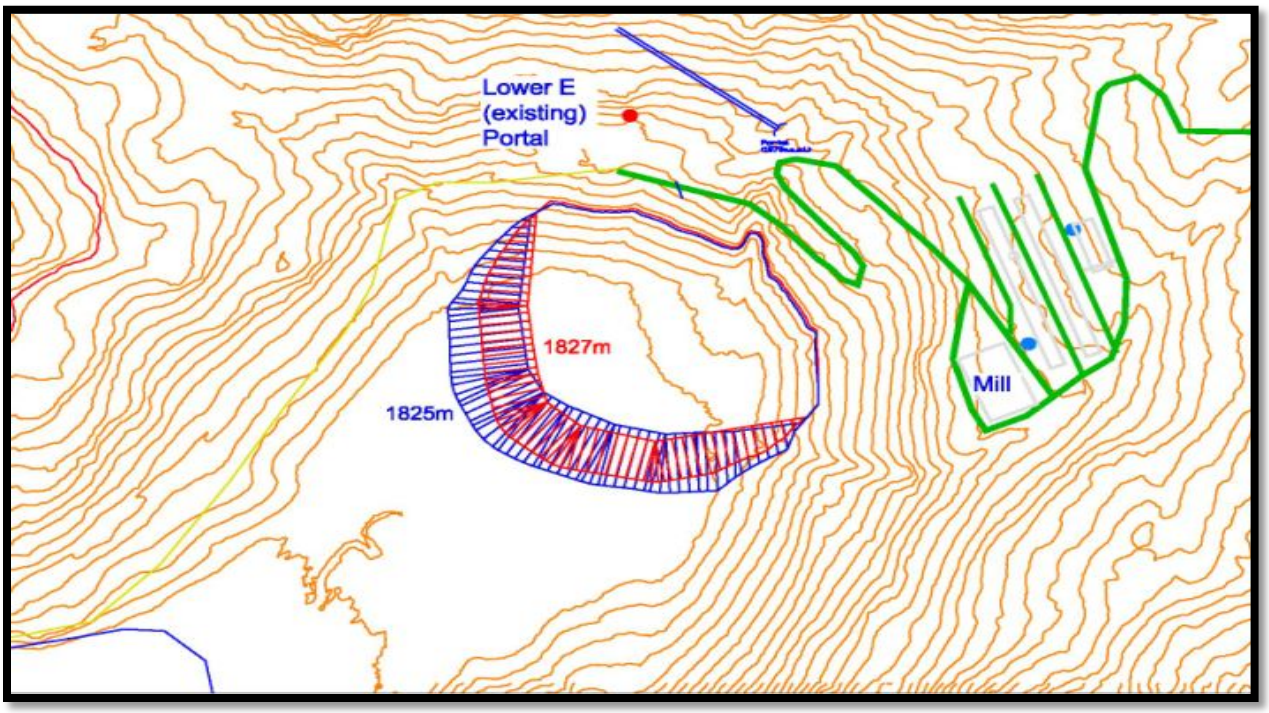


Figure 7–11 Lower E Zone (and DMS Float) Waste Rock Storage Area



7.1.6 *Primary Building*

In keeping with the objectives of the primary design principles for the Project components, a single primary building (of approximately 40m wide by 190m long and four stories high) on the slope east of and above Light Lake will house the following infrastructure and activities:

- Processing Plant;
- Concentrate Shed;
- Assay Lab;
- Maintenance Shop;
- Warehouse;
- Accommodations facilities; and
- Administration and technical offices.

The Proponent chose to apply the "everything under one roof" concept to the Project design to mitigate for the winter climate. The benefits of a single primary building include:

- Minimize the overall Project footprint (to avoid and minimize potential adverse effects);
- Site preparation costs are minimized for construction;
- Construction will be more effectively managed due to the compactness of the work site;
- Surface travel between work and residences will be eliminated for most workers, maximizing the efficiency of the workforce;
- Heating costs will be minimized; and
- Surface road maintenance and snow removal will be minimized.

Processing Plant

The Process Plant will measure approximately 92 m x 40 m and will be stick-constructed with a slab floor, although components of the plant will be modular construction, manufactured off-site. The Process Plant will house all processing activities with the exception of primary and secondary crushing, which will be completed in the underground workings.

Concentrate Shed

A concentrate shed, located in the Primary Building, will temporarily store Zn and Pb-Ag concentrates before shipping off-site, and will act as a load-out facility for trucks.

Assay Lab

The assay lab will occupy a section of the concentrate shed's footprint. It will be sealed from the rest of the building, with access only from the outside to prevent contamination.

Maintenance Shop

The surface maintenance shop will be used for repairs and preventative maintenance on surface vehicles, as well as major re-builds on underground equipment. The surface maintenance shop will have two main doors on either side of the building for access from either side. It will contain an overhead crane, welding area, and be provided with suitable ventilation. An electrical shop will be contained inside the maintenance shop.

Warehouse

The warehouse will receive and store parts and supplies for use in maintenance of the processing plant's mechanical and electrical equipment.

Accommodations Facilities

The accommodations camp, which will be functional for construction, will be equipped with 180 individual residences for workers and will include a dining hall, kitchen, washrooms, showers, laundry facilities, exercise rooms, and lounges. During operations, when the need residences is anticipated to decrease the size of the accommodations facilities will be reduced. The camp buildings will be built using approximately 100 sea containers which offer the following advantages:

- Sea containers are designed to stack six-high on ships with heavy cargo loads making them very solid structures.
- There are no bouncing floors, as they are designed for forklifts to travel on and no transmission of sound between adjacent rooms.
- The rooms and contents can be constructed off-site and assembled on-site quickly like building blocks, complete with furniture and fixtures, minimizing assembly costs.

The mine dry will be two stories, using a basket configuration to raise the clothes for drying. A total of 100 baskets will be required. Rotational workers will bag their gear and store it when off site.

Administration and Technical Offices

Administration and technical offices will be located above the maintenance shop. The wicket area will contain the offices of the mine superintendent, mine foremen, mine training, safety officer, and first aid. It will also contain the cap lamp recharge stands, and the line-up wickets for crew orientation. Mine plans, schedules and safety information will be prominent on the walls and will be available for the workers to take underground.

7.1.7 *Haul Roads*

A network of haul roads will be constructed and maintained as part of the Project site. Mined waste rock from construction activities may be used to construct haul road bases if determined to be acceptable for road construction. All haul roads will be designed and constructed in accordance with *BC Ministry of Energy, Mines* guidelines for the anticipated level of traffic and use.

7.1.8 *Borrow Sources*

There are potentially good borrow materials, sand and gravel, located on the flats east of Light Lake that may be suitable for construction and road capping. Borrow sources for the Project will be confirmed with additional planned investigations.

7.1.9 *Fuel Storage*

The Proponent will use diesel for the underground mining fleet of equipment. There will be one week's storage on site of approximately 150,000 L in double-walled enviro-tanks which will not require berms or secondary containment measures. The fuel storage site will be located north east of the primary building.

7.1.10 *Explosives Storage Facility*

The Proponent will contract a Natural Resources Canada licensed explosives contractor to manage the storage and handling of explosives for the Project. The bulk explosives and blasting agent storage facilities could be located at the existing exploration explosive storage facility along the access road west of the Primary Building. The current location is approved and meets the acceptable setback distance as per the *BC Mines Act* and Natural Resources Canada guidelines.

7.1.11 *Communications Network*

A communications network will be established for the Project site. This will utilize satellite technology and wireless communication for voice, fax, internet, and computer network traffic. The communications infrastructure will be similar to the existing system used at the exploration camp and include a satellite link, telephone private branch exchange system, wireless internet, desktop and laptop computers, copper and fibre cable and site VHF radio system.

7.1.12 *Reagent Mixing and Distribution*

All reagents will be mixed in a tank equipped with an agitator and then transferred to a head tank for distribution. The head tanks will be situated so that all reagents will flow by gravity to a metering pump that will pump the required quantity to the desired location on the Project site.

A 40 t lime silo will be located outside the building along the access road so that transport trucks have easy access to unloading. The lime silo will be connected to a lime slaking system which will then be pumped to the desired location in the processing plant. The slaking system is a self-contained system that will be pumped in a continuous loop around the plant to avoid plugging of piping. A 60 t cement silo will be located adjacent to the lime silo. The cement will be used in the preparation of the paste backfill that will be used in the underground workings.

7.1.13 *Transmission Line*

The Project will require a reliable power source for operations, of approximately 10 MW, and RCMC is currently engaged in discussions with BC Hydro on the preferred transmission line option (W1) and other stakeholders on the alternate transmission lines (E1, E2 and E3), shown on Figure 5–4.

The point of interconnection for the preferred transmission line (W1) is the existing substation in Avola. The alternate point of interconnection for the alternate transmission lines (E1, E2, and E3) is the existing line from the Mica Dam.

The four potential transmission line routes that have been preliminarily studied and their approximate distances from the two existing points of interconnection are:

- Route W1 = 41.43 km;
- Route E1= 36.88 km;
- Route E2= 18.70 km; and
- Route E3= 21.52 km.

The Project's preferred point of interconnection is the existing substation in Avola and the Project's preferred transmission line route is Route W1; a new transmission line would be constructed to follow the existing road from the Avola substation to the mine site.

The new transmission line will likely be in the form of a single wood pole or H-frame wood pole transmission line that will follow the existing Forest Service Roads (FSRs) and access road for ease of maintenance. A qualified power line contractor will be contracted to clear a 60 m right-of-way (ROW) and install either single or H-frame wood poles spaced approximately every 100 m. Standard construction and environmental protection practices will be employed by the contractor. A *Licence to Cut* permit will be obtained to clear the ROW. As the proposed transmission line route traverses several categories of land status (i.e. crown and private), the salvageable trees will be directed to the appropriate location based on the land status from where they originated.

Due to the fact that the existing Avola grid may not have sufficient power for the Project and there have been no assurance from BC Hydro that additional capacity will be added in time for Project operations, RCMC will continue investigation of the Mica routes. For these alternate route options (E1, E2, and E3), the construction of a new transmission line and a new sub-station would be required. There is abundant power available from the east using the existing 69 kV line from the Mica Dam down the east side of Revelstoke Lake where it used to power the now shut down Goldstream Mine; though these options are not as preferred as Route W1.

The selection of the preferred point of interconnection, along with the preferred transmission line route corridor will be confirmed during the environmental assessment. The preferred option selected for Project certification will discuss the technical feasibility of both the transmission line and point of interconnection, as well as predicted environmental and socioeconomic effects within the Application/EIS.

7.1.14 *Access Road and Bridges*

Off-site components and activities will include the upgrade of a section of the existing access road and the upgrade and replacement of two bridges for transportation to and from the mine site to Vavenby (Figure 1–2).

The Project is currently accessible by road using existing FSRs from the Yellowhead Highway #5 through Vavenby to the mine site. These existing FSRs, starting at Vavenby towards to the mine site, are:

- Vavenby No. 2-Adams FSR (approximately 38 km);
- Tumtum FSR (approximately 55 km); and
- Oliver Creek FSR (approximately 22 km).

Access to the mine site was analyzed in a transportation study of three routes that were considered for permanent site access and transportation of concentrate. From the study, the most suitable access route was selected based on the fact that it would require the least upgrade, stays at a low elevation for safe traveling during winter conditions, and would access Highway #5 closer to the final destination. The distance of the route between the mine site and Highway #5 will be approximately 74.8 km.

To complete this route for the Project, there will be a short section (of approximately 6.2 km) of existing access road that will require upgrading from Oliver Creek to the mine site to reduce the grade of the steeper sections. The access road will be upgraded in accordance with applicable guidelines for the anticipated level of traffic and use. Culverts will be installed as required to maintain positive drainage in the roadside ditches. Culverts will be designed and constructed to meet regulatory requirements using accepted engineering principles and due consideration of unimpeded fish passage and for the protection of aquatic environments.

The majority of the existing bridges along the access road are already rated for the anticipated tonnage of the concentrate haul trucks. One bridge will require upgrading through the application of new bridge decking and increased signage. One bridge will require replacement and will be a 10 m clear span bridge.

7.1.15 *Concentrate Transport*

The Project will produce Zn and Pb concentrates which will be transported off site by trucks. The Project will transport concentrates to Vavenby by trucks on existing FSRs using 75 t tandem trucks. The Proponent anticipates that there will be approximately 12 concentrate trucks leaving the mine site per day. Concentrates will be trucked to markets via the Port of Vancouver. Alternatively, the Pb concentrate may be sent by rail to the existing Teck smelter in Trail.

7.2 Project Phases and Activities

7.2.1 *Construction Phase*

The majority of Project construction will occur over one year (in Year-1) with some activities carrying into the beginning of operations (Year 1). Construction will commence upon receipt of the required regulatory approvals and permits and will include the following key activities at the mine site:

- Preparation works including site clearing, grading, and grubbing;
- Construction of sediment control and water management facilities;
- Set up of mine infrastructure (including the primary building which houses the accommodations camp, processing plant, maintenance shop, and administration offices);
- Construct surface lined impoundment area for PAG tailings;
- Construct pipeline to transfer NAG thickened tailings from Processing Plant to northeast corner of Light Lake for disposal;
- Construct weirs for NAG tailings in Light Lake;
- Excavation of necessary underground workings for production;
- Installation of underground crushers, ventilation and conveyors;
- Set up explosives storage facility; and
- Develop haul road network.

The construction phase of the Project will include the following key activities off site:

- Upgrade existing access road and bridges for delivery of construction-related materials and equipment;
- Construct transmission line; and
- Transport construction workers, equipment and supplies to the mine site.

The objectives of the construction phase for the Project are to establish both mine site and off site infrastructure in preparation for mine production. Upgrading of the existing access road and construction of the Project transmission line will take priority, as overall Project construction and operations depends on having suitable electricity and access to the mine site. A 1 MW diesel generator will supply temporary power for construction activities.

The Proponent will negotiate construction contracts and carry out purchases of equipment and materials, particularly the process plant and the accommodations facilities, in advance of the start of the construction

phase to minimize the duration of construction. Project set-up and earth and foundation works will be completed to the extent possible each year before weather prohibits outdoor work in the winter.

7.2.2 *Operation Phase*

Based on the best available information, the anticipated operation phase of the Project is eight years, though this is contingent on material changes that could arise during the continued exploration work, process refinement, or throughput modifications. The process of removing the ore through development of the underground workings will also generate waste rock and tailings. During the operation phase of the Project, the following key activities will occur at the mine site:

- Underground mining, crushing, handling and processing of ore at an anticipated rate of 3,000 t/d. Ore will be crushed (primary and secondary) underground and conveyed to the surface for tertiary crushing at the DMS plant located at the Primary Building;
- The DMS circuit will separate the "light" fraction (waste minerals) from the "heavy" fraction (ore minerals).
- Ore processing will include a Pb flotation circuit to produce Pb concentrate, a Zn flotation circuit to produce Zn concentrate and a pyrrhotite flotation circuit to produce separate thickened tailings streams of NAG and PAG tailings.
- Waste rock management includes using waste rock from mine development as loose waste fill for backfill in the underground workings and storage of excess waste rock at surface waste rock storage areas;
- Tailings management includes storage of thickened NAG tailings generated in the first 6 months of operations in Light Lake, acting as a tailings storage area, and temporary storage of PAG tailings for 6 months in a lined surface impoundment until it can be used as backfill for the underground workings;
- Continued backfilling of mined areas;
- Operation of sediment control and water management facilities;
- Ongoing reclamation of disturbed areas; and
- Environmental monitoring, supervision and surveillance.

The following key activities will occur off site during the operation phase:

- Maintenance and vegetation management along transmission line and access roads;
- Transport of workers, equipment and supplies to the mine site; and
- Transport of Zn and Pb concentrates by trucks through Vavenby to market.

7.2.3 *Decommissioning and Closure Phase*

The decommissioning and closure phase of the Project is anticipated to take one year and will include activities that are designed to ensure that the mine site will be left in a manner that reduces the potential environmental and socioeconomic impacts. Project infrastructure will be removed and environmental monitoring will take place until it is shown that the site meets all agreed closure conditions. Primary activities during decommissioning and closure include:

- All mining equipment from surface and underground workings will be removed;
- All processing equipment and buildings will be removed;
- All underground access, secondary egress and ventilation routes will be permanently closed;
- All surface workings will be re-contoured and reclaimed to its natural landscape; and
- Ongoing monitoring will be planned and implemented as required.

Conceptual plans for the decommissioning and closure of the mine (including reclamation activities, end use objectives and reclamation monitoring program) will be developed by RCMC and presented during the environmental assessment. Detailed closure plans will be submitted during the permitting phase after

the environmental assessment phase as part of the *BC Mines Act* permit application. It is important to note that reclamation, to the extent possible, will be progressive and will occur over the life of the Project. The closure and reclamation plan will adhere to *Health & Safety Reclamation Codes for Mines in BC* (2008) and will take into consideration all Project components, reclamation and long-term monitoring that will occur into post closure. The key objectives that will be considered in planning for decommissioning and closure include:

- Protect public health and safety;
- Alleviate or eliminate effects that have occurred because of the Project;
- Achieve a productive use of the land, or a return to its original condition or an acceptable alternative; and
- To the extent achievable, provide for sustainability of social and economic benefits resulting from mine development and operations.

7.2.4 *Post Closure Phase*

Activities during the post closure phase will focus on monitoring programs and maintaining the integrity of the environment and of any retained infrastructure. The post closure phase will begin once decommissioning and closure activities have been completed and post closure activities is anticipated to extend 3-5 years after the closure of the mine but will depend on the final detailed closure and reclamation plan developed and submitted and approved as part of the *BC Mines Act* permit application.

7.3 Project Workforce

The Proponent anticipates that the total workforce requirement for the Project will vary from 131 workers in Year 8 to 225 workers on the payroll in Year 3 as shown in Table 7–2. As many of the workers are anticipated to work rotational shifts, the total payroll numbers will be significantly larger than the on-site workforce. The projection also represents the accommodation camp room requirements which will be set at 180 units to allow additional rooms for catering staff and casual visitors.

Table 7–2 Total Workforce Requirement by Department

Department	Construction	Operation							
	Yr -1	Yr 1	Yr 2	Yr 3	Yr 4	Yr 5	Yr 6	Yr 7	Yr 8
Mining & Technical	68	106	110	153	142	147	138	135	86
Processing Plant	6	53	53	53	53	53	53	53	33
General & Administration	13	19	19	19	19	19	19	19	12
Construction	80	-	-	-	-	-	-	-	-
Total Payroll	**167**	**178**	**182**	**225**	**214**	**219**	**210**	**207**	**131**
On Site Total	**132**	**102**	**104**	**126**	**120**	**123**	**118**	**117**	**73**
Room Requirement	**142**	**112**	**114**	**136**	**130**	**133**	**128**	**127**	**83**

Hourly workers for the mine and processing plant will work 12 hour shifts with a two-week on and two-week off rotation due to the remote location of the Project.

8 ENVIRONMENTAL SETTING

RCMC has completed several baseline studies to characterize the existing environmental setting for the Project area and plans to complete additional baseline studies as part of the environmental assessment. Additional baseline studies, as applicable, will take into consideration "*The Water and Air Baseline Monitoring Guidance Document for Mine Proponents and Operators prepared by the BC MOE* (Ministry of Environment, 2012)" which provides guidance on study objectives and data collection.

Environmental baseline studies including climate, hydrology, water quality, fish, wildlife and vegetation, have been conducted in the Project area since 2006 by:

- ENKON Environmental Limited, supported by Levelton Consultants Ltd.;

- Northwest Hydraulics Consultants;
- Nautilus Environmental; and
- Knight Piésold Ltd.

For the Project Description, existing baseline data may exist from other sources and completed studies for some physical and biological components of interest in the Project area (such as the geology of the region), while less is currently known about other components of interest.

For the purposes of meeting the information requirements of the Project Description, the following overview of the existing environmental setting has been provided; a detailed and comprehensive description of the baseline environmental setting for physical and biological components of value in the area that may interact with the Project will be submitted as part of the Application and/or Environmental Impact Statement (EIS).

8.1 Climate

The climate in the area can be characterized as temperate with generally warm summers and cool, wet winters. Regional data indicate that both precipitation and runoff generally increase with elevation.

Air temperature in the Project area is relatively cool with a mean annual temperature between 3°C to 7°C. Mean monthly temperatures are below 0°C for three to five months and above 10°C for four to five months. The mean annual precipitation is estimated to be in the order of 850 mm in drier portions and up to 1,400 mm in wetter areas. Substantial snow accumulations of 3 m to 5 m are the norm and permanent snow cover exists on some of the higher areas of the mine site.

There are several years of site-specific and regional meteorology and climate data available to characterize the baseline climate at the mine site. Two meteorological stations have been installed at the mine site by RCMC:

- Light Lake Station, September 2006 at elevation 1770m; and
- Oliver Creek Road km21 Station, August 2012 at elevation 1230m.

Standard meteorological observations consisting of wind speed and direction, temperature and precipitation are being measured and recorded at these stations.

In addition to the ongoing monitoring from the mine site stations, historical climate data is available from five Environment Canada meteorological stations within a 50 km radius: Avola (Climate ID 1160565)

- Goldstream River Brewster Creek (Climate ID 1173242);
- Mica Dam (Climate ID 1172543);
- Downie Slide BCHPA (Climate ID 1175122); and
- Goldstream River (Climate ID 1173BDB).

Data from these Environment Canada stations have more than 63 years of data on record. In addition, data from other stations farther away (within a 100 km radius) are available for reference, including:

- Blue River CS;
- Blue River A;
- Blue River North;
- Seymour Arm;
- Goldstream River Stit Creek;
- Vavenby;
- Seymour Arm Nine Mile Light;
- Revelstoke Mt Copeland;
- Revelstoke Carnes Creek;

- Malakwa Eagle R Hatchery;
- Clearwater Spahats Creek;
- Griffin Lake;
- Clearwater Candle Crk;
- Eagle Bay;
- Moul Creek Clearwater;
- Clearwater; and
- Celista.

8.2 Air Quality

The baseline air quality characteristics for the mine site are considered to be typical of a rural area with no known current large sources of emissions. The joint report published by the Ministry of Water, Land and Air Protection and Environment Canada on *Particulate Matter in British Columbia A Report on PM10, PM2.5 and Mass Concentrations up to 2000* (Ministry of Water Land and Air Protection, 2002) provides expected background air quality concentrations for PM_{10} and $PM_{2.5}$ for a rural setting:

- PM_{10}: range of 2.9 to 12.0 $\mu g/m^3$ with a mean value of 8.8 $\mu g/m^3$; and
- $PM_{2.5}$: range of 1.7 to 3.8 $\mu g/m^3$ with an average of 3.2 $\mu g/m^3$.

In the absence of major anthropogenic emission sources in the Project area, the baseline Total Particulate Matter (TPM) background value can be generated from a relationship developed to estimate TPM from PM_{10} values by Environment Canada's National Pollutant Release Inventory program (Environment Canada, 2013).

Baseline (or background) concentrations of air pollutants will be presented in the Application and/or EIS in order to predict the potential incremental increases from Project emission sources.

8.3 Fish and Fish Habitat

Very little or no fish and fish habitat data existed for the Project area and surrounding waterways prior to baseline works undertaken by RCMC. Completed reconnaissance surveys over two years in 2006 and 2007 confirmed the presence of fish in Oliver Creek and the lower reach of Light Creek. RCMC intends to complete additional fish and fish habitat characterization studies in preparation for the environmental assessment Application and/or EIS submission.

ENKON conducted a fish and fish habitat field program in 2006 and 2007, including visual habitat assessments and fish distribution surveys. A habitat assessment was completed at each sampling site based on methodologies outlined in the Reconnaissance (1:20,000) Fish and Fish Habitat Inventory: Standards and Procedures (RISC, 2001). Observations of environmentally sensitive features and hydrologic connections were mapped. Fish distribution was determined utilizing Gee-minnow traps, electro fishing, and analysis of physical barriers or conditions not suitable for fish presence. The surveys focused on streams where little or no fisheries resource data existed prior to the survey.

In 2006, Oliver Creek, Light Creek, Light Lake, and an un-named Light Creek tributary upstream of Light Lake were surveyed. Further stream surveys in 2007 included the un-named east draining tributaries of Oliver Creek and second year sampling of Light Creek to determine fish presence/absence according to the Ministry of Environment's two season sampling requirements.

Extensive sampling confirmed the presence of Bull Trout in Oliver Creek. Frequent captures of Bull Trout occurred from reach 6 to reach 8 upstream of the Light Creek confluence with Oliver Creek. Due to accessibility and favourable habitat, Oliver Creek is considered fish bearing up to a natural barrier (in the form of a moraine), 3 km upstream of the Light Creek and Oliver Creek confluence. Upstream of the barrier, fish presence is assumed unlikely.

Light Creek is likely fish-bearing only in the lower reach of the creek due to the presence of a gradient barrier and a waterfall approximately 3 km above the confluence with Oliver Creek. An un-named headwater tributary of Light Creek was sampled in 2006, but no fish were captured. This un-named tributary could be considered non-fish bearing due to its connection to the non-productive upper Light Lake system, unsuccessful trapping results, and poor fish habitat characteristics.

Sampling in Light Lake was conducted in 2006 using minnow trapping and seine netting of the lake margins. No fish were captured in the sampling events. In 2006 and 2007 sampling was conducted in Light Creek at the primary inlet to Light Lake. Sampling utilized electrofishing and trapping in 2006 and electrofishing in 2007. No fish were captured over two seasons of repeated sampling in the system. Light Creek above Light Lake and Light Lake may be designated as non-fish bearing under the Ministry of Environments two season sampling requirements.

In 2007, four unnamed Oliver Creek tributaries within the Project area were surveyed. These four watercourses were assessed for fish presence and fish-habitat suitability features. Assessments included the watercourse sections between the Oliver Creek Road and the confluence of each tributary with Oliver Creek. All four were considered as non-fish bearing for a number of reasons, including:

- Gradient Barrier, minimal low and shallow water in Tributary 1;
- Steep gradient, mid-channel scour and aggradation in Tributary 2;
- Gradient barriers and flow conditions in Tributary 3; and
- Steep gradient, lack of pools, and woody debris in Tributary 4.

Tributary 1 (WSC 128-453400-76600-19100) potentially provides rearing, overwintering, and refuge habitat for fish within the low gradient reach that is within the Oliver Creek floodplain. Electrofishing confirmed fish presence in this reach with the capture of one fry. However, Tributary 1 is likely non-fish bearing upstream from a point 15 m below the FSR due to a gradient barrier, minimal flow and very shallow water.

At the time of the survey Tributary 2 (WSC 128-453400-76600-20700) was dry from a point 20 m upstream of the confluence with Oliver Creek. This tributary likely only flows during periods of heavy snowmelt and is characterized by recent channel scour and deposition attributed to debris torrent activity. Debris torrents are assumed to result from the direct coupling with hillslope geomorphic processes (i.e. potential avalanche activity). The resulting channel substrate was observed as angular to sub-rounded material suggesting recent deposition and confirms relatively recent deposition. Based on the steep gradient and mid-channel scour and aggradation Tributary 2 is proposed for classification as non-fish bearing above the Oliver Creek floodplain.

Tributary 3 (WSC 128-453400-76600-24400) has been modified by beaver activity within the floodplain of Oliver Creek. Electrofishing confirmed fish presence with the capture of one fry. A gradient barrier is present upstream from the toe of slope at the northeastern extent of the floodplain. Fish sampling above the toe of slope resulted in no fish captures. From this point upstream, Tributary 3 is tentatively considered non-fish bearing due to gradient barriers and flow conditions not suitable for fish presence (minimal flow with very shallow water).

Tributary 4 (WRC 128-453400-76600-26600) conveys a significant amount of flow but is considered poor fish habitat due to a steep channel gradient and a lack of pools and woody debris. Electrofishing resulted in no fish captures.

8.4 Aquatic Species at Risk

Baseline studies completed to date indicate that there are no known aquatic species at risk as defined in the *Species at Risk Act* (SARA) within the Project area. Future studies will be conducted to increase the confidence in the results of previous investigations within the mine site. Appropriate best management

practices and strategies (if defined by a recovery strategy) will be implemented to minimize risk to any critical habitat identified.

8.5 Aquatic Resources

Aquatic resources include water quality, sediment quality, and the spatial distribution, taxonomic composition and abundance of plants and animals other than fish. This includes periphyton (streams), phytoplankton (lakes), benthic invertebrates (streams and lakes), and zooplankton (lakes). As part of the environmental assessment, RCMC will characterize the baseline aquatic resources in the Project area through baseline collection programs.

8.6 Wildlife

The 2006-2007 terrestrial studies focused primarily on the presence and habitat requirements of federal and provincial wildlife species of concern.

In July and September of 2007, ENKON conducted ground and aerial habitat surveys to investigate the potential for animal species of concern and the presence and extent of their associated habitats. ENKON's wildlife ecologist assessed a representative sample of the landscape for presence of species of concern and focused on several specific areas of interest for future Project activities including Light Lake. Terrestrial habitat assessments were conducted along the access road. Aerial surveys complied with protocols outlined in the BC Ministry Resource and Inventory Standards Committee's Species Inventory Fundamentals: Standards for Components of British Columbia's Biodiversity No. 1 (Version 2.0) and Aerial-Based Inventory Methods for Selected Ungulates (Version 2.0) (RISC, 1998). Bird surveys included diurnal Bird Point Counts at stations along Oliver Creek Road and nocturnal Owl Call-Playback surveys along Oliver Creek Road below Light Lake.

ENKON also met with local wildlife biologist and caribou specialist, Robert Serrouya, in 2006 to discuss the potential presence of sensitive habitat within the Project area for caribou, primarily with regard to spring calving, and to obtain documentation of caribou use in the Project area from annual surveys conducted by the Ministry of Environment.

Provincial and federal listed species that are potentially found in the Project area include:

- Woodland caribou (*Rangifer tarandus*) Southern Mountain population;
- Grizzly bear (*Ursus arctos*);
- Bighorn sheep (*Ovus canadensis*);
- Wolverine (*Gulo gulo*); and
- Western toad (*Bufo boreas*).

The Woodland caribou, Southern Mountain population is a SARA Schedule 1, federally listed Threatened Species, there is currently a draft proposed recovery strategy for the Woodland caribou, Southern Mountain population, developed and proposed by Environment Canada (Environment Canada, 2014). Based on the "Current distribution of southern mountain caribou subpopulations and local population units" map provided in the proposed recovery strategy, the subpopulation is likely to be the Columbia North; the subpopulation and local population unit of Southern Mountain population will be confirmed through consultations with the Ministry of Environment and Environment Canada as part of the environmental assessment.

Caribou presence in the Project area were not observed during the aerial transect surveys in 2007, but has been documented by local government and research biologists in the past and a few individuals were observed by exploration camp staff using the road near the camp.

The Western toad is a SARA Schedule 1, federally listed amphibian species of Special Concern, there is currently no recovery strategy in place for the Western toad. In 2006, one western toad was observed on moss-covered rocky substrate above Oliver Creek.

Other regionally important large mammals that may exist in the Project area include:

- Rocky Mountain goat *(Oreamnos americanus);*
- Moose *(Alces alces);*
- Rocky Mountain elk *(Cervus canadensis nelsoni);*
- Mule deer *(Odocoileus hemionus);*
- White-tailed deer *(Odocoileus virginianus);*
- Black bear *(Ursus americanus);*
- Cougar *(Puma concolor); and*
- Prairie falcons (*Falco mexicanus*).

Species observed during ground and aerial transect surveys include moose, hoary marmot, Columbian ground squirrel, red squirrel, snowshoe hare, deer mouse and a wide range of bird species. Black bears, moose and mountain goat were observed in a wide variety of sites. Wolf and coyote scat were observed on the access roads and trails.

Birds listed under the Migratory Birds Convention Act, with the possibility of occurring in the Project area include:

- Barn Swallow (*Hirundo rustica);*
- Common Nighthawk (protected by the *Migratory Birds Convention Act*, 1994 even though hawks species and subspecies are not usually protected under provincial jurisdiction) *(Chodeiles minor);*
- Olive-Sided Flycatcher *(Contopus cooperi);*
- Great Blue Heron *(Ardea herodias);* and
- Harlequin Duck *(Histrionicus histrionicus).*

Several raptors were observed over the two years of baseline surveys: golden eagles, falcons, a Swainson's hawk, red-tailed hawks, merlin, sharp-shinned hawk and American kestrels. No owls have yet been detected. A wide range of passerine species (45 species) use various habitat types available throughout the Project area. Game birds such as blue and ruffed grouse are also common.

A wildlife log for exploration camp personnel has been used to record observations of wildlife species. Wildlife species that have been recorded as of July 2013 included grizzly bears, black bears, moose, mountain goats, white-tailed deer, wolves, porcupines, squirrels, toads, and marmots.

8.7 Vegetation

The mine site is situated in extremely mountainous terrain at the height of land between the drainages of the Columbia River and Fraser River systems. The terrain is characterized by heavily timbered lower slopes and steeper alpine-glaciated upper slopes. The terrain is extremely steep in some areas making access very difficult. A number of small alpine lakes or tarns dot the area. Water supply from streams fed by glacial and snow melt varies according to elevation and time of year.

The vegetation is mainly below the 1,900 m level and consists primarily of subalpine Balsam Fir, Spruce, Hemlock and Western Red Cedar. Vegetation is limited to heather and stunted shrubs in the lower alpine regions above tree-line and in the upper areas the ground is either barren rock or is covered by permanent snow, small glaciers or glacial moraine and rock talus.

The Project area lies within four biogeoclimatic subzones: Interior Cedar Hemlock Very Wet Cool (ICHvk), Engelmann Spruce-Subalpine Fir Very Wet Cold (ESSFvc), Engelmann Spruce-Subalpine Fir Very Wet Cold Parkland (ESSFvcp) and Alpine Tundra Undifferentiated Parkland (ATunp). Within the Project area, the predominant tree cover is coniferous over most of the terrain with minimal deciduous cover adjacent to lakes and in riparian areas. Vegetation consists primarily of subalpine Balsam Fir, Spruce, Hemlock and Western Red Cedar. Vegetation is limited to heather and stunted shrubs in the lower

alpine regions above the tree-line and in the upper areas the ground is either barren rock or is covered by permanent snow, small glaciers or glacial moraine and rock talus.

Ground-based habitat surveys conducted by ENKON indicated that vegetation within a random sample of forest cover sites mapped for the Project area by Ministry of Forests was representative of the expected vegetation cover for the elevation, aspect and slope within each of the biogeoclimatic subzones. Provincially red or blue listed plant species and SARA listed Schedule 1 plant species were not detected during the surveys in 2006 to 2007; additional vegetation surveys are planned as part of the environmental assessment.

8.8 Topography and Surface Hydrology

The Project is situated in extremely mountainous terrain between the drainages of the Columbia River and Fraser River systems. The terrain in the area is characterized by heavily timbered lower slopes and steeper alpine-glaciated upper slopes. Elevations range from 950 masl at the western edge of the Project area in the Oliver Creek drainage to 2,854 masl on an unnamed peak at the northern edge. The terrain is extremely steep in some areas making access to the site potentially difficult. A number of small alpine lakes or tarns dot the area. Water from streams fed by glacial and snow melt varies according to elevation and time of year.

Regional runoff patterns are characterized by low flows during the winter months when precipitation falls almost exclusively as snow, high flows during the spring and early summer snowmelt freshet, low flows during the dry late summer months, and moderate flows during the fall months, as precipitation increases. The change in runoff with elevation is also quite evident, with lower runoff from lower elevation watersheds and an earlier onset of the spring freshet resulting from warm spring temperatures arriving earlier at the lower elevations. The annual hydrograph in the Project area has a uni-modal shape, with the majority of runoff occurring in May and June during the snowmelt freshet.

Hydrology programs are currently in place for the Project. Two stream flow gauging stations were installed at the mine site in early July 2006; one on Light Creek at the outlet of Light Lake and one under the bridge over Oliver Creek, at km 7.7 on the Oliver Creek FSR. The Oliver Creek station will provide integrated information on runoff patterns throughout most of the Project area, while the Light Creek station will provide more specific information on the mine site area proposed for most intensive development. A third stream flow gauging station was installed in September 2012 on the Creek Zone Creek nearing the flatlands area behind Light Lake. The current location and drainage area of each station are provided in Table 8–1.

Table 8–1 Surface Hydrology Stations

STATION	EASTING (UTM 11)	NORTHING (UTM 11)	ELEVATION (m)	DRAINAGE AREA (km^2)
Oliver Creek	359626	5746257	770	79.0
Light Creek	367449	5736267	1770	7.44
Creek Zone Creek	368079	5736944	1793	2.44

The gauging stations were installed and operated in accordance with standard provincial procedures. Each gauging station consists of a Solinst water-level sensor with built-in data logger that senses and records level (or stage) at 15 minute intervals. A staff gauge and series of benchmarks provide a physical reference at each station to verify the accuracy of the recorded stage data. The data collected to date represent a complete water year with the low winter flow period, freshet and increased water temperatures through summer and the lower flows during fall into winter.

Raw stage data was error checked and corrected against the benchmarks and sensor gauge data readings. Correction factors were applied to the raw elevation data to make all measured values relative to gauge height. The ratings curves were calculated and used to convert the gauge (stage) readings to discharges.

Extrapolations to the curve were undertaken to estimate flows outside of the range of measured values. For Light and Oliver Creeks, a considerable portion of the winter low flow period lies below minimum measured stage-discharge measurements.

The detailed baseline topography and surface hydrology baseline conditions from the ongoing programs will be characterized and presented in the environmental assessment, including a figure with the locations of the surface hydrology stations selected to characterize baseline conditions

8.9 Water Quality

A baseline monitoring program was established for the Project in 2006. Water samples were collected from 12 sites concentrated in the mineral exploration area around Light Lake and extending to Oliver Creek and the Adams River during 2006 and 2007. Sampling has continued and the program has been expanded to the current sampling at 18 sites on a near monthly basis. Water samples are analyzed for anions, nutrients, general physical variables, total phosphorus, and total dissolved metals.

Initial analysis of the water quality completed to date at the mine site indicate that in general, existing water in the mine site is very soft with low dissolved solids and low to moderate alkalinity. Several unknown tributaries to Light Lake periodically had alkalinity <10 mg/L (as CaCO3). Sulphate concentrations were low (average <5.0 mg/L) at most sites. Nutrient concentrations (nitrogen and phosphorus) and total organic carbon were low. Baseline cadmium and zinc concentrations at some sites exceeded applicable BC water quality guidelines. The baseline cadmium and zinc concentrations were particularly elevated in a tributary of Light Creek; this tributary also had the highest baseline concentrations of lead. It is likely that this tributary is influenced by the ore body over which the creek flows.

As part of the environmental assessment, the current water quality monitoring program being used by RCMC will be re-evaluated to include an assessment of other water bodies or sources that may potentially be affected by the Project. The main objectives of water quality program related to the environmental assessment of the Project will be to:

- Assess the ambient (baseline) surface and groundwater conditions before the Project;
- Identify whether provincial water quality guideline are naturally exceeded during baseline conditions and whether site-specific water quality objectives may need to be established;
- Collect baseline information that can be used to predict and assess impacts as part of the water quality model;
- Determine the need for monitoring and management (including an assessment of the potential requirement for treatment); and
- Allow the comparison of baseline with operational and post-closure water quality data in order to identify whether water quality is affected by mine-related activities and to verify established water quality objectives or guidelines are being met and water quality is being protected.

8.10 Groundwater

The majority of the hydrogeological measurements have been made during underground exploration activities with use of a flow meter on the underground discharge. The majority of the underground exploration workings are dry except for fractures that contain standing water. It was observed that water inflows are from areas where the workings cross a fault that has continuous water flow.

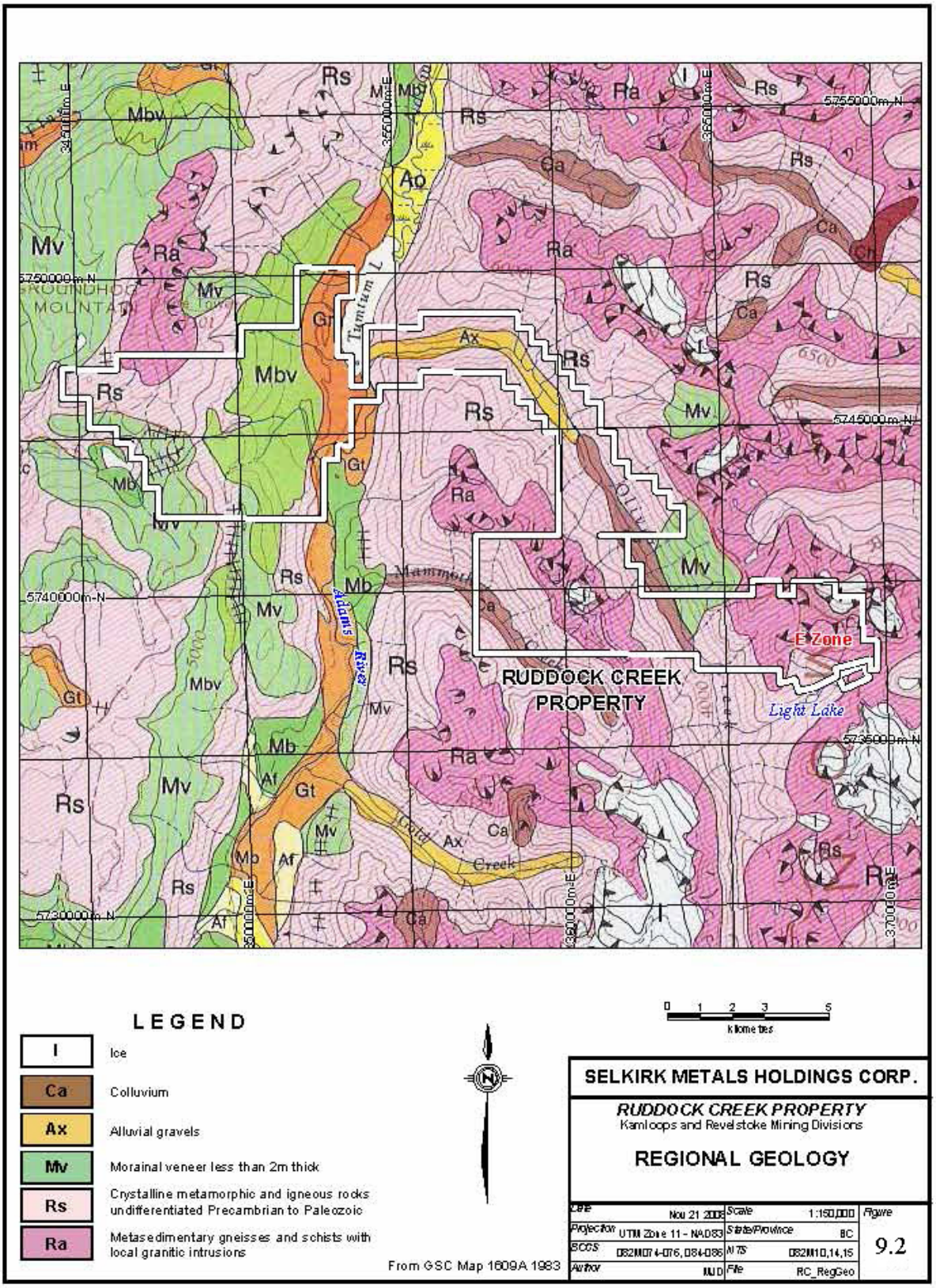
The Water and Air Baseline Monitoring Guidance Document for Mine Proponents and Operators prepared by the BC MOE (Ministry of Environment, 2012) provides guidance on the study objectives and data collection in carrying groundwater studies. Detailed hydrogeological studies have yet to be initiated at the mine site and will commence with the installation of groundwater monitoring wells established for baseline monitoring.

8.11 Geology

The geologic and structural description of the regional geology that exists in the Project area below is summarized from the BCDM Bulletin #57 from the JT Fyles Natural Resources Library (Fyles, 1970).

The Project lies in metasedimentary rocks of the Shuswap metamorphic complex on the northwest flank of the Frenchman Cap Gneiss Dome. The Dome is elongate with the long axis trending north-northwest, parallel to the Columbia River. In the northern area of the “Dome” the core gneisses lie beneath gently northerly dipping metasedimentary rocks which grade upward into metasedimentary rocks containing abundant pegmatite. This pegmatite rich zone covers wide areas between the Columbia River and Oliver Creek. The structure of the area is dominated by repetitive folding, which took place during metamorphism, and was followed by faulting. There is a high degree of metamorphism and structural complexity of the area (Figure 8–1).

Figure 8–1 Regional Geology



The stratigraphy of the Project area can be simplified as a continuous planar massive sulphide horizon which is exposed intermittently along a 5 km strike and varies in true thickness from less than 5 m to over 50 m. Adjacent to this mineralized horizon, the footwall zone and hanging wall zone are composed of interlayered successions of calc-silicate gneiss, quartz biotite schist/gneiss, marble, and lesser quartzite. Table 8–2 presents the descriptions of the rocks types that are found in the Project area.

Table 8–2 Rock Types of the Project Area

Location	Description	Typical Rock type
Immediate Hanging Wall Zone*	Large irregular intrusions to planar dykes, fine grained to pegmatitic / megacrystic. Or thin to thickly banded fine-coarse grained quartzite/marble, diopside rich, amphibolitic.	Pegmatite (Pg), Calc-Silicate with Pegmatite (CSPg), Calc-Silicate (CS),
Ore Zone*	Fine to coarse grained, some banded, massive to semi-massive.	Massive (Z) to Semi-Massive (Zs) Sphalerite, galena, pyrrhotite hosted in calc-silicate, less commonly in pegmatite (ZPg).
Immediate Footwall Zone*	Large irregular intrusions to planar dykes, fine grained to pegmatitic/megacrystic. Or thin to thickly banded fine-coarse grained quartzite/marble, diopside rich, amphibolitic.	Pegmatite (Pg), Calc-Silicate with Pegmatite (CSPg), Calc-Silicate (CS),
May also be present within 5m of Hanging Wall Zone and Footwall Zone	Thin-medium banded/schistose, medium to coarse grained biotite with pyroxene ± amphibole, subordinate plagioclase; garnet. Some chloritic alteration.	Quartz biotite gneiss/schist

Note: *HWZ and FWZ may both represent the same rock type

The two major structures are present at the mine site: the E-Zone fault and steel-set fault. The steeply west dipping E-Zone fault separates the lower and upper zones. In the lower E-Zone, the steel set fault strikes at approximately 340° and dips steeply to the east. Smaller local fault systems are not uncommon and are usually non-graphitic and clay-rich. The mineralized plane of the Upper E-Zone dips 45°N and 40°W while the lower E dips at 25°N and 15°W. The V-Zone strikes E-W and dips -60°.

The mine site hosts a lead and zinc sedimentary exhalative type deposit. The ore body occurs within a succession of amphibolite grade metasedimentary and metavolcanic rocks of the Shuswap metamorphic complex on the northwest flank of the Frenchman Cap Gneiss Dome. The deposit can be divided into nine zones of mineralization: E (Upper and Lower) ,F,G,M,T (including the Upper and Lower T and Creek-Zone) ,U,V,R,Q. The bulk of the deposit's resource, however, is within the V, Creek, and Upper and Lower E-Zones.

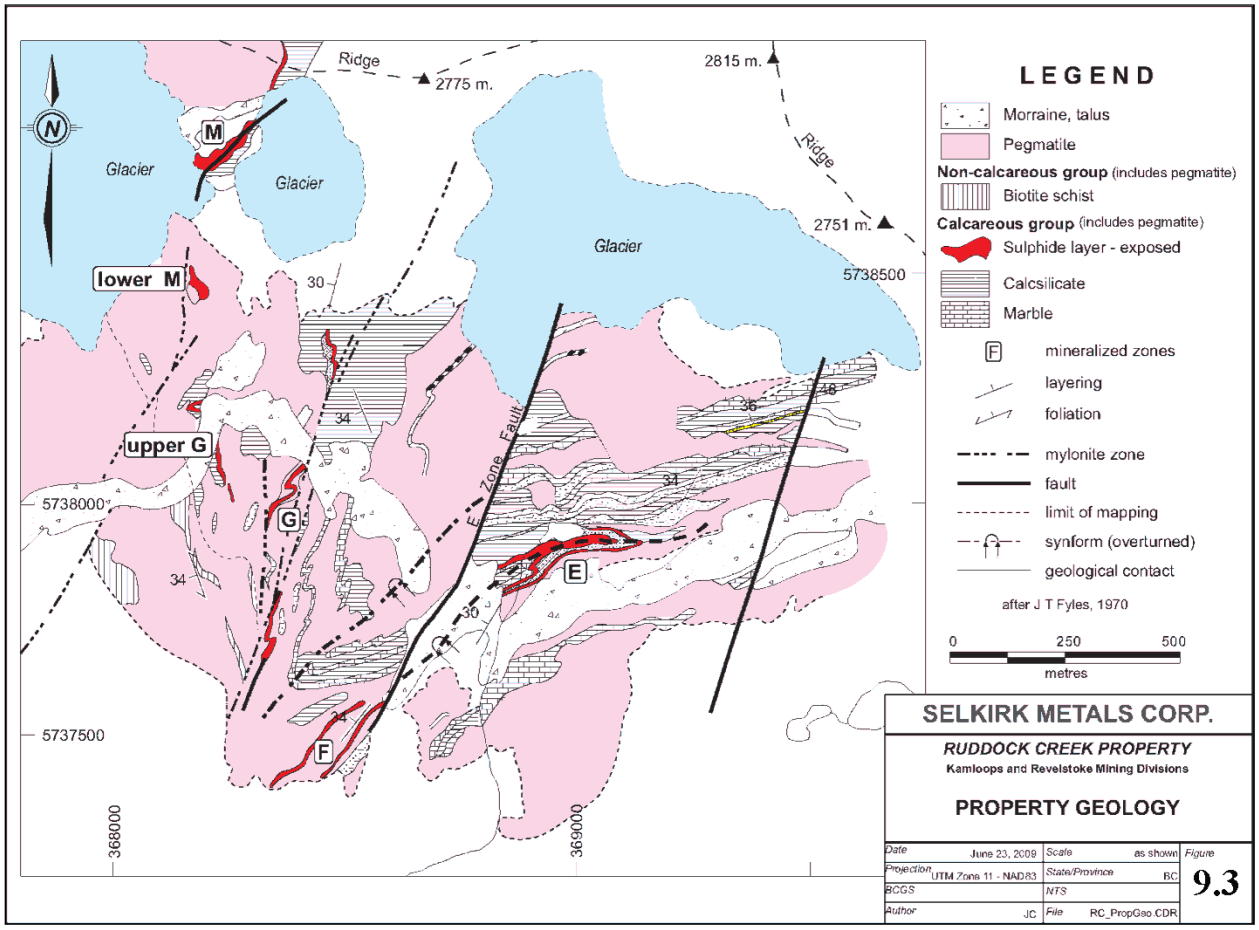
The metasedimentary and metavolcanic rocks on the property comprise schists, gneisses, quartzites and marbles, which can be divided into seven compositionally distinct lithotypes. The primary rock types and geology of the area are presented in Table 8–3 and on Figure 8–2.

Mineralization in the Project area can be simplified as a continuous planar massive sulphide horizon which is exposed intermittently along a 5 km strike and varies in true thickness from less than 5 m to over 50 m. The sulphide horizon consists dominantly of calc-silicate rocks, pegmatites and lesser biotite schist.

Table 8–3 Primary Rock Types at the Project Area

Primary Rock Type	Rock Code	Description	Distribution
mafic gneiss	BQ	Thinly-banded to massive, dark green, fine-grained pyroxene +/- amphibole gneiss; subordinate plagioclase; garnet common.	Occurs structurally 100-200 m above F and G showings; 30-50 m above T showings
calc-silicate gneiss, marble	CS	Thinly- to thickly-banded, compositionally varied unit containing alternating bands of fine- to coarse- grained quartzite, marble, diopside-rich and amphibolitic marble and quartzite	Widely distributed through project area, occurs both structurally above and below massive sulphides
marble	MBL	Tan to light gray, medium to very coarse-grained, massive marble, with subordinate micaceous or diopside partings	Forms mapable unit between F and G showings, thick units on slope structurally below E-Zone
amphibole gneiss	BQ	Thinly- to medium- banded, amphibole + plagioclase gneiss; contains garnetiferous layers; distinguished from calc-silicate gneiss by lack of calcite and by abundance of amphibole; may represent metamorphosed chloritic alteration	Occurs as thin (not mapable) layers within calc-silicate gneiss; occurs as thick mapable unit only in hanging wall to E-Zone, and pinches out abruptly along strike.
Quartz biotite schist	BQ	Highly-schistose, coarse-grained biotite containing up to 40% by volume foliation-parallel to moderately discordant leucocratic segregations (probably both transposed veins and metamorphic segregations) consisting of fine- to medium-grained quartz and feldspar; abundant garnet in some intervals	Occurs structurally above massive sulphides at E-Zone and F and G showings, forms thick unit structurally overlying T showings, and in several layers (with possible structural repetition) below E-Zone.
quartzo-feldspathic biotite schist	MBQ	Finely-banded to massive, schist to semi-schist, consisting of quartz, feldspar, and biotite in varying proportions; distinguished from biotite schist by finer grain size, less schistose texture, and lack of leucocratic segregations.	Abundant immediately above massive sulphide interval at E-Zone and T showings.
quartzite, quartzose schist	QZ	Thinly- to thickly-bedded, fine- to medium-grained recrystallized quartz grains with variable percentage of fine biotite or amphibole grains; commonly includes decimetre to metre thick schistose, marble, and calc-silicate layers not mapable at property scale; gradational into quartzo-feldspathic biotite schist	Usually spatially associated with massive or disseminated sulphide mineralization; thickest at E-Zone

Figure 8–2 Project Area Geology Correlations



8.12 Soils

Overburden in the mine site is generally shallow (ranging from 0 to 6.5 m in depth) and consists of gravel and cobbles with varying amounts of boulders and silty sand. Areas of deeper overburden have been found up to a depth of up to approximately 33 m. Overburden composition in these areas range from boulders, cobbles, and gravel to silty sand with some clay and gravel. Additional studies will be conducted as part of the environmental assessment to characterize the soils in the mine site and to determine the availability and suitability of soils for future reclamation purposes.

9 SOCIOECONOMIC SETTING

For the purposes of the Project Description, the following overview of the existing socioeconomic setting has been provided; a detailed and comprehensive description of the baseline socioeconomic setting in the area that may interact with the Project will be submitted in the Application and/or Environmental Impact Statement.

9.1 Aboriginal Groups

A description of the potentially affected Aboriginal groups is presented in:

- Section 3.2.2 - Aboriginal groups, RCMC has commenced pre-submission consultation with;
- Section 5.2.4– Aboriginal groups that are potentially affected by the Project;
- Section 5.4.6 - Lands and resources currently used for traditional purposes by Aboriginal peoples;

- Section 12 – Consultation with Aboriginal groups potentially affected by the Project.

9.2 Regional and Local Communities

A description of the regional and local communities that have a potential to interact with Project components and activities is provided in:

- Section 3.2.1 and Section 3.2.3– Local governments and public stakeholders, RCMC has commenced pre-submission consultation with;
- Section 5.2.1– Nearby communities and their proximity to the Project;
- Section 5.4.3– Management plans and initiatives; and
- Section 5.4.5– Local community land uses.

9.3 Economics

The Thompson-Nicola Regional District (TNRD) is typical of semi-rural resource regions of BC with slightly higher levels of unemployment than the provincial average and greater levels of employment in the natural resource sector. It is anticipated that the Project will have positive impact on the economy of the region and especially for neighboring communities. A detailed description of the baseline economic condition in the Project area will be presented in the Application/EIS.

9.4 Heritage and Traditional Ecological Knowledge

To further understand Aboriginal people's relations with the land base and to further relationships, RCMC will explore opportunities to collaborate with potentially affected Aboriginal groups on traditional use or traditional knowledge studies for the purposes of the environmental assessment. These studies typically identify locations where Aboriginal groups have traditionally engaged in hunting, fishing, gathering, and spiritual activities. The results of these studies will be used to inform planning for the Project and the environmental assessment to avoid or mitigate for potential adverse effects.

An archeological impact assessment will be carried out for the potential areas of disturbance to determine the potential impacts of the Project on known archaeological sites. Currently, a chance find procedure has been developed and implemented for the exploration phase of the Project; there are no known heritage sites of significance in the Project site. A detailed description of the baseline archaeological condition will be presented in the Application/EIS.

9.5 Human Health

A detailed description of the baseline human health condition will be presented in the Application/EIS including the identification of potential sensitive human receptors. At this time, due to the high altitude of the mine site and lack of access, RCMC believes that there is a very limited country food supply for humans. Accordingly the Proponent feels that the likely occurrence of human consumption of game or vegetation in the Project area is low. As well, potential contamination of country food supplies and potential effects to human health through potentially affected air quality, noise, and drinking water quality will be investigated further and assessed during the environmental assessment as part of the assessment of the Project's potential effects on human health.

10 POTENTIAL PROJECT EFFECTS

The following is a preliminary and brief assessment of potential interactions between the environment and the Project, intended to satisfy the requirements of the *Prescribed Information for the Description of a Designated Project Regulations* (2012). This preliminary assessment is based on best available current information and is not intended to be a full or detailed assessment of potential Project effects; a full and detailed assessment of potential Project effects will presented in the environmental assessment Application and/or Environmental Impact Statement.

The definition of "Environmental Effects" within Sections 16, 17, 18, & 19 of the *Prescribed Information for the Description of a Designated Project Regulations* (2012) requires a description of the physical and biological setting and the preliminary assessment, based on best available current information within the Project Description of the potential impacts of the Project associated with:

- Any changes that may be caused as a result of carrying out the Project to fish and fish habitat, as defined in the *Fisheries Act;*
- Any changes that may be caused as a result of carrying out the Project to aquatic species, as defined in the *Species at Risk Act;*
- Any changes that may be caused as a result of carrying out the Project to migratory birds, as defined in the *Migratory Birds Convention Act, 1994;*
- A description of any changes to the environment that may occur, as a result of carrying out the Project on federal lands, in a province other than the province in which the Project is proposed to be carried out, or outside of Canada; and
- A description of the effects on Aboriginal peoples of any changes to the environment that may be caused as a result of carrying out the Project, including effects on health and socio-economic conditions, physical and cultural heritage, the current use of lands and resources for traditional purposes, or any structure, site or thing that is of historical, archaeological, paleontological or architectural significance.

It is important to note that valued components have not been proposed or confirmed at this time. During the development of the Application Information Requirements (AIR) and/or EIS Guidelines, valued components will be selected based on consultation with the governments, Aboriginal groups, public and other stakeholders. During this process, the Proponent will take into consideration, the EAO's policy document, *Guideline for the Selection of Valued Components and Assessment of Potential Effects,* for its proposal of valued components (EAO, 2013). The selected valued components will be outlined in the final approved AIR and/or EIS Guidelines.

The Application and/or EIS will include consideration of the potential environmental, social, cultural, economic, health and heritage effects and potential effects on Aboriginal interests. The Application and/or EIS will also identify and evaluate practical means of avoiding or mitigating potential adverse effects to the extent possible, while maximizing the benefits of the Project for all stakeholders.

10.1 Solid, Liquid, Gaseous or Hazardous Wastes

A description of the solid, liquid, gaseous or hazardous wastes likely to be generated by the Project, potential environmental effects and plans to mitigate and manage those wastes are described in Table 10–1.

Atmospheric contaminant emissions will be generated by the Project, including criteria air contaminants and greenhouse gases, or other non-criteria contaminants that are of potential concern). Air quality modelling will be carried out to predict levels of air contaminants and to identify if mitigation will be required.

Table 10–1 Wastes Generated by the Project and Potential Environmental Effects

Type of Waste	Project Phase[1]	Description of Waste, Project Source and Potential Environmental Effects	Management Plans/Strategies
Atmospheric	C, O, D	- Increase criteria air contaminants and greenhouse gases from construction equipment, diesel generator and vehicles - Dust and particulate matter from transportation, roads, ore conveyance, and construction activities - Potential effects on sensitive receptors (if present)	- An Air Quality Management Plan will be developed for the Project - For surface works, strategically placed air quality monitoring sites will be installed. - For underground operations daily air quality will be measured. - Minimize idling, maintain equipment and vehicles - Use low sulfur fuel - Use covered conveyors for ore transport
Sewage Waste	C, O	- Liquid sewage waste from the accommodations camp and primary building - Potential effects to downstream water quality (if accidentally released)	- A Non-Hazardous Materials Management Plan will be developed for the Project - Sewage waste will be treated before discharge
Mine Contact Water	C, O, D	- Contact water with mine facilities - Potential effects to downstream water quality (if released)	- A Mine Site Water Management Plan will be developed for the Project - Mine contact water will be diverted from facilities with diversion ditches and stored in water management ponds for use as make up water for the processing plant
Mine Wastes	C, O	- Waste rock from DMS float - Waste rock from development of underground workings - Thickened NAG tailings - Thickened PAG tailings - Increased potential for ML/ARD effects and adverse downstream water quality effects if not appropriately managed	- Waste rock will be disposed of as progressive backfill of the underground workings - Excess will be dispose of at surface waste rock storage areas - NAG tailings will be disposed of in Light Lake for 6 months - PAG tailings will be temporarily placed in a lined surface impoundment for 6 months until backfilled in underground workings
Non-hazardous materials	C, O, D	- The mine will generate recyclable materials, non hazardous materials from the accommodations camp, maintenance facility, and warehouse	- A Non-Hazardous Materials Management Plan will be developed for the Project - Disposed of through a combination of incineration or disposal at the site - Recyclable material will be sent to off-site recycling.
Hazardous Materials	C, O	- Hazardous materials such as used batteries, waste hydrocarbon products, engine oil, and oil filters - Potential human health and environmental effects if not managed approriately	- A Hazardous Waste Management Plan will be developed for the Project - Disposed of through licensed off site disposal facility

NOTE: (C) construction phase, (O) operation phase, (D) Decommissioning and Closure, and (PC) post closure

10.2 Fish and Fish Habitat

Fish habitat, according to the *Fisheries Act*¸ is defined as spawning grounds and nursery, rearing, food supply, and migration areas on which fish depend directly or indirectly in order to carry out their life processes. These are aquatic environments that directly or indirectly support fish populations that sustain, or have the potential to sustain, subsistence, commercial or recreational fishing activities. Fish are defined as shellfish, crustaceans, marine animals, the eggs, sperm, spat and juvenile stages of fish, shellfish, crustaceans, and marine animals.

Fish and fish habitat baseline assessment work done to-date for the Project indicates that the Project may have the potential to:

- Alter fish habitat in the lower reach of Light Creek and confluence of Oliver Creek because of a potential changes in seasonal surface and groundwater flow patterns and/or a potential change in water quality; and
- Change species occurrence and abundance in the lower reach of Light Creek and confluence of Oliver Creek.

It is unlikely that the Project components and activities will adversely affect the ongoing productivity of any commercial, recreational or Aboriginal fisheries as defined in the *Fisheries Act*, with the application of mitigation measures. As well, baseline surveys indicate that it is very likely that Light Lake is non-fish bearing and a natural fish barrier prevents fish in the lower reach of Light Creek from reaching the mine site.

All potential effects to fish and fish habitat from Project components and activities will be carefully characterized and evaluated as part of the environmental assessment.

10.3 Aquatic Species at Risk

As described in Section 8.4, baseline studies to date indicate that there are no known aquatic species as defined in the *Species at Risk Act* within the Project area. Future fish and aquatics studies will be conducted to increase the confidence in the results of previous investigations. Appropriate best management practices and strategies (if defined by a recovery strategy) will be implemented to minimize risk to any critical habitat if identified.

10.4 Wildlife

Potential effects to wildlife (including migratory birds listed under the *Migratory Birds Convention Act* and wildlife species listed under Schedule 1 of the *Species at Risk Act*) and their habitat can result from Project activities. Generally mine developments have the potential to affect wildlife through the loss of habitat because of site clearing activities and disturbance from noise and Project related traffic. The potential exist for increased mortality risk through clearing activities. Sensory disturbance can occur primarily through Project generated noise, as well as ingestion of contaminants directly or indirectly and dermal absorption.

Appropriate best management practices and strategies (of applicable recovery strategies) will be considered and implemented to the extent possible to minimize potential effects to wildlife or any critical habitat identified. The Proponent anticipates that with the implementation of best management practices and mitigation measures the Project is not anticipated to cause significant adverse effects on wildlife or their habitat. There will be future wildlife surveys conducted as part of the environmental assessment to inform the assessment of potential effects.

10.5 Noise

Project activities, primarily during the construction phase, will generate noise from the operation of heavy machinery for site clearing activities, vehicle movements, and diesel generators. The Proponent

anticipates that noise generation will be reduced during operations as there will be limited noise from underground workings, the processing plant and vehicle movements.

Noise levels will be modelled to predict potential effects on sensitive human and wildlife receptors. If required, mitigation for potential noise effects on sensitive human and wildlife receptors will be implemented in the form of best management practices and sound reducing devices to the extent practical.

10.6 Human Health

Potential contamination of country food supplies, as well as potential effects to human health through air quality, noise, and drinking water quality changes will be investigated further and assessed during the environmental assessment as part of the assessment of the Project's potential effects on human health.

Due to the high altitude of the mine site and lack of access, RCMC believes that there is a very limited country food supply for humans and a very limited number of sensitive receptors in the Project area. Accordingly the Proponent feels that the likely occurrence of human consumption of game or vegetation in the Project area is low. As well, RCMC is not aware of any permanent or temporary residents near the mine site and there is likely to be a limited number of seasonal hunters and trappers in area.

10.7 Heritage and Archaeology

To further understand Aboriginal relations with the land base and to further relationships, RCMC will explore opportunities to collaborate with potentially affected Aboriginal groups on traditional use/traditional knowledge studies for the purposes of the environmental assessment. These studies typically identify locations where Aboriginal groups have traditionally engaged in hunting, fishing, gathering, and spiritual activities. The results of these studies will be used to inform planning for the Project and the environmental assessment.

An archeological impact assessment will be carried out for the mine site and key portions of the Project area to determine the potential impacts of the Project on known archaeological sites. Currently, a chance find procedure has been developed and implemented for the exploration phase of the Project; there are no known heritage sites of significance in the Project area.

10.8 Socioeconomics

The Proponent anticipates that the Project will have a positive socioeconomic effect for local communities. The Project will provide training for local community members and increased investment in services to the local population.

10.9 International and Provincial Boundary Effects

No changes to the environment as a result of the Project are anticipated to affect Alberta or the Unites States given the distance from the Project site to provincial and international boundaries (See Section 5.2.7).

10.10 Effects on Aboriginal Peoples of Any Changes to the Environment that may be caused as a Result of Carrying out the Project

Based on the current available information at the time of submitting the Project Description and limited information regarding potential interests and asserted Aboriginal rights in the Project area, it is difficult to predict if the changes to the environment that may result from the Project will have an effect on Aboriginal peoples. A summary of general types of potential effects, based on similar resource developments, is presented in Table 10–2.

Through additional studies and consultation with potentially affected Aboriginal groups, RCMC will determine if the potential effects of the Project to the environment will have an effect on health and socio-economic conditions, physical and cultural heritage, the current use of lands and resources for traditional purposes, or any structure, site or thing that is of historical, archaeological, paleontological or

architectural significance. This analysis will be presented in the Application and/or Environmental Impact Statement.

Table 10–2 General Types of Potential Effects on Aboriginal Peoples from Mine Developments

Potential Project Effect	Potential Effect on Aboriginal Peoples	Potential Mitigation
Limited access to the mine site due to Project construction and operation.	Reduced ability to hunt, gather, fish and trap in the area of the mine site due to access limitations.	An access management strategy will consider measures to minimize adverse effects on access for traditional uses.
Project disturbance area and footprint.	Potential loss of structures or sites of historical, archaeological, paleontological, architectural or spiritual significance.	An archaeology impact assessment will be carried out to identify potential sites of significance and options for to avoid potential impacts. A chance find procedure has been implemented for the Project.
Potential effects to wildlife and vegetation that support subsistence hunting and traditional use due to the Project footprint, disturbance area and activities.	Potential to affect asserted Aboriginal rights to traditional food harvesting practices, including hunting, trapping and country food harvesting.	The Project design will limit new disturbance. A wildlife management and monitoring plan will be developed for the Project. A vegetation management and monitoring plan will be developed for the Project. Progressive reclamation will be implemented as appropriate.
Potential effects to downstream water quality, and fish and fish habitat from the Project.	Potential to affect asserted Rights to traditional food harvesting practices, including fishing.	Project design will minimize water use and manage mine contact water to avoide potential effects to downstream water quality. A water management and monitoring plan will be developed for the Project to manage water quality. In addition, to a fish habitat compensation plan (if required) will be developed.

10.11 Cumulative Effects

A cumulative effects assessment will be carried out as part of the environmental assessment and include an assessment of other past, present and reasonably foreseeable future projects that may interact temporarily or spatially with the Ruddock Creek Mine Project. The cumulative effects assessment will follow applicable guidelines for cumulative effects assessment developed by the Agency and EAO.

11 GOVERNMENT ENGAGEMENT AND CONSULATION

The Proponent has conducted consultations to date with provincial, federal, regional and local governments about the Project. These consultations focused on introducing the Project, the Proponent and receiving feedback and guidance on the regulatory process and the Project Description. A summary of the pre-submission consultation conducted to date is provided below.

Future consultation opportunities are anticipated with relevant government agencies through the environmental assessment Working Group, led provincially by the EAO and federally by the Agency for the environmental assessment. These future opportunities for consultation with government agencies will focus on guidance for data collection programs, presentation of impact assessment results, and ideas to avoid or mitigate for potential adverse Project effects.

11.1 Provincial and Federal Governments

The Proponent has met with the EAO and Agency and other provincial and federal departments on numerous occasions in 2008 and 2009 when the previous project description was submitted and the previous provincial environmental assessment commenced.

Upon substantial revisions to the mine plan and the Project, RCMC held meetings with both the EAO and Agency in mid-2013 to re-introduce the Project with its "new" updated design. Additional meetings between RCMC, the EAO and the Agency have occurred since mid-2013 and have focused on guidance for the upcoming review process and development of the Project Description for submission.

Provincial ministries and organizations that have been involved in consultations with RCMC include:

- Environmental Assessment Office;
- Ministry of Energy and Mines;
- Ministry of Environment;
- Interior Health;
- Ministry of Transportation and Infrastructure;
- Ministry of Community, Sport and Cultural Development;
- Columbia Shuswap Regional District;
- Ministry of Forests, Lands and Natural Resource Operations;
- Ministry of Aboriginal Relations and Reconciliation;
- Ministry of Advanced Education;
- Ministry of Agriculture; and
- BC Hydro and Power Authority.

Federal agencies/departments that have been involved in consultations with RCMC include:

- Canadian Environmental Assessment Agency;
- Natural Resources Canada;
- Environment Canada;
- Fisheries and Oceans Canada;
- Transport Canada;
- Health Canada; and
- Aboriginal Affairs and Northern Development Canada.

11.2 Local and Regional Governments

The Proponent has held several meetings with local and regional government representatives to discuss and understand their issues and concerns, since exploration activities for the Project began in 2004. Since Clearwater is the closest community to the Project and RCMC anticipates that the community of Clearwater will be the most directly affected by Project activities there have been several presentations given to the Mayor and Council on the Project. The Proponent maintains regular contact via meetings, phone and email communications with local and regional government representatives, including:

- Regional District of Clearwater;
- Community of Chase; and
- Community of Vavenby.

11.3 Other Jurisdictions that have an Environmental Assessment or Regulatory Decision

The Proponent has consulted with the BC EAO and Agency who may have environmental assessment related decisions for the Project. Consultation with other regulatory decision makers, primarily provincial and federal permitting agencies, is described in Sections 11.1 and 11.2 of the Project Description.

12 ABORIGINAL CONSULTATION

RCMC is committed to consulting with potentially affected Aboriginal groups about the potential impacts of the Project on their interests and asserted Aboriginal rights. Consultation with Aboriginal groups will

inform the consideration of Aboriginal interests in the environmental assessment and allow the environmental assessment process to explore opportunities to mitigate potential effects on asserted rights.

12.1 Potentially Affected Aboriginal Groups

The Agency and EAO have provided preliminary advice regarding the Aboriginal groups that may be potentially affected by the Project components and activities (including the alternate transmission line routes). These potentially affected Aboriginal groups are listed in Sections 5.2.4. The Proponent will engage potentially affected Aboriginal groups identified by the EAO and/or Agency, upon commencement of the environmental assessment.

12.2 Pre- Submission of the Project Description Consultations

In pre-submission of the Project Description, RCMC's approach to consultation with potentially affected Aboriginal groups has been to:

- Introduce the Project and Proponent
- Distribute and provide access to information
- Participate in community meetings and engagement activities such as job fairs
- Track engagement activities to identify concerns, comments and resolutions

As well, RCMC has looked for opportunities to minimize intrusive sampling and impacts during the exploration phase.

To date, RCMC has commenced consultations with the following Aboriginal groups:

- Adams Lake Indian Band;
- Neskonlith Indian Band;
- Little Shuswap Lake Indian Band;
- Simpcw First Nation;
- Okanagan Indian Band; and
- Shuswap Indian Band.

RCMC intends to commence consultation with the Splatsin First Nation upon submission of the Project Description.

Listed below is the contact information for the seven Aboriginal groups mentioned above:

Adams Lake Indian Band
6453 Hillcrest Rd.
PO Box 588
Chase, BC V0E 1M0
Tel: 250-679-8841
Fax: 250-679-8813

Little Shuswap Lake Indian Band
1886 Little Shuswap Lake Road
RR 2
Chase, BC V0E 1M2
Tel: 250-679-3203
Fax: 250-679-3220

Neskonlith Indian Band
PO Box 318
Chase, BC V0E 1MO
Tel; 250-679-3295
Fax: 250-679-5306

Okanagan Indian Band
12420 Westside Road
Vernon, BC V1H 2A4
Tel: 250-542-4328
Fax: 250-542-4990

Shuswap Indian Band
PO Box 790,
Invermere BC V0A 1K0
Tel: 250-342-6361
Fax: 250-342-2948

Simpcw First Nation
500 Dunn Lake Road PO Box 220
Barriere, BC V0E 1E0
Tel: 250-672-9995
Fax: 250-672-5858

Splatsin First Nation
5775 Old Vernon Rd RR 3
Enderby, BC V0E 1V3
Tel: 250-838-2246
Fax: 250-838-2131

An overview of RCMC's consultation history with potentially affected Aboriginal groups on the Project is presented below from the perspective of the Proponent.

Adams Lake Indian Band, Neskonlith Indian Band, Little Shuswap Lake Indian Band and Simpcw First Nation

Engagement activities with the Adams Lake Indian Band, Neskonlith Indian Band, Little Shuswap Lake Indian Band and Simpcw First Nation have been more extensive to date due to the fact that the proposed mine site and access road, as understood by RCMC, are within these Aboriginal groups' traditional territories. Engagement activities have been varied in nature and have included one-on-one meetings with representatives, meetings with Chief and Council, joint open houses, site visits, and job fairs. A Community Agreement was signed between RCMC and the Little Shuswap Lake Indian Band (on January 1, 2014). A Memorandum of Understanding was signed by RCMC and the Adams Lake Indian Band (dated September 3, 2013). A Community Investment Agreement was signed between the Simpcw First Nation and RCMC on May 17, 2012. The Proponent is exploring opportunities to develop a similar agreement with the Neskonlith Indian Band.

Invitations were extended by RCMC to these Aboriginal groups for guided visits to the proposed mine site, as well as meetings to discuss the Project and future opportunities to conduct traditional use studies. The draft Project Description was shared with these Aboriginal groups most recently on October 10, 2013. The Proponent has provided capacity funding to the Simpwc First Nation, Adams Lake Indian Band, and Little Shuswap Lake Indian Band as part of the capacity agreements that have been established. In response to specific comments and issues raised by the Aboriginal groups, RCMC has provided and shared all information with Aboriginal groups that may help to answer the questions, for example water quality reports and analytical results of the exploration programs have been shared. The Proponent has also hired a consultant to aid in interpretation of scientific data; this same information and data was available for review at open houses and at meetings with Mayors and Council. To date, the Proponent has employed 10 members of the Adams Lake Indian Band, 2 members from the Simpcw First Nation and 2 members from the Neskonlith Indian Band for Project exploration activities.

Okanagan Indian Band and Shuswap Indian Band

The Proponent has notified the Okanagan Indian Band and Shuswap Indian Band that the three alternative power transmission line routes east of the Project from Mica, as identified to RCMC, have the potential to affect their Aboriginal interests and asserted Aboriginal rights and have shared advance copies of the Project Description with them. Through additional consultation and engagement activities as part of the environmental assessment process, RCMC hopes to have a better understanding of how the alternate transmission line routes could affect their Aboriginal interests and/or asserted Aboriginal rights so that avoidance, mitigation and accommodation measures can be considered as part of the environmental assessment, if one of the three alternate transmission line routes is selected for the Project.

Comments Raised by Aboriginal Groups in Pre-Submission Consultation

Table 12–1is a summary of the comments raised by Aboriginal groups prior to submission of the Project Description and how the Project could affect Aboriginal interests and asserted Aboriginal rights, as understood by RCMC, and the Proponent's preliminary response to the comments raised; RCMC welcomes comments and clarifications from Aboriginal groups on the information presented.

Table 12–1 Summary of Comments Raised by Aboriginal Groups

Comments Raised (as understood by RCMC)	Interests or Asserted Rights (as understood by RCMC)	Preliminary Response from RCMC
Timing of activities	Interest in economic benefits including job opportunities	RCMC has and will continue to share updates with Aboriginal groups on the anticipated timing of Project development. In addition, RCMC will continue to explore opportunities for jobs for Aboriginal peoples with interested Aboriginal groups.
Caribou protection and questions on how the Proponent will minimize the impact of the Project on the Woodland caribou, Southern Mountain population.	Asserted rights to traditional food harvesting practices including hunting	Potential effects to the Woodland caribou, Southern Mountain population will be assessed as part of the environmental assessment, including proposed mitigation measures that will be implemented by the Project to avoid and/or minimize adverse effects. RCMC will take into consideration the draft proposed Recovery Strategy developed by Environment Canada to guide the development of mitigation measures.
Water quality protection and questions on how the Proponent will protect the integrity of the water due to its location and the downstream fisheries	Asserted rights to traditional food harvesting practices including fishing	Potential effects of the Project to water quality and subsequent downstream fisheries will be assessed as part of the environmental assessment, including proposed mitigation measures that will be implemented by the Project to avoid and/or minimize adverse effects.
Jobs, training and business opportunities, questions on what jobs and training will be offered and what may be available for contractors	Interest in job opportunities	RCMC will continue to explore opportunities for jobs for Aboriginal peoples with interested Aboriginal groups.
Process plant contaminants, questions on if there are any chemicals used in the processing of ore that could potentially harm the environment	Interest in understanding potential environmental effects of the Project from ore processing.	A detailed description of any reagents used in ore processing will be provided in the environmental assessment as well the potential effects of ore processing on the environment.
Acid Rock Drainage/Metal Leaching, questions on whether there will be a rock or metal leaching problem that may harm the environment long term	Interest in understanding potential environmental effects of the Project from acid rock drainage/metal leaching.	The environmental assessment will assess the potential for acid rock drainage/metal leaching from the Project after the implementation of mitigation measures.
Traditional Ecological Knowledge, questions on whether First Nation's Traditional Use Knowledge will be used in the design and operations of the mine	Interest in understanding if traditional ecological knowledge will be incorporated into the Project design and operations.	RCMC looks forward to working with Aboriginal groups to document their traditional ecological knowledge and explore opportunities to incorporate it into the environmental assessment.
Tailings, questions on how the tailings will be handled	Interest in understanding how tailings will be managed for the Project	A preliminary description of the proposed tailings management process is provided in the Project Description. A detailed description of tailings management will be provided in the environmental assessment.

Through additional consultation and engagement activities as part of the environmental assessment process, RCMC hopes to have a better understanding of how the Project could affect Aboriginal interests and/or asserted Aboriginal rights so that avoidance, mitigation and accommodation measures can be considered as part of the environmental assessment.

12.3 Proposed Consultation and Information Gathering

As part of future consultations during the environmental assessment, RCMC will continue to look for opportunities to clarify potential impacts on asserted Aboriginal rights with all Aboriginal groups. The following guidelines will be taken into consideration by RCMC in developing and carrying out consultation and information gathering with potentially affected Aboriginal groups:

- EAO's Guide to Involving Proponents when Consulting First Nations in the Environmental Assessment Process (EAO, 2013b);
- BC's Updated Procedures for Meeting Legal Obligations When Consulting with First Nations (Ministry of Aboriginal Relations and Reconciliation. 2010.)
- Agency's guidance on Considering Aboriginal traditional knowledge in environmental assessments conducted under the Canadian Environmental Assessment Act, 2012 (Agency, 2013);
- Canada's Updated Guidelines for Federal Officials to Fulfill the Duty to Consult (Aboriginal Affairs and Northern Development Canada, 2011).

The Province of British Columbia and the Government of Canada have the duty to consult and where required, accommodate Aboriginal groups whenever a decision or activity could impact Treaty rights or asserted or established Aboriginal Rights and Title. As part of the environmental assessment, the EAO and/or Agency may delegate the procedural aspects of consultation to the Proponent. The Proponent will look to the EAO and/or Agency to identify the scope of consultation delegated to the RCMC for the environmental assessment of the Project and the depth of consultation required.

Moving forward into the environmental assessment, RCMC intends to consult potentially affected Aboriginal groups on the Project to:

- Gain an understanding of the potential effects of the Project on Aboriginal interests and asserted Aboriginal rights;
- Discuss the type of information required to assess those potential impacts as part of the environmental assessment; and
- Discuss the methods of gathering that information for the environmental assessment.

RCMC will prepare a Consultation Plan which must be approved by the EAO. The Consultation Plan will be developed to incorporate consultation requirements as set out in the EAO's Section 11 Order and relevant provincial and federal guidance materials related to the environmental assessment process and consultation (as identified above). The Consultation Plan will build on pre-submission consultations undertaken to-date by RCMC.

A preliminary schedule of proposed consultation and information gathering activities is presented in the Table 12–2, to provide an overview of the types of general consultation activities being considered by RCMC. Through consultation with the EAO and/or Agency, and potentially affected Aboriginal groups, and the receipt of new information, a schedule and proposed activities will be more clearly defined and proposed as part of the Proponent's consultation plan.

Table 12–2 Proposed Consultation and Information Gathering Activities

Proposed Activity	Environmental Assessment Phase	Purpose of Activity
Information sharing, notifications, meetings, community open houses and presentations	Throughout	To provide potentially affected Aboriginal groups with all relevant information about the Project so that they can consider their interests and participation level. Request confirmation and clarifications on RCMC's understanding of how the Project could affect their Aboriginal interests and/or asserted Rights. Identify and develop accommodation measures to prevent, mitigate or address potential effects on Aboriginal Interests
Studies	Prior to submitting the Application and/or Environmental Impact Statement	To involve potentially affected Aboriginal groups in relevant studies including archaeology, traditional use, and ethnography and socioeconomic. To integrate traditional knowledge where possible into the environmental assessment.
Consultation plan	Prior to the Application Information Requirements	To share with potentially affected Aboriginal groups how RCMC intends to consult and seek their feedback on the approach
Report on consultation results	Application/Environmental Impact Statement	Document and report to EAO and/or Agency the results of the Proponent's consultation with potentially affected Aboriginal groups.
Discussions	Throughout the environmental assessment	To provide potentially affected Aboriginal groups with all relevant information about the Project so that they can consider their interests and participation level. Request confirmation and clarifications on RCMC's understanding of how the Project could affect their Aboriginal interests and/or asserted Rights with the goal of identifying and developing accommodation measures to prevent, mitigate or address potential effects on Aboriginal interests and/or asserted Rights. Explore opportunities for short-term and long-term employment.
Agreements	Currently and throughout the Application/Environmental Impact Statement review phase	To encourage participation in the environmental assesment and provide capacity funding support. To address a range of matters of concern to the band including environment, employment, contracting and internal capacity to assess and respond to permitting.

13 PUBLIC STAKEHOLDER ENGAGEMENT AND CONSULTATION

13.1 Potentially Interested Stakeholders

Potentially interested public stakeholders in the Project are listed in Section 3.2.3.

13.2 Pre-Submission of the Project Description Consultations

The Proponent's ongoing public consultation program to date is aimed at establishing a local presence in the region to facilitate consultation on the Project with the public and interested stakeholders. Table 13–1 is a summary of questions from public stakeholders, as understood by RCMC, and the Proponent's preliminary response to the questions; RCMC welcomes comments and clarifications from public stakeholders on the information presented.

Table 13–1 Summary of Questions from Public Stakeholders

Questions (as understood by RCMC)	Preliminary Response from RCMC
Transportation route, are there are several possible routes to the provincial highways or railroads, which one will the Project use?	The Project proposes to use the using existing Forest Service Roads from the Yellowhead Highway #5 through Vavenby to the mine site.
How will Project generated traffic be controlled on the transport routes?	The Project will develop a transportation management plan that will outline measures to control Project generated traffic along the proposed transport route. As well, best practices will be adopted by Project generated traffic to promote safety, the protection of wildlife and avoidance of potential accidents and malfunctions.
Power line transmission route, will the Project use the Thompson River corridor or the Columbia/Mica corridor?	At this time, the preferred transmission route is from the existing substation in Avola to the mine site, following the existing access road as closely as possible. Due to the fact that the existing Avola grid may not have sufficient power for the Project and there has been no assurance from BC Hydro, RCMC will continue investigation of the Mica routes from the east.
Process plant contaminants, will the Project use any chemicals used in the processing of ore that could potentially harm the environment?	A detailed description of any reagents used in ore processing will be provided in the environmental assessment as well the potential effects of ore processing on the environment.
Schedule and camp for Project operations, what is the schedule for workers and will it be primarily camp-style accommodations for the Project?	A preliminary schedule for Project operations is provided in the Project Description; a detailed schedule will be provided in the environmental assessment. An accommodations camp with180 individual residences for workers and associated facilities is proposed for the Project.
Acid Rock Drainage/Metal Leaching, are there rock or metal leaching problems that may harm the environment in the long term?	The environmental assessment will assess the potential for acid rock drainage/metal leaching from the Project after the implementation of mitigation measures.
Where and how will the tailings be handled and deposited for the Project?	A preliminary description of the proposed tailings management process is provided in the Project Description. A detailed description of tailings management will be provided in the environmental assessment.

13.3 Proposed Consultation

As part of the environmental assessment, RCMC will conduct additional public and stakeholder consultation activities to determine if the Project has a potential to affect the public and other stakeholders in the area.

A Public Consultation Plan will be developed by RCMC and must be approved by the EAO. This plan will incorporate public consultation requirements under relevant federal and provincial legislation and guidance materials related to the environmental assessment and public consultation, including the BCEAA *Public Consultation Policy Regulation* (2002).

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