CanAus Coal Limited

Project Description

Michel Creek Coking Coal Project

Loop Ridge Mine

August 2015

Project Description

Michel Creek Coking Coal Project

Loop Ridge Mine

Submitted to:

BC Environmental Assessment Office

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PO Box 9426 Stn Prov Govt

Victoria, BC, V8W 9V1

And

Canadian Environmental Assessment Agency

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Submitted by:

CanAus Coal Limited

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Project Description

Michel Creek Coking Coal Project

Loop Ridge Mine

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August 2015

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List of Acronyms, Abbreviations and Scientific Symbols

Acronym or Abbreviation	Description
AB	Alberta
AEA	Archaeological Effect Assessment
AOA	Archaeological Overview Assessment
AP	Acid Generation Potential
ARD	Acid Rock Drainage
ATV	All-terrain Vehicle
BC	British Columbia
BCCDC	British Columbia Conservation Data Centre
BCEAO	British Columbia Environmental Assessment Office
BEC	Biogeoclimatic Zone
BCMFLNRO	British Columbia Ministry of Forests, Lands and Natural Resource Operations
BCMEMNG	British Columbia Ministry of Energy, Mines, and Natural Gas
BC MOE	British Columbia Ministry of Environment
BCEAA	British Columbia Environmental Assessment Act
BMP	Best Management Practice
c.	Circa
CBG	Coal Bed Gas
CEAA	Canadian Environmental Assessment Act
CEA Agency	Canadian Environmental Assessment Agency
CEMF	Cumulative Effects Management Framework
CEMP	Construction Environmental Management Plan
CH4	Methane
CHP	Coal Handling Plant
COSEWIC	Committee on the Status of Endangered Species in Canada
CNPC	Crow's Nest Pass Coal Company
CP	Canadian Pacific (Rail)
CPP	Coal Processing Plant
CPS	Central Processing Site
CSR	Coke Strength after Reaction
DFO	Fisheries and Oceans Canada
dAIR	Draft Application Information Requirement document
e.g.	For example
EA	Environmental Assessment

Acronym or Abbreviation	Description
EAC	Environmental Assessment Certificate
EC	Environment Canada
EIS	Environmental Effect Statement
EPP	Environmental Protection Plans
EVCEMF	Elk Valley Cumulative Effects Management Framework
EKLUP	East Kootenay Land Use Plan
EVWQP	Elk Valley Water Quality Plan
EVSTF	Elk Valley Selenium Task Force
FS	Feasibility Study
FSI	Free Swelling Index
GHG	Greenhouse Gas
H2S	Hydrogen Sulphide
HCA	Heritage Conservation Act 1996
HMC	Heavy Media Cyclone
HVAC	Heating, Ventilating, and Air Conditioning
i.e.	That is
IFS	Instream Flow Study
KNC	Ktunaxa Nation Council
LOM	Life of Mine
LSA	Local Study Area
MEM	Ministry of Energy and Mines
MFLNRO	Ministry of Forest Lands and Natural Resource Operations
ML/ARD	Metal Leaching / Acid Rock Drainage
MoE	Ministry of Environment
NAG	Non-acid Generating
NOx	Nitrogen Oxides
NP	Neutralization Potential
PAG	Potentially Acid Generating
OEMP	Operational Environmental Management Plan
PAH	Polycyclic Aromatic Hydrocarbon
PEA	Preliminary Economic Assessment
PFS	Prefeasibility Study
PM, PM10, PM2.5	Particulate Matter, 10 micron, 2.5 micron
PR	Plant Reject
Q1, Q2, Q3, Q4	Quarter one (Jan, Feb, Mar), two (Apr, May, Jun), three (Jul. Aug, Sep), four (Oct, Nov, Dec)
RAAD	Remote Access to Archaeological Data

Acronym or Abbreviation	Description
RC (drilling)	Reverse Circulation (drilling)
RSA	Regional Study Area
RDEK	Regional District of East Kootenay
ROM	Run-of-Mine
SARA	Species at Risk Act
SG	Specific Gravity
SOx	Sulphur Oxides
SRMMP	Southern Rocky Mountain Management Plan
SRMLUP	Southern Rocky Mountain Land Use Plan
TEM	Terrestrial Ecosystem Mapping
TU/TK	Traditional Use, Traditional Knowledge
Project	CanAus Michel Creek Coking Coal Project – Loop Ridge Deposit
UWR	Ungulate Winter Range
VCs	Valued Components
WOC	Water Only Cyclone

Unit	Description
%	Percent
°C	Degree Celsius
<	Less than
>	Greater than
$	Canadian dollars
bcm	Bank cubic metre
gal/min	Gallons per minute
ha	Hectare
km	Kilometre
km^2	Square kilometre
mm	Millimetre
m	Metre
masl	Meters above sea level
M bcm	Million bank cubic metres
M bcmrc	Million bank cubic metres raw coal
M bcmw	Million bank cubic metres waste
M mtcc	Million metric tonnes clean coal
M mtrc	Million metric tonnes raw coal
m^3	Cubic metre
Mmt	Million metric tonnes
mt	Metric tonne
mtpa	Metric tonnes per annum
mvB	Medium volatile bituminous
t/d	Tonnes per day
tph	Tonnes per hour
trc/day	Tonnes raw coal per day

Note:

1. The term “Waste Rock” is used in this document. This refers to rock that has no coal value and is simply rock that must be removed from the pit during mine development. Often this rock is referred to as development rock and it is stockpiled in managed deposition areas.

2. The abbreviations RSA (Regional Study Area) and LSA (Local Study Area) are used in this document. LSAs and RSAs are discipline-specific and vary in size.

Concordance Table

This Project Description – Michel Creek Coking Coal Project (Project Description) has been prepared using the following documents for guidance:

- British Columbia (BC) Environmental Assessment Office Guidelines for Preparing a Project Description for an Environmental Assessment in British Columbia (2013);
- The Canadian Environmental Assessment Agency's Operational Policy Statement: Preparing Project Descriptions under the Canadian Environmental Assessment Act (2007); and
- Guide to Preparing a Description of a Designated Project under the Canadian Environmental Assessment Act, 2012 (July 2012).

The following table provides a "concordance table" that cross-references the requirements identified in the referenced documents with the corresponding section within this Project Description.

Project Description Concordance Table

Topic	BC EAO Guidance Document	CEAA Guidance Documents	Project Description Section
Proponent Information		1.1 Short description of the nature of the designated project, and proposed location.	2. 2, 2.4
	The proponent's name and the representative managing the project.	1.2 Name of the proponent. Name of the designated project. Chief Executive Officer or equivalent.	2.8
	Contact information, including a mailing address, phone and fax numbers, and email addresses.	1.2 Address of the proponent. Principal contact person for purposes of the project description.	2.8
	Corporate information, including a website address, particulars of company incorporation, and partners' names (if applicable).		1.1, 2.8
		1.3 List of any jurisdictions and other parties including Aboriginal groups and the public that were consulted during the preparation of the project description.	11.6
		1.4 Information on whether the designated project is subject to the environmental assessment and/or regulatory requirements of another jurisdiction(s).	3.1, 3.2
		1.5 Information on whether the designated project will be taking place in a region that has been the subject of an environmental study.	1.1, 4.1
General Background Information	The type and size of the project, with specific reference to the thresholds set out in the Reviewable Projects Regulation.	2.1 Provide a general description of the project, including the context and objectives of the project. 2.2 Indicate the provisions in the schedule to the Regulations Designating Physical Activities that	2.5, 3.1, 3.2

Topic	BC EAO Guidance Document	CEAA Guidance Documents	Project Description Section
		describe the designated physical activities that are proposed to be carried out as part of the designated project.	
	Project purpose and rationale.		2.6
	Estimated capital cost.		5.16
	Number of construction jobs (in person years) and operating jobs (actual number).		5.16
	Location (latitude and longitude).	3.1.1 Coordinates (i.e. longitude/latitude).	2.3
Project Overview	A brief description of the major on-site and off-site project components, including options if the final site selections are not yet available.	2.3 Description of the components associated with the designated project. 2.3.1 The physical works. 2.3.2 Anticipated size or production capacity of the designated project, with reference to thresholds set out in the Regulations Designating Physical Activities, including a description of the production processes to be used, the associated infrastructure, and any permanent or temporary structures.	2.5, 5.1, 5.6, 5.7, 5.8, 5.9, 5.10
	A conceptual site plan and map(s) at sufficient scale to allow for clear location of all major components of the project.	3.1.2 Site map/plan(s) depicting location of the designated project components and activities. 3.1.3 Map(s) at an appropriate scale showing the location of the designated project components and activities relative to existing features. 3.1.4 Photographs of work locations to the extent possible. 3.1.5 Proximity of the designated project to: • Any permanent, seasonal or temporary residences. • Traditional territories, settlement land (under a land claim agreement) as well as lands and resources currently used for traditional purposes by Aboriginal peoples. • Any federal lands	2.4, 5.4, 7.3; 6.13
		2.4 Description of any waste that is likely to be generated during any phase of the designated project and plans to manage that waste, including the following: 2.4.1 Sources of atmospheric contaminant emissions during the designated project phases (focusing on criteria air contaminants and greenhouse gases, or other non-criteria contaminants that are of potential concern) and location of emissions. 2.4.2 Sources and location of liquid discharges. 2.4.3 Types of wastes and plans for their disposal (e.g., landfill, licenced waste management facility, marine waters, or tailings containment facility).	5.6, 5.7, 5.9, 5.10, 5.11

Topic	BC EAO Guidance Document	CEAA Guidance Documents	Project Description Section
	The project's duration, including decommissioning if appropriate.	2.5 Construction, operation, decommissioning and abandonment phases and scheduling. Provide a description of the timeframe in which the development is to occur and the key project phases. 2.5.1 Anticipated scheduling, duration and staging of key project phases, including preparation of the site, construction, operation, decommissioning and abandonment. 2.5.2 Main activities in each phase of the designated project that are expected to be required to carry out the proposed development.	2.6, , 5.3, 5.15
	The project's potential environmental, economic, social, heritage and health effects (in general terms).	5.0 ABrief assessment of the environmental interactions of the project. 5.1 A description of the physical and biological setting, including the physical and biological components in the area that may be adversely affected by the project (e.g., air, fish, terrain, vegetation, water, wildlife, including migratory birds, and known habitat use). 5.2 A description of any changes that may be caused as a result of carrying out the designated project to: (a) Fish and fish habitat, as defined in the *Fisheries Act*. (b) Marine plants, as defined in the *Fisheries Act*. (c) Migratory birds, as defined in the *Migratory Birds Convention Act*, 1994. 5.3 A description of any changes to the environment that may occur, as a result of carrying out the designated 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. 5.4 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 designated 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.	6, 7, 8
Land use setting	A general description of existing land use in the vicinity of the project site.	3.2 To the extent that is known at this time, describe the ownership and zoning of land and water that may be affected by the project, including the following. 3.2.1 Zoning designations. 3.2.2 Legal description of land to be used (including information on sub-surface rights) for the designated project, including the title, deed or	2.4, 4.2, 7

Topic	BC EAO Guidance Document	CEAA Guidance Documents	Project Description Section
		document and any authorization relating to a water lot. 3.2.3 Any applicable land use, water use (including ground water), resource management or conservation plans applicable to or near the project site. Include information on whether such plans were subject to public consultation 3.2.4 Describe whether the designated project is going to require access to, use or occupation of, or the exploration, development and production of lands and resources currently used for traditional purposes by Aboriginal peoples	
	Whether the project and its components are situated on private or Crown land.		4.2
		4.0 Federal Involvement – Financial Support, Lands and Legislative Requirements 4.1 Describe if there is any proposed or anticipated federal financial support that federal authorities are, or may be, providing to support the carrying out of the designated project. 4.2 Describe any federal lands that may be used for the purpose of carrying out the designated project. This is to include any information on any granting of interest in federal land (i.e., easement, right of way, or transfer of ownership). 4.3 Provide a list of any federal permits, licenses or other authorizations that may be required to carry out of the project.	3.2
	Information about First Nation(s) interests where asserted claims to rights or title are known.		2.2, 7.3, 11.5.3
Consultation Activities	A summary of consultation activities that have been carried out with First Nation(s), the public and local governments.	6.1 A list of Aboriginal groups that may be interested in, or potentially affected by, the designated project. 6.2 A description of the engagement or consultation activities carried out to date with Aboriginal groups, including: Names, dates and means of consultation. 6.3 An overview of key comments and concerns expressed by Aboriginal groups including any responses provided to these groups. 6.4 A consultation and information-gathering plan that outlines the ongoing and proposed Aboriginal engagement or consultation activities, the general schedule for these activities and the type of information to be exchanged and collected.	7.3, 11.5, 11.7, Appendix 3

Topic	BC EAO Guidance Document	CEAA Guidance Documents	Project Description Section
		7.0 Consultation with the Public and Other Parties (other than Aboriginal consultation included above). Provide the following information to the extent that it is available or applicable: 7.1 An overview of key comments and concerns expressed to date by stakeholders and any responses that have been provided. 7.2 An overview of any ongoing or proposed stakeholder consultation activities. 7.3 A description of any consultations that have occurred with other jurisdictions that have environmental assessment or regulatory decisions to make with respect to the project.	11.6, 11.7, Appendix 3
Proposed Development Schedule	A tentative schedule for submitting an application for an environmental assessment certificate and developing the project (should a certificate be issued).		3.3
Required Permits	A list of required permits, if known.		3.1, 3.2

1 Reason for Submission

1.1 Introduction

CanAus Coal Limited (CanAus) is a Canadian resource company based in Sparwood, British Columbia, and is a wholly owned subsidiary of CoalMont Pty Ltd (CoalMont), a private Australian resource development company. CanAus is focused on the exploration and development of the proposed Michel Creek Coking Coal Project (MCCCP or Project), located in the Crowsnest Coalfield, British Columbia, Canada. CanAus holds the rights to the Michel Creek coal license and application areas, which host significant coking coal resources primarily referred to as the Loop Ridge, Michel Head and Tent Mountain deposits, which are located approximately 15 km southeast of Sparwood, B.C. (Figure 1-1).

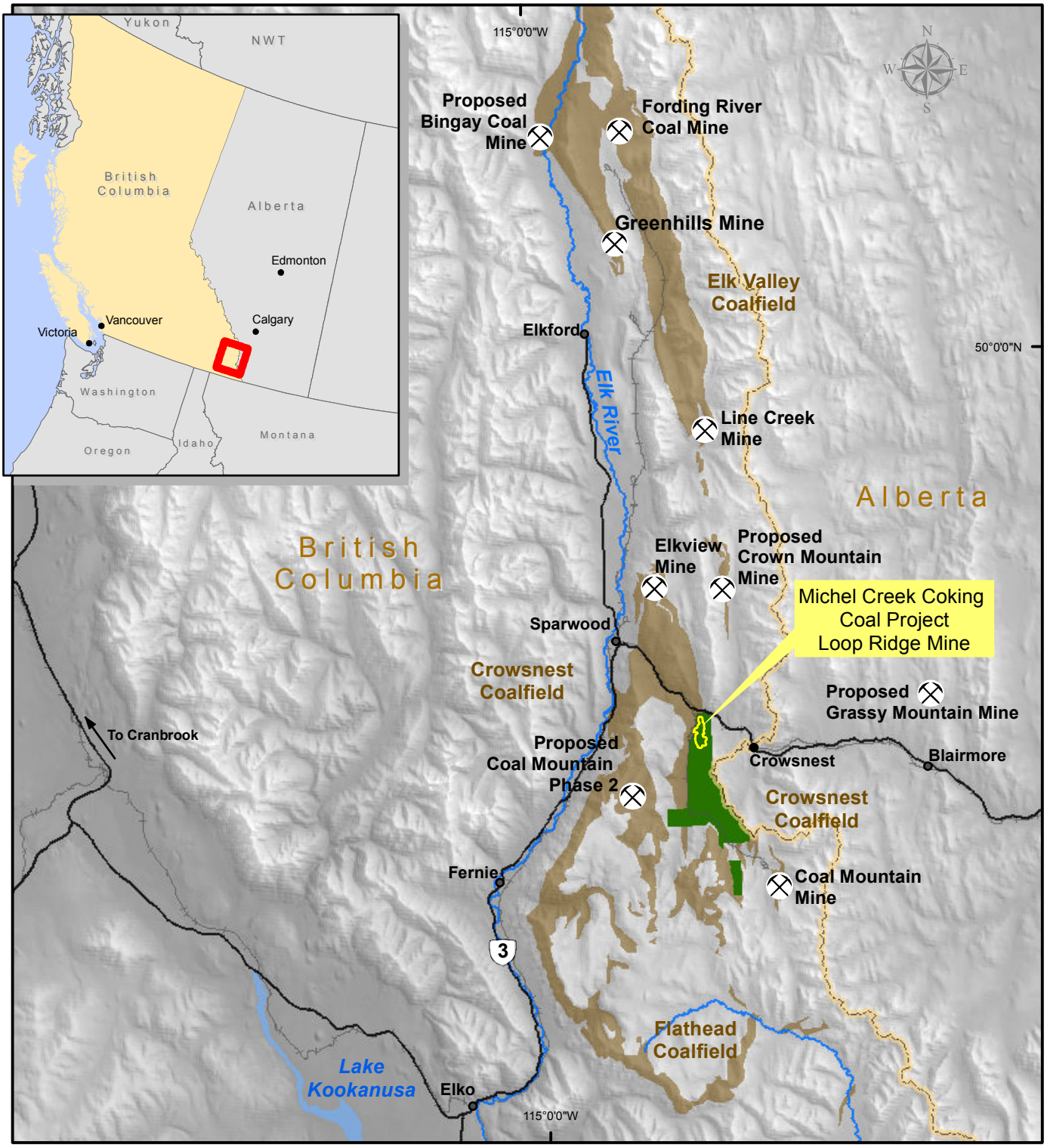
CanAus is proposing the development of the Michel Creek Coking Coal Project, which includes only the Loop Ridge deposit at this time. The Loop Ridge deposit includes:

- An annual production of 3.5 million tonnes raw coal (2.1 million tonnes clean) – based on proposed plant design capacity;
- Average production rate of 5,800 clean tonnes per day (t/d), based on a 365-day operating period;
- A Loop Ridge mine life of 10 years with the potential to extend the Project life by approximately 10 years assuming positive resource exploration at the other deposits; and
- An initial estimate of project disturbance footprint over the 10-year life-of-mine of approximately 1,000 ha.

CanAus is following a design philosophy of eliminating potential environmental effects by design. In this process, environmental studies lead and set the boundaries for engineering design, which is supported with iterative consultation with the Ktunaxa Nation, other interested Aboriginal groups, community, scientists, engineers, and regulators to refine the final design. At this stage of project planning, this process has identified the following features where potential environmental effects are being eliminated by design:

- Pit design focussed on controlling in-pit water and discharge points from the pit;
- Return of waste rock, to the extent possible, to the in-pit areas to reduce potential selenium oxidation metal leaching;
- Bottom-up development of waste rock storage areas with saturated zones to minimize selenium production and reduce to a minimum any metal leaching and acid rock drainage;
- Plant designed to produce dry tailings that can be co-disposed with waste rock;
- A stand-alone emulsion plant with a 150 tonnes of prill stored in silos. Two magazines rated for up to 25,000 kg each, one licensed for 50,000 detonators and one for 20,000 kg of explosive. All items will be designed to meet Mines Act Permit requirements to ensure safety and security;

- Keeping non-contact (clean) water away from mine workings and returning it to streams;
- Avoiding fish-bearing streams and minimizing flow alterations to streams; and
- Using progressive reclamation and rehabilitation to minimize the mine footprint.



Map Notes:
1. NAD 1983 UTM Zone 11N

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Project No.:	**Project:** Michel Creek Coking Coal Project	**Client:** CanAus Coal Limited	**Figure: 1** CanAus Loop Ridge, Tent Mountain and Michel Head Property Location
Date: September, 2015			
Drawn By: SMART MAP	**Approved By:** Consult 5 Inc.		

Notable features of the proposed Project include:

- The Project has a resource of 65 – 75 Mt of Elk Valley quality hard coking coal;
- The Project is located in Canada's Crowsnest Coalfield, one of the world's premier hard coking coal producing districts;
- The Project is located on private fee simple lands;
- The Loop Ridge deposit is a partial brownfield site that was previously mined in the 1960s and again in 1993 and 1998 under a Mines Act Permit, and the Project area has previously been extensively harvested by forestry operations;
- Approximately 20% of the anticipated 1,000 ha Project footprint has been previously disturbed by logging, and more is scheduled for logging by the forestry operator before construction of the mine begins;
- The mine plan allows for progressive reclamation of the mining area over the ten year operating period;
- The proposed mine site has an existing Environmental Certificate (issued to the former McGillivray Coal Mine);
- The Project is anticipated to be an open-pit mine with processing facilities adjacent to existing rail, road and power infrastructure;
- The existing railway will be used to transport product to the port of Vancouver and/or Prince Rupert B.C., for sales in the global export coking coal market, and to other domestic consumers;
- CanAus is currently a member of the Working Group of the Elk Valley Cumulative Effects Management Framework (CEMF), which is under the leadership of the Ministry of Forests, Lands and Natural Resource Operations;
- All Project water management strategies will be consistent with the *Elk Valley Water Quality Plan* (EVWQP);
- There is appreciation among stakeholders for the openness and transparency of the consultation conducted by CanAus to date;
- The Project is recognized as a brownfield proposal and can be expected to enjoy general support from nearby communities in the Elk Valley, where coal mining has been occurring for over a century, and where approximately 4,000 coal mine workers are employed; and
- Consultation and engagement with the Ktunaxa is expected to begin in detail, following the issuance of a Section 10 Order by BCEAO.

1.2 Purpose of Submission

CanAus Coal Limited believes that excellence in workplace safety, environmental performance and stewardship is essential to their business success. To that end, we believe that project planning and development must be based on a thorough assessment of the effects of our activities in advance.

In order to meet these principles, CanAus believes that it must undertake a thorough environmental and socio-economic impact assessment of our proposed Michel Creek Coking Coal Project in order to systematically evaluate the ecological, socio-economic and cultural aspects of the activity. We also believe that such an assessment must be conducted in an open and transparent process that includes an appropriate level of Aboriginal, regulatory and public input and review.

This *Project Description – Michel Creek Coking Coal Project* (Project Description or PD) has been prepared and is being submitted by CanAus in order to initiate the processes required to secure and obtain all the necessary environmental assessment approvals, permits and licenses required to undertake the development of the Loop Ridge coal deposit located within our Michel Creek Project properties. It is our desire to mine, process coking coal from our Loop Ridge deposit, transport that coal to port for export sale, to effectively manage any and all resulting waste, and finally, decommission and reclaim the entire site to the satisfaction of the community in which we operate including First Nations, Métis, the relevant regulatory agencies and the general public.

2 Proposed Project

2.1 Project Property

The MCCCP license area is located approximately 15 km southeast of Sparwood, British Columbia (BC) in the Elk Valley and forms part of the Crowsnest Coalfield of southeastern BC. The licensed property consists of three separate deposits referred to as Loop Ridge, Tent Mountain and Michel Head.

2.1.1 Loop Ridge

This Project Description addresses only the proposed development of the Loop Ridge deposit with an anticipated 10-year life-of-mine.

2.1.2 Michel Head and Tent Mountain

The Michel Head and Tent Mountain deposits must be further defined based on additional exploration drilling and engineering design. However, they do offer the potential for an additional 10 years of production. Development plans for these two deposits do not form part of this Project Description.

2.2 Property Features

The Project is located within the asserted traditional territory of the Ktunaxa Nation, as represented by the Ktunaxa Nation Council (KNC).

The north end of the Project property is approximately 2 km south of the Crowsnest Pass Highway (Hwy 3), approximately 15 km southeast of Sparwood, B.C. An all-weather access road extends from the highway to the site. The US border is approximately 92 km south, via Highway 3 and Highway 93 leading to northern Montana and Idaho.

The Canadian Pacific Railway (CP), connecting eastern Canada with west coast ports, including Vancouver, B.C., runs through the Project area.

The nearest commercial airport is the Rocky Mountains International Airport, located in Cranbrook (population 19,000), approximately 125 km to the west. The major international airport of Calgary, Alberta is located 261km to the northeast of the site.

No known old growth forests exist on the Project site. However, there is mature forest cover present that has at least some old-growth attributes based on current surveys. Most of the Project area is reported to have been burned around 1900, due to railroad era fires (The Lethbridge Daily

Herald, 1908-08-02). The site is covered by actively managed forests. The proposed Project is not located within or close to any legally protected or internationally recognized areas.

The Loop Ridge deposit is a brownfield site that was previously mined in the 1960s, and again in 1993 and 1998 under a Mines Act Permit and the Project area has previously been subject to harvesting in forestry operations. As a result, approximately 20% of the anticipated 1,000 ha Project footprint has been previously disturbed, and more will be disturbed by planned logging by forestry operators before construction begins on the Project.

2.3 Project Location

The Michel Creek Coal Project (Figure 1-1) is centered at approximately:

UTM: 660,000E, and 5,498,000N (NAD 83)
Latitude: 49° 38’ 54.91” N
Longitude: 114° 46’08.82” W

2.4 Location Relative to other Projects in the Area

There are a number of mining projects in various stages of development, operations and environmental assessment approval process within the Sparwood region (Table 2-1). The location and distances to the nearest towns, federal lands (Table 2-2), and other mines in the region are shown in Figure 2-1 and Figure 2-2, respectively.

Table 2-1: Mine Developments near the Proposed Michel Creek Coking Coal Project

Project Name	Owner	Direct distance from the Project (km)	Bearing	Status
Elkview	Teck Coal	15	North North-west	Certified coal mine project
Coal Mountain	Teck Coal	18	South East	Certified coal mine project
Greenhills	Teck Coal	51	North	Certified coal mine project
Fording River	Teck Coal	64	North	Certified coal mine project
Line Creek	Teck Coal	31	North	Certified coal mine project
Coal Mountain Phase 2	Teck Coal	10	South West	Pre-Application Phase
Grassy Mountain Coal Project	Riversdale Resources	24	Easr North-east	Pre-Application Phase
Bingay Main Metallurgical Coal Project	Centermount Coal Limited	65	North	Pre-Application Phase
Baldy Ridge Extension	Teck Coal	13	North North-west	Pre-Application Phase
Crown Mountain	NWP Coal Canada Ltd.	15	North	Pre-Application Phase
Coal Creek	Crowsnest Pass Coal Mining Ltd.	27	South West	Pre-Application Phase

Table 2-2: Distances to Local Towns, Provincial Parks, Federal Lands and Borders

Name	Land Type	Direct Distance from the Project (km)	Bearing
US Canada Border	International Border	72	South
Alberta BC Border	Provincial Border	3	South East
Mount Fernie Park	Provincial Park	30	South West
Elk Valley Park	Provincial Park	13	West
Crowsnest Park	Provincial Park	5	East
Waterton Lakes National Park	National Park	88	South West
Dominion Coal Block	Crown Land	4	West
Dominion Coal Block	Crown Land	10	South
Elkford	District	14	North West
Sparwood	District	13	North West
Hosmer	Unincorporated Place	16	South West
Fernie	City	27	South West
Crowsnest Pass	Municipality (consisting of five former towns and villages amalgamated under one municipality).	8	East
Coleman	Urban community in Crowsnest Pass Municipality .	20	East
Corbin	Seasonal Community possible permanent residents.	17	South East

Map Key

- Major Highways
- Provincial Boundary
- Mineral Claims
- Dominion Coal Blocks
- Other Coal Tenures
- CANAUS COAL LIMITED
- Proposed Loop Ridge Mine
- Operating Mines
- Proposed Mines

Map Notes:
1. NAD 1983 UTM Zone 11N
2. Map does not show the surveyed tenures for the coal mines at Elkview, Sparwood and Baldy Ridge or any other coal mines in the area.

Project No.:	**Project:** Michel Creek Coking Coal Project	**Figure:2-1** Distances to Other Mines	CanAus Coal Limited
Date: September, 2015			
Drawn By: SMART MAP	**Approved By:** Consult 5 Inc.		

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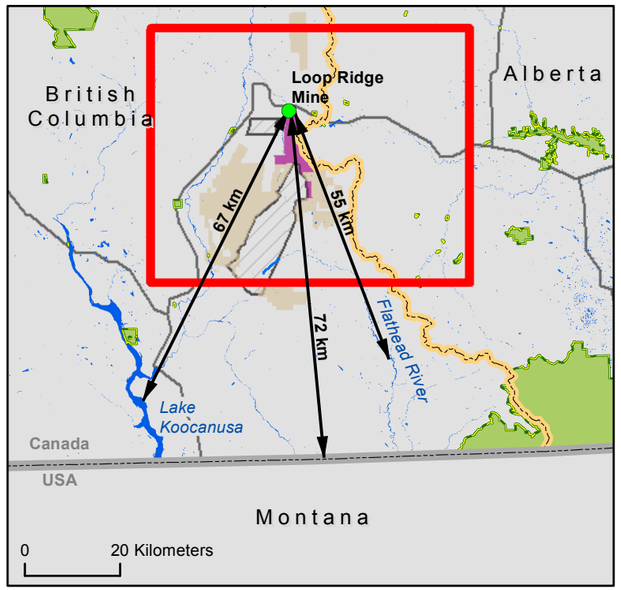
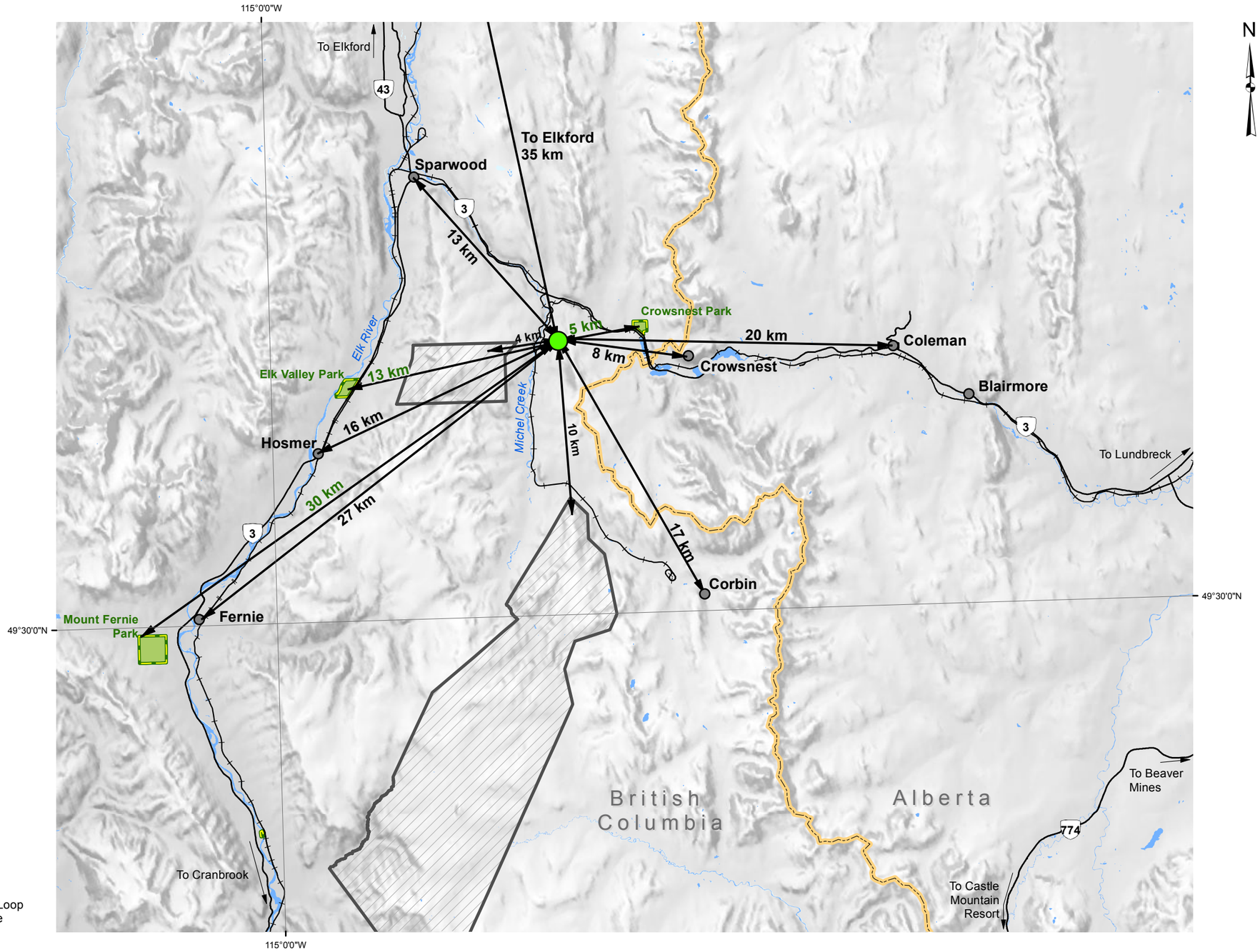




Map Key

- Railroad
- Roads
- Provincial Boundary
- Parks
- Dominion Coal Blocks
- Other Coal Tenures
- CANAUS COAL LIMITED
- Proposed Loop Ridge Mine

Map Notes:
1. NAD 1983 UTM Zone 11N

Document Path: D:\Projects\Consult_5\CanAus\MXD\Loop_Ridge\Project_Description\Revised_Maps\September_2015\Figure_2-2_Distance to Local_towns_Map.mxd

Project No.:	**Project:** Michel Creek Coking Coal Project	**Figure: 2-2** Distances to Local Towns and Federal Lands
Date: September, 2015		
Drawn By: SMART MAP	**Approved By:** Consult 5 Inc.	

CanAus Coal Limited

2.5 Scope of Project

In general terms, the Project being proposed will consist of:

- Construction and upgrading of access roads and development of a product loading facility and railway loop connecting the CanAus property to the existing railway line;
- Construction of a laydown area, power corridors, fuel storage area and fuelling station;
- Relocation of the TransCanada natural gas pipeline, which currently crosses the Loop Ridge property;
- Water management systems designed to be consistent with the Elk Valley Water Quality Plan;
- Construction of office, maintenance and coal processing plant facilities with associated stockpile areas, water treatment and sewage facilities;
- Development of an explosives storage area and delivery system;
- Removal and temporary storage of soil in stockpiles for re-use during progressive decommissioning and reclamation;
- Development of mine pit excavations;
- Development of waste rock stockpile areas;
- Production of dry stack tailings for co-deposition with waste rock in a purpose-built management facility;
- Progressive decommissioning and reclamation by backfilling of previously mined pit areas with waste rock as the Project proceeds;
- Rehabilitation of areas where mining and backfilling has been completed during the life of mine to meet agreed final land use objectives; and
- Final decommissioning and closure according to closure “endpoints” that will be developed in consultation with Regulators, First Nations and the local community.

2.6 Need for the Project

The proposed Project will mine coking coal, otherwise known as metallurgical coal. Coking coal is less abundant than thermal coal and is used to produce coke, a required and integral component in the steel manufacturing process.

World demand for high-quality metallurgical coal continues to grow to support industrialization in China, India, and many other countries. British Columbia is ideally positioned to satisfy this demand owing to the existence of high-quality coal deposits, an efficient transportation infrastructure for bulk commodity transportation, a skilled workforce and a stable political environment. Development of the Project will contribute to expanding and sustaining local communities, and will be economically beneficial to the province and the country as a whole.

2.7 Project Schedule

The schedule for the development of the Project is presented in Figure 2-3

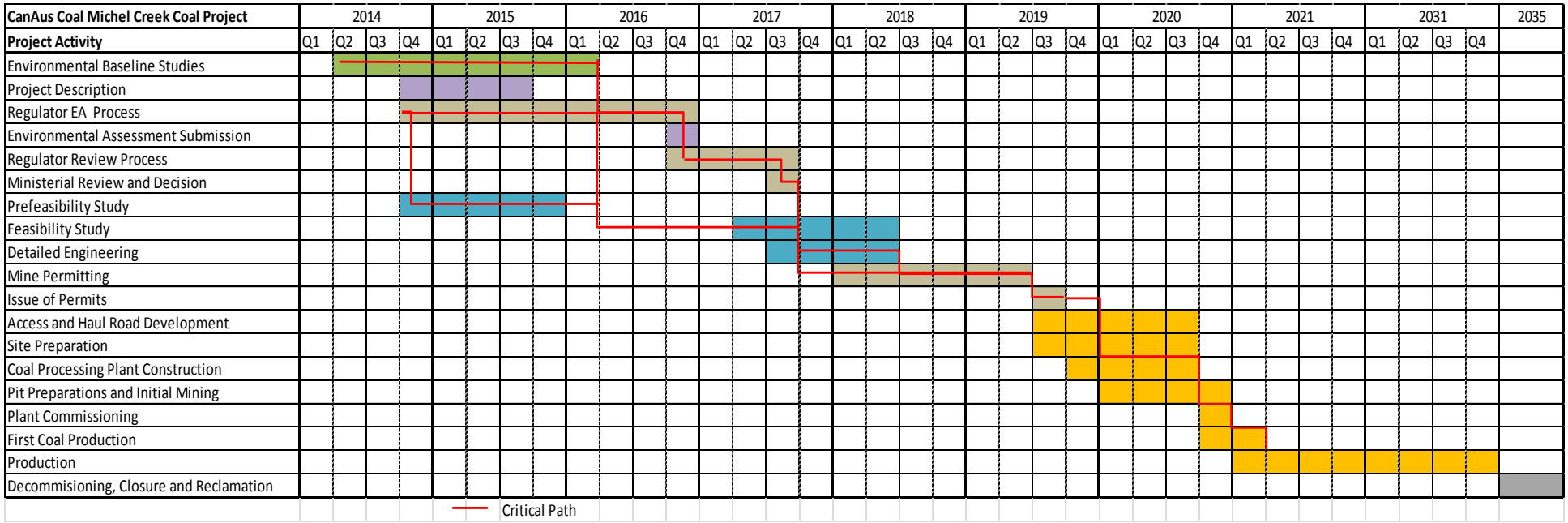


Figure 2-3: Conceptual Project Schedule

2.8 Project Operator

CanAus Coal Limited of Sparwood, BC holds the coal license areas on which the Project is based.

CanAus Coal Limited will be the Project Operator.

Proponent: CanAus Coal Limited
Address: 5000, Highway 43
Sparwood, B.C.
CANADA
V0B 2G1

Phone: +1.778.518.0775
Web Site: **www.canaus.ca**

The representative of CanAus Coal is:

Contact: John Pumphrey -- Chief Operations Officer
5000, Highway 43
Sparwood, BC
CANADA
V0B 2G1

Telephone: +1.778.518.0775
Email: jpumhprey@canaus.ca

For the Environmental Assessment (EA) the principal contact person is:

Contact: Mark Vendrig, Project Lead – Environmental Assessment and Permitting
5000, Highway 43
Sparwood, BC
CANADA
V0B 2G1

Telephone: +1.604.657.2727
Email: mvendrig@canaus.ca

2.9 Site Management

Management of all activities at the Project site will be the direct responsibility of employees of CanAus, although a number of specific activities may be contracted out during development and operations.

3 Regulatory Context

3.1 Provincial

Provincially, the Project is considered a Reviewable Project given that the production capacity of the mine is proposed to be greater than 250,000 tonnes per year of clean coal and result in a land disturbance greater than 750 hectares (ha) not previously permitted for disturbance.

3.1.1 British Columbia Environmental Assessment Act

CanAus considers this a brownfield site that was mined under a previous Mines Permit in the 1960s and again in the 1990s, with between 110,000 and 150,000 tonnes of coal extracted. There has also been forestry harvesting over the years. As a result, it is estimated that approximately 20% of the total Project footprint (1,000 ha.) has been disturbed by previous mining and forestry activity and will be further disturbed by planned logging by forestry operators before Project construction commences.

Although previously mined, the Project, as proposed, is considered a “new mine”. The planned annual production rate of the Project will exceed the threshold for coal mines stipulated in the *Reviewable Projects Regulation* issued pursuant to the *BC Environmental Assessment Act*, thereby triggering an environmental assessment under the Act.

3.1.2 British Columbia Licenses and Permits

Provincial permitting, licensing, and approval processes (statutory permit processes) may proceed concurrently with the EAC application or follow the issuing of the EAC. CanAus may seek concurrent permitting with the BC EA process, if required. However, no statutory permit approvals may be issued before an EAC is obtained. Statutory permit approval processes are normally more specific than the environmental assessment and may require more detailed design information.

Existing Approvals, Permits, Licenses and Authorizations

Table 3-1 provides a summary of the permits and authorizations issued to the Project. All are in good standing as of the writing of this document.

Anticipated Permit, License and Authorization Requirements

Mining projects in BC are subject to regulation under federal and provincial legislation, to protect workers and the environment. This section discusses the principal licenses and permits required for the Project.

Table 3-2 provides a preliminary list of the anticipated provincial permits and authorizations required for the Project. Permit and authorization requirements will be reviewed and updated as the Project advances through the EA and permitting process.

Table 3-1: Summary of Current Permits and Authorizations

Permit	Description	Number	Validity	Issuer
Access				
Wildlife Act Permit Access	Management Area Permit for the Corbin Creek Access Management Area	Cb13 -92300	2014/01/01-2014/12/31	Regional Manager Recreational Fisheries and Wildlife Programs, Kootenay-Boundary Region
Pipeline or Right of Way Permit - Gas Line Crossing Authorization	Temporary Equipment Crossing Structure	4200010205	2013/05/17- 2014.05.17 (no expiry)	Fortis BC
Temporary access road crossing pipelines		D10108-1	2013/05/16	TransCanada Corporation
Agreement to cross the gas lines on a previously existing crossing	Loop Ridge Southern Drilling Area			TransCanada Corporation
CPR agreement to use crossing at McGillivray (Fabro Station)			Annual renewal	CP Rail
Jemi Fibre Corp. Land Use Agreement			Annual renewal	Jemi Fibre Corp.
Coal License				
418317: Michel Head			Annual renewal	
418318 : Tent Mountain			Annual renewal	
418319 : Loop Ridge			Annual renewal	
418624, 418625, 418626, 418627, 418628, 418629, 418630, 418631, 418632, 418633, 418634			Annual renewal	
Mines Act Permits				
	Loop Ridge	CX-5-019	2013/07/11- 2018/05/31	
	Michel Head	CX-5-018	2013/06/25- 2018/12/31	
	Tent Mountain	CX-5-017	2013/06/25- 2018/12/31	
	Loop Ridge Phase 2	CX-5-021	2013/07/22- 2018/12/31	

Table 3-2: BC Authorizations, Licenses and Permits Anticipated for the Project

BC Government Permits and Licenses	Enabling Legislation
Environmental Assessment Certificate	*BC Environmental Assessment Act*
Permit Approving Work System and Reclamation Program (mine site – initial development)	*Mines Act*
Amendment to Permit Approving Work System and Reclamation Program (Pre-production)	*Mines Act*
Amendment to Permit Approving Work System and Reclamation Program (Bonding)	*Mines Act*
Amendment to Permit Approving Work System and Reclamation Program (Mine plan –production)	*Mines Act*
Permit Approving Work System and Reclamation Program (Gravel pit/wash plant/rock borrow pit)	*Mines Act*
Coal Lease	*Coal Act*
Water License – Notice of Intention (application)	*Water Act*
Water License – Storage and Diversion	*Water Act*
Water License – Use	*Water Act*
Water License – Construction of fences, screens and fish or game guards across streams to conserve fish or wildlife	*Water Act*
Water License – Alteration of Stream or Channel	*Water Act*
Authority to Make a Change in and about a Stream – notification	*Water Act*/Water Regulation
Authority to Make a Change in and About a Stream – approval to make a change	*Water Act*/Water Regulation
Authority to Make a Change in and About a Stream – terms and conditions of habitat officer	*Water Act*/Water Regulation
Waste Management Permit – Effluent (sediment, tailings, and sewage)	*Environmental Management Act*
Waste Management Permit – Air Emissions (crushers, ventilation, dust)	*Environmental Management Act*
Waste Management Permit – Refuse (if burial on site)	*Environmental Management Act*
Special Waste Generator Permit (waste oil)	*Environmental Management Act* (Special Waste Regulations)
Waterworks Permit	*Drinking Water Protection Act*
Fuel Storage Approval	*Fire Services Act*
Highway Access Permit	*Highway Act*
Heritage Inspection Permit (to conduct archaeological site investigations)	*Heritage Act*
Wildlife Permit (to handle wildlife)	*Wildlife Act*

3.2 Federal

Federally, the Project is considered a Designated Project under the CEAA 2012 *Regulations Designating Physical Projects*, as the mine will have a production capacity of more than 3,000 tonnes per day.

3.2.1 Canadian Environmental Assessment Act 2012

The *Canadian Environmental Assessment Act*, 2012 (CEAA 2012) offers an updated, modern approach that responds to Canada's current economic and environmental context. It implements central elements of the Government's plan for Responsible Resource Development to modernize the regulatory system and allow natural resources to be developed in a responsible and timely way for the benefit of all Canadians.

Under CEAA 2012, an environmental assessment focuses on potential adverse environmental effects that are within federal jurisdiction, including:

- Fish and fish habitat;
- Other aquatic species;
- Migratory birds;
- Federal lands;
- Potential effects that cross provincial or international boundaries;
- Potential effects on Aboriginal groups, such as their use of lands and resources for traditional purposes; and
- Changes to the environment that are directly linked to or necessarily incidental to any federal decisions about a project.

The following sections provide a brief summary of these issues as they apply to the Project.

3.2.2 Fisheries Act

The Project as proposed will not result in significant residual adverse effects to the sustainability and ongoing productivity of the recreational, commercial or Aboriginal fisheries in Michel Creek or the Elk River.

It is anticipated that the Loop Ridge mine and waste rock storage area will alter the flow path of the headwaters of only three small streams, which eventually discharge to Michel Creek. Diversion channels will be incorporated into the mine design to divert clean water flows in these tributaries around these facilities to minimize potential contamination. These channels may also be used to create offset aquatic habitat.

The construction of water management systems to bring compliance with the EVWQP may also require authorization from Fisheries and Oceans Canada (DFO). Consultation with representatives of DFO will continue in order to determine the need for a Fisheries Act Authorization from that agency, as none of the streams directly impacted are fish-bearing (Figure 3-1).

Map Key

- Conceptual Haul Road
- Proposed CanAus Open Pit
- Conceptual Rail Spur Line
- Diversion Ditch
- Fortis Pipeline
- TransCanada Pipeline
- Railroad
- Roads
- Drainage
- Provincial Boundary
- Ex-Pit Rock Dump
- In-Pit Rock Dump
- Treatment Wetland (Semi-Passive)
- Potential Disturbance Area Boundary
- Wooded Areas
- Parks

Fish Bearing

- Ephemeral
- Fish bearing
- No Seasonal Connection
- Non-fish bearing
- Unknown

655,000 660,000 665,000

5,500,000

Fortis Pipeline
Fir Creek
TransCanada Pipeline
British Columbia
Alberta
Island Creek
Michel Creek
Wheeler Creek
East Crowsnest

N

0 500 1,000 1,500 2,000 2,500 Meters

1:40,000

Map Notes:
1. NAD 1983 UTM Zone 11N
2. Woodlots are present within the Dominion Coal Blocks.

Document Path: D:\Projects\Consult_5\CanAus\MXD\Loop_Ridge\Project_Description\Revised_Maps\September_2015\Figure_3_1_Fish_bearing_Streams.mxd

Project No.:	**Project:** Michel Creek Coking Coal Project	**Figure: 3-1** CanAus Conceptual Design in Relation to Fish Bearing Streams	CanAus Coal Limited
Date: September, 2015			
Drawn By: SMART MAP	**Approved By:** Consult 5 Inc.		

3.2.3 Migratory Birds Conservation Act

The mountainous ecosystems of the Elk Valley generally host about 300 bird species of which about 200 are regular inhabitants. The Rocky Mountains and the Rocky Mountain Trench are considered a flight path between breeding sites in the north and overwintering areas for migratory birds in the south. A substantial number of bird species are anticipated within the study area, utilizing both breeding habitat and migratory flight paths.

A list of migratory birds identified on site up to June 2015 is presented in Appendix 2. Based on preliminary investigations, some of the important migratory birds that are likely to occur in the Project area include, but are not limited to:

- Olive - sided Flycatcher (*Contopus cooperi*);
- American Dipper (*Cinclus mexicanus*);
- Harlequin Duck (*Histrionicus histrionicus*); and
- Barn Swallow (*Hirundo rustica*).

CanAus will also be focusing area baseline bird investigations on birds with conservation priorities. These include a subspecies of blue heron (*Ardea herodias herodias),* which is considered a conservation priority in the study area. Riparian areas and wetlands are a necessary habitat feature for these birds, though these habitats have not yet been mapped for the study area.

In addition, although not explicitly identified in the Elk Valley, two species, the Lewis' woodpecker (*Melanerpes lewis*) and the Williamson's sapsucker (*Sphyrapicus thyroideus*), have been recorded in the East Kootenay trench and the Project area may fall within the species range. Finally, the Common nighthawk possibly occurs in the area as well, though the species has not been studied locally. Species distribution and population size for these birds is believed to be most strongly influenced by insect populations (COSEWIC 2007).

CanAus intends to conduct all clearing of vegetation and other similar disturbance during periods that are prior to or after nesting and peak migration and, therefore, migratory birds are unlikely to be affected. As a result, the proposed project is not anticipated to significantly affect migratory birds as there is significant suitable habitat in abundance in the area for the birds to locate. No disturbance and minimal on-going activity will take place near any shorelines and therefore the proposed project will have negligible impact to shoreline birds. Notwithstanding this, CanAus is committed to conducting appropriate spring breeding bird, spring water bird, and spring and fall bird migration surveys during the EA.

3.2.4 Indian Act

The Project will not be located on, nor does it require access to, through or over any First Nations Reserve lands.

3.2.5 Natural Resource Act and Provincial or International Boundaries

The Project will not be located on, nor does it require access to, through or over any federal lands, such as national parks or national defence bases.

It is anticipated that the Project will not result in impacts or effects that will cross international or provincial boundaries, but this will be assessed during the EA process.

3.2.6 Canadian Transportation Act

A key east-west line of CP Rail travels along the northwestern edge of the Loop Ridge property, and a rail spur from the existing Coal Mountain mine to the CP railway passes along the western boundary of the Project property. It is anticipated that a rail spur, and associated load-out facilities, will be built at the Loop Ridge CPP and connect with the CP rail system, in order to facilitate the shipment of coal by rail to commercial ports on the west coast of Canada.

It is anticipated that construction of the rail connection will require approval from the Canadian Transportation Agency under section 98(2) of the *Canada Transportation Act*.

3.2.7 Species at Risk Act

A database search of the BC Conservation Data Centre (CDC) produced a list of vegetation and wildlife species with a SARA, COSEWIC, Red list or Blue list designation, that have the potential to exist within the Regional Study Area (RSA), based on the ecosystems present. These include:

- Wolverine (*Gulo gulo*) – Special Concern (SARA);
- Whitebark pine (*Pinus albicaulis*) – Endangered (COSEWIC);
- Western toad (*Anaxyrus boreas*) - Special Concern (COSEWIC);
- Little brown myotis (*Myotis lucifugus*) - Endangered (COSEWIC);
- Northern leopard frog (*Lithobates pipiens*)- Endangered (COSEWIC;
- American badger (*Taxidea taxus*) - Endangered (COSEWIC); and
- Grizzly bear (*Ursus arctos*) - Special Concern (COSEWIC).

CanAus has initiated its Biodiversity Action Plan (BAP) with a goal of a Net Positive Impact (NPI) to biodiversity over the life of the Project (i.e. through exploration, construction, operations, decommissioning and reclamation). A BAP is an internationally recognized program addressing threatened species and habitats and is designed to protect and restore biological systems. Section 10.3 provides additional discussion of the Project BAP.

3.2.8 Explosives Act

The proposed Project will require a stand-alone emulsion plant with 150 tonnes of prill stored in silos. The facility will require two magazines rated for up to 25,000 kg each, one licensed for 50,000 detonators and one for 20,000 kg of explosive. All items will be designed to meet *Mines Act* Permit requirements to ensure safety and security.

The facilities will be in a secure location and be locked at all times, with only appropriately trained and authorized personnel allowed to access the facility. In addition, the access road leading to the facilities will be within the property boundary and therefore access will be controlled and public access restricted.

The magazines will be constructed and operated in accordance with federal and provincial regulations, and will meet or exceed the standards set out in the May 2001 edition (or subsequent iterations) of *Storage Standards for Industrial Explosives* published by the Explosives Regulatory Division of the Department of Natural Resources, Government of Canada and any terms and conditions imposed by the required permits and approvals. Neither an Explosives Factory License nor an ANFO Manufacturing Certificate will be required for the Project.

3.2.9 Navigable Waters Protection Act

The *Navigable Waters Protection Act* is a federal law designed to protect the public right of navigation. It ensures that works constructed in or over navigable waterways are reviewed and regulated to minimize the overall effect upon navigation. The Act includes provisions for the removal of unauthorized works or obstructions that render navigation so difficult it proves to be considered dangerous. Within the Act, "**Navigable Waters"** are defined as including any body of water capable of being navigated by any type of floating vessel for the purpose of transportation, recreation or commerce.

No aspects of the proposed Project are anticipated to have the potential to extend into navigable waters, or impede navigation.

3.2.10 Federal Policy on Wetland Conservation

CanAus recognizes that the "Federal Policy on Wetland Conservation" (GAC 1991) promotes the wise use of wetlands and protection through adequate consideration of wetland concerns in environmental assessments of development projects. The objective of the Policy is to promote the conservation of Canada's wetlands to sustain their ecological and socio-economic functions, now and into the future.

In its planning and implementation CanAus will take all reasonable measures to avoid wetlands areas where feasible, irrespective of whether they are wet or dry, and, when feasible, establish buffers or setbacks based on the 1-in-100 year high water mark. In addition, at the end of operations, CanAus will reclaim wetland areas within the Project area, if they exist, in a manner that restores, to the extent possible, the function, type and area of wetlands lost directly as a result of this Project. The overall goal will be to promote the maintenance of the functions and values derived from wetlands throughout the Project area.

CanAus is currently not aware of any listed wetlands in the project area, but this will be confirmed during the baseline and environmental assessment process.

3.2.11 Governmental Financial Support

There is no federal or provincial funding identified for this Project.

3.2.12 Regional Studies

CanAus is not aware of any formal regional studies as defined under CEAA 2012. CanAus is participating in the regional work of the Cumulative Effects Management Framework and will work within the Elk Valley Water Quality Plan.

3.2.13 Ktunaxa Regulations and Frameworks

CanAus recognizes that this project is located within the asserted traditional Territory of the Ktunaxa. CanAus intends to engage and consult with the Ktunaxa in order to better understand and develop processes and outcomes in relation to Ktunaxa interests.

3.3 BC EAO and CEA Agency EA Process and Schedule

The Canadian Environmental Assessment Act, 2012 (CEAA 2012) enables cooperation between the federal government and other jurisdictions in the delivery of timely, high quality environmental assessments (EAs) through a number of different means. One of these approaches is for the Federal Minister of the Environment to substitute the EA process of another jurisdiction for the EA process that would otherwise be conducted by the Canadian Environmental Assessment Agency (CEA Agency). This approach achieves the objective of “one project-one assessment” which has been endorsed by the Canadian Council of Ministers of the Environment.

In 2013, the CEA Agency and the British Columbia Environmental Assessment Office (BCEAO) signed a Memorandum of Understanding (MOU 2013) which, among other things, allows for “substitution” in order to provide clarity and facilitates the efficient use of resources in the timely delivery of assessments.

The proposed Project offers the opportunity for the substitution of the British Columbia EA process for the EA process that would otherwise be conducted by the Canadian Environmental Assessment Agency, thereby potentially eliminating unnecessary overlap and duplication in the review process.

In the event that a substitution is deemed not possible and BCEAO and CEA Agency undertake independent Environmental Assessments prior to the issuance of an EA certificate, it is anticipated that the process described in Table 3-3 will be followed.

Table 3-3: Proposed Environmental Assessment Schedule

Period	Activity
September 2013	• Gap analysis and initiation of baseline data collection
April 2013 to April 2016	• Baseline studies to characterize existing environment
October 2013 to June 2016	• Engagement with key stakeholders
August 2015	• CanAus submits the PD to BCEAO and Canadian Environmental Assessment Agency • Canadian Environmental Assessment Agency determines whether the Project requires an environmental assessment • BCEAO issues Section 10 procedural order confirming the Project will undergo review under BCEAA • Canadian Environmental Assessment Agency issues Notice of Commencement
August to December 2015	• Working Group established. • BCEAO issues Section 11 Procedural Order outlining the scope, procedures and methods for the EA • Canadian Environmental Assessment Agency issues Notice of Commencement • EAC Application Information Requirements under BCEAO established • EIS Guidelines under Canadian Environmental Assessment Agency established - includes regulatory review and public comment period • Public and First Nations consultation on the Project • CanAus prepares EAC Application and EIS • Ongoing consultation efforts and activities
October 2016	• CanAus submits EAC Application and EIS • CanAus submits permit applications for other relevant Provincial and Federal permits and approvals • Ongoing consultation efforts and activities
October 2016 to May 2017	• Review of EAC Application and EIS, including public comment period • Preparation of Assessment Report by BCEAO and EA Report by Canadian Environmental Assessment Agency
June 2017 to September 2017	• Ministerial review and decision

4 Summary of Property Historical Activities

4.1 Property History

The Project area has been explored and mined over the past 50 years, with at least three separate mining campaigns under the auspices of numerous companies and various configurations of licenses and land/mineral tenures. The property has also been subject to extensive forest harvest activities in the past and more recently in 2015.

4.1.1 "Post-Contact" Exploration and Development History

The Crow's Nest Pass Coal Company (CNPC) was the first to exploit the coal reserves in 1897 and held the mineral and coal rights up until the late 1960's. Since then, ownership has changed hands several times with the following work sequence detailed in chronological order.

1897 to 1904: CNPC begins its operations in the area. Mining commences at Coal Mountain in 1904, four kilometers southeast of the present-day Michel Creek Coking Coal Project.

1964 to 1969: John T. Boyd drills seven holes on behalf of CNPC following a decision by the Alberta Natural Gas Company to lay gas pipelines in the area. Coal estimates for the entire area indicate 153.6 Mt of coal (non 43-101 compliant) within 460 m of surface with a further 13.3 Mt between the depths of 460m and 760m. In 1969, CNPC mines the McGillivray Pit at the north end of the Loop Ridge Property. It is estimated that between 60,000-100,000 t of coal is mined and trucked to the now defunct Michel preparation plant near Sparwood.

1972: Kaiser Resources and Coleman Collieries conduct regional trench sampling, collecting 69 samples from 31 trenches.

1993 to 1995: McGillivray Mining Ltd. (MML) completes an agreement with the landowner to work the McGillivray Pit on the Loop Ridge Property, which was last mined by CNPC in 1969. Following the issue of a Mines Permit Act Permit and bulk sample, MML mines approximately 20,000 t of coal in 1995 from McGillivray for assessment. Post mining, the site is decommissioned and reclaimed. The Mines Act Permit was returned to the Crown and after review of closure activities by the regulators, the rehabilitation bond was returned to MML.

1996 to 2000: Fording Coal Ltd. (Fording) purchases MML and the coal rights from the landowner. A further 30,000 t is mined from the McGillivray area (Figure 4-1). Fording completes two drill programs on the entire Loop Ridge property, the first in 1998 (18 holes), the second in 1999 (18 holes).

Figure 4-1: Photo of McGillivray Mining Activity at Loop Ridge (c. 1996)

Fording is merged into a larger diversified mining company in 2000. Smaller assets are relinquished.

2013 onward: Three coal licenses (~1,200 ha), are granted to CanAus Coal Limited forming the core of the Michel Creek Coking Coal Project. An additional three contiguous coal licenses are granted in 2014 and consolidated to form an overall package of approximately 4,000 ha. The first drilling campaign provides positive results, enabling the environmental baseline studies and data collection to begin. Eight additional coal licenses are granted in 2014, providing required lands for infrastructure and expanded resource opportunities. The total area stands at ~5,000 ha. A Preliminary Economic Assessment (PEA) was prepared on behalf of CanAus and delivered at the end of 2014. A Prefeasibility Study (PFS) of the Project commenced shortly thereafter.

4.2 Tenure

4.2.1 Current Surface Tenure

Project Property

All surface rights for the Project area (i.e. license areas) are privately held by Jemi Fibre Corp. as part of the freehold Tent Mountain Block 21. No Crown Lands or First Nations Reserve lands are located within the Project area. CanAus currently has a Land Use Agreement with Jemi Fiber Corp. for the use of the land surface.

4.2.2 Current Coal Tenure

The Project area currently consists of the following coal licenses (Table 4-1 and Figure 4-2).

Table 4-1: CanAus Coal License Areas as of August 2014

License	Area (ha)	Exploration Area	Status	Applicant
418319	409	Loop Ridge (Main)	Granted	CanAus
418318	417	Tent Mountain	Granted	CanAus
418317	342	Michel Head	Granted	CanAus
418629	1	Loop Ridge West	Granted	CanAus
418630	4	Loop Ridge West	Granted	CanAus
418628	24	Loop Ridge West	Granted	CanAus
418631	151	Loop Ridge North	Granted	CanAus
418632	1160	Loop Ridge South I	Granted	CanAus
418634	1049	Loop Ridge South II	Granted	CanAus
418624	689	Loop Ridge South III	Granted	CanAus
418625	133	Loop Ridge South IV	Granted	CanAus
418633	326	Loop Ridge South V	Granted	CanAus
418627	27	Loop Ridge South VI	Granted	CanAus
418626	408	Loop Ridge West	Granted	CanAus
Total Area	**5140 ha.**			

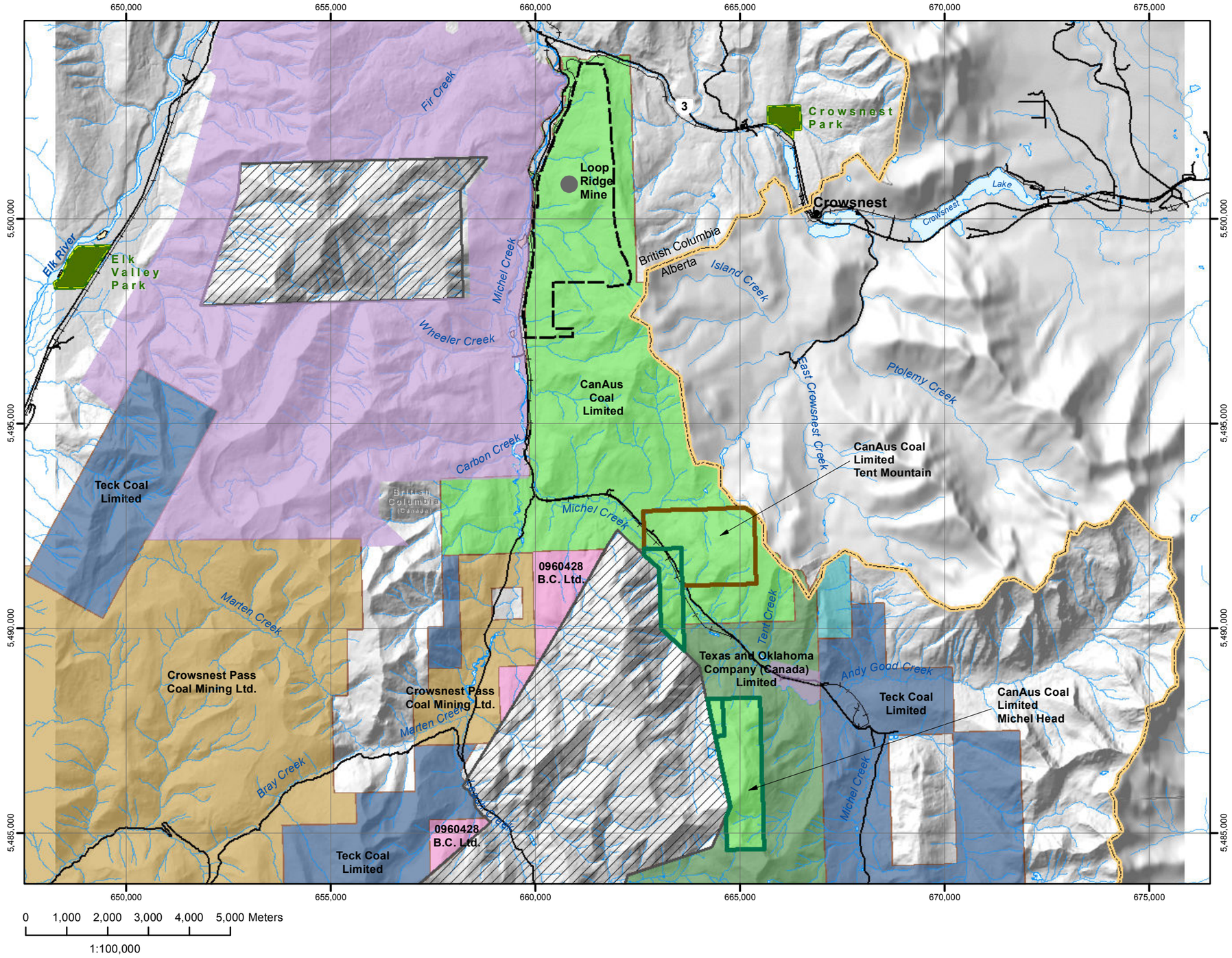
Map Key

- Muncipality
- Provincial Boundary
- Main Roads
- Teck Private Lands
- Potential Disturbance Area Boundary
- Parks
- DOMINION COAL BLOCKS

Coal Tenures

- 0960428 B.C. LTD.
- CANAUS COAL LIMITED
- COAL VALLEY RESOURCES INC.
- CROWSNEST PASS COAL MINING LTD.
- TECK COAL LIMITED
- TEXAS AND OKLAHOMA COAL COMPANY (CANADA) LIMITED

Map Notes:
1. NAD 1983 UTM Zone 11N
2.Coal Tenures derived from BC Mineral Titles Online (BC MTO) database; accessed in January, 2015
3. Map does not show all privately owned lands and coal tenures as they were not available from the public datasets.



Project No.:	**Project:** Michel Creek Coking Coal Project	**Figure: 4-2** Project License Areas	CanAus Coal Limited
Date: September, 2015			
Drawn By: SMART MAP	**Approved By:** Consult 5 Inc.		

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4.2.3 Mineral Tenure

In the area of the proposed Project, several mineral tenures have been identified coincident with or near the CanAus coal tenures (Figure 4-3). These mineral tenures belong to:

- Fertoz International Inc.;
- Graymont Western Canada Inc.; and
- High Brix Manufacturing Inc.

4.2.4 Oil and Gas Tenure

There are no oil and gas tenures coinciding with or adjoining the CanAus license area, and there are no oil and gas drilling activities on the property (BC Oil and Gas Commission, 2015; BC Ministry of Natural Gas Development, 2015; Apache Corporation, 2015).

4.3 Current Site Condition

Approximately 20% of the 1,000 ha footprint of the proposed Project area has been previously disturbed by historical mining, timber harvesting and other industrial activities. It is anticipated that a large part the proposed Project disturbance area will have been logged before mine construction begins.

Figure 4-4 provides a comparative view of the previously approved and operated mine footprint overlain by the Loop Ridge mine development proposed for the Project.

Map Key

- Municipality
- Provincial Boundary
- Potential Disturbance Area Boundary
- Parks
- DOMINION COAL BLOCKS

Mineral Claim Owner

- FERTOZ INTERNATIONAL INC
- GRAYMONT WESTERN CANADA INC.
- HIGH BRIX MANUFACTURING INC.

Coal Tenures

- CANAUS COAL LIMITED

650,000 655,000 660,000 665,000 670,000 675,000

5,500,000 5,495,000 5,490,000 5,485,000

N

Fir Creek
Loop Ridge Mine
Crowsnest Park
3
Crowsnest
Lake
Crowsnest
Elk River
Elk Valley Park
Michel Creek
Island Creek
Wheeler Creek
East Crowsnest Creek
Ptolemy Creek
Alberta
(Canada)
Carbon Creek
CanAus Coal Limited
British Columbia
(Canada)
Michel Creek
Marten Creek
Tent Creek
Andy Good Creek
CanAus Coal Limited
Bray Creek
Marten Creek
Beaver Creek
Michel Creek

650,000 655,000 660,000 665,000 670,000 675,000

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1:100,000

Map Notes:
1. NAD 1983 UTM Zone 11N
2. Coal Tenure data derived from BC Mineral Titles OnLine (BC MTO); Data was accessed Septmebr, 2014.
3. Map does not show the surveyed tenures for the coal mines at Elkview, Sparwood and Baldy Ridge and any other coal mines in the area.

Project No.:	**Project:** Michel Creek Coking Coal Project	**Figure: 4-3** Mineral Tenures Around the Proposed Project
Date: September, 2015		
Drawn By: SMART MAP	**Approved By:** Consult 5 Inc.	CanAus Coal Limited

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Map Key

- Provincial Boundary
- Existing Railroad
- Proposed CanAus Open Pit
- Fortis Pipeline
- TransCanada Pipeline
- Area Disturbed by Logging
- Potential Disturbance Area Boundary
- DOMINION COAL BLOCKS
- McGillivray Mine Footprint
- Ex-Pit Rock Dump
- In-Pit Rock Dump
- CANAUS COAL LIMITED

Notes:
1. Area of 1999 McGillvray Mine Footprint - 26.9 hectares
2. Area of Proposed Open Pit - 246 hectares
3. Area Disturbed by Logging - 152 hectares

656,000 657,000 658,000 659,000 660,000 661,000 662,000 663,000 664,000 665,000 666,000 667,000

5,505,000 5,504,000 5,503,000 5,502,000 5,501,000 5,500,000 5,499,000 5,498,000 5,497,000

N

Crowsnest Highway
Fortis Pipeline
Fir Creek
McGillivray Mine Footprint
TransCanada Pipeline
Corbin Road
Proposed Loop Ridge Open Pit
Michel Creek
Wheeler Creek
Proposed Project Disturbance Area
Conceptual Waste Rock Dump Footprint
British Columbia
Alberta
Island Creek
Crowsne

0 300 600 900 1,200 1,500 Meters

1:40,000

Map Notes:
1. NAD 1983 UTM Zone 11N
2. Areas disturbed by logging derived from Google Earth image accessed 2015.

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Project No.:	**Project:** Michel Creek Coking Coal Project	**Figure: 4-4** Proposed Mine Footprint Comparison With Previously Approved Mine	CanAus Coal Limited
Date: September, 2015			
Drawn By: SMART MAP	**Approved By:** Consult 5 Inc.		

5 Proposed Project

5.1 Project Overview

The proposed Project will involve surface mining throughout the life of the mining operations. The pit at Loop Ridge will be designed to meet the annual production requirement of approximately 2.1 Mmt clean coal from the process plant. Currently, it is estimated that the resources in the Loop Ridge deposit alone will support a 10-year mine life, producing approximately 21 Mmt of clean coal. The proposed Project is anticipated to have a disturbance area of about 1,000 ha, primarily within the Michel Creek watershed. It is anticipated that the relocation of the natural gas supply line crossing the proposed pit area will be completed in time to ensure efficient resource development.

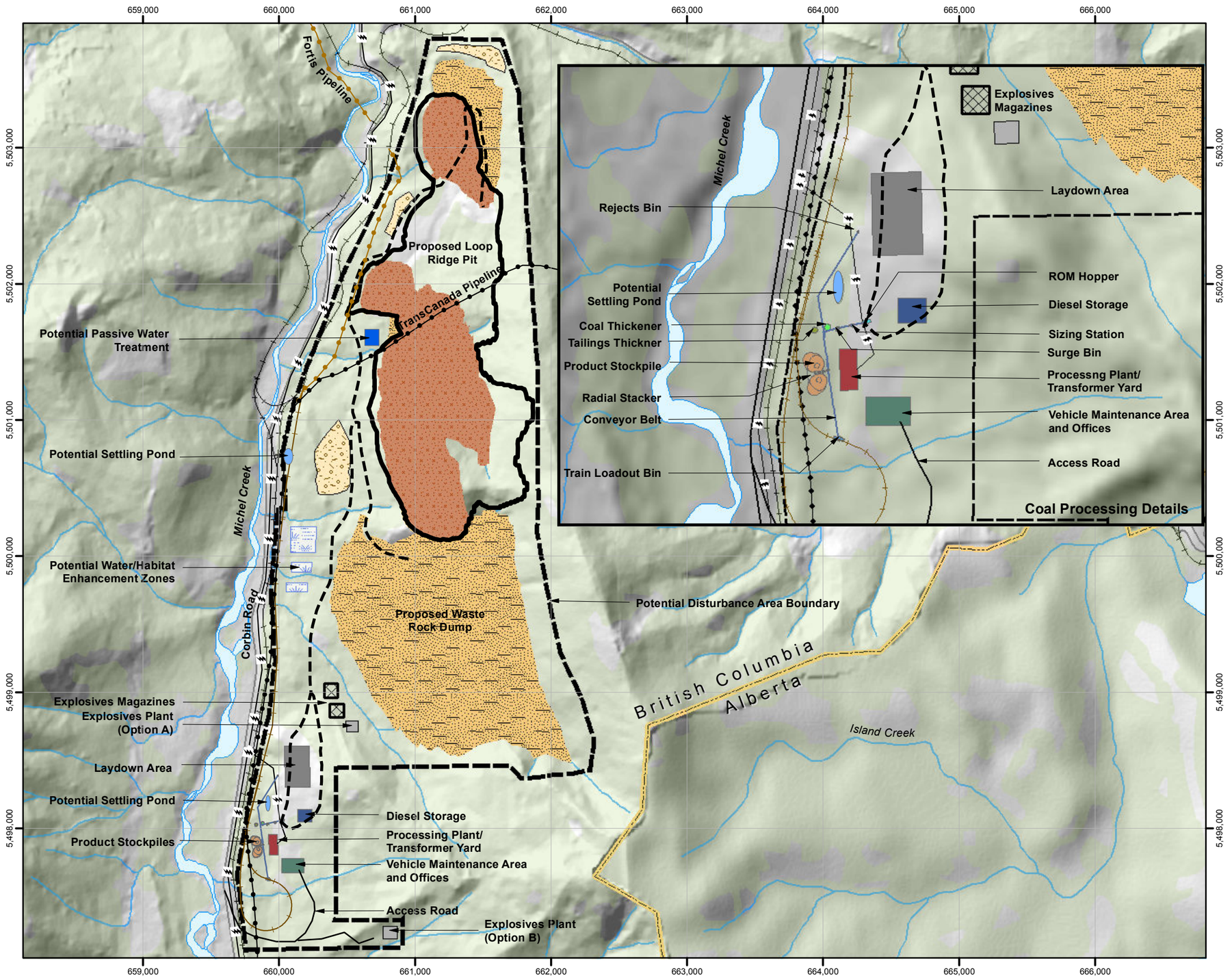
The run-of-mine (ROM) coal providing the feed material for the coal processing plant (CPP) will be upgraded in quality through the CPP. The resulting product coal will be loaded onto trains for transport to the major export bulk commodity ports on the west coast of Canada. It is proposed to build a new coal load-out facility and associated rail loop close to the Loop Ridge mine that ties into the existing CP rail system. It is anticipated that power for the mine site will be provided by connection to the existing BC Hydro power system.

The proposed Project will include the following mine components and activities as illustrated in Figure 5-1 and Figure 5-2:

- Construction and upgrading of access roads and development of a railway loop;
- Construction of a laydown area, power corridors, fuel storage area and fuelling station;
- Water management systems designed to be consistent with the Elk Valley Water Quality Plan;
- Construction of office, maintenance and coal processing plant facilities with associated stockpile areas, water treatment and sewage facilities;
- Development of an explosives storage area and delivery system;
- Development of mine pit excavations with associated soil and waste rock stockpile areas;
- Development of near-pit waste rock areas and pit backfill operations;
- Production of a dry stack mine waste management facility;
- Progressive reclamation of areas, where mining and backfilling have been completed during the life of mine to the agreed-upon final land use objectives; and
- Final decommissioning and closure according to a closure plan, to be developed in consultation with Regulators, Aboriginal Groups and the community.

Map Key

- Provincial Boundary
- Existing Railroad
- Fortis Pipeline
- TransCanada Pipeline
- Conceptual Haul Road
- Conceptual Rail Loop
- Proposed CanAus Open Pit
- Conceptual Access Road
- Conceptual Powerline
- Coal Thickener
- Diesel Storage
- Laydown Area
- Processing Plant/Transformer Yard
- Product Stockpile
- ROM Dump Hopper
- Radial Stacker
- Rejects Bin
- Sizing Station
- Soil Stockpile
- Surge Bin
- Tailings Thickener
- Train Loadout Bin
- Vehicle Maintenance Area and Offices
- Treatment Wetland (Semi-Passive)
- Explosives Plant
- Explosives Magazines
- Ex-Pit Rock Dump
- In-Pit Rock Dump
- Potential Disturbance Area Boundary
- Forest Cover



0 200 400 600 800 1,000 Meters

1:30,000

Map Notes:
1. NAD 1983 UTM Zone 11N

Project No.:	**Project:** Michel Creek Coking Coal Project	**Figure: 5-1** Conceptual Site Plan	CanAus Coal Limited
Date: September, 2015			
Drawn By: SMART MAP	**Approved By:** Consult 5 Inc.		

Document Path: D:\Projects\Consult_5\CanAus\MXD\Loop_Ridge\Project_Description\Revised_Maps\September_2015\Figure_5_1_Conceptual_Michel_Creek_Coal_Mine_Design.mxd

Map Key

- Conceptual Haul Road
- Existing Road
- TransCanada Pipeline
- Existing Railroad
- Conceptual Rail Loop
- Powerline
- Potential Disturbance Area Boundary
- Cut
- Fill

Name

- Coal Thickener
- Diesel Storage
- Laydown Area
- Processing Plant/Transformer Yard
- Product Stockpile
- ROM Dump Hopper
- Radial Stacker
- Rejects Bin
- Sizing Station
- Surge Bin
- Tailings Thickener
- Train Loadout Bin
- Vehicle Maintenance Area and Offices
- Explosives Magazines
- Explosives Plant
- Ex-Pit Rock Dump
- In-Pit Rock Dump
- Forest Cover

660,000 661,000 662,000

5,499,000 5,498,000 5,497,000

N

Michel Creek

Corbin Road

Explosives Storage Area

Explosives Plant (Option A)

Laydown Area

Rejects Bin

Conveyor

Sizing Station

Proposed Settling Pond

Surge Bin

Coal Thickener

Tailings Thickener

Radial Stacker

Product Stockpile

Train Loadout Bin

Conceptual Powerline

ROM Dump Hopper

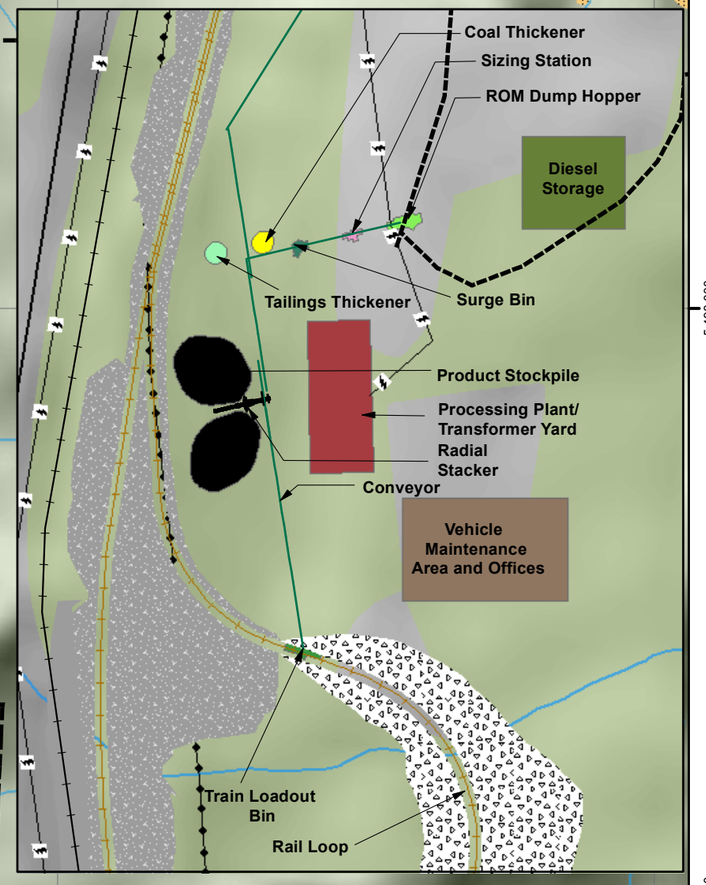
Diesel Storage

Processing Plant/ Transformer Yard

Vehicle Maintenance Area and Offices

Access Road

Explosives Plant (Option B)



0 100 200 300 400 500 Meters

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Map Notes:
1. NAD 1983 UTM Zone 11N

Document Path: D:\Projects\Consult_5\CanAus\MXD\Loop_Ridge\Project_Description\Revised_Maps\September_2015\Figure_5_2_Conceptual_Michel_Creek_Mine_Design_Detail_Map.mxd

Project No.:	**Project:** Michel Creek Coking Coal Project	**Figure: 5-2** Conceptual Site Plan Detail	CanAus Coal Limited
Date: September, 2015			
Drawn By: SMART MAP	**Approved By:** Consult 5 Inc.		

5.2 Project Alternatives

CanAus does not view the EA process as merely a means for regulation, but also as an opportunity to assess whether there are alternative means of developing the Project that would meet the Project objectives, and would be a more preferable approach with respect to environmental or other considerations (i.e., a structured Alternatives Analysis). Therefore, CanAus will consider various alternatives early in the planning process and provide a comparison of each based on health and safety, economics and environmental merit.

5.2.1 Assessment of Options

Alternative means of developing the Project will be reviewed in the EA process as the various technically and economically feasible ways that the project can be implemented are assessed. For the proposed Project, alternative means include alternative site infrastructure configurations, alternative water withdrawal, management and discharge options, and alternative access road and product transportation options. During the EA, the criteria used to evaluate alternatives will reflect a consideration for both the economic and technical feasibility, as well as the predicted short-term (during operations) and long-term (after decommissioning) effects of the activity. In addition, the identification of potential Project alternatives will be the subject of consultation with each of the primary stakeholder groups, including communities and Aboriginal organizations.

Where existing disturbed areas occur such as existing access trails and areas previously disturbed by past forestry and/or mining activities, and where operational and regional experience supports proven approaches and methodologies, alternatives analysis is considered not to be necessary.

5.2.2 Preferred Option

CanAus has opted to undertake a more detailed Alternatives Analysis and finalize mine and infrastructure design after the EA process has been initiated in order to create the opportunity for input into the alternatives considered from regulators, Aboriginal groups and the community. This will allow CanAus to consider a combination of regulatory requirements, traditional use, environmental and social sensitivities, and economic feasibility, to achieve a mine design that supports both long-term sustainability and the intent of CanAus to leave a positive mining legacy.

5.3 Project Schedule

The Preliminary Economic Assessment (PEA) for the Project was completed in July 2014. The Pre-feasibility Study (PFS) commenced in 4th Quarter 2014, and CanAus is targeting 4th Quarter 2015 for its completion. CanAus has developed a preliminary schedule that includes environmental baseline studies initiated in 1st Quarter 2014, with a scheduled completion by 1st Quarter 2016, and a planned submission date in 4th Quarter 2016 for the Environmental Assessment Certificate (EAC) Application and Mines Act Permit Application. Commencement of construction activities will

depend on timelines for the review and issuance of an EAC and Mines Act Permit, but are tentatively planned to begin in 3rd Quarter 2017, with first coal being produced in 4th Quarter 2020 (Figure 2-3).

A more detailed description for each of the phases is presented in the following discussion:

- Baseline studies, environmental assessment approval and permitting (2013 – 2019);
- Construction (Q3 2019 – Q4 2020);
- Operation (Q4 2020 – Q4 2031);
- Decommissioning (2031 – 2034); and
- Closure and post-closure (2035).

5.3.1 Baseline Studies

In response to the possible environmental, social, economic, health and heritage effects resulting from the Project, CanAus initiated baseline studies in 2013, which are scheduled for completion in 2016. The various studies are shown in Table 5-1 below. The specialists retained to do this work are also shown in the table. The studies are being conducted to meet the environmental planning and assessment requirements of the:

- BC Environmental Assessment Act (BCEAA);
- Canadian Environmental Assessment Act (CEAA);
- Various regulators such as BC MEM, MOE and, DFO who have been consulted to date; and
- Feedback from early consultation.

Table 5-1: Baseline Studies Being Conducted for the Proposed Project

Discipline	Retained Specialists
Expert Water Advisory Group	Stella Swanson, Gord McKenna and Mike O'Kane
Air Quality	RWDI
Noise and Vibration	RWDI
Geochemistry	Lorax Environmental Services and Borealis
Hydrogeology	Lorax Environmental Services
Surface Water Hydrology	Lotic Environmental and Lorax Environmental Services
Water and Sediment Quality	Lotic Environmental, Lorax Environmental Services and Borealis
Aquatic Health	Lotic Environmental, Lorax Environmental Services and Borealis
Fish And Fish Habitat	Lotic Environmental
Geohazards, Soil and Terrain	SNC Lavallin
Vegetation	Keefer Ecological Services
Wildlife And Wildlife Habitat	Keefer Ecological Services
Socio Economics	Consult5 -Paul Cox

Discipline	Retained Specialists
Visual Aesthetics	To be decided
Archaeology	Tipi Mountain Eco-Cultural Services
Human Health and Ecological risk assessment.	Nautilus Environmental and Azimuth Consulting
First Nations Considerations, First Nations Liaison Activities, TU and TK	Tipi Mountain Eco-Cultural Services and MDG Contracting, TU and TK proposed in collaboration with Ktunaxa Nation Council
Sustainability and Corporate Social Responsibility	MDG Contracting
Public Consultation	Swanson Environmental Strategies Ltd, Roger Berdusco, MDG Contracting

5.3.2 Construction Phase

The following provides a list of the anticipated construction phase activities of the Project:

- Development of a construction schedule;
- Defining work force needs and skills requirements;
- Development of preliminary end land-use objectives;
- Development of a Construction Environmental Management Plan (CEMP) and related Environmental Protection Plans (EPPs). (Conceptual components of the plans will be outlined in the EA document);
- Initial mobilization of materials, earth moving equipment and people;
- Vegetation harvesting and clearing;
- Relocation of existing TransCanada natural gas pipeline;
- Preparation, use and clean-up of ancillary construction areas such as laydown areas, fuel storage and tendering facilities and other storage facilities;
- Access road construction, including site roads;
- Site preparation;
- Construction of an overhead transmission line from the Project switchyard to an interconnection point to the BC Hydro grid;
- Construction of water collection and management facilities;
- Construction of processing facilities, water conveyance system, and switchyard;
- Soil stockpiling;
- Blasting activities;
- Construction of the coal processing plant and associated facilities; and
- Construction of the coal loading facilities and the rail loop.

5.3.3 Operations Phase

The following list includes anticipated operational phase project activities:

- Work force and work force skills development;
- Develop facility Operational Plans, Operational Environmental Management Plan (OEMP) and associated EPPs. (Conceptual components of the plans will be outlined in the EA document);
- Open-pit mining;
- Mine site and facilities maintenance;
- Processing facilities maintenance;
- Waste rock site (rock, co-deposition of dry-stacked tailings, PR) and Metal Leaching/Acid Rock Drainage (ML/ARD) management;
- Maintenance of on-site access;
- Internal haul road usage and maintenance;
- Coal transportation route maintenance;
- Maintenance of load-out facilities;
- Transmission line and onsite power distribution management;
- Water resource management;
- Drainage and mine waste water treatment and management;
- Provision of onsite workforce transportation and parking facilities;
- Onsite rail facility use and maintenance; and
- Ongoing, progressive site decommissioning and reclamation activities.

5.3.4 Decommissioning Phase

The following list includes anticipated decommissioning phase Project activities:

- Re-evaluation of applicable regulations;
- Evaluate methods and approaches for final decommissioning of all mine infrastructure;
- Plans for on-going monitoring and maintenance;
- Consultation on and confirmation of end land-use objectives;
- Site restoration and safety;
- Removal of infrastructure;
- Management of waste rock and overburden facilities;
- Reclamation and rehabilitation of disturbed areas; and
- Access management.

The end land-use objectives for the mine site will generally be based on pre-mining use to the extent possible, but will be developed with consultation and input from the appropriate regulatory agencies, First Nations and communities.

5.3.5 Closure and Post-closure

On-going monitoring and maintenance requirements will be developed in consultation with regulators.

5.4 Preliminary Site Plan

A conceptual site layout has been developed and is shown in Figure 5-1. The Project area is surrounded by comprehensive existing and serviceable development. CanAus does not need to construct an accommodation camp and can tie into existing power, road and rail transportation infrastructure, all within the immediate area of the Project property.

5.5 Soil and Overburden Management

The Health, Safety and Reclamation Code for Mines in BC (BC MEMPR, 2008) states that all soils shall be salvaged from all areas disturbed by mining and used for reclamation. All feasibly available topsoil and subsoil material will be removed from areas scheduled for disturbance during the mining process. These materials will either be stockpiled for later use or directly placed on to areas undergoing active (progressive) reclamation. Removal, stockpiling and/or direct re-spread of the topsoil and subsoil will likely occur through all seasons of the year as weather permits and in a way that preserves the chemical, physical and biological integrity of the material.

All stockpiled soil will be stored in separate stockpiles to eliminate any potential contamination. All topsoil and subsoil stockpiles will be re-vegetated with a quick growing cover to minimize the erosion from the stockpiles. Erosion from the stockpiles will be controlled using straw bale dikes, diversion ditches connected to sedimentation ponds or other Best Management Practices.

As mining progresses, topsoil/subsoil will be removed and directly re-spread on to active reclamation areas as required to meet post-mining land use objectives. For mining haul and access roads, topsoil/subsoil will ideally be removed and stockpiled adjacent to these roads, or alternatively taken to a common stockpile area. These stockpiles will remain until the road is reclaimed when the material will be re-spread on to the reclaimed roads.

For the areas designated for infrastructure construction, the topsoil/subsoil will also be removed and stockpiled. These stockpiles will be longer lived and will remain until coal resources within this mine area are exhausted. Once mining of all planned economic deposits is completed, all the facilities will be decommissioned and removed and, where needed, transported off-site to be recycled or disposed of in an approved disposal site. All concrete foundations and slabs will be broken up and will be disposed of under appropriate authorization.

Any sites requiring topsoil for final reclamation will then be surfaced with the topsoil from the long-term storage areas.

5.6 Mining Overview

5.6.1 Introduction

The Project will include surface mining over a 10-year life-of-mine (MMTS, 2014). The Loop Ridge deposit has the potential to produce approximately 20Mt of clean coal. Based on the CanAus studies completed to date, the following production estimates have been prepared based on plant throughput:

- Annual production of approximately 3.5 million tonnes raw coal to produce approximately 2.1 million tonnes of clean coal, based on plant throughput rates;
- Loop Ridge mine life of 10 years;
- 9,600 trc/day or 5,800 clean tonnes per day, based on a 365-day calendar year;
- Additional resources are being explored, but will be the subject of a future EA amendment once more drilling has been completed;
- Strip ratio estimate currently being updated as part of PFS activities; and
- Total disturbance footprint estimated to be approximately 1,000 ha.

During operations, run-of-mine (ROM) coal will be upgraded in quality through a wash plant and clean coal will be transported via rail to export ports on the west coast of Canada. The Project proposes to build a new coal load-out facility and associated rail loop that ties into the existing CP rail system. It is anticipated that power for the mine site will be provided by connection to the existing BC Hydro power system. During operations at Loop Ridge, CanAus plans to undertake further exploration of Tent Mountain, Michel Head and other areas of interest to integrate further potential coal resources into the long-term mine plan for the development of the CanAus coal license areas.

5.6.2 Resource and Waste Rock Volume Estimates

The resource quantities and waste rock volumes for the Loop Ridge phased pit designs are presented in Table 5-2. These quantities represent the anticipated mineable open pit resources. Clean coal quantities are based on an overall wash plant yield of 60%. Oxidized and CLASS 4 (Exploration Target) coal are treated as non-recoverable.

Table 5-2: Summary of Loop Ridge Resources Over the Five Pit Phases

Waste Rock													
Phase	**Units**	**Year -1**	**Year 1**	**Year 2**	**Year 3**	**Year 4**	**Year 5**	**Year 6**	**Year 7**	**Year 8**	**Year 9**	**Year 10**	**Year 11**	**LOM**
1E	kBCM	5,952	8,800	4,905	7,351	3,595	4,260	716						35,579
1W	kBCM	5,147	14,795	19,350	12,220	11,176	591							63,279
2	kBCM				2,625	5,612	14,691	10,581	2,244					35,753
3	kBCM					5,555	8,916	10,108	22,581	8,302	3,025	1,062		59,549
4	kBCM							3,867		19,103	17,573	14,761	4,616	59,920
Total		11,099	23,595	24,255	22,196	25,938	28,458	25,272	24,825	27,405	20,598	15,823	4,616	254,080
Raw Coal														
Phase														
1E	kMTRC	96	979	419	879	763	1,295	382						4,813
1W	kMTRC	364	1,766	3,081	2,575	2,379	91							10,256
2	kMTRC				46	331	1,754	2,062	968					5,161
3	kMTRC					27	360	916	2,532	2,460	1,817	713		8,825
4	kMTRC							140		1,040	1,683	2,787	1,215	6,865
Total		**460**	**2,745**	**3,500**	**3,500**	**3,500**	**3,500**	**3,500**	**3,500**	**3,500**	**3,500**	**3,500**	**1,215**	**35,920**

5.6.3 Land Clearing

No known old growth forests are expected to be impacted by mining, although the site is covered by actively managed forest resources. Before mining can commence clearing, grubbing, soil removal and stockpiling will be conducted. At Loop Ridge, clearing will occur at the pit area, South Loop Ridge waste rock storage area, access roads, administrative buildings, warehouses, water diversion infrastructure, and other associated infrastructure that will be constructed. Development will follow the processes of clearing, grubbing and soil recovery as described below:

- Native seeds will be collected prior to any development occurring and in accordance with a pre-development reclamation and rehabilitation plan;
- Vegetation removal will involve selected trees being harvested by the land owner;
- Subsequent to vegetation removal, soil with forest woody debris will first be salvaged and stockpiled for later use in progressive reclamation; and
- After the soil is removed, waste rock will be removed to expose the area that will be mined. Waste rock from the initial cut will be moved by conventional truck-and-shovel methods to a waste rock disposal area.

This approach will allow progressive reclamation to occur. The sequential backfilling of pits will form bench-like topographic features with nearly level tops and sloping faces. These faces will be designed and constructed to reduce the potential for erosion and infiltration. Since the backfilling will follow the mining progression, site preparation for reclamation will occur in sequence and result in a final topography that meets end land uses.

5.6.4 Mining Method

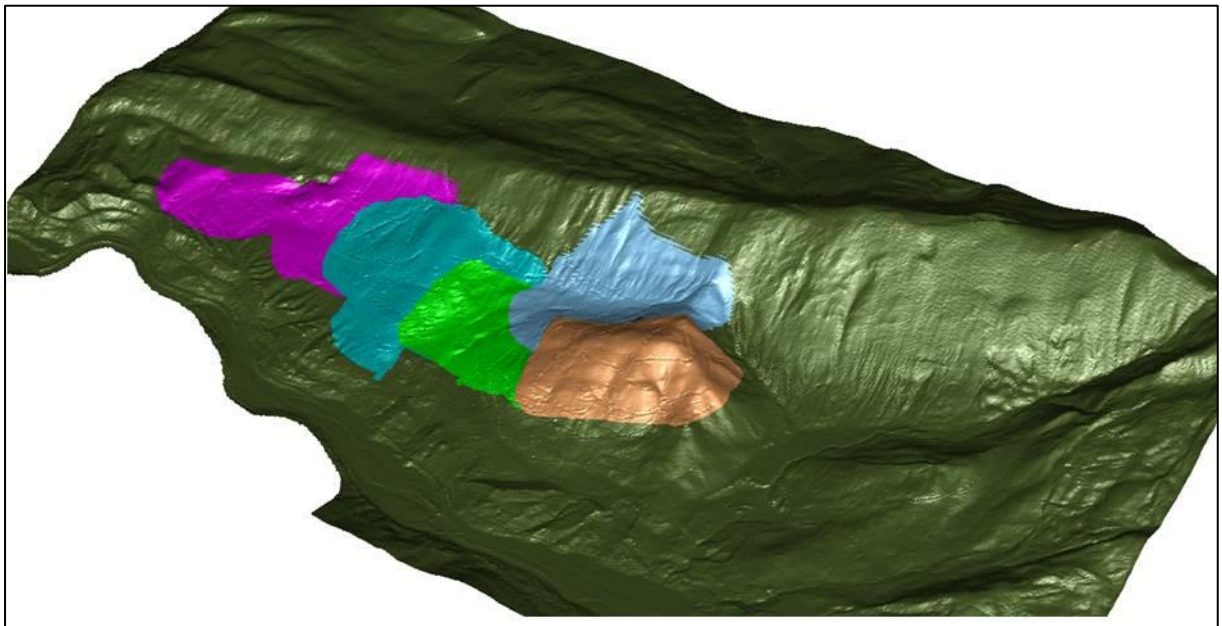
CanAus has opted to finalize mine and infrastructure design after the EA process has been initiated, in order to create the opportunity for the input of regulators, First Nations and the community into the alternatives considered and the final design process.

At this stage of the Project, the conceptual mine plan is to utilize open-pit bench mining methods in distinct phases (Figure 5-3 to Figure 5-8). The phases are being planned to maximize waste rock management within the pit. In this method of mining, coal seams are exposed by track dozers and hydraulic excavators removing waste rock. A drill and blast program is employed to loosen and fracture waste rock to provide a particle size distribution and looseness in the mineable material, suitable for high-efficiency working by the shovel and haul truck fleet. Waste rock is initially removed from the pit in haul trucks and placed external to the mining area. Once pit capacity has been created after initial mining, waste rock will be placed in-pit as backfill, as far as operations allow, although some ex-pit waste storage may still be required in later stages of the mining. All mining benches will be accessed by cut ramps developed prior to bench mining in each phase. Where possible, the cut ramps are laid out within the overall pit limits, in order to minimize external pit excavations. It is anticipated that mining bench heights will be similar in configuration to that utilised in other local mines governed by Mines Act requirements. Engineered safety berms will ensure a safe operation.

In the current design, pit development is anticipated to begin on the south side of the property and advances north until the resource is fully mined (Figure 5-3 to Figure 5-8). The mining sequence is optimized based on:

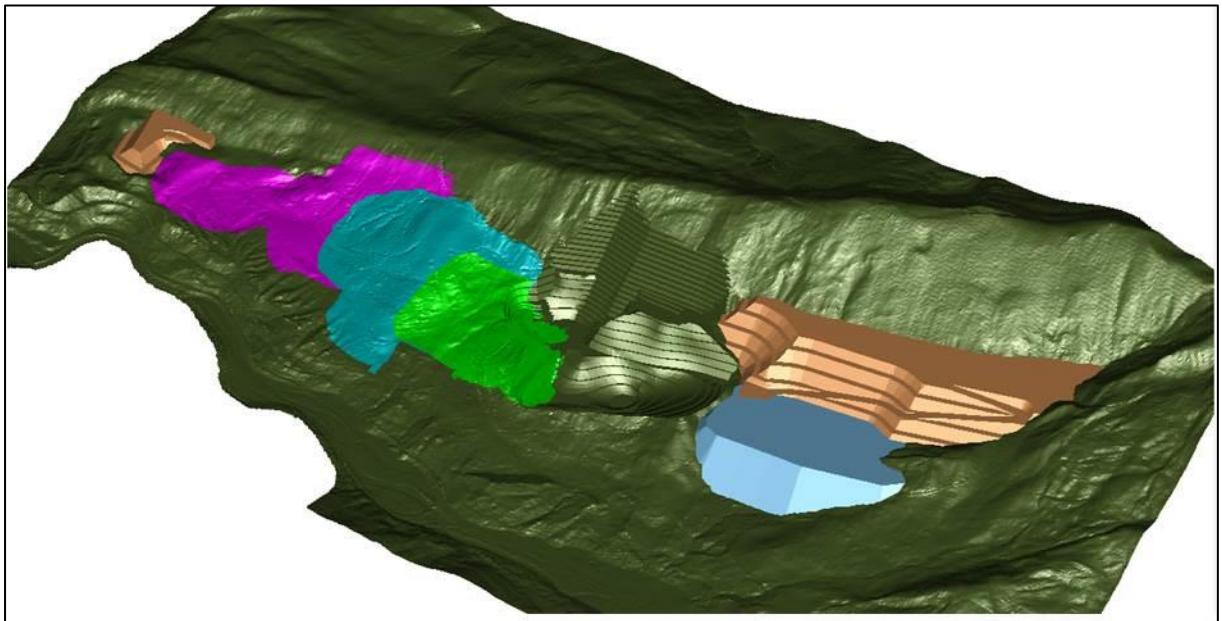
- The location of the CPP site;
- Coal blend requirements;
- The initial layout of the external pit waste dump;
- Co-disposal and backfilling of process plant waste and mining waste; and
- Mining out of early phases so that later phase stripping and waste rock can be placed into the mined-out voids where possible.

Breaks between pits and pit sequencing are based on material movement requirements, developing backfill opportunity, accessing requirements and coal blend requirements. As a result, the development sequence has primarily been driven to maximize backfill opportunity, while meeting operational requirements. Once initial mining areas are fully extracted, backfill opportunities are utilized to balance waste rock movement between external spoils and internal backfill.



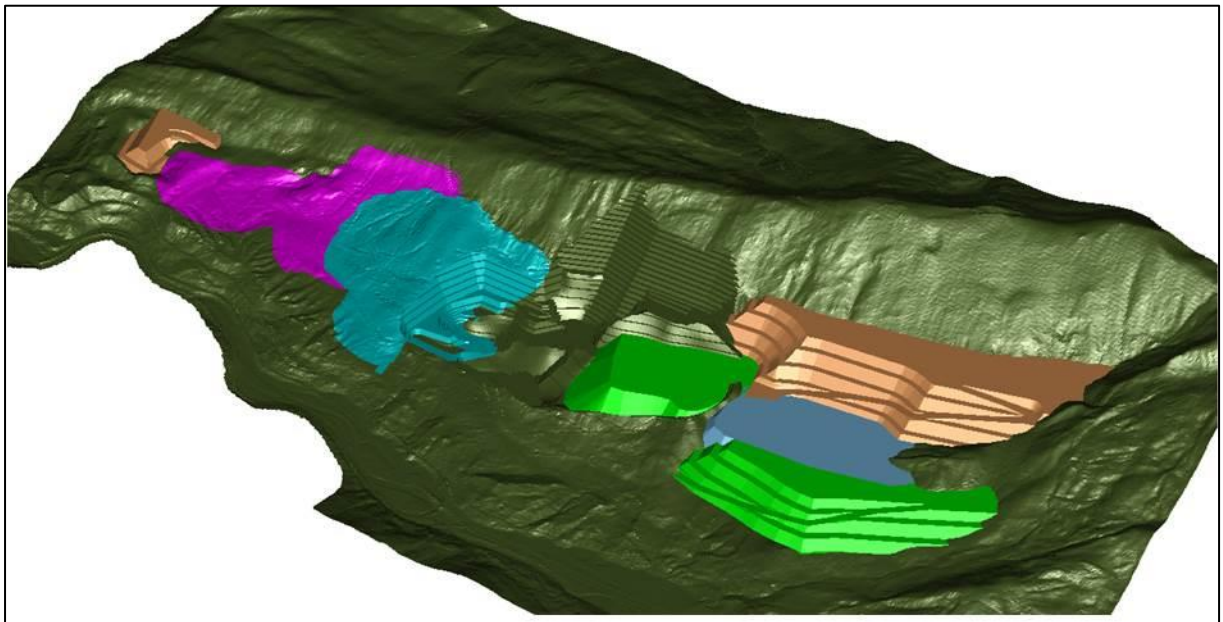
Coloured areas on left indicate mine pit phases.

Figure 5-3: Loop Ridge Mine: Location of Mine Phases – Pre-mining



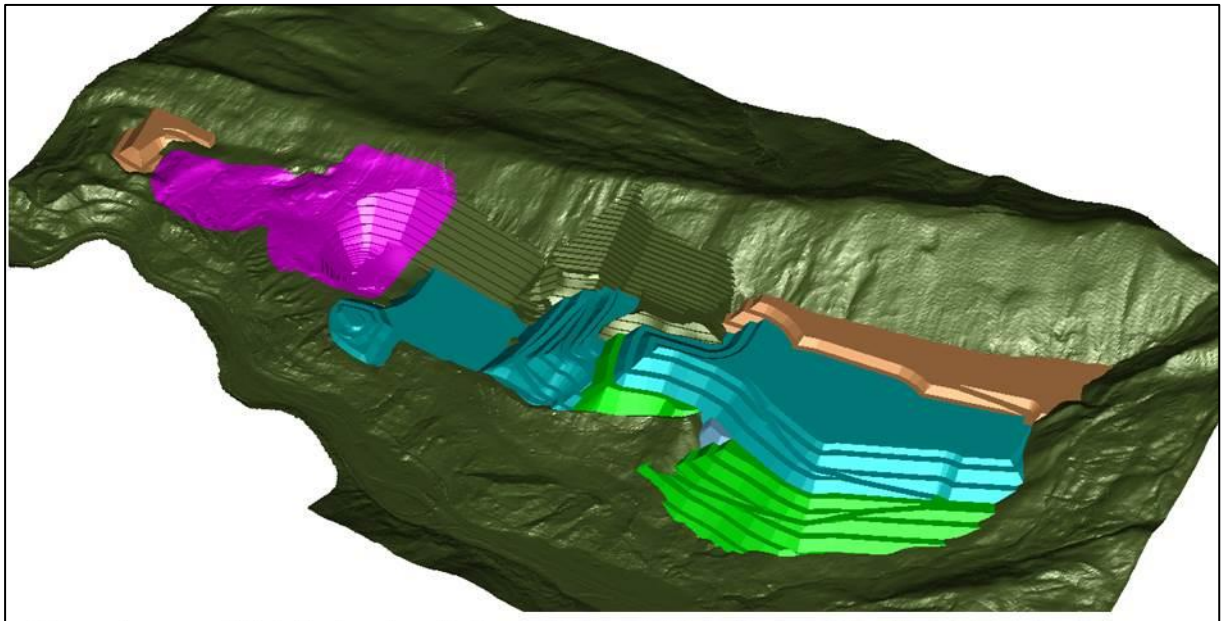
Coloured areas on left indicate mine pit phases. Void in middle indicates pit location. Coloured areas on right and brown area on left, indicate waste rock stockpiles.

Figure 5-4: Loop Ridge Mine: Phase 1 of Mining and Waste Rock Dump Development



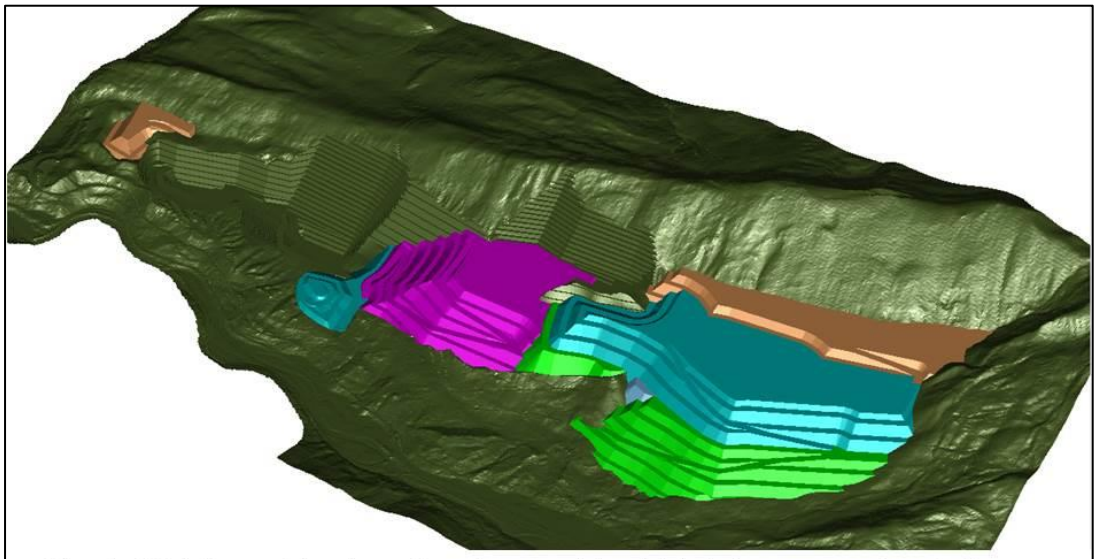
Coloured areas on left indicate mine pit phases. Void in middle indicates pit location. Coloured areas on right and brown area on left, indicate waste rock stockpiles.

Figure 5-5: Loop Ridge Mine: Phase 2 of Mining and In-pit Disposal



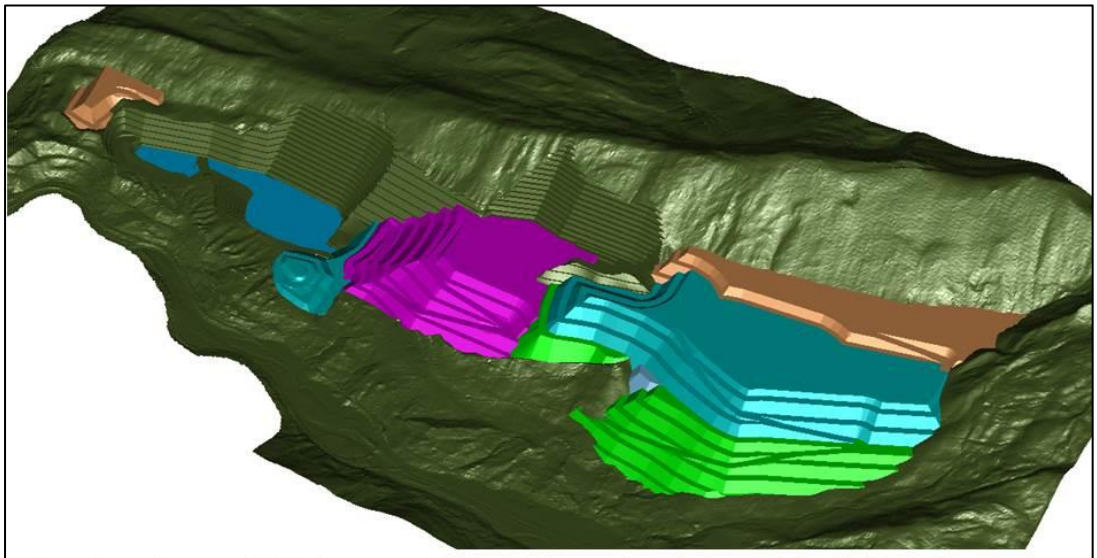
Coloured areas on left indicate mine pit phases. Void in middle indicates pit location. Coloured areas on right and brown area on left, indicate waste rock stockpiles.

Figure 5-6: Loop Ridge Mine: Phase 3 of Mining and In-pit Disposal



Void on the left indicates pit location. Coloured areas on left and right indicate waste rock stockpiles.

Figure 5-7: Loop Ridge Mine: Phase 4 of Mining and In-pit Disposal



Blue coloured areas on left indicates possible final pit lake. Coloured areas on left and right indicate waste rock stockpiles that will be reshaped and revegetated.

Figure 5-8: Loop Ridge Mine: End of Mine Life with Pit Lake and Waste Rock Dumps

5.6.5 Coal Gas Management

The Project resources may contain coal strata with quantities of coal bed gas (CBG). Such coal strata typically occur at depths where hydrostatic pressures have confined gas, preventing it from naturally diffusing out of the coal into the surrounding rock and then to the surface. CBG primarily comprises methane (CH_4), and does not contain sour gas. It is unknown at this time what quantity or quality of CBG may exist. However, appropriate management plans will be developed and implemented to manage such gases in an effective manner, if they occur in significant quantities.

5.6.6 Hydrogeology

At present, there is limited regional or local hydrogeology data, other than Teck's data for the Elk River and the Teck Coal Mountain Project. CanAus initiated baseline studies in 2013 with the installation of 12 borehole piezometers for the purposes of monitoring groundwater across the site (Figure 5-9). The data from these piezometers will be used for:

Baseline characterization:

- Water level elevation, hydraulic parameters, hydraulic gradient, seasonal variation;
- Groundwater quality (monitoring wells and seeps); and
- Existing groundwater usage.

Hydrogeological conceptual model:

- Hydrostratigraphic units, recharge and discharge areas; and
- Groundwater flow directions.

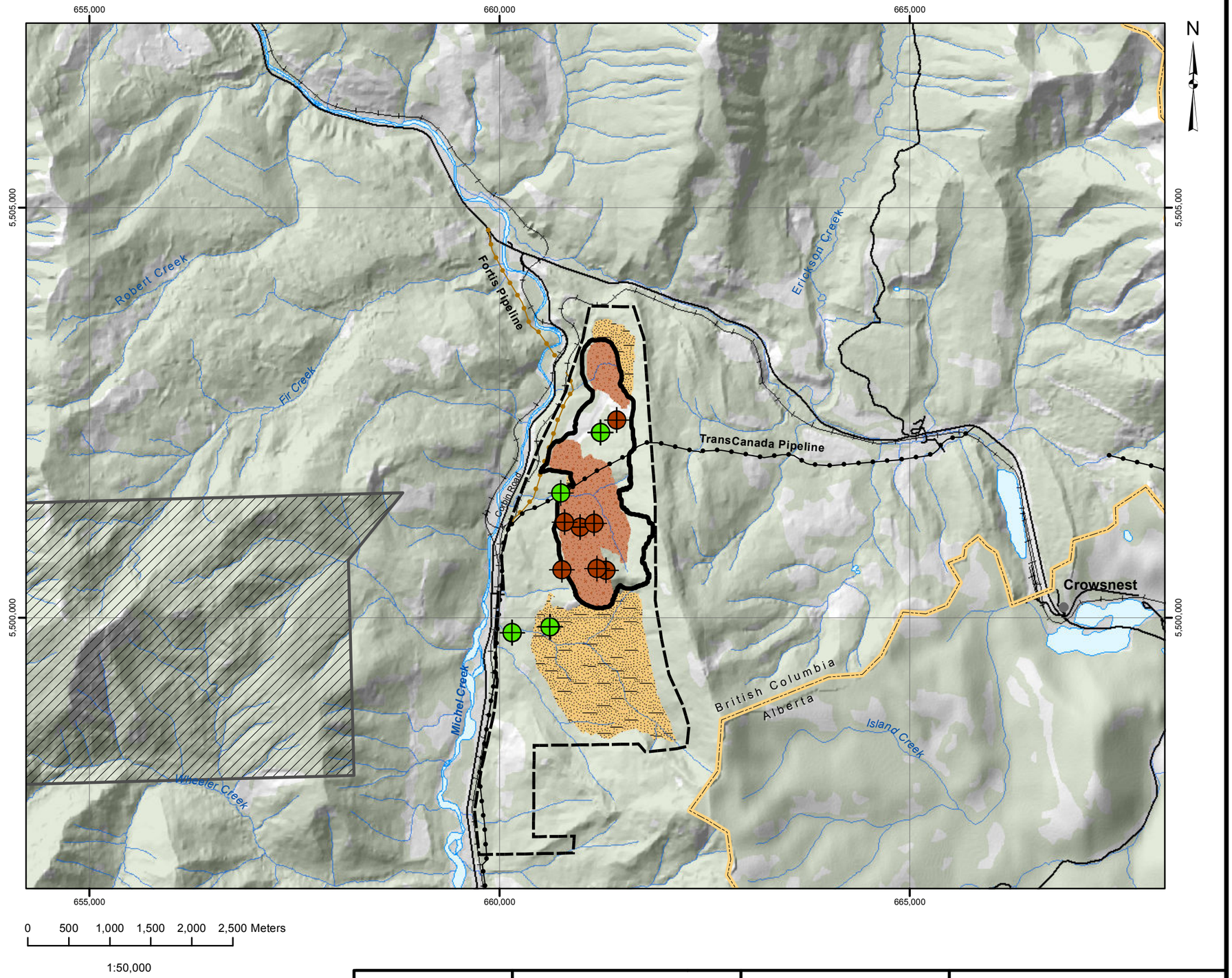
The baseline studies and modelling will allow the following groundwater effects to be assessed in the EA:

- Pit inflow estimates;
- Residual Project effects to groundwater quantity;
- Residual Project effects to groundwater quality;
- Residual Project effects to groundwater discharge to surface waters; and
- Cumulative effects.

Additional groundwater monitoring sites will be added in the future to assist in building a larger dataset and understanding of the hydrogeological regime of the area. Almost two years of data will be available by the time the EA is finalised for submission in 2016.

Map Key

- Towns
- 2015 Groundwater Boreholes
- 2014 Groundwater Boreholes
- Provincial Boundary
- Fortis Pipeline
- TransCanada Pipeline
- Proposed CanAus Open Pit
- DOMINION COAL BLOCKS
- Potential Disturbance Area Boundary
- Ex-Pit Rock Dump
- In-Pit Rock Dump



Map Notes:
1. NAD 1983 UTM Zone 11N
2. Contour Interval:40 metres

Document Path: D:\Projects\Consult_5\CanAus\MXD\Loop_Ridge\Project_Description\Revised_Maps\September_2015\Figure_5_9_ GroundWater_Monitoring_Points_Map.mxd

Project No.:	**Project:** Michel Creek Coking Coal Project	**Figure: 5-9 Groundwater Monitoring Locations**	CanAus Coal Limited
Date: September, 2015			
Drawn By: SMART MAP	**Approved By:** Consult 5 Inc.		

5.6.7 Pit Water Management

It is anticipated that groundwater will be encountered in surface mining areas. Designs for containing and controlling groundwater seepage into the mine pit will be developed during the PFS and considered during the EA process.

It is anticipated that in the surface mine areas; both surface water and groundwater will be collected using a series of ditches and in-pit sumps for water storage. Using diversion ditches and/or pumps, water will be removed from the active pit area and sent to sediment control structures. These sedimentation structures will be designed to clarify the mine run-off and remove sediment so that it can be used in mining and processing operations or, if of suitable quality, discharged directly to receiving streams. Water discharged from the site will meet all applicable permitting requirements prior to release.

Hydrogeological drilling, mapping and modelling of groundwater is currently underway in order to assess the information for more detailed geotechnical, mine planning, environmental effect assessment and mine development permit applications.

5.6.8 Equipment Requirements

Mining Fleet

The mining fleet has been sized to meet the expected processing plant throughput.

Table 5-3: Anticipated Mining Fleet

Description	Specification	Number
Drilling		
Primary Diesel Rotary Drill	310 mm	2
Loading		
Hydraulic Front Shovel	28 m^3	3
Rock Bucket Wheel Loader	27 m^3	2
Coal Cleaning		
Track Dozer	433 kW	1
Track Dozer	634 kW	1
Hydraulic Excavator	12 m^3	2
Hydraulic Excavator	4.5 m^3	1
Hauling		
Coal/Waste Haul Truck	230 t	20

The following equipment is anticipated to be needed to support mining operations. Most equipment will start operations in the Pre-Production period, and continue to the end of mine life:

Mine Support Vehicles:

- Float truck and trailer (100 tonne capacity) for equipment transport;
- Hydraulic excavator (3.5 m^3);
- Pit support, ditching and construction;
- Fuel/lube truck for support of mobile equipment;
- Motor grader (4.88 m blade);
- Water truck (52,000 Gallons);
- Wheel loader (13 m^3);
- Motor scraper (37 t capacity);
- Pit dewatering trash pumps (1,400 Gallon/min);
- Light plants;
- Ambulance;
- Pickup trucks (1/2 ton);
- Mine rescue truck;
- Crew bus;
- Fire truck;
- Maintenance trucks (1 ton);
- Tire manipulator; and
- Mobile crane (40 t capacity).

5.6.9 Waste Rock Management

Introduction

Much of the landscape has been previously disturbed by historical mining, timber harvesting and associated infrastructure such as pits, roads and landings. These previously disturbed areas are in varying stages of recovery, demonstrating that with careful planning and revegetation, mined areas will recover, including areas where mine waste rock material is rehabilitated.

Waste rock material will consist of colluvium, conglomerate and interbedded silts, sands, gravels and sandstone. Management plans for the waste rock will be refined during the PFS and FS and fully discussed in the EA. CanAus is committed to best practices in the handling, stockpiling and rehabilitation of waste rock. As outlined below, detailed geochemical characterization of waste rock materials will be used to define the ML/ARD characteristics, and inform decision making with respect to waste rock placement, facility design, the need for special handling (e.g., segregation),

and associated water management. In addition, a detailed Waste Rock Management Plan will be developed and implemented before active mining commences.

It is anticipated the waste rock material will be drilled, blasted and loaded into haul trucks and then be placed either in external or in-pit waste rock disposal areas. As far as is practical, materials high in gravels and boulders will be placed within these stockpiles and efforts will be made to avoid placing these materials on the final reclaimed surfaces. If possible, opportunities will be sought to encourage habitat connectivity and suitable habitat to increase biodiversity during reclamation.

Waste rock stockpiles will be designed to be structurally stable with the stockpile faces to be constructed to a minimum 2 to 1 slope (2 horizontal to 1 vertical) with slopes not to exceed 26° if possible. Steeper slopes will be considered on south to southwest facing slopes to increase their usefulness as winter range. Prior to construction of any external waste stockpiles, the subsurface conditions under these stockpiles will be examined to determine bedrock conditions, and will be tested to determine geotechnical parameters to be used in designing stable stockpile configurations. All stockpile areas will have perimeter ditches to divert clean storm water away from the stockpile and collect runoff water flowing from the stockpile.

Geochemistry of Waste Rock

CanAus has recognised the concerns being addressed through the EVWQP and has commenced extensive geochemical, hydrogeological and hydrological studies to define potential mine-related effects to surface and groundwater receptors, and to develop an effective Waste Rock Management Plan. The geochemical testing program entails both static and kinetic test work, and analysis of discard materials to be generated by the Project (waste rock, Plant Reject (PR) and tailings), as well as a review of existing available geochemical data for other mines in the region. The test program has been specifically designed to address all major parameters of concern, including selenium, sulphate, nitrate, trace elements (e.g., Cadmium and Zinc) as well as calcite formation. The geochemical characterization program, in conjunction with best management practices for the prevention of ML/ARD, will be incorporated into the engineering design for waste and water management strategies, including opportunities for potential passive treatment (i.e., saturated storage).

CanAus holds water quality as the single most important environmental consideration affecting the proposed mine plan, and has assembled an advisory panel of local industry specialists to identify and apply the best solutions for inclusion in the mine design, in order that the mine is designed and operated in a manner consistent with the EVWQP.

Selenium and Other Water Quality Parameters

Metallurgical coal mining and processing generates large quantities of waste rock, which is stored on mine property. In the past the engineering applied to this waste storage has predominantly focused on ground stability, but history has shown that the geochemical considerations also need to be taken into account when designing structures for of the long term storage of waste rock. The

leaching of selenium from these discard materials (e.g., waste rock, PR, dry-stack tailings), its transport into local watersheds, and the potential for biological or ecological effects, represents a specific concern for regulators and local communities.

There have been on-going concerns related to increasing selenium concentrations in water and biota within the Elk Valley. Selenium occurs naturally within seleniferous rock within the Elk River Valley, into which five existing coal mines discharge. Open-pit coal mining in the area has increased the mobilization of selenium into the receiving environment, resulting in concentrations that exceed the BC water quality guideline in much of the Elk River system (McDonald 2009).

Selenium will be evaluated as a contaminant of potential concern (COPC) in the CanAus environmental assessment and considered carefully in the mine design. CanAus has already initiated extensive geochemical testing of rock from the proposed mine areas. This information, together with hydrogeological, hydrological and water quality data will be used to conduct predictive modelling in support of engineering design, to manage selenium and other contaminants of potential concern such as sulphate and cadmium. In addition, the Project will draw upon publicly available data for other mines in the region as part of the comprehensive mine design process.

Teck's Valley-Wide Selenium Management Action Plan was submitted to the BCMOE in February 2013 (Teck, 2013). Recently, the BC Government announced a framework to develop a plan to address water quality issues in the Elk Valley. Under this framework, Teck committed to work with governments, the Ktunaxa Nation and communities to develop an over-arching Elk Valley Water Quality Plan intended to maintain the overall health of the watershed. In particular, the plan proposes short-, medium- and long-term targets for selenium, nitrate, sulphate and cadmium, as well as dealing with the issue of calcite formation. CanAus notes that other contaminants of potential concern may also be identified and evaluated during its environmental assessment. CanAus is committed to working within the framework outlined by the EVWQP.

Acid Rock Drainage (ARD)

The potential for ARD is currently being assessed through a combination of static test work, laboratory-based kinetic test work (Figure 5-10) and field based kinetic test work (Figure 5-11). The results of geochemical test work to date indicate that the vast proportion of waste materials to be generated by the Project will be non-potentially acid generating (non-PAG), consistent with other coal operations in the Elk Valley. Static test data suggests that ARD potential will be largely limited to near-seam finer-grained lithologies (e.g., mudstones). On-going test work will be used to further inform on the potential for ARD and the requirements for PAG management. Management of PAG wastes may include:

- Backfill of PAG waste into in-pit saturated zones;
- Blending of PAG materials with neutralizing materials;
- Encapsulation; and
- Cover systems.

Figure 5-10: CanAus Humidity Cells in the Laboratory (Lorax, 2015)

Figure 5-11: Field Based Kinetic Test (Lorax, 2014)

5.7 Coal Handling and Processing Plant (CHPP)

A conceptual site layout has been developed for mining and processing coal, and is illustrated in Figure 5-1. The Project area is surrounded by comprehensive existing and serviced development, therefore the Project will not require an accommodation camp and can tie into existing power, road and rail transportation infrastructure.

The Coal Handling and Processing Plant (CHPP) will consist of the raw coal, reject coal, and product coal material handling components and the Coal Processing Plant (CPP), the mechanical coal dryer and Tailings Filter Plant modules.

Figure 5-12 shows the preliminary material handling flowsheet for the proposed CHPP facilities.

5.7.1 Plant Description

Over the life of the proposed mine, raw coal will be sourced from the mine. Due to the proximity of the coal reserve to the plant, a run-of-mine (ROM) dump and raw coal delivery system will be developed near the plant. The ROM raw coal from the Loop Ridge open pit mine will be tipped from mining haul trucks into the raw coal ROM bin, or in cases where the raw coal system is unavailable, onto one or two stockpiles.

The raw coal will then be fed into a feeder at the bottom of the ROM bin for initial primary sizing. After sizing, the raw coal will be fed onto a conveyor and then into a secondary sizing station that ensures a plant feed top-size of 50 mm. The raw coal will then be fed into a surge bin that allows for an uninterrupted feed into the Coal Preparation Plant (CPP) during minor ROM interruptions. The capacity of the raw coal handling system and surge bin will be approximately 700 mt/h and 250 mt respectively.

The CPP and tailings filters will be located in close proximity to one another and will be contained within separated sheds with HVAC systems included to maintain temperatures above freezing point during the winter months, and to provide ventilation during summer. The base of the CPP will have a concrete floor slab and access-ways for maintenance vehicles around the building. Maintenance in both the CPP and tailings filter building will be aided by over-head travelling cranes spanning the lengths of the building modules, and by monorails which will also be installed above process equipment that requires frequent change-outs. A simplified flow diagram of the proposed CPP processing circuit is shown in **Error! Reference source not found.**.

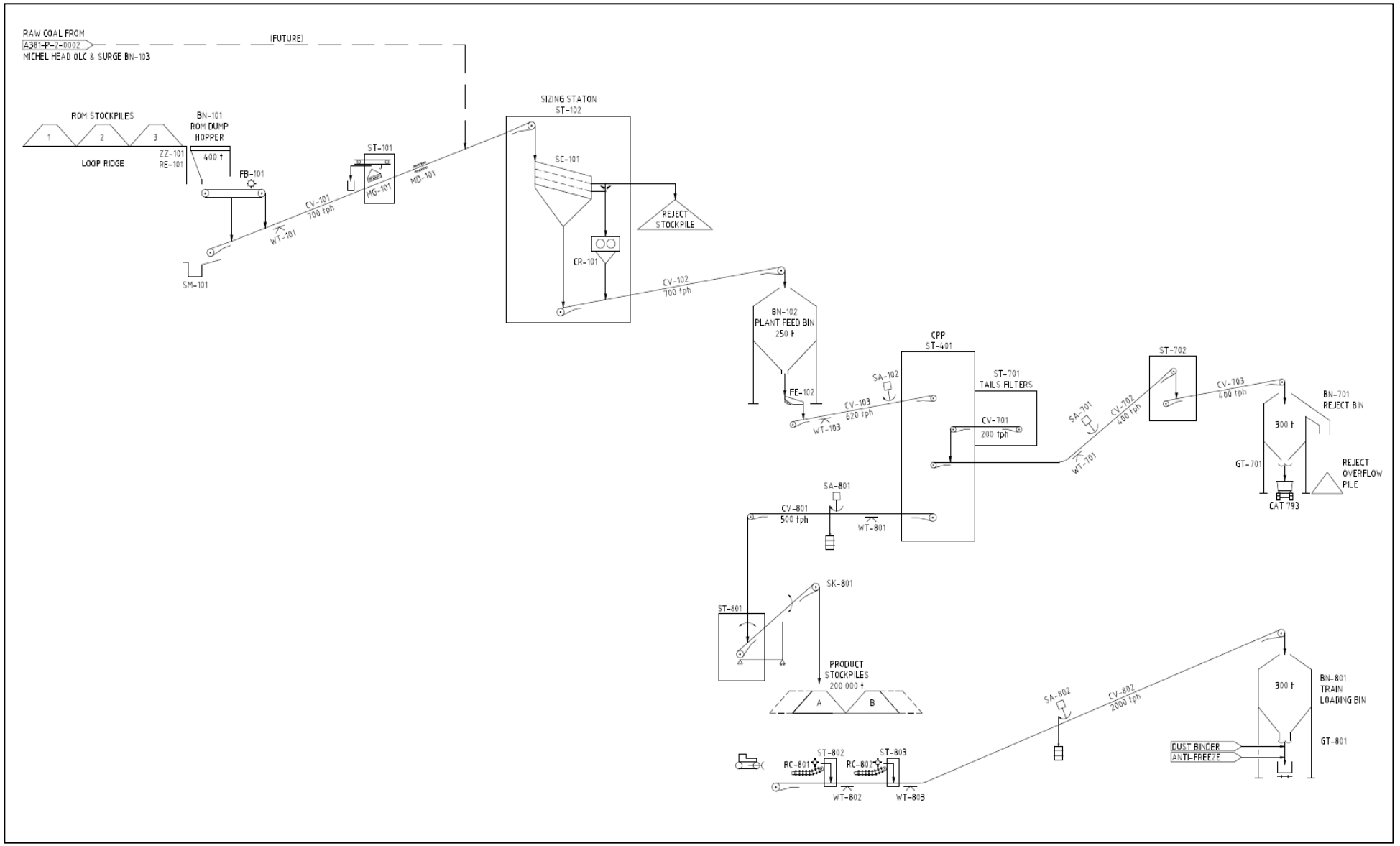


Figure 5-12: Loop Ridge Mine Concept Material Handling Flowsheet

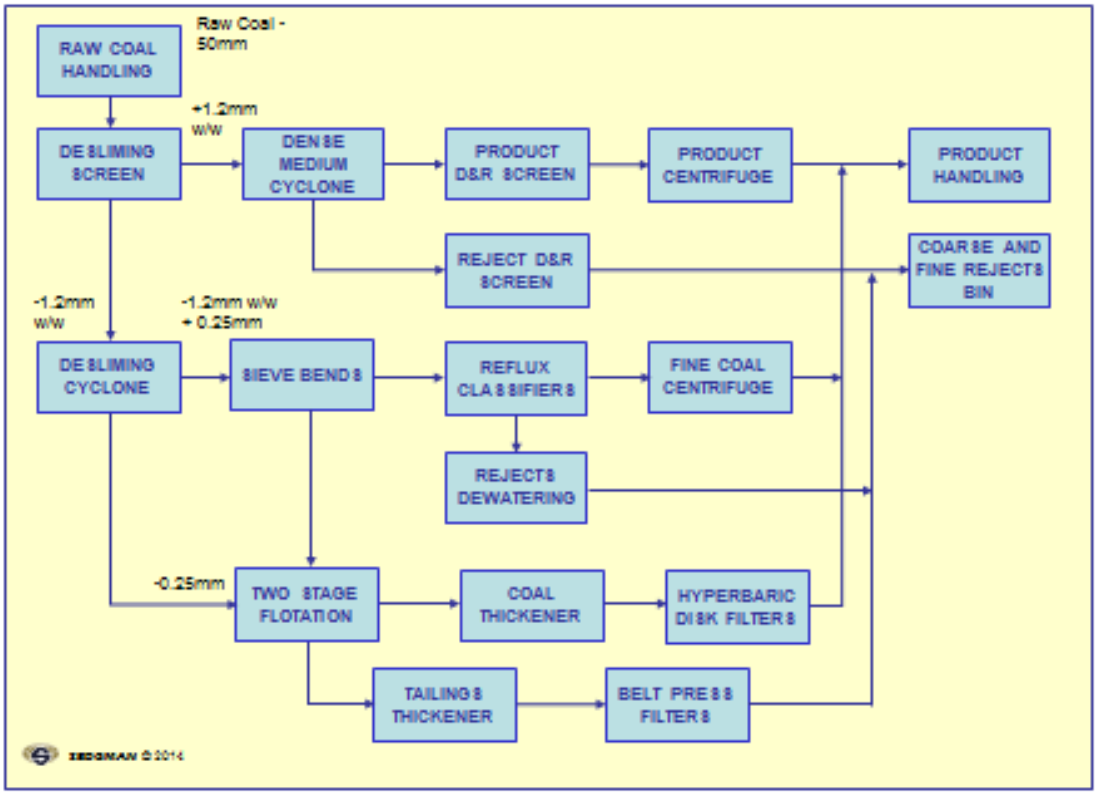


Figure 5-13: A Simplified Flow Diagram of the Proposed CPP Processing Circuit

Coal quality test work and process simulation modeling has shown that the most efficient CPP design consists of a single-stage dense medium cyclone (DMC) for coarse coal processing (+1.2 mm w/w), reflux classifiers for processing fine coal (-1.7 mm w/w + 0.25 mm) and two-stage flotation in a cleaner-scavenger cell arrangement for ultrafine coal (-0.25 mm) processing. The CanAus intent is not to employ a thermal coal dryer in the process, which will reduce greenhouse gas (GHG) and particulate matter emissions as well as the visible steam cloud. Product coal dewatering will be completed by vibrating and scroll centrifuges for coarse and fine coal respectively, and a hyperbaric disc filter for ultrafine coal.

The CPP module will be capable of processing 600 t/h of raw coal for a total of 6800 operating hours per year, giving an annual feed rate of up to 4.2 Mmt/a. The CPP will produce approximately 2.1 Mmt/a of product coal at the expected yield of 60% based on the Loop Ridge coal quality data.

5.7.2 Coal Washing Process

Within the CPP, coarse feed will be screened and separated from the fine and ultrafine feed by a multi-slope deslime screen with a typical screen deck aperture of 1.2 mm w/w. Deslime screen oversize (OS) which contains coal and waste rock will report to the Dense Medium Cyclone (DMC) feed sump where it is combined with dense medium. The dense medium is pumped from the medium sump to the DMC feed tank at controlled target densities. Both raw coal and medium are pumped to the DMC, where coal together with medium reports to the cyclone overflow (OF)

stream. Heavier reject material, together with medium, reports to the cyclone underflow (UF) stream. The DMC product coal and reject coal feed onto respective product, reject multi-slope drain, and rinse screens, with drain section underflow reporting to the correct medium sump and the rinse section reporting to a magnetic separator via a dilute medium circuit for magnetite recovery. DMC product coal will be dewatered via a coarse coal centrifuge and ultimately reports to the product coal conveyor, while the screened (drained and rinsed) reject will report directly to the reject coal conveyor.

Fine and ultrafine coal will be separated using a desliming (classifying) cyclone to achieve separation at the desired size cut-point. The classifying cyclone UF stream reports to a set of sieve bends, which further deslime the fine material by allowing misplaced ultrafines to correctly report to the ultrafine processing circuit. Sieve bend OS material reports to the Reflux Classifiers (RC), where the coal and waste rock will be separated by density. RC product coal will report to fine coal centrifuges for dewatering before being placed onto the product coal conveyor. Fine coal centrifuge effluent, deslime cyclone OF and sieve bend undersize material all report to the flotation circuit to maximize recovery of ultrafine coal. RC fine reject coal is first dewatered by thickening cyclones and then by high frequency (HF) screens, with dewatered rejects combining with coarse rejects on the rejects conveyor.

Ultrafine coal will be processed via two-stage flotation in a cleaner-scavenger configuration, whereby the primary flotation reject is reprocessed through a second stage. Flotation collector (Diesel) and frother (MIBC) reagents are added to both stages of flotation to promote coal recovery. Flotation concentrate from both the primary and secondary cells will report to a coal thickener where it is thickened with the aid of flocculant. Coal thickener UF will be pumped to a hyperbaric disc filter, which will dewater the ultrafine coal.

5.7.3 Rejects

Flotation reject, thickening cyclone OF and HF reject screen effluent will report to a tailings thickener for dewatering and tailings thickening. Flocculant is dosed into the tailings thickener to assist with tailings settling and water recovery. Once thickened, ultrafine reject tailings will be pumped from the thickener underflow, mixed with flocculant and dewatered using belt press filters (BPFs). Dewatered tailings filter cake is then transferred onto the rejects conveyor. The BPF filters will be housed within the tailings filter building.

The CPP rejects conveyor will deliver combined coarse, fine and ultrafine reject material into a reject truck loading bin. The rejects conveyor has a nominal capacity of 400 mt/h. The reject bin has a storage capacity of 300 mt and has a hydraulically controlled discharge gate that allows for a controlled flow of reject material into the haul trucks. The haul trucks then take the reject material for co-emplacement at disposal areas in the mine.

There are no planned CHPP effluent discharges. However, the tailings thickener underflow may be discharged to a mineable tailings cell during an upset operating condition (i.e. in the unlikely event of a thickener or tailings filter plant catastrophic failure.) The tailings cell will be located in close proximity to the CPP. There will be no conventional slurry tailings management facility or impoundment area at the mine. All dry tailings generated will be co-disposed with waste rock in an appropriately designed and managed manner.

5.7.4 Product Coal

The product coarse, fine and ultrafine coal is combined on the product conveyor, which will deliver the washed coal onto a radial stacker, which allows segregated storage stockpiles to be created. The ultimate stockpile storage capacity will be 200,000 mt after dozer push-out. The product conveyor that leaves the CPP module has a nominal capacity of 500 mt/h. A two-stage sampling system will be installed next to this conveyor to routinely take product samples, which will be used for plant control feedback.

Washed product coal is reclaimed from the stockpiles that were formed by the stacker, using dozers pushing coal onto two reclaim feeders. Each reclaim feeder has a nominal capacity of 2,000 t/h and will deliver washed product coal onto a train load-out conveyor with a load-out capacity of 2,000 mt/h. The train load-out conveyor delivers this product coal into the train load-out bin, which has a clean coal storage capacity of 300 mt. At the bottom of the bin, a hydraulic gate controls the flow of product coal into train railcars, with track scales used to accurately control the amount of coal placed into each wagon, as well as creating a tare inventory for the rail shipment. During the rail wagon loading cycle, each of the rail wagons will be sprayed with a dust binder chemical to mitigate dust, and anti-freeze during the winter months to prevent coal freezing and sticking to the wagon.

The train load-out bin will be installed over a new rail siding and rail loop. Figure 5-14 shows a plan view of the product stockpiles, train load-out facility and rail loop.

Map Key

- Conceptual Powerline
- Radial Stacker
- Train Loadout Bin
- Conveyor Belt
- Existing Railroad
- Rail Loop June 2015 option
- Main Roads
- Drainage
- Lakes
- Cut
- Fill

Name

- Coal Thickener
- Diesel Storage
- Laydown Area
- Processing Plant/Transformer Yard
- Product Stockpile
- ROM Dump Hopper
- Radial Stacker
- Rejects Bin
- Sizing Station
- Surge Bin
- Tailings Thickener
- Train Loadout Bin
- Vehicle Maintenance Area and Offices
- Potential Disturbance Area Boundary

Map Notes:
1. NAD 1983 UTM Zone 11N

659,500 660,000 660,500

5,498,000

5,497,500

Coal Thickener
Tailings Thickener
Diesel Storage
ROM Dump Hopper
Sizing Station
Surge Bin
Radial Stacker
Processing Plant/
Transformer Yard
Product Stockpile
Corbin Creek
Michel Creek
Conveyor
Vehicle Maintenance Area
and Offices
Train Loadout Bin
Cut Surfaces
Fill Surfaces

N

0 50 100 150 200 250 Meters

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Project No.:	**Project:** Michel Creek Coking Coal Project	**Figure: 5-14** Train Load-out and Rail Loop Concept Layout	CanAus Coal Limited
Date: September, 2015			
Drawn By: SMART MAP	**Approved By:** Consult 5 Inc.		

5.7.5 Process Services

Both the coal thickener and tailings thickener overflow (OF) will report to respective clarified water tanks that allow the recovered water to be re-used as process water throughout the CPP. Coal thickener process water will be utilised (recycled) as much as possible within the ultrafine circuit, containing flotation frother and collector reagents to that section of the plant. Approximately 88 m^3/hr of raw water is required as make-up water for CHPP plant process water losses. This raw water will be pumped to the CHPP by a set of raw water pumps, which will be installed in a raw water reservoir, located within close proximity to the plant. Most of the water will be sourced from the pit.

The following additional facilities will be provided for delivery and storage of process consumables:

- A flocculant storage shed;
- A flocculant storage and dosing skid within a bunded area to provide secondary containment;
- A magnetite storage shed within a bunded area to provide secondary containment;
- An MIBC double-walled tank within a bunded area to provide additional containment;
- A diesel double-walled tank within a bunded area to provide additional containment ; and
- A propane double-walled tank to supply localised CHPP general heating requirements.

Pump and piping distribution systems with appropriate secondary containment will be installed to allow these consumables to be piped into the CPP and tailings filter building, for use in the coal wash and tailings filtering process.

5.7.6 CHPP Infrastructure

Additional facilities that will support the CHPP operation include:

- A warehouse and maintenance workshop building that includes:
  - A mobile equipment service bay, including a vehicle wash-down bay;
  - A coal sampling and processing laboratories bay; and
  - A small warehouse bay.
- A control room including additional office space for CHPP operations personnel, ablution facilities and a waste tank for removal of waste by a portable suction truck;
- CHPP electrical distribution network and localised substations; and
- A skid mounted CHPP potable water plant with associated water tank, pumps and distribution network.

Two firewater tanks, together with a set of firewater pumps will be installed to provide firewater for the CHPP infrastructure. Firewater will be distributed to the various parts of the plant via an underground firewater distribution ring main. The tanks will be supplied from the raw water feed line into the CHPP; and the firewater pumps will be housed within a small heated enclosure.

5.7.7 Annual Production Figures

The annual CHPP production figures are presented in Table 5-4.

Table 5-4: Annual CHPP Production Figures

Description	Annual Rate	Comment
CHPP Feed Tonnes	3.0-3.5 Mmt	
Production Run Hours	6,800 hrs	
CHPP Average Yield	60% (ar)	Product yield calculated on a 11% total moisture (TM) basis
CHPP Coking Coal Production	2.0-2.5 Mmt	
CHPP Rejects	1.2 to 1.5 Mmt	
Raw Water Usage	598.5 ML	Based on 88m^3/hr raw water rate
CHPP Power Demand	47,246 MWh	Loop Ridge power load

Refer to Table 5-5 for the annual CHPP consumable consumption rates. These figures are based on nominal usage rates.

Table 5-5: Annual CHPP Consumable Rates

Description	Annual Rate	Comment
Flocculant (Anionic)	144 mt	Based on 0.036 kg/ROM Feed t
Flocculant (Cationic)	192 mt	Based on 0.048 kg/ROM Feed t
MIBC (Frother)	600 mt	Based on 0.15 kg/ROM Feed t
Diesel (Frother)	1,254 mt	Based on 0.31 kg/ROM Feed t
Magnetite	2,000 mt	Based on 0.5 kg/ROM Feed t
TLO Dust Binder Chemical	80 mt	Based on 0.02 kg/ROM Feed t
TLO Anti-Freeze	40 mt	Based on 0.02 kg/ROM Feed t. Only required 6 months of year

5.7.8 CPP Waste Management

CPP waste will be disposed of using a process of co-deposition of dry stacked tailings in waste rock. Comingling of plant reject with pit waste rock will be evaluated to minimize the area disturbed and facilitate effective and long-term containment post-closure. It is not anticipated that there will be any need for a conventional tailings facility.

5.7.9 Process Water and Effluent

Based on the current design, there is no tailings dam arrangement needed for this project. There will be no discharge of process effluent into a water dam or cell throughout standard operation of the CPP. This is possible due to the dewatering of ultrafine reject by belt press filters for dry co emplacement with the coarse rejects. Any water recovered from the process will be recycled and blended back into the process with make-up water. Make-up water for the plant is only required to balance the difference in moisture in the material being fed to the plant at ~5% moisture with the moisture in the material leaving the plant via product (~10% moisture) and reject (~20% moisture).

There are no planned CHPP effluent discharges. However, the tailings thickener underflow may be discharged to a mineable tailings cell in the event of an upset operating condition (i.e., in the unlikely event of a thickener or tailings filter plant catastrophic failure). The tailings cell will be located in close proximity to the CPP, but will not be used in daily or normal operation of the CPP. In the worst case, the entire thickener volume of 2,400 m^3 may need to be discharged to the tailings cell. Discharging to the tailings cell is not normal operation, but it is anticipated that it would be required at least every 2-3 years for plant inspection. As equipment failure and blockage issues may occur during commissioning and early operation, the tailings cell will likely be used at these times so it will be designed appropriately for a volume of ~5,000 m^3.

5.8 Support Infrastructure

5.8.1 On-site Infrastructure

The following additional on-site infrastructure is planned for the Michel Creek Coking Coal Project:

- Plant site access roads;
- Lay-down and parking areas;
- Railway spur;
- Clean water diversions works;
- Settling ponds and contact water collection ditches;
- Fresh water wells;
- Fresh water piping and storage;
- Mine dewatering wells, pumps, sumps and piping;
- Fire hydrants and fire protection system;
- Potable water source; and
- Sewage collection and disposal system.

5.8.2 Site Roads

Site Access

The Project can be accessed via a series of all-weather highways, linking the site with towns and cities throughout southern BC and southern AB in Canada. The Crowsnest Pass Highway (Hwy 3) runs east to west immediately north of the Project area. Corbin Road, a paved access road, extends from Highway 3 south to the Coal Mountain Mine and passes along the western edge of the CanAus Project property.

Internal Site Roads

Historical mining activity at the McGillivray Pit and exploration elsewhere on the Loop Ridge property has resulted in the development of dirt access roads from Corbin Road to areas of the site. Additionally, due to the land being managed for forestry, there is a well-developed network of roads to support timber harvesting. There is also an access road along the TransCanada natural gas pipeline, which runs northeast to southwest across the property.

Within the site, existing road corridors will be used wherever possible although they will likely require upgrading.

5.8.3 Railway Spur

Construction of a new railroad spur with an on-property coal load-out facility is required as is a rail tie into the existing CP rail system. The optimal location, size and right-of-way for the railway spur will be determined as part of the EA process.

A key east-west line of CP Rail travels along the northwestern edge of the Project property, and a rail spur to the existing Coal Mountain Mine passes along the western boundary of the Project property. A rail spur, and associated load-out facilities, will be built at the Loop Ridge CPP and connect with the CP Rail line (Figure 5-15). Coal will be shipped by rail to commercial ports on the west coast of Canada. CP Rail will maintain and clean their rail line, and CanAus will be responsible for on-site maintenance.

5.8.4 Buildings and Ancillary Facilities

The following buildings and ancillary facilities will be incorporated at or near the CPP:

- Maintenance shop of which the ground floor area of the building will be used for vehicle maintenance and the second floor area for offices, open work areas, conference rooms, lunchroom, and a mechanical room;
- Administration offices/guard house/truck scale are included in the Truck-shop building;
- Reagent and cold storage building;
- Metallurgical and Environmental Laboratory;

- Truck fuel station and distribution. Fuel storage capacity estimated on an annual consumption rate of 25 ML/a by the mining fleet, and an 8 to 10-day storage capacity with some allowance for additional uses by other equipment;
- Blasting agents and high explosives storage; and
- Waste Disposal Facility.

5.8.5 Explosives Manufacturing and Storage Magazine

The proposed Project will require a stand-alone emulsion plant with 150 mt of prill stored in silos. The facility will require two magazines rated for up to 25,000 kg each, one licensed for 50,000 detonators and one for 20,000 kg of explosives. All items will be designed to meet Mines Act Permit requirements, to ensure safety and security.

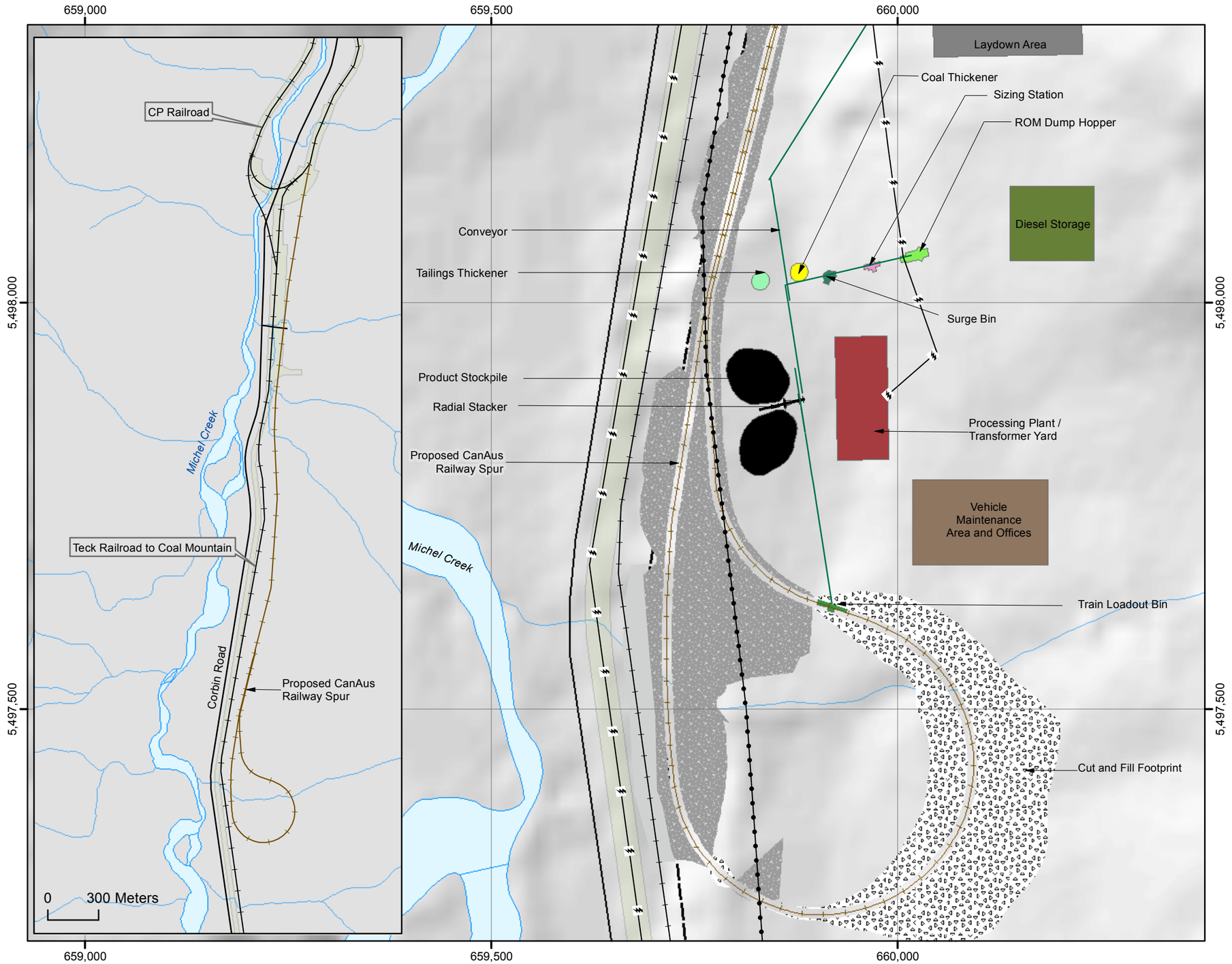
The facilities will be in a secure location and be locked at all times with only appropriately trained and authorized personnel allowed to access the facility. In addition, the access road leading to the facilities will be within the property boundary, and therefore access will be controlled and public access restricted.

The magazines will be constructed and operated in accordance with federal and provincial regulations and will meet or exceed the standards set out in the May 2001 edition (or subsequent iterations) of *Storage Standards for Industrial Explosives* published by the Explosives Regulatory Division of the Department of Natural Resources, Government of Canada, and any terms and conditions imposed by the required permits and approvals. Neither an Explosives Factory License nor an ANFO Manufacturing Certificate will be required for the Project.

Map Key

- Existing Pipeline
- Powerline
- Main Roads
- Drainage
- Radial Stacker
- Conveyor Belt
- Existing Teck Railroad to Coal Mountain
- Proposed CanAus Railway Spur
- Cut
- Fill
- Coal Thickener
- Diesel Storage
- Laydown Area
- Processing Plant/Transformer Yard
- Product Stockpile
- ROM Dump Hopper
- Radial Stacker
- Rejects Bin
- Sizing Station
- Surge Bin
- Tailings Thickener
- Train Loadout Bin
- Vehicle Maintenance Area and Offices
- Potential Disturbance Area Boundary
- Railroad Right of Way

Map Notes:
1. NAD 1983 UTM Zone 11N



Project No.:	**Project:** Michel Creek Coking Coal Project	**Figure: 5-15** Proposed Railway Spur on the CanAus Property	CanAus Coal Limited
Date: September, 2015			
Drawn By: SMART MAP	**Approved By:** Consult 5 Inc.		

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5.8.6 Electricity

It is proposed that power for the mine site will be provided by connection to the existing BC Hydro Power System. The preferred route and buffer zones for the power line will be determined as part of the EA process. It is anticipated that power to the Project site will come from a 69-kV main feeder power line that will be extended along the western edge of the lease area to a location near to the rail load-out loop, where the main substation will be located. The main substation will consist of power utilities equipment, including switching, monitoring and control equipment, along with the 25-kV High Voltage distribution load centre. The main substation will also be where power will be transformed to 25-kV for reticulation:

- Around the mine site;
- To a substation at the mine infrastructure area;
- To a substation at the raw water switch room; and
- To a substation serving the CHPP area, including raw coal, CPP and local load-out area.

Estimated loads for the CHPP portion of works are detailed in Table 5-6.

Table 5-6: CHPP Estimated Demand by Area

Plant Area	Demand in kW
Raw Coal Handling	707
CPP	4,189
Rejects Handling System	110
Product handling system	971
Ancillary Buildings and Services	972
Total	6,949

There will be a number of area substations around the CHPP. Each will include a 25kV/600V transformer and a switch room building to house the Motor Control Centres for radial distribution to each of the localised areas. The distribution transformers will be installed on fenced concrete plinths and will be situated centrally within a bunded area (i.e., secondary containment).

General lighting throughout the plant will be by fittings mounted on the steelwork structures. The lighting will be designed to avoid unnecessary visual impacts to the surrounding areas. Emergency lighting and illuminated exit signs with integral battery back-up will be utilised in the CHPP stairways and safety shower locations, to aid in safe egress from areas of the CHPP in the event of an unscheduled power failure and/or limited visibility due to environmental conditions.

5.8.7 Stream Crossings

Michel Creek runs along the western side of the property, but lies west of Corbin Road, and it is not anticipated that the creek will need to be crossed. Project-related linear infrastructure (e.g., roads, power line, conveyor, etc.) will cross at five tributary streams to Michel Creek. Stream crossings will be fully documented and their fish-bearing status determined during baseline studies. Any new crossings required over fish-bearing streams will be constructed as clear span structures.

5.8.8 Hazardous Substance Storage and Use

Chemicals

Although chemical usage at the mine site is expected to be limited, all materials will be trucked to the mine site by a commercial hauler as required, and will immediately be transferred to an appropriately constructed storage facility that will include secondary containment designed for the chemical(s) being stored. In each case, the commercial hauler will be required to have a Spill Contingency Plan appropriate for the cargo being hauled, and be capable of responding to an anticipated event while transporting chemicals to the site.

All chemicals will be stored in an appropriate manner and in accordance with the applicable regulations. The site manager will maintain an up-to-date record of the various substances on site and will maintain Material Safety Data Sheets (MSDSs) and appropriate procedures for spill management, handling and clean up in an accessible location.

Site Fuel Storage

All fuels for equipment on site will be stored in double walled tanks that will include self-contained secondary containment, appropriate high-level alarms and pump dispensers. A Spill Kit will be located in the immediate vicinity of the fuelling station, and the actions identified in the Project Spill Contingency Plan will be implemented immediately, in the unlikely event that an unanticipated discharge takes place. The fuel storage area will be equipped with suitable crash barriers, and will be certified and/or registered as required, by the appropriate regulatory authority.

Fuel will be trucked to the site by a commercial hauler as required, and will immediately be transferred to the appropriate storage tanks. The commercial hauler will be required to have a Spill Contingency Plan, and be capable of responding to an unanticipated discharge while transporting fuel to the site.

No fuels, oils or other hazardous substances will be stored within 100 m of any water body, and no equipment maintenance or re-fuelling will be conducted within 100 m of a water body.

Site Fueling

CanAus is committed to best practices for fuelling and will install oil-water separators at each fuelling station. Employees will be given training to improve environmental awareness so that they can take responsibility for spill reporting and containment.

Site Lubricants and Coolant Storage

Various lubricants and coolants required for the regular maintenance of equipment will be stored on site. Each one of these materials will be stored, handled, recycled or disposed of in an appropriate manner. The site manager will maintain an up-to-date record of the various lubricants and coolants on site, and will maintain MSDSs and appropriate procedures for spill management, handling and clean up in an accessible location. Used oil and lubricants on site will be stored in appropriate containers and transported off site for appropriate recycling or disposal.

5.9 Waste Management

5.9.1 General Waste Management

During all activities, CanAus will maximize opportunities to recycle and reuse materials wherever possible, in order to reduce the total amount of material that will have to be disposed of during operations, decommissioning and reclamation activities. Prior to initiating any significant activities at the site, CanAus will develop a site-wide waste management plan, which will identify the various waste streams present on the site, promote the principle of reduce, reuse and recycle, identify disposal requirements for individual streams, and maintain records of waste volumes and fate.

5.9.2 Sewage and Grey Water

A sewage and grey water system will be developed as part of the proposed operation. The design for these features will occur as part of the PFS design, and it will be included in the evaluation of water flows and quality as part of the EA process.

5.9.3 Domestic Waste

Domestic waste will be handled in an appropriate manner. For example, “household waste” will be collected and temporarily stored in wildlife proof containers. Uncontrolled burning of garbage, plastics and other waste will be strictly prohibited at the site. Any waste that cannot be reused or recycled will be disposed of by hauling the material off site for disposal in an approved waste disposal site.

5.9.4 Industrial Waste Management

Initial plans are for the creation of a solid waste disposal area located away from natural drainage courses on the site for all non-hazardous materials. Other waste materials generated at the Project will be recycled (e.g. spent lubricants) or disposed of in accordance with appropriate regulations.

5.10 Site Water Management

5.10.1 Introduction

The environmental assessment for the Project will consider all aspects of surface water management during all phases of the project, including construction, operation, decommissioning, reclamation and post closure. The water management strategy will include, but not necessarily be limited to:

- Diversion of non-contact water (i.e. clean water unaffected by the mining operation) from mine areas, allowing it to be released directly, thus reducing the volume of surface water requiring management;
- Containing runoff from disturbed areas and moving water into sumps and sedimentation control ponds for clarification. Water will only be released once it has met all relevant permit requirements;
- Developing haul and access roads that are crowned properly. Roadside ditches will be provided to control the runoff from the road. Culverts or bridges will be used to divert water flow under the road. Temporary roads used for mine development, exploration or other miscellaneous mine activities will be ditched with culverts or water-barred to divert water off the roadways. All temporary roads not required will be re-contoured and re-vegetated to control erosion; and
- Ditches will be armored when necessary to minimize the potential for erosion and sediment generation.

Detailed climate and hydrological studies, including hydrogeological drilling, mapping, and detailed surface hydrological assessments of Michel Creek and its major tributaries are currently underway. This information will be required to inform more detailed mine planning, the environmental effects assessment and Mines Act and Environmental Management Act permit applications.

5.10.2 Freshwater Use and Source

Water will be required at the site for the CPP, dust suppression, wash-down and fire protection systems. A separate system will be developed for the potable water supply. A hierarchy of water for use in the mining operation will be established, with an emphasis placed on using mine-affected water for industrial activities prior to using unaffected (clean) water. The hierarchy of use is proposed as follows:

- Collected surface water runoff from mine areas, waste dumps and other mine facilities;
- Constructed surface water impoundments;

- Other water storage facilities;
- Groundwater; and
- Nearby surface water bodies (streams and wetlands).

Based on a total assumed water requirement for coal processing, dust suppression and the wash-bay of 416 l/min and a potable water requirement of an additional 7.5 l/min, it is not unreasonable to expect that those volumes of water will be available through multiple sources, including pit dewatering, reclaim water from processing and tailings dewatering, drilled groundwater sources (wells) and, as a last resort, direct stream withdrawal.

5.10.3 Site Water Recycling

CanAus is committed to incorporating re-use and recycling of water to the maximum extent possible, including, but not necessarily limited to, water used in the processing plant, and maximizing the use of water captured from runoff drains and water recycled from the mine. All make-up water supply sources will be evaluated for quality, volume, and potential environmental effects resulting from withdrawal and release to natural water bodies. Water licenses will be required for make-up water withdrawals consistent with similar mining projects in the area.

5.10.4 Site Storm Water Management

Non-contact water will be protected by building diversion ditches above active mining areas and draining these, if possible, via sediment ponds into existing creeks draining the mine site (Figure 5-1). Non-contact water is therefore managed by diversion of clean waters around disturbance areas.

Contact water will be managed by installing collection ditches below waste dumps and other infrastructure. The contact water will either be:

- Treated in settling ponds equipped with passive water treatment systems prior to being discharged into local streams if of suitable quality; or
- The water will be reused in the operations.

5.10.5 Site Water Treatment

CanAus is working to eliminate potential water quality issues by design, with the objective of minimising or eliminating the need for active water treatment. In particular, the following design options are being explored to minimize potential water quality issues:

- Returning as much waste rock to the pits as possible, where it will be stored in saturated conditions and where pit water spill points can be controlled;
- Understanding the geochemistry of the rock to facilitate blending and disposal, thereby minimizing ML/ARD issues;

- Waste rock stored externally to the pit will be placed behind waste rock structures designed to control egress and seepage, maximize a saturated storage zone, make use of covers to eliminate oxygen and ingress of water, and be built from the bottom up to minimize the spread of rock;
- Separating contact and non-contact water;
- Recycling water into the processing plant; and
- Producing dry tailings and co-disposing those tailings with the waste rock.

Conceptually, it is anticipated that in the mine areas, both surface water and groundwater will be collected using a series of ditches and in-pit sumps for water storage. Water will be removed from the active pit area and sent to sediment control structures. These sedimentation structures will be designed to clarify the mine run-off and remove sediment so that it can be used in mining operations, or has the potential to be discharged back into the adjacent streams. Water discharged from the site will meet all applicable permitting requirements prior to release.

5.10.6 Water Quality and Water Balance

The Project will fall within the *Elk Valley Water Quality Plan* (EVWQP) area, and will be consistent with those requirements.

A comprehensive water balance for the Project area is being developed as part of the pre-feasibility study and the EA process. The water balance will consider all natural inputs, industrial land use effects on the water balance and the established monitoring points in local creeks and Michel Creek (Figure 5-16).

The water balance will consider seasonal variations and climatic extremes and will be used for water quality predictions to assess effects on receiving water bodies. In conjunction with the overall water balance, the careful design of on-site water management structures will allow for water conservation and water quality management. The water management system will predominantly utilize clean, non-contact water diversions to minimize runoff into disturbed areas and collection ditches to route contact water to sedimentation sumps and impoundments.

A comprehensive water management plan will be developed for the Environmental Application based on the ultimate Project design, water balance and requirements for water quality protection. A sediment control plan, including water management for construction, will also be developed for the application.

Map Key

- Water Quality Monitoring Sites
- Proposed CanAus Open Pit
- Provincial Boundary
- Fortis Pipeline
- TransCanada Pipeline
- Ex-Pit Rock Dump
- In-Pit Rock Dump
- Treatment Wetland (Semi-Passive)
- Potential Disturbance Area Boundary
- DOMINION COAL BLOCKS

650,000 655,000 660,000 665,000 670,000 675,000

5,505,000 5,500,000 5,495,000 5,490,000

N

Fortis Pipeline
Crowsnest Highway
Fir Creek
TransCanada Pipeline
Loop Ridge Mine
Michel Creek
Wheeler Creek
Island Creek
Crowsnest Creek
East Crowsnest Creek
Ptolemy Creek
Coal Mountain Phase 2
Carbon Creek
Marten Creek
Tent Creek
Andy Good Creek
Coal Mountain Washing Plant
Coal Mountain
British Columbia
Alberta
0 1,000 Meters

0 1,500 3,000 4,500 6,000 7,500 Meters

1:100,000

Map Notes:
1. NAD 1983 UTM Zone 11N
2. Contour Interval:40 metres

Document Path: D:\Projects\Consult_5\CanAus\MXD\Loop_Ridge\Project_Description\Revised_Maps\September_2015\Figure_5_16_ Water_Monitoring_Points_Map.mxd

Project No.:	**Project:** Michel Creek Coking Coal Project	**Figure: 5-16** Site Water Monitoring Network
Date: September, 2015		
Drawn By: SMART MAP	**Approved By:** Consult 5 Inc.	

CanAus Coal Limited

5.11 Site Air Emissions

Mining and processing activities at the site may result in localized effects on air quality (airborne particulates). These activities generally include blasting, coal and mine rock hauling, service vehicle traffic and wind-generated dust from coal and mine rock stockpiles.

Dust will be generated from five main sources: active mining faces; coal and waste haul roads; waste spoils; stockpiles; and the coal production plant. Dust management practices will be developed in the PFS and FS phase of the Project. CanAus is committed to implementing best practices in dust control and suppression. The following specific measures are being considered:

- The primary generator of dust will be internal mine haul roads. When needed, all active haul roads will be sprayed with water, or water combined with dust suppression agents. The dust suppression agents are designed to join dust particles together so they stay on the road and do not become airborne;
- CanAus is designing a processing facility that does not use a thermal dryer and this eliminates one of the major sources of particulates at the proposed mine;
- During construction of topsoil/subsoil and waste rock piles, CanAus will build dumps from the bottom up to minimize dust and manage the footprint. Top down dumping will only be used when backfilling the pits; and
- Dust suppressant sprays will be used throughout the coal production plant as needed. These suppressants will be non-toxic. Dust suppression will be used at the ROM coal truck dump, all conveyor transfer points, raw and clean coal stockpiles and any other location where there is a potential for dust generation. Conveyors will be equipped with belt cleaners, dribble chutes and tight fitting covers where needed. The production plant, all conveyors, all galleries and other facilities will be equipped with complete wash down systems to remove dust accumulations from all structures.

The largest emitters of GHG and other pollutants are anticipated to be the burning of fossil fuels to power mining and other mobile equipment. Maximizing fuel efficiency and a reduction in fuel consumption will reduce air emissions as carbon-based petrochemical products are broken up in combustion to form carbon dioxide (amongst other greenhouse gases), carbon monoxide, volatile organic compounds, nitrogen oxides (smog), sulphur oxides (acid rain) and very fine particulate matter.

In order to ensure that the Project minimizes, to the extent possible, GHG and other pollutant emissions, CanAus will consider implementing the following controls:

- Use, as far as is possible, construction equipment that will meet Tier 2 emission standards for non-road diesel engines (at a minimum);
- The use of vehicles meeting the newest emission standards;
- Implement regularly scheduled maintenance of all fossil fuel burning equipment;
- Monitor fuel consumption;

- Minimize unnecessary use of vehicles;
- Use group transport on the mine site;
- Institute a no-idling policy;
- Reduce heating (i.e., propane consumption) by appropriately insulating and operating all relevant facilities;
- Eliminate the use of a thermal dryer to dry coal, and use other cleaner technologies such as centrifuges and hyperbaric disk filtration;
- Investigate the potential to use bio-fuels (i.e., ethanol and bio-diesel) to replace fossil fuels; and
- Reduce electrical demands via a comprehensive energy conservation program for all on-site buildings.

CanAus will annually set objectives and targets for reducing GHG emissions, and continually evaluate new options to further reduce such emissions in all aspects of the Project.

5.12 Health, Safety and Environment Quality Management

5.12.1 Introduction

As a mineral resources company, CanAus is committed to making occupational health and safety a primary objective in all of the Company's exploration, development and operational activities. The Board of Directors will establish a Health, Safety and Environment Committee with a mandate to monitor the effectiveness of this commitment and to provide oversight on the company's health and safety and environmental objectives. The Company currently has an established Occupational Health and Safety Policy.

CanAus recognizes that the safety of its employees is a core value that cannot be compromised. Employees are expected to be aware of workplace hazards and risks, and that "unsafe" behaviour is deemed unacceptable. Compliance with safety standards and procedures is an absolute requirement of employment.

CanAus's management will ensure that the Health and Safety Management System objectives and effectiveness are reviewed on a regular basis, and that programs are implemented to achieve the objectives. Key performance indicators will be closely monitored and continuous improvement will be actively promoted in all programs.

5.12.2 Occupational Health and Safety

The safety concerns for the Project are anticipated to be essentially the same as those encountered in any open-pit mining and coal processing operation. These include risks associated with the use of heavy mobile equipment, stationary industrial equipment and machinery, chemicals, exposure to falls, contaminants, noise, air quality and extreme weather conditions.

The emphasis at the site is on the prevention of safety and/or health risks through the development of a company-wide safety culture, safety conscious employees and maintaining a safe work environment. This is accomplished through a combination of training and diligence in monitoring the workplace to identify and minimize factors that may have the potential to pose an unnecessary risk to the health and safety of any worker.

Some of the more significant activities related to health and safety that will be implemented at the Project site are as follows:

New Employee Orientation

Upon their arrival at any of the site, all new employees will attend an orientation session on safety, fire protection, environmental awareness, site rules, and any other related topics.

Safety Manuals

A safety manual will be prepared, presented to all employees and replaced with updated material when necessary. Employees are/will be required to read and be familiar with its contents.

Hearing Conservation

Noise surveys will be carried out throughout the site at regular intervals, and any areas above the 85 dBA level will be posted and employees will be required to wear hearing protection. Hearing protection will be issued to every employee and will also be available at strategic locations (related to noise levels) throughout the project sites.

Personal Protective Equipment

Efforts will be made to reduce or eliminate workplace hazards whenever and wherever possible. However, when this is not possible, approved personal protective equipment will be provided and used. Any employee that is required to wear personal protective equipment will be trained in its use, maintenance and capabilities.

Lock Out Procedures

In order to ensure that machinery and other equipment (both electrical and fueled) cannot be inadvertently used or started and jeopardize the safety of any employee working on the equipment, lock out procedures will be developed and must be followed.

Mobile Equipment

Employees with duties that include the operation of mobile equipment will be trained in the safe operation, maintenance and inspection of such equipment.

Work Place Hazardous Materials Information System

In order to ensure that all employees are able to identify any and all hazardous materials, a Workplace Hazardous Materials Information System (WHMIS) program will be implemented at the Project site. The program will include: labeling of products by suppliers; submission of Material Safety Data Sheets by suppliers; the labeling of containers, tanks and piping; the appropriate posting of Material Safety Data Sheets; and the effective training of all employees.

First Aid

All employees will be encouraged to obtain first aid certification.

In the event of a medical emergency, sick/injured persons can be rapidly transported to the nearest appropriate medical facility.

Emergency Vehicle/Communications

A vehicle will be available at all times on site to evacuate injured or sick personnel to the nearest medical facility.

Communication equipment will be available at all times at site.

Occupational Health and Safety Committee

An Occupational Health and Safety Committee will be established at the Project site and will consist of employees and supervisors. The committee will be charged with the responsibilities of: reviewing accidents in the unlikely event that one should happen; conducting safety inspections; evaluating existing safety programs; and recommending health and safety improvements. The committee will meet on a regular basis and the minutes of such meetings will be posted for the information of all employees. CanAus will comply with the requirements of the *Health, Safety and Reclamation Code for mines in British Columbia, (HSRC) 2008.*

Mining and Processing

CanAus and its contractors will also adhere to all applicable regulatory requirements of the applicable Acts and regulations, and any future amendments to those regulations.

5.12.3 Upset Conditions

In the case of any unanticipated or upset condition on any of the Project site or transportation routes, the priorities will be as follows:

1. Protect the health and safety of persons in the area;
2. Protect the environment; and
3. Protect the facility.

Emergency Preparedness and Response Plan

CanAus has prepared an Emergency Preparedness and Response Plan and a Spill Contingency Plan and these plans will be updated on a regular basis to reflect activities at the site. The plans will consist of a number of Safety Plans and Environmental Protection Plans (EPP) focusing on specific activities and/or situations. The EPPs will document proactive as well as reactive procedures to be implemented to prevent and/or mitigate accidental releases or spills of potentially harmful substances. The updated plan will include general contingency planning including, but not necessarily limited to:

- Actions to be taken in the event of a spillage of contaminated waters outside of contained areas;
- Action to be taken in the event that treated effluent approaches or exceeds quality limits;
- An action plan to deal with spills of specific hazardous materials used on site; and
- A general action plan to deal with spills of unspecified hazardous materials.

The Project Emergency Preparedness and Response Plan and Spill Contingency Plan will be reviewed at least annually by Company management, and on an as-needed basis by employees and supervisors. The EPPs are designed as living documents that can be amended as improved procedures are identified.

The Emergency Preparedness and Response Plan will be developed in consultation with emergency measures representatives from the local communities, particularly the District of Sparwood.

The plan will be updated routinely and it will be made available at a strategic location for easy access.

Appropriate personnel at each site will be trained and equipped for firefighting and mine rescue activities as required by applicable regulations.

On-site Medical

A medical emergency response plan will be developed for all aspects of the Project. All employees will be encouraged to obtain first aid certification and qualified medical staff will be retained on site.

In the event of a medical emergency, a vehicle will be available at all times on site to evacuate injured or sick personnel to the appropriate local medical facility, or for severe cases, to a location where the patient can be transported by air or ground to a regional medical facility. Safety personnel will be on site in the event of a medical emergency.

Spills

In the event that a reportable spill does occur, following the guidance of the *Environmental Management Act*, Spill reporting Regulation, the person having control of the pollutant that has been spilled shall report the occurrence to the Provincial Emergency Program.

The report shall contain at a minimum, the following information:

- The reporting person's name and telephone number;
- The name and telephone number of the person who caused the spill;
- The location and time of the spill;
- The type and quantity of the substance spilled;
- The cause and effect of the spill;
- Details of action taken or proposed to comply with section 3 of the Regulation concerning further action;
- A description of the spill location and of the area surrounding the spill;
- The details of further action contemplated or required;
- The names of agencies on the scene; and
- The names of other persons or agencies advised concerning the spill.

The person having control of the spilled material and the owner of the material will then submit a written report to the Ministry of Environment, within seven days of the reportable spill occurring. The written report will, but may not necessarily be limited to, the following:

- Location of and time of spill;
- The type and quantity of material spilled;
- A description of the spill site area;
- Details of any remedial action taken with respect to the spill;
- The method and location of disposal of spilled material, clean-up material and contaminated soils; and
- Changes in procedures or actions undertaken to ensure similar events are not repeated.

5.13 Malfunctions or Accidents

5.13.1 Introduction

Malfunctions or accidents will be a consideration in the planning and operation of the Project. This section considers the potential malfunctions and accidents related to significant aspects of the proposed Project. These include: mining at site; processing of the coal; the management and discharge of process wastes (co-disposal of dry stack tailings); treated effluent; the transportation of hazardous substances to and from the site; and coal transport from the mine.

Various reasonable malfunctions will be considered in the EA process in terms of their probability of occurrence, response in the event that they do occur, and the potential effects of such an occurrence.

5.13.2 Hazardous Substances Storage

A number of hazardous substances and waste dangerous goods materials will be employed on the site. All of these materials will be stored in vessels or facilities designed for the materials being stored and in accordance with applicable acts and regulations.

A significant spill to the environment from any one of these facilities has the potential to affect the surface environment in addition to surface and/or ground waters in the area. As such, each of the facilities will be constructed with suitable secondary containment to retain the material stored within, and each will be operated in a manner that limits the potential for spillage.

All outdoor fuel storage tanks will be of double walled construction to contain leakage to the primary (internal) tank. Fuelling stations will be constructed and operated in a manner that minimizes spill during fuelling activities. In addition, the tanks and fuelling stations will be subject to daily inspections and any items identified during that inspection will be addressed without delay.

In the event of an unanticipated release from a storage facility, emergency response procedures, defined in the Spill Contingency Plan, will be implemented. A typical response to a spill will be: to ensure worker safety in the area; isolating the source of the spilled material; containing the spilled material; and clean-up of the area. This spill response, coupled with site runoff design, will ensure that any spill of hazardous substances or from the waste dangerous goods storage facilities will be contained within the operating areas of the sites.

The expected frequency of such events is considered very low and this, combined with a rapid and effective response mechanism in the event that such an event does occur, will ensure that malfunctions associated with the storage of hazardous substances and waste dangerous goods result in minimal residual impacts to the environment.

5.13.3 Leakage from Settling Ponds

External ponds will be used to store surface runoff and mine water. The quality of the water within the ponds is expected to be better than the discharge criteria provided in the applicable regulations or management plan, so a small leak in a particular pond would pose little to no risk to the surrounding environment. Notwithstanding this, all such ponds will be subject to daily visual inspections by on-site personnel of water levels and for obvious signs of leaks. In addition, a detailed annual inspection will be conducted of each pond to ensure that the overall integrity of the pond is maintained.

5.13.4 Water Pipeline Spills

External pipelines will be used to collect pit-dewatering water, to transport that water to the mine water settling ponds, etc. The quality of the water within the water pipelines is expected to be better than the discharge criteria, so a small leak in a particular pond would pose little to no risk to the surrounding environment. Notwithstanding this, all water pipelines in use will be subject to daily visual inspections for leaks by on-site personnel.

5.13.5 Open-Pit Slope Failure

Minor slippage of the pit slope and falling rock will be mitigated by safety benches established in the pit slope. They may require periodic cleaning to remove debris, although this is unlikely considering the expected pit slope stability on all open pits associated with the Project. Detailed geotechnical studies and pit design features are designed to minimize the potential for instability in pit slopes. However, the risk of a major failure cannot be excluded entirely. Regular pit wall slope monitoring will be implemented in an effort to identify areas of instability should they develop. Any response to detected stability or pit wall failure will be dependent on the characteristics of the failure, and may vary from pinning the slope, to facilitating a design collapse of unstable areas, removal of the fallen rock and reduction of the slope.

5.13.6 Release of Contaminants from Coal and Waste Rock Storage Areas

Coal storage and waste rock storage areas will be constructed appropriately and will include a perimeter ditch to collect all surface runoff and divert it to a collection pond, where it will be transferred to the mine water settling ponds. The ponds will be designed with sufficient retention time to allow for the settling of suspended solids and a reduction in the concentration of un-ionized ammonia. Discharges from such ponds will be monitored in a manner and on a frequency approved by the regulatory agencies.

The potential for wind-generated dust from coal and waste rock stockpiles is possible, although the nature and size of the rock in these areas make such an occurrence extremely unlikely. In the event that it does develop, appropriate dust suppression measures will be taken to maintain air quality within acceptable standards.

Based on the coal and rock characterizations conducted, the temporary surface storage of coal, and the permanent storage of waste rock presents a negligible risk to surface and ground water in the immediate area of the piles, both during operations and after decommissioning and reclamation. However, the ongoing waste rock monitoring and management program will be used to verify that there are no negative effects during operation and upon decommissioning of the site.

5.13.7 Coal Haulage

During the active haulage of the coal from the mine to the CPP, minor spillage or dusting from the haul trucks could potentially result from overfilling. Both will be carefully controlled by proper loading of the truck and limiting the size of loads.

In the unlikely event that a large spill of coal occurred while being hauled between a mine and the CPP due to an accident, the response would be to first attend to the injured personnel, and then action a prompt clean-up of all spilled material. Because of the nature of the coal, no residual environmental impacts would be expected from a major spillage during hauling.

5.13.8 Transportation Accident

Transportation accidents involving one or more vehicles could potentially result in the release of a hazardous substance, waste, or dangerous goods. In all instances, CanAus will require that transporters have emergency response plans suitable for the materials being transported and, in the event that an accident happens, that these are implemented. Through proper emergency response and clean-up, the potential residual environmental effects of such accidents will be minimized. In accordance with the Project Emergency Preparedness and Response Plan, CanAus will respond to any accident on site access roads. The Operations Manager, or designate, will determine whether site personnel will respond to accidents on provincial highways, as this decision will be based on factors such as the severity of the accident and location, in relation to the site.

5.13.9 Fire Suppression

All facilities associated with the Project will be self-reliant for fire prevention and suppression in the event of such an occurrence. As such, programs, procedures and practices will be developed at the site, in order to insure that fire prevention and protection are of paramount importance.

Fire extinguishers and other firefighting equipment will be located at strategic points throughout the Project site, including in the mine, and maintained in good working order. Appropriate training will be provided to ensure an effective and efficient force of appropriately trained individuals is always on site to perform necessary fire suppression duties.

All precautions will be taken to prevent and suppress forest fires near the site. Burning or open fires, except for fire response training, will be strictly prohibited at the site. Firefighting equipment will be readily accessible on site during the fire season. In addition, all heavy equipment and fuelling sites will have approved and fully charged fire extinguishers installed. All equipment on site will be kept clean and in good operating condition, ensuring there is no build-up of combustible materials near manifolds, exhaust systems and mufflers.

All fuelling sites will be designated no smoking areas. No smoking will be allowed near fuelling sites or while operating equipment.

5.14 Decommissioning and Reclamation

5.14.1 Introduction

CanAus has both a legal and a moral responsibility to decommission, clean up and reclaim all aspects and sites related to the Project in a manner prescribed by the appropriate regulatory authority. Experience has demonstrated that the site can be decommissioned to a condition that will allow for land uses similar to that which the site was subject to before development.

5.14.2 Progressive Decommissioning and Reclamation

The mining plan, which has been developed, will allow progressive reclamation of the mine pit to occur. The sequential backfilling of pits will form bench-like topographic features with nearly level tops and sloping faces. These faces will be designed and constructed to reduce the potential for erosion and infiltration. Since the backfilling will follow the mining progression, the reclamation will occur in sequence and result in a final topography that meets end land uses. Final topography having steep slopes will be graded to a more gentle topography, blending with the natural topography of the area. Reclamation of the area will follow agreed-upon end land uses.

Annual Reclamation Schedule

An annual reclamation schedule will be prepared and will include:

- The location of areas scheduled for reclamation;
- An estimate of the number of hectares to be reclaimed;
- Volumes of waste, topsoil and subsoil to be moved or placed;
- Detailed description of the activities to be completed during reclamation;
- Estimate of equipment, materials and supplies and manpower requirements; and
- Projected cost of reclamation activities.

General Land-use Objectives

The pre-mining land use of the area being disturbed is usually assumed to be the post-mining land use, unless a higher and better use can be demonstrated for the land. Post-closure land use will be the subject of consultations and the anticipated post-closure land use will be fully discussed in the environmental assessment. Generally, the pre-mining land use for the Project area is important for habitat connectivity, ungulate winter range and commercial forest use. Wildlife use will potentially be improved as the revegetated mine areas will provide increased connectivity, forage and shelter as the new forest matures.

Selection and Preservation of Soil

Soil salvage is generally based on a soil survey of the mine site. Criteria, such as soil texture, coarse fragment content, parent material, and slope, are used to determine the quality, location, and volume of soil to be salvaged.

Timber harvesting will typically be conducted as necessary before mining commences. This operation will be accomplished in blocks as mining progresses in an effort to minimize the amount of surface disturbance at any point in time. Removal of topsoil/subsoil will also be done in small blocks to keep the total mine disturbance to a minimum. The topsoil/subsoil will be stored in a temporary stockpile adjacent to the active mine area, and will be graded and revegetated to reduce erosion and weed development. Once ongoing reclamation provides sufficient area where the topsoil/subsoil can be replaced, it will be removed from the stockpiles and replaced onto the final graded areas. Available topsoil and subsoil will be replaced on all final graded disturbed areas, as required, to meet land use objectives.

Erosion Control Measures

As part of the ongoing mining process, erosion control measures including ditching, diversion channels, terraces, culverts, sedimentation control ponds, mulching, installation of silt fences or straw bale dikes, are installed to control erosion during mining. During final mine closure, any additional required erosion control will be installed. Long-term stabilization of the disturbed areas will be accomplished by establishment of a vegetative cover that meets end land-use objectives.

Plant Species Selection

The revegetative program at the mine site seeks to have both short and long-range goals. The short-range goal would be to control erosion on new topsoil/subsoil and waste stockpiles, or other freshly disturbed areas. The long-term goals include providing a vegetative cover that would provide for long-term erosion control using tree, shrub, grass and forb species that are native to the mine site area. The criteria used for the selection of plant and tree species would include:

- Meet traditional knowledge and use and/or other Ktunaxa values;
- Meet stakeholder and other community values;
- Biodiversity objectives;
- Meet required regulatory criteria;
- Assist with reducing infiltration of water into the spoils;
- Satisfy requirement for final post-mine land use;
- Suitable to soil materials; and
- Adapted to grow at various elevations.

Native shrub species will be used during reclamation whenever possible, as they provide the best potential for meeting the stated criteria and reclamation success. A mixture of non-persistent agronomic and native grasses and legumes may be planted, as well as native trees and shrubs.

As part of the re-vegetation process, mulching of waste wood and other material could lead to enhanced seed and tree seedling establishment, and help the soil retain moisture to enhance growth.

Soil Amendments

Prior to re-vegetation, soil fertility analysis will be carried out in an effort to understand carbon and nitrogen levels required to provide successful vegetation re-establishment. Other amendments, such as mulches and fertilisers, may also be used. Application rates of all amendments will vary with physical and chemical characteristics of the soil materials.

Seeding

Where possible native plant seeds will be collected on and adjacent to the Project site for use in revegetation. Seeding will likely be carried out at the Project site during the spring to allow for short-term erosion control and to allow plant establishment before the fall frost. Fall seeding may also be used to allow for early spring germination, while there is sufficient moisture for plant establishment. The primary method of seeding will likely be by broadcasting. However, hydro-seeding and hydro-mulching may also be used. Seeding rates will vary according to site characteristics, seed size, species composition, and wildlife habitat needs.

Management Techniques

Management of rehabilitated lands will be dictated by the end land-use plan. The management may include:

- Fencing;
- Monitoring of wildlife utilization; and
- Application of soil conservation techniques.

The site will continue to be managed including monitoring of reclaimed areas until prescribed conditions are met, or until CanAus is released from further management by the requirements of approvals.

Reclamation research may need to be conducted on site to develop reclamation techniques that could help enhance the success of the reclamation process. During the early stages of mining, a series of test plots will be developed that are treated with various seeding rates, mulch rates, soil amendment rates, fencing or other factors. These test plots could provide valuable information to help develop methods to increase the potential for final reclamation success.

5.14.3 Final Closure

The final reclamation and closure plan will address the reclamation of all disturbed areas by the removal of all structures not required for ongoing reclamation monitoring and maintenance, and will conform with final land-use objectives. The mine closure plans will be updated annually to reflect the ongoing site activities and final closure objectives. CanAus will actively strive to maximize progressive reclamation, where possible, so that end-of-mine-life closure can occur quickly and effectively and to ensure that transition phase monitoring can be commenced at the appropriate time. This closure process is currently estimated to take between two and five years.

Final Closure Schedule

A schedule for the final reclamation and closure of the mine will be prepared and provided in the EA. It will include a budget for all reclamation activities including equipment used, labor and supervision requirements, a cost estimate of all reclamation activities and a reclamation timing schedule. This type of reclamation schedule will be required for the final mine closure program, as well as the annual program when the mine is operating.

The annual reclamation plans will include:

- The location of areas scheduled for final reclamation;
- An estimate of the number of hectares to be reclaimed;
- Volumes of waste topsoil and subsoil to be moved or placed;
- Detailed description of the activities to be completed during reclamation;
- Estimates of equipment, materials and supplies, and manpower requirements;
- Projected cost of reclamation activities; and
- Monitoring of reclamation areas.

The final closure schedule will include the same requirements as the annual reclamation planning schedule. In addition, a description and schedule for post-mine-closure environmental and reclamation monitoring, remedial maintenance, if required, and a schedule of additional mine reclamation research, if necessary, will be included.

Re-grading and Shaping

Final reclamation of all remaining disturbed mining area will be completed as part of the final mine closure process. Activities will include backfilling mining pits where possible and final grading of all disturbed areas as required when mining operations cease. The types of equipment used for these activities will include dozers, trucks, loaders, shovels, motor graders, scrapers, water trucks and other ancillary equipment.

Reshaping of contour-mined areas will generally be accomplished by truck and shovel equipment. Final re-shaping will generally be conducted by crawler dozers.

Proposed Mine Closure and Reclamation Plan

The proposed mine closure plan would include the following items:

- Consultation and collaboration with the Ktunaxa Nation;
- Consultation with regulators and the community and other First Nations;
- Schedule and budget for reclamation and mine closure activities;
- Description of pre-mining land use and post-closure land-use objectives;
- Assessment of infrastructure requirements post-mine closure;
- Schedule for removal of all unnecessary buildings, coal processing plant, conveyors, coal stockpile areas and other associated mine infrastructure;
- Plans for final reclamation of all remaining un-reclaimed surface mine areas;
- Definition of final acceptance criteria to indicate when reclamation and closure is complete and acceptable;
- Plans for the replacement of topsoil/subsoil on final reclamation areas;
- Construction of any required final erosion control structures;
- Selection of plant species, soil amendments, seeding methods and mulching for final reclamation; and
- Plans for site monitoring and maintenance after final land reclamation.

Assessment of Infrastructure Post Mine Closure

An assessment of the infrastructure required during the post mine closure may be needed. Once the final reclamation of the disturbed mining areas has been completed, CanAus will likely need to monitor surface and ground water, assess reclamation success, and provide maintenance and repair of any sites requiring care once mine closure is complete. CanAus may then need to maintain office space for site personnel in charge of these activities, as well as storage of equipment that may be required to repair damaged areas.

Infrastructure Removal

A schedule will be developed to remove all site facilities and infrastructure that is not required post mine closure. All office buildings, CPP and equipment, conveyors, transfer facilities, coal stockpile conveyors and feeders, roads, power lines, substations and other miscellaneous infrastructure will be demolished and disposed of in an authorized manner. Only the infrastructure required for post-mine closure activities should remain.

5.14.4 Post-Closure Transition Phase Monitoring

Once all required decommissioning and reclamation activities are completed to the satisfaction of the appropriate regulatory agencies, “transition phase monitoring” will be initiated at the site. This monitoring will continue for an appropriate period to demonstrate that all areas are performing as predicted, and to demonstrate that the site is physically and chemically stable.

During the transition phase monitoring period, CanAus will:

- Continue monitoring and maintaining the site, as per the requirements in the decommissioning and reclamation plan, at its own expense; and
- Maintain financial assurances sufficient to cover the cost of the remaining obligations outlined in the decommissioning and reclamation plan, and any monitoring and maintenance requirements for the balance of the transitional period as well as a contingency, to be negotiated, for any unexpected occurrences.

During this phase, it is expected that the appropriate regulatory agencies will continue to:

- Conduct periodic regulatory inspections of the site to monitor the Company’s maintenance activities, to ensure that the performance targets provided in the decommissioning and reclamation plan are being achieved; and
- Review and verify monitoring results and maintenance activities.

Once the site performs in accordance with the decommissioning and reclamation plan, and achieves the predicted stability during the transition phase monitoring period, CanAus will make an application in order to obtain a release from further monitoring and maintenance responsibilities, and from the obligation to maintain financial assurances.

5.15 Inspections and Monitoring

5.15.1 Geotechnical Monitoring Program

Geotechnical monitoring will be conducted at all stages of the Project in order to:

- Ensure the development and implementation of a safe and efficient mine; and
- To ensure safe working conditions are maintained within the pit at all times.

5.15.2 Environmental Inspection and Monitoring

During the conduct of the environmental assessment, CanAus will identify and develop appropriate follow-up programs that will be discussed in detail within the EA. At this stage in Project planning, these are expected to include:

- Environmental Inspection and Monitoring Plan, including but not necessarily limited to:
  - Visual inspections; and
  - Operational environmental monitoring:

- Stream flow;
- Snow pack;
- Water quality;
- Aquatic monitoring;
- Air quality monitoring;
- Post-decommissioning monitoring; and
- Environmental reporting.

- Cumulative effects monitoring; and
- Metal Mine Effluent Regulations Environmental Effects Monitoring Program (if applicable).

5.16 Project Economic Inputs and Benefits

During the construction phase and throughout the operational life of the mine, the Project will result in direct and indirect economic benefits to individuals, local communities, the Province of BC, and Canada. These benefits will include employment, construction materials and contracts, taxes, resource payments, and other levies. Additional information on personnel requirements, construction and operating costs, and contributions to provincial and federal revenue will be generated as part of the Pre-feasibility Study (PFS) and the EA.

5.16.1 Personnel Requirements, Local Employment, and Procurement

During construction and operations, the Project will create substantial direct and indirect employment opportunities for local communities, and beyond. There will be employment opportunities at the mine site and in adjacent communities, railway operations, and port transhipment operations. CanAus will utilize local business services whenever practical and in accordance with its supply chain policies, standards and procedures such that opportunities for local and regional procurement of supplies and services are enhanced. Additionally, there will be employment opportunities remotely, through specialized equipment and materials suppliers. Employment estimates will be refined in the PFS and presented in the EA, but are currently estimated for each phase of the project as presented in Table 5-7.

Table 5-7: Anticipated Direct Employment Numbers

Project Phase	Number of Full-Time Positions
Construction	100-250
Operation	220-260
Closure	30-50

The Project is expected to generate between 200 and 500 person-years of direct employment during the 1.5-2 years of construction. The Project is anticipated to require 220 to 260 full time employees, and generate between 2,200 and 2,600 person-years of employment over the ten years of operation.

Through its consultation activities to date, CanAus has been made aware of the concerns of local community elected officials regarding the adverse effects of worker shift schedules on community cohesion, including support of local businesses by employees, rates of volunteerism and the use and support of community amenities and services. CanAus will assess these potential adverse effects and seek to identify appropriate mitigation measures.

CanAus has also been made aware of the adverse effects on communities via transport of coal dust and associated contaminants to communities on vehicles that have not been appropriately cleaned prior to leaving active mining areas. CanAus will incorporate appropriate policies and procedures to mitigate this adverse effect.

5.16.2 Project Infrastructure – Capital Costs

CanAus is following a process whereby environmental assessment information is informing engineering design in the early stages of the Project. This process will see the development of various alternatives that will be tested with First Nations, community and regulators (Alternatives Analysis) to define the optimal concept design, which will then be taken through into full engineering design. The capital costs for the Project will be developed during the PFS and presented in the EA.

5.16.3 Operating Costs

The operating costs for the Project will be developed during the PFS and presented in the EA.

5.16.4 Provincial and Federal Revenues

The Project will generate substantial provincial and federal revenue through taxation, resource payments, and other levies. An economic analysis using the Provincial Input-Output model will be undertaken as part of the socio-economic impact assessment within the EA process, where a detailed profile of forecast revenue will be provided.

6 Existing Environment

6.1 Introduction

The CanAus Project area is situated in the northwest trending Front Ranges of the Rocky Mountain physiographic region, which is characterized by a series of steep mountains running to the northwest, incised by west-flowing streams. Elevations range from approximately 1,280 masl along Michel Creek, to a height of 1,640 masl at Loop Ridge. Loop Ridge is dominated by lodgepole pine and trembling aspen, with smaller stands of spruce and Douglas fir. A portion of the Loop Ridge property was logged within the past several years and is now predominately covered in grasses, forbs, shrubs and seedlings.

In 1995, when an EA was prepared for the McGillivray Pit, the Project area was considered to provide generally high quality winter range for elk and moose, and moderate winter range for mule deer. Calving and fawning areas were present above the mine pit, and near the CP rail line (Piteau and Townsend, 1995). The baseline studies conducted by McGillivray Mining Ltd. (Piteau and Townsend, 1995) also reported bighorn sheep, white-tailed deer, and a range of fur-bearing animals: lynx, marten, black bear, grizzly bear, wolf and cougar. Baseline studies for the Project commenced in 2013 and will continue through 2015 and into 2016. To date, bighorn sheep tracks have only once been found on the site during winter wildlife surveys. These studies will provide an up-to-date assessment of habitat potential for ungulates and furbearers, as well as document the presence or signs of these animals. Studies will also provide an update on the status of vegetation and ecosystems present on the landscape.

Michel Creek is the largest river in the Project area, runs northwest along the western edge of the property, and is a tributary of the Elk River, which flows south to Lake Koocanusa. From the south end of Lake Koocanusa, the Kootenai River flows 90 km to Montana and Idaho, eventually returning to Canada and Kootenay Lake. The water flows through the west arm of Kootenay Lake and then south to join the Columbia River at Castlegar, BC. The Columbia River drains to the Pacific Ocean at the border between Washington and Oregon states in the USA. Large recreational lakes are located along the Kootenay River, including Lake Koocanusa and Kootenay Lake. Leach Creek and Marten Creek are tributaries of Michel Creek and are adjacent to the Project area.

Michel Creek and its tributary streams contain several species of fish with subsistence, commercial and recreational value, including westslope cutthroat trout, bull trout, mountain whitefish and eastern brook trout, and two species not traditionally available for angling, longnose dace and longnose sucker.

In 1993, McGillivray Mining Ltd. undertook environmental studies necessary to obtain a permit for excavating bulk samples from the McGillivray Pit (Piteau and Townsend, 1995). In addition to baseline information, the Application for a Project Approval Certificate (Reeves and Morris, 1995) provided detailed project information and a detailed project effects assessment. Some of the data and information collected during those studies have been used to inform and guide the recent program of environmental baseline studies and monitoring currently being conducted as part of this EA process.

The climate of the area is characterized by long, cold winters and short, cool to hot summers, coupled with strongly south to north flowing winds that follow the valleys. Year-round mining operations are common in the area, as winter conditions do not preclude surface or underground mining activities.

6.2 Ecoregion Description

The Project footprint and Local Study Area (LSA) are located entirely within the Michel Creek drainage of the Elk Valley in southeastern British Columbia. The Regional Study Area (RSA) includes portions within the Michel Creek watershed and extends into Alberta. LSAs and RSAs are discipline-specific and will vary between studies.

Both the Local and Regional Study Areas are ecologically diverse, with influences from BC's temperate rainforest to that of the grasslands of the Alberta Foothills. With such a range of ecosystems, it can be expected that a broad array of vegetation, wildlife and habitat diversity may be found in the Project area. This variation is not only important for biological diversity, but local species, habitats, and ecosystems are also valued for their contributions to regional cultures and for providing socio-economic benefits.

In addition to its biological diversity, the region is characterized by anthropogenic disturbances across the landscape. Much of the RSA burned around 1900, as part of early railroad era fires, leading to substantial areas of even-aged forest. Widespread linear and industrial disturbances are also present, with highways, rail lines, power lines, gas wells, pipelines, logging road networks, forestry cutblocks, and portions of two operating coal mines occurring within the RSA. Portions of the Project area have also historically been subject to grazing pressure from local cattle, though this no longer appears to be the case.

In British Columbia, the Biogeoclimatic Ecosystem Classification (BEC) system is used to classify ecosystems. This system provides a valuable, standardized, objective and repeatable methodology. Vegetation, climatic, site, and seral information are combined to determine the classification of the site into BEC zone, subzone, variant, and site series. Site series is the finest scale of these classifications, and is based on soil moisture and nutrient content, supported by indicator plant presence, and modified by local terrain. The BEC system has recently undergone a revision for this

region with both new subzones and site series being described. Work for this Project will be based on the revised units (MacKillop 2012). In addition to forested ecosystems, a number of non-forested ecosystems are found within the Project area including, grasslands, avalanche path and wetlands, and are classified using a BEC-based system.

6.2.1 Regional Study Area (RSA)

The following BEC subzones: Montane Spruce Dry Cool Elk (MSdk1), Engelmann Spruce Dry Cool Elk (ESSFdk1), Engelmann Spruce Dry Cool Woodland (ESSFdkw), and the Engelmann Spruce Dry Cool Parkland (ESSFdkp), are all found within the Project RSA.

The MSdk1 represents the low- to mid-elevation habitat found within Michel Creek. A number of warm aspects within MSdk1 are dominated by grasses providing high-value winter range for ungulates and high-potential habitat for listed plant species. In the absence of logging, the MSdk1 is characterised by moderate to heavy timber, however, it has been highly modified by forestry activities both historically and in recent years. The MSdk1 also contains the heaviest footprint from utility and transportation corridors, including the Southern Crossing Pipeline and a feeder pipeline to the Coal Mountain Mine, a BC Hydro transmission line, Corbin Road, Highway 3, and a major rail line. The extensive disturbed areas from these developments are both sources and vectors for invasive plant infestations such as Canada thistle (*Cirsium avense*), spotted knapweed (*Centauria biebersteinii*) and scentless chamomile (*Tripleurospermum inodorum*).

Moving up in elevation from the MSdk1, the ESSFdk1 is found widely in the study area and contains large swaths of commercially valuable timber. Occasional south-facing slopes within this subzone contain grasslands, some of which offer valuable winter range on years with lower snowfall. Logged or burned sites within this subzone are known locally to support productive black huckleberry stands (*Vaccinium membranaceum*), a berry much sought after by bears and local berry pickers. As elevation increases from ESSFdk1, one moves into the ESSFdkw, which closely resembles the ESSFdk1, with the key differentiating factor being lesser tree density and considerable shrub presence. The ESSFdkp is the highest elevation subzone in the study area, and the forest becomes much more open in structure and begins to exhibit the structure of the alpine zone. This zone is characterised by a heavy, long-lasting snowpack and is often important to wildlife in the summer. With the ESSFdkp there are frequently large areas of grassland, avalanche tracks and other less forested areas.

6.2.2 Local Study Area (LSA)

Stratifying the landscape into units using the BEC classification system can be conducted using either Terrestrial Ecosystem Mapping (TEM) or Predictive Ecosystem Mapping (PEM). TEM mapping is the preferred method for larger scale more detailed mapping, whereas PEM is a coarser tool based on modeling. The TEM approach requires air-photo interpretation and ecosystem plot work, whereas PEM relies on the modeling of ecosystem attributes. TEM mapping is presented as

polygons (linework), whereas PEM is typically presented as a raster or pixel-based model. Both methods provide interpretations of the biotic and abiotic elements of the landscape that can be used to inform management decisions in a variety of contexts. For the purpose of this Project, the TEM approach is being used for the LSA and is being complimented by a provincial PEM at the RSA scale.

6.3 Climate

Within the Elk River valley, climate varies considerably with changes in elevation. The climate of the Project area is typical of central British Columbia with below-freezing temperatures from November to April and periods of warmer weather in the summer. Average temperatures range from a high of 15.4 °C in July to a low of -7.7 °C for December. Precipitation varies throughout the year with a substantial portion in the form of snow during the winter months (Dillon, 2013). Monthly average precipitation ranges from a low of 33.3 mm in March to a high of 66.9 mm in November.

Climate data collection is ongoing at a number of sites in the Elk Valley. The nearest active long-term climate stations to the Project are located in Sparwood and Coleman. Data collected at the Sparwood Station includes temperature, precipitation (snow and rain), wind, and relative humidity. The Sparwood weather station is located approximately 14 km northwest of the mine site and is 310 meters lower in elevation.

Wind data was acquired from the Teck Elkview Coal Operation, Mannix weather station located approximately 10 km from the Project site. Winds from the south to southwest are prevalent at the Mannix weather station and average between 11 and 14 km per hour. The prevalent wind direction at the Sparwood weather station is south to southeast.

Climate normals have been compiled by Environment Canada at the completion of each decade and represent average climatic conditions based on the last 30 years of meteorological data. The most recent climate normals are based on 30 years of data from 1971 to 2000. Climate normals compiled for a monitoring location near Sparwood (Climate ID 1157630) are summarized in Table 6-1, with highlights including:

- Daily average temperatures ranging from -7.7 °C to 15.4 °C;
- Extreme maximum temperature of 36.5°C recorded in August 1981;
- Extreme minimum temperature of -39.8°C recorded in December 1991;
- Monthly precipitation ranging from 34.2 mm in August to 71.1 mm in November; and
- Precipitation falls primarily as snow from November through March.

Automated snow pillow data is available for selected sites throughout the province from the Ministry of Forests, Lands and Natural Resource Operations (MFLNRO). An automated snow pillow station, owned by BC Hydro, is located at Morrissey Ridge, 20 km southwest of the site, and represents the nearest snow pillow monitoring location to the Project site. The station has been in operation since 1983 and collects measurements of air temperature, precipitation, and snow water. Figure 6-1 presents recent snow water equivalent values estimated from November 3, 2012 to January 12, 2013 and from March 10, 2013 to August 2013.

Table 6-1: Summary of Climate Normals 1971 to 2000, Environment Canada, Sparwood, BC

	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
Temperature												
Daily Average (°C)	-6.8	-4.4	0.2	4.9	9.2	12.6	15.4	15.1	10.4	5	-2	-7.7
Daily Maximum (°C)	-2.5	0.5	5.5	11	16	19.5	23.2	23.6	18	10.8	1.7	-3.7
Daily Minimum (°C)	-11.1	-9.3	-5.1	-1.3	2.4	5.7	7.6	6.6	2.7	-1	-5.7	-11.6
Extreme Maximum (°C)	10.3	13.8	19.5	25.6	31.3	32.5	34.1	36.5	34.2	27.2	16.9	10.5
Date	1984/ 06	1995/ 24	1999/ 21	1987/ 27	1986/ 30	1992/ 23	1984/ 26	1981/ 12	1988/ 02	1992/ 02	1981/ 02	1980/ 16
Extreme Minimum (°C)	-37.9	-34.6	-29.3	-15	-5.8	-3.3	0	-3.5	-8.5	-22.2	-34	-39.8
Date	1998/ 12	1989/ 03	1989/ 03	1982/ 03	1984/ 01	2000/ 01	1982/ 23	1992/ 24	2000/ 23	1991/ 29	1985/ 27	1990/ 29
Precipitation												
Rainfall (mm)	14	14.4	14.5	26.1	56.8	61.2	51.5	34.1	41.3	38.8	39	14.1
Snowfall (cm)	51	34	28	16	5	2	0	0	1	11	43	57
Precipitation (mm)	53.2	40.9	38.4	38.4	61.9	62.8	51.5	34.2	42.7	48.2	71.7	59.6
Average Snow Depth (cm)	17	14	5	0	0	0	0	0	0	0	5	15
Extreme Daily Rainfall (mm)	27.8	35.8	15.4	27.1	31.7	45.2	27.2	16.5	26.2	38.4	47	27.8
Date	1984/ 04	1986/ 24	1988/ 26	1996/ 23	1993/ 31	1995/ 06	1990/ 25	1993/ 16	1984/ 20	1990/ 04	1999/ 12	1980/ 26
Extreme Daily Snowfall (cm)	24	24	23	32	27	15	0	1	4	16	41	65
Date	2000/ 16	1986/ 15	1988/ 09	2001/ 02	1981/ 04	1981/ 13	1980/ 01	1992/ 21	1999/ 25	1991/ 21	1990/ 24	1980/ 03
Extreme Daily Precipitation (mm)	31.7	35.8	22.2	27.1	34	45.2	27.2	16.5	28.2	38.4	47	65
Date	1986/ 18	1986/ 24	1998/ 22	1996/ 23	1981/ 04	1995/ 06	1990/ 25	1993/ 16	1984/ 20	1990/ 04	1999/ 12	1980/ 03
Extreme Snow Depth (cm)	56	64	33	26	27	3	0	0	1	18	44	133
Date	1997/ 01	1982/ 13	1993/ 01	2001/ 03	1981/ 05	1981/ 13	1981/ 01	1980/ 01	1984/ 21	1991/ 26	1993/ 22	1980/ 05
Wind												
Maximum Hourly Speed (km/h)	67	83	59	52	41	44	37	44	44	63	59	74
Date	1989/ 31	1994/ 23	1991/ 04	1991/ 04	1984/ 30	1992/ 23	1981/ 14	1984/ 26	1996/ 30	1984/ 30	1982/ 20	1992/ 22
Direction of Maximum Hourly Speed	SE	E	E	SE	S	SE	SW	S	SE	E	E	E

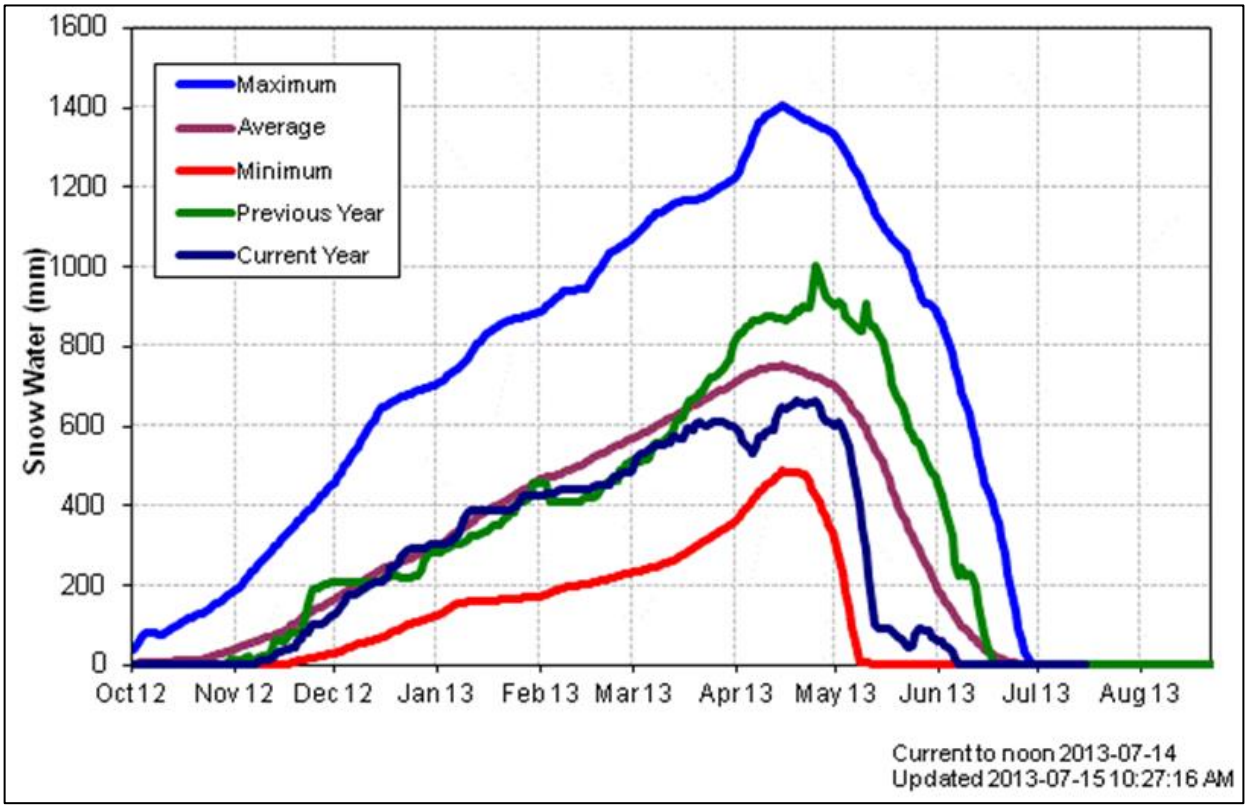


Figure 6-1: Snow Water Equivalency Measurements at Morrissey Ridge Snow Pillow Station

6.4 Air Quality

Most of the air quality monitoring data gathered in the Michel Creek watershed is associated with the Coal Mountain Operation. Air quality information is available through the BC MOE.

The National Pollutant Releasing Inventory (NPRI) reporting sites also occur in relatively close proximity to the Project license areas. The information suite from these stations is provided in Table 6-2.

Table 6-2: Summary of NPRI Data Sources in Close Proximity to the Project

NPRI Identity Number	Facility	North American Industry Classification System	City and Province	Substance Reports	Years Data Available
6712	Foothills Pipe Lines Ltd. – ANG	Pipeline Transportation of Natural Gas	Crowsnest, BC	Carbon Monoxide Nitrogen Oxides PM_{10} $PM_{2.5}$	2002 - 2011
6674	Teck Coal Limited - Coal Mountain Operations	Coal Mining	Sparwood, BC	Sulphur Dioxide Nitrogen Oxides PM – Totals PM_{10} $PM_{2.5}$	2002 - 2011

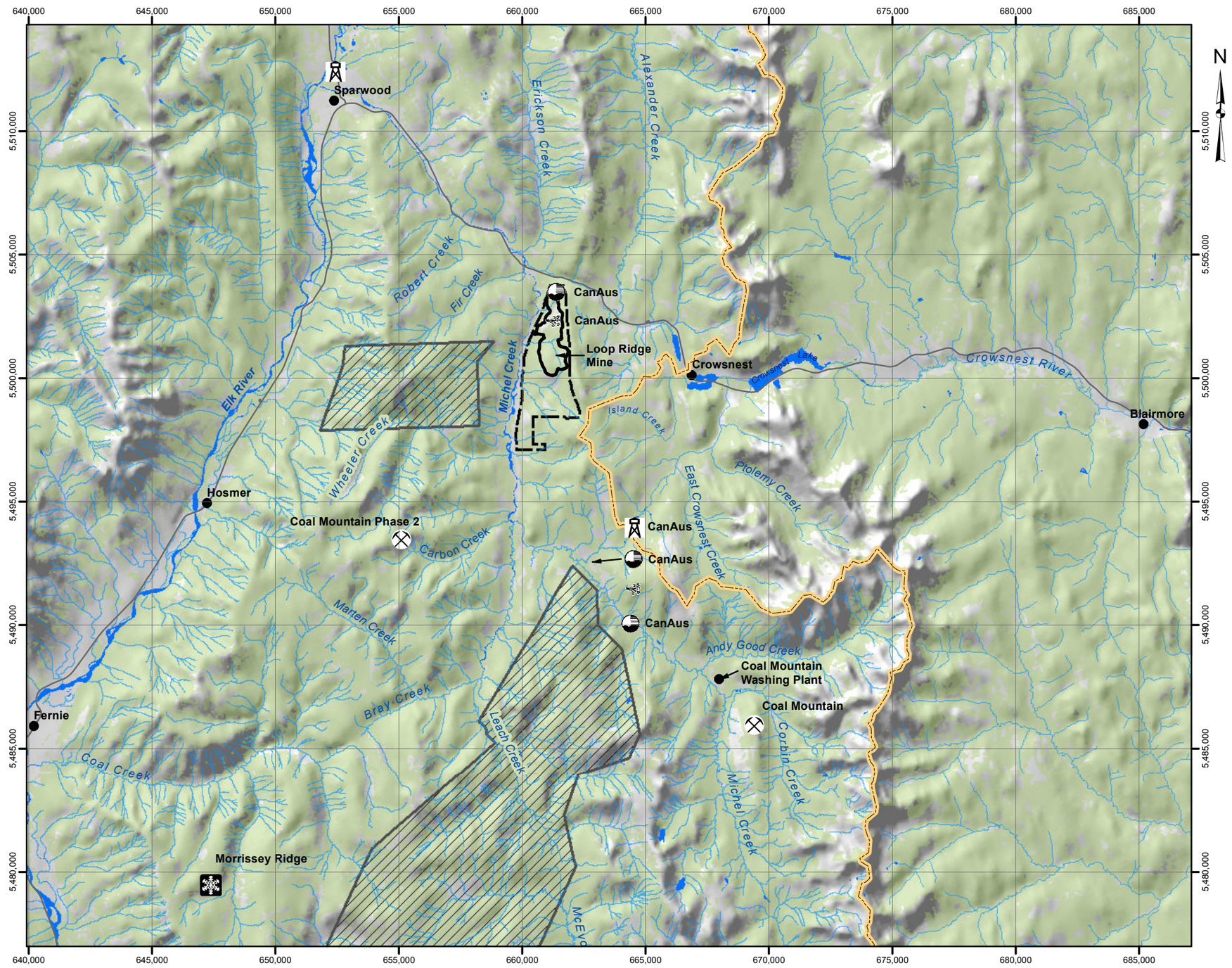
CanAus has established a weather station, a remote wind station and several dust monitoring sites on the property to ensure that site-specific air quality data will be available for the Project EA (Figure 6-2). The preliminary air quality Regional Study Area (RSA) is a 64 km by 72 km area that includes Teck's Line Creek Operations, the district of Elkford and the municipality of Crowsnest Pass. The preliminary air quality LSA is a 44 km by 46 km area that includes the Project site, the Coal Mountain Operation, the Elkview Operation, and the communities of Sparwood, Fernie and Hosmer. The baseline started in September of 2014 and one year of data will be available for the EA.

6.5 Regional Noise

Although there are no residential communities in the immediate area of the Project, noise and vibration studies will be required to ensure that the environmental effects from the Project operations can be determined. Baseline studies have been started and noise monitoring has been undertaken at the points noted in Figure 6-3. Currently, the noise in the area is mainly generated by an existing coal mine, railroad and highway traffic in the area of the Project.

Map Key

- Towns
- Snow Pillow Site
- Air Quality Station
- Meteorological Station
- Wind Station
- Rivers/Streams
- DOMINION COAL BLOCKS
- Potential Disturbance Area Boundary
- Forest Cover
- Proposed CanAus Open Pit
- Provincial Boundary



0 2,000 4,000 6,000 8,000 10,000 Meters

1:170,000

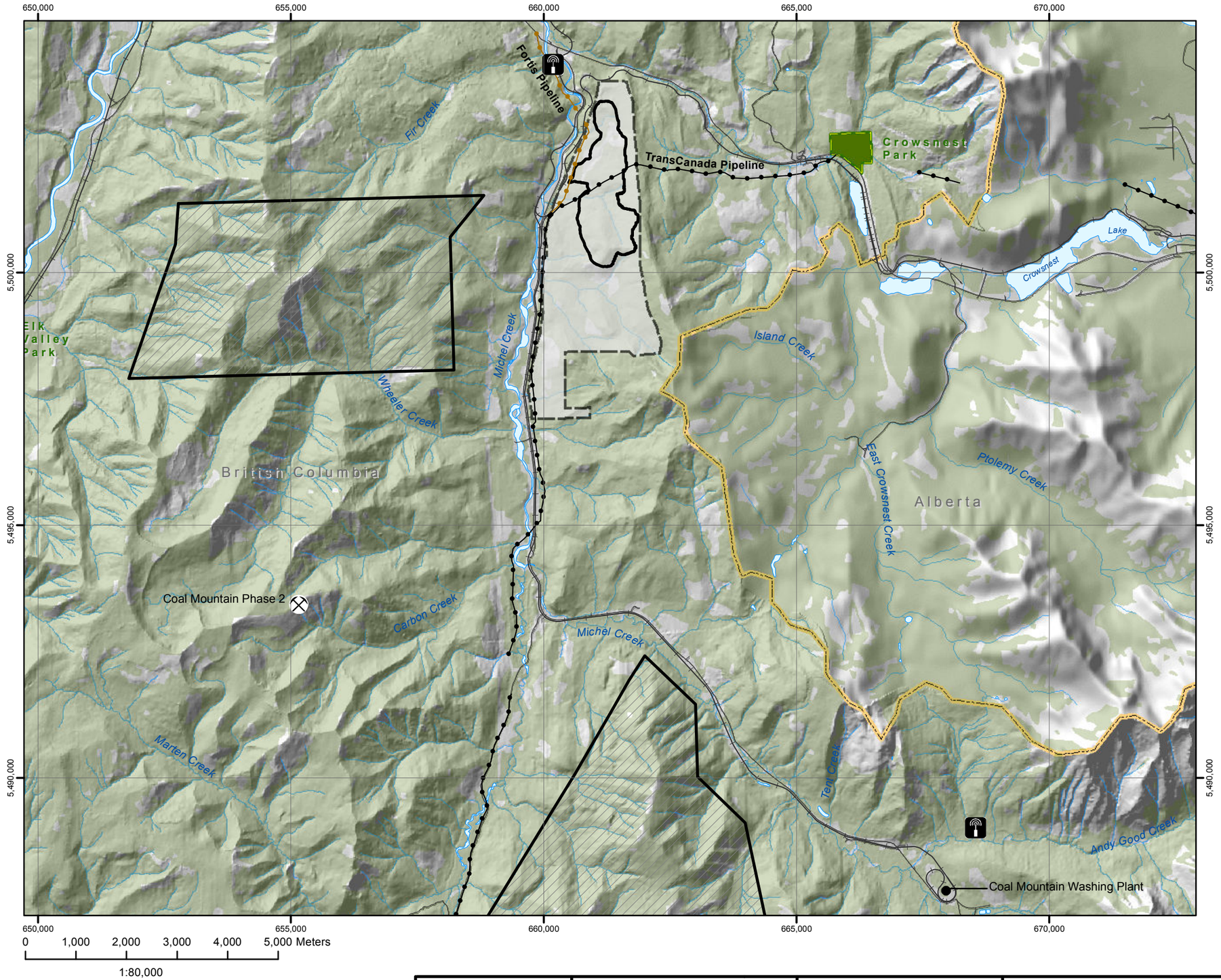
Map Notes:
1. NAD 1983 UTM Zone 11N
2. Contour Interval:40 metres

Document Path: D:\Projects\Consult_5\CanAus\MXD\Loop_Ridge\Project_Description\Revised_Maps\September_2015\Figure_6_2_ Air_Quality_Met_Stations_Monitoring_Locations_Map.mxd

Project No.:	**Project:** Michel Creek Coking Coal Project	**Figure: 6-2** CanAus and Other Air Quality and Meteorological Stations Near The Project Site
Date: September, 2015		
Drawn By: SMART MAP	**Approved By:** Consult 5 Inc.	CanAus Coal Limited

Map Key

- Coal Mountain Phase 2
- Noise Monitoring Points
- Fortis Pipeline
- TransCanada Pipeline
- Railroad
- Roads
- Drainage
- Provincial Boundary
- Proposed CanAus Open Pit
- Lakes
- Dominion Coal Blocks
- Potential Disturbance Area Boundary
- Wooded Areas
- Parks



Map Notes:
1. NAD 1983 UTM Zone 11N
2. Woodlots are present within the Dominion Coal Blocks.

Project No.:	**Project:** Michel Creek Coking Coal Project	**Figure: 6-3** CanAus Noise Monitoring Points LSA and Surrounding Infrastructure	CanAus Coal Limited
Date: September, 2015			
Drawn By: SMART MAP	**Approved By:** Consult 5 Inc.		

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6.6 Regional Geology

6.6.1 Geological Setting

The Project property is located within the East Kootenay Coalfields and forms part of the Rocky Mountain Foothills structural belt, which lies to the east of the Canadian Rocky Mountain Trench. The East Kootenay Coalfield is comprised of three separate fields extending from the Montana border northward, known respectively as the Flathead, Crowsnest, and Elk Valley coalfields. These are the most important coalfields in the province, having produced over 500 Mt of mainly metallurgical coal since 1898. All three fields are underlain by the Jura-Cretaceous Kootenay Group, which contains the 100 to 700 m thick coal-bearing Mist Mountain Formation. Coal seams are found throughout the formation, although the thicker seams occur lower in the section. The formation contains from 4 to over 30 seams, which make up from 8% to 12% of the thickness of the formation. Cumulative coal thickness ranges up to over 70 m. The area has experienced moderate to intense folding and thrust faulting, which has caused repetitions and structural thickening of seams. Rank varies from low to high-volatile A bituminous, although most of the coal is medium-volatile bituminous and of metallurgical grade.

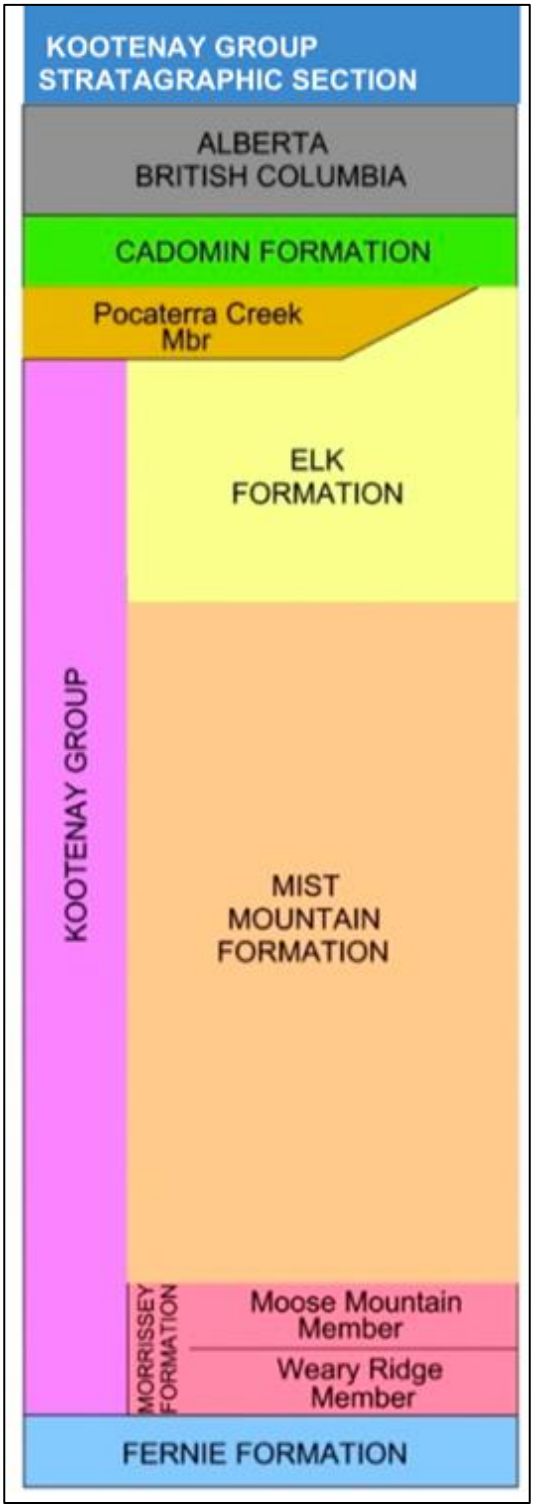
6.6.2 Geological Structures

The East Kootenay Coalfields lie in the Front Ranges of the Rocky Mountains, which are characterized by north-to-northwest trending concentric folds and west-dipping thrust faults. Tertiary normal faults, some of which are listric and probably occupy earlier thrust surfaces, are also a major feature.

The Crowsnest coalfield is a complex synclinorium in the Lewis thrust sheet. The major compressional features of the basin are the synclines linked by low-amplitude anticlines. A series of west-dipping thrust faults dominates the structure of the north half of the basin. The major extensional feature is the Erickson fault system, which juxtaposes Mississippian limestone and the Kootenay Group. The fault has a minimum, west-side-down, displacement of 1,200 m.

6.6.3 Deposit Geology and Resource Characterisation

The Jurassic-Cretaceous Kootenay Group occupies part of a northwest-trending belt of predominantly non-marine rocks comprising part of the Rocky Mountain Foothills and Front Ranges of southwestern Alberta and southeastern British Columbia. The Kootenay Group extends from just north of the United States border in the south to the North Saskatchewan River in the north (Gibson, 1985).



The Kootenay Group of the Rocky Mountain Foothills and Front Ranges encompasses the stratigraphic interval between the Jurassic Fernie Group below, and the Lower Cretaceous Blairmore Group above (Gibson, 1985). Three formations are recognized within the Kootenay Group, including the basal sandstone Morrissey Formation, the coal-bearing Mist Mountain Formation, and the upper Elk Formation (Figure 6-4).

The Cadomin Formation, including the Pocaterra Creek (Mbr) unconformity, and more recent Quaternary deposits overlie the Elk Formation. The Elk Formation is the uppermost formation in the Jurassic-Cretaceous Kootenay Group and is characterized by a relative abundance of coarse elastics (sandstone and locally conglomerate) and relative lack of coal, in comparison to the underlying Mist Mountain Formation (BC Geologic Survey Branch, 1989-2). The overlying Cadomin Formation is composed primarily of conglomerate and interbedded sand and finer clastics. Additional geologic studies are required to define the composition of the overlying Quaternary deposits in the Project area, but it is anticipated these sediments are consistent with those found at the nearby Coal Mountain operations. At Coal Mountain, the overlying Quaternary deposits consist of colluvium, clay, silt, sands, gravel, and cobbles as shown in Table 6-3 (Teck, 2014).

Figure 6-4: Kootenay Group Stratigraphic Section

Table 6-3: Michel Creek Coking Coal Project stratigraphy inferred from Coal Mountain (Teck, 2014)

Period	Litho-Stratigraphic Unit			Principle Rock Type
Recent				Colluvium
Quaternary				Clay, silt, sand, gravel and cobbles
Lower Cretaceous	Blairmore Group			
Lower Cretaceous to Upper Jurassic	Kootenay Group	Elk Formation		Sandstone, siltstone, shale, mudstones, chert pebble conglomerate, minor coal.
		Mist Mountain Formation		Sandstone, siltstone, shale, mudstones, thick coal seams.
		Morrissey Formation	Moose Mountain Member	Medium to coarse-grained quartz-chert sandstone.
			Weary Ridge Member	Fine to coarse-grained, slight ferruginous quartz chert sandstone.
Jurassic	Fernie Formation			Shale, siltstone, fine-grained sandstone.
Triassic	Spray River Formation			Sandy shale, shale quartzite.
	Rocky Mountain Formation			Quartzite
Mississippian	Rundle Group			Limestone

As reported for Teck's nearby Coal Mountain Operation (Teck 2014), the Elk Formation is coal-bearing, with very thin coal seams. The Elk Formation is generally believed to reach a maximum thickness of nearly 550 m in the Fernie basin area (Ollerenshaw 1981b) and overlies the Mist Mountain Formation, the major economic coal-bearing unit of interest in this Project. The contact between the Elk Formation and the underlying coal-bearing Mist Mountain Formation is noted as the base of the first sandstone above the uppermost principal seam. Minor coal beds reaching thicknesses between 0.15 and 1.5 m occur in carbonaceous zones in the lower portion of the Elk Formation, while needle coal or sapropelic coal occurs in thin bands in the upper portion of the formation up to the contact with the overlying Cadomin Formation. The Elk Formation is overlain by the Cadomin Formation, the basal unit of the non-marine Lower Cretaceous Blairmore Group. The Cadomin Formation generally consists of a series of conglomerate beds separated by maroon and green mudstones (Ollerenshaw 1981) and consists of coarse grain sandstones, grey to black shale, and prominent chert-pebble conglomerates.

The Mist Mountain Formation lies beneath the Elk Formation and contains the economic coal-bearing strata of interest in the Project area. The Formation is mainly composed of non-marine sandstone, siltstone, mudstone, shale, and bituminous coal seams of various thicknesses. The sandstone is composed of fine to coarse, angular to well-rounded grains of quartz and chert with minor amounts of lithic grains of various other rock types and is typically light to medium grey in colour. The sandstones are moderately to well sorted and generally well indurated and are visible as local cliff-forming features between the other rock units. The predominant siltstones are

medium to dark grey in colour, composed almost entirely of quartz, with minor chert and lesser amounts of carbonate minerals. The Mist Mountain Formation can range in thickness from a few hundred metres to over 600 m in the upper Elk Valley.

The Morrissey Formation comprises massive, medium dark grey to brownish grey to orange brown sandstone, with rare interbeds of carbonaceous mudstone, siltstone, and coal (Gibson 1985). This mainly sandstone unit is easy to recognize in the field as it forms many of the sandstone cliffs. The Morrissey Formation is sub-divided into two members:

- The upper, cliff-forming well-indurated sandstone member is the Moose Mountain Member, which is light to medium dark grey colour on fresh faces, and darker grey to buff on weathered faces. Texture ranges from fine- to medium-grained quartz and chert and can contain thin beds of mudstone, shale, and bituminous coal. The upper contact with the overlying Mist Mountain Formation is where the indurated sandstone gives way to less resistant beds of carbonaceous shale, mudstone, siltstone, and coal; and
- The lower, less resistant orange, brown weathered sandstone that lies on the Fernie Formation Passage Beds unit is known as the Weary Ridge Member. It is argillaceous, generally fine-grained, and contains pyrite and limonite throughout the quartz matrix.

The Fernie Formation consists mainly of brownish, medium to dark grey, and black marine shales. Although mainly shale, the Fernie Formation does contain interbeds of numerous other rock types indicative of cyclic regression of the seas during the Jurassic Period in this area. The uppermost sub-unit, known as the Passage Beds, consists of interbedded shales, siltstones, and sandstones and is up to 100 m thick on the Project site. The upper contact of the Morrissey Formation is the first continuous sandstone devoid of interbedded siltstones (Gibson 1979).

6.6.4 Project Stratigraphy and Coal Occurrences

Within the Project property, the Mist Mountain Formation averages over 500 m in thickness and contains more than 20 mineable coal seams that vary in thickness from less than 1 m to over 14 m. There is also potential for the development of underground coking coal resources within the Loop Ridge property, within 600 m depth of cover. The basal Morrissey Formation has not been identified in any of the holes drilled to date. On the east side of the Loop Ridge Property, 22 drill holes have located limestone below the coal measures. The limestone represents the footwall side of the major, regional, Erickson normal fault, which juxtaposes Mississippian limestone and the Kootenay Group. The fault has a minimum, west-side-down, displacement of 1,200 m. Drilling on Loop Ridge has identified 20 coal seams with an average cumulative thickness of 70 m in a 504 m section, with the coal representing approximately 14% of the section, generally typical for the area (Figure 6-5).

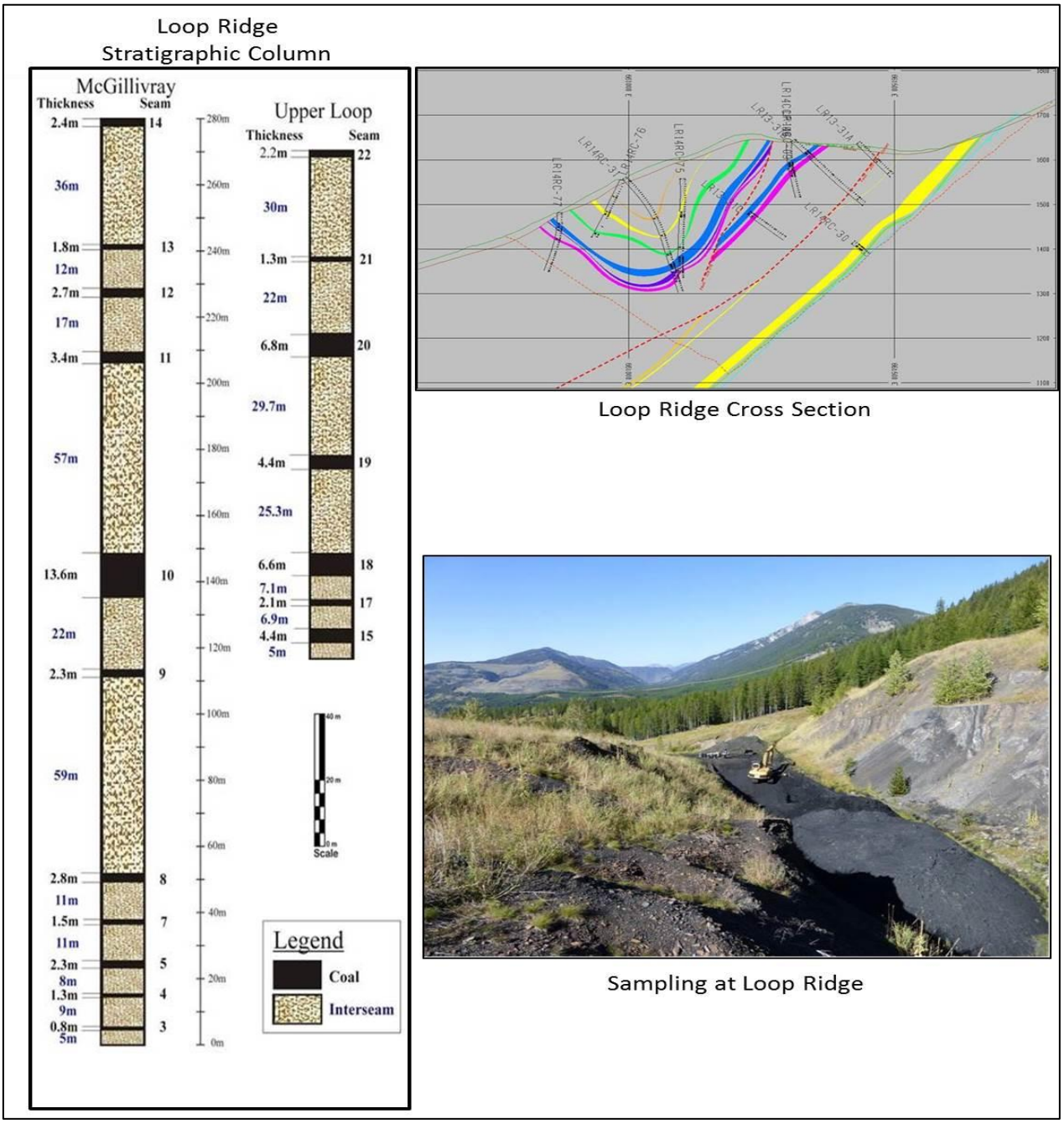


Figure 6-5: Loop Ridge Stratigraphic Column and Cross Section

6.6.5 Topography

The Michel Creek watershed is characterized by variable elevation, topography, and slopes. Elevations within the watershed range from approximately 2760 masl at Mount Ptolemy to approximately 1120 masl in downstream areas near Sparwood. Kennedy and Kovach (1987) noted that the bottom areas of the Michel Creek valley have slopes of less than 5° with gently undulating topography. The valley walls are moderately to steeply sloping with slopes in some areas exceeding 50°. Map analysis indicates that elevations within the Loop Ridge coal license ranges from approximately 1,280 m to 1,640 m.

6.6.6 Terrain Hazards

Given the steep topography of the area within the Project area, there is evidence of past flooding, historical changes in channel morphology and both erosion and sedimentation zones. As a result, baseline studies are being conducted in order to identify:

- Natural terrain geohazards or risks to the Project infrastructure; and
- Fluvial and flood hazards posed by the Michel Creek channel and floodplain.

The areas that are being investigated are presented in Figure 6-6. To date, Loop Ridge has not had any significant hazard areas identified, although within the CanAus license areas, there is evidence at higher elevations of rock falls, rock toppling and snow avalanches. Within Michel Creek, there is evidence of flooding, changing channel morphology, erosion and sedimentation zones.

Map Key

- Towns
- Proposed CanAus Open Pit
- Rivers/Streams
- Provincial Boundary
- Lakes
- Flood Hazard Study Area
- Terrain and Slope Hazard Study Area
- DOMINION COAL BLOCKS
- Potential Disturbance Area
- Forest Cover

650,000 655,000 660,000 665,000 670,000 675,000

5,505,000 5,500,000 5,495,000 5,490,000 5,485,000

N

Flood Hazard Study Area

Loop Ridge Mine

Crowsnest

Terrain and Slope Hazard Study Area

Coal Mountain Phase 2

Coal Mountain Washing Plant

Coal Mountain

Fir Creek
Michel Creek
Wheeler Creek
Crowsnest Lake
Crowsnest Creek
East Crowsnest Creek
Ptolemy Creek
Carbon Creek
Marten Creek
Tent Creek
Andy Good Creek

0 1,000 2,000 3,000 4,000 5,000 Meters

1:100,000

Map Notes:
1. NAD 1983 UTM Zone 11N
2. Contour Interval:40 metres

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Project No.:	**Project:** Michel Creek Coking Coal Project	**Figure: 6-6** Terrain and Flood Hazard Study Areas	CanAus Coal Limited
Date: September, 2015			
Drawn By: SMART MAP	**Approved By:** Consult 5 Inc.		

6.7 Local Hydrogeology

As discussed in Section 5.6.6, there is limited hydrogeology data, other than Teck's data for the Elk River and the Teck Coal Mountain Project. In 2014, CanAus initiated baseline studies with the installation of 12 borehole piezometers for the purposes of monitoring groundwater across the site (Figure 5-9). Some additional groundwater monitoring sites will be added in the future to assist in building a larger dataset and understanding the hydrogeological regime of the area. Almost two years of data will be available at the time the EA is planned for submission in 2016.

The data from these piezometers will be used for:

Baseline characterization:

- Water level elevation, hydraulic parameters, hydraulic gradient, seasonal variation;
- Groundwater quality (monitoring wells and seeps); and
- Existing groundwater use.

Hydrogeological conceptual modelling:

- Hydrostratigraphic units, recharge and discharge areas; and
- Groundwater flow directions.

The baseline studies and modelling will allow the following groundwater effects to be assessed in the EA:

- Pit Inflow estimates;
- Residual project effects to groundwater quantity;
- Residual project effects to groundwater quality;
- Residual project effects to groundwater discharge to surface waters; and
- Cumulative effects.

6.8 Aquatic Environment

6.8.1 Surface Hydrology

The Project is located within the Kootenay River watershed. The Kootenay River Basin is an international watershed encompassing approximately 50,300 km2 of British Columbia, Northwest Montana and Northern Idaho.

Michel Creek flows northwest along the western edge of the Project property, and is a fifth tributary of the Elk River, which flows south to Lake Koocanusa. From the south end of Lake Koocanusa, the Kootenai River flows 90 km to Montana and Idaho, eventually returning to Canada and Kootenay Lake. The water flows through the west arm of Kootenay Lake and then south to join

the Columbia River at Castlegar, BC. The Columbia River drains to the Pacific Ocean at the border between Washington and Oregon states in the USA. Large recreational lakes are located along the Kootenay River, including Lake Koocanusa and Kootenay Lake.

Named tributaries to Michel Creek that are located in the area of the Project include:

- Roberts Creek
- Bodie Creek
- Erickson Creek
- Crahan Creek
- Fir Creek
- Alexander Creek
- Summit Creek
- Erickson Creek
- Wheeler Creek
- Martin Creek
- Leach Creek
- Carbon Creek
- Snowslide Creek
- Tent Creek
- Corbin Creek
- Andy Goode Creek
- Scrubby Creek

A limited number of these tributaries are crossed by access roads on the Project property.

With regard to Michel Creek, a spring flood on June 6, 1995 washed out long stretches of Corbin Road, the access road to Coal Mountain Mine, as well as portions of the CP railway main rail bed. After the flood, heavy equipment was used to channelize the stream course to protect against future damage to the road and railway. In 1995, the works to Michel Creek were described as follows:

> *"essentially (Michel Creek) has been turned into a wide, uniform sluiceway for a large portion of its length between Wheeler Creek and the confluence with Alexander Creek. With the exception of a few bedrock pools, the channelized stream course could best be described as shallow, braided and unconfined"* (Piteau and Townsend, 1995:9).

Anthropogenic activities within the Michel Creek watershed include transportation corridors (e.g., Highway 3, gas lines, CP Rail), two active coal mines (Coal Mountain and Elkview, both owned by Teck Coal), forestry, and resource exploration. The area is also heavily used for recreation purposes. These various uses of the Michel Creek catchment are anticipated to effect water quality. Based on analogous situations in the Elk River (Hauer and Sexton, 2013), sites below existing coal mining operations have altered water quality with respect to nitrate, total nitrogen, sulfate and selenium.

6.8.2 Aquatic Baseline Studies

Hydrology and water quality baseline studies for the EA were initiated in May 2014 and will continue until 2016, providing almost two years of data. The hydrology monitoring network includes 7 continuous monitoring stations and 11 periodic monitoring stations (Figure 6-7 and Figure 6-8). Water quality monitoring includes 19 local (to the Project area) stations and several regional stations and will provide approximately two years of data for inclusion in the EA. Analytical parameters included in the Project water quality baseline program include:

- Total and dissolved metals;
- Nutrients;
- Anions;
- Inorganics;
- Polycyclic aromatics; and
- General water chemistry.

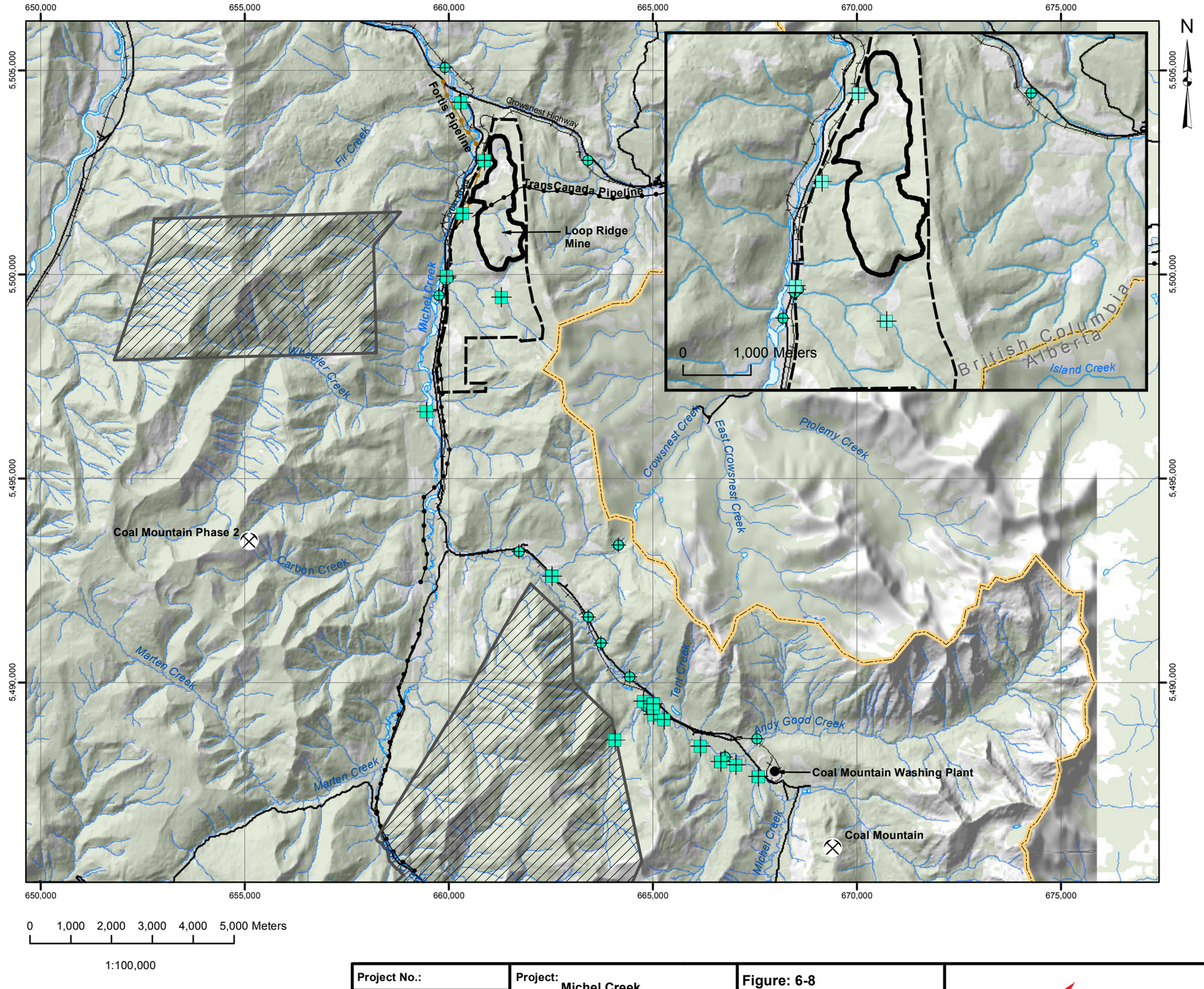
Sample results are compared against BC Water Quality Guidelines (BC Ministry of Environment, 2006) and the Canadian Council of Ministers of the Environment (CCME) water quality guidelines for the protection of aquatic life (CCME, 1999).

CanAus will be focussing on the local catchments and will make use of data from other publicly available studies conducted in the area. The water quality aspect is considered one of the key components of the study, as it will inform how CanAus will interface with the Elk Valley Cumulative Effects Management Framework and the EVWQP, as well as have a bearing on how the mine is designed and the predictive water quality modelling that will be included in the EA.

Figure 6-7: Hydrology Monitoring Stations used by CanAus (Lotic, 2014)

Map Key

- Hydrology Sites
- Water Quality Monitoring Sites
- Proposed CanAus Open Pit
- Provincial Boundary
- Fortis Pipeline
- TransCanada Pipeline
- Potential Disturbance Area Boundary
- DOMINION COAL BLOCKS



Map Notes:
1. NAD 1983 UTM Zone 11N
2. Contour Interval:40 metres

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Project No.:	**Project:** Michel Creek Coking Coal Project	**Figure: 6-8** CanAus Water Quality and Hydrology Monitoring Stations	CanAus Coal Limited
Date: September, 2015			
Drawn By: SMART MAP	**Approved By:** Consult 5 Inc.		

6.8.3 Sediment Quality

The Geological Survey Branch (BCMEMNG) has been involved in reconnaissance-scale stream sediment and water surveys since 1976 and has compiled data for regional geochemical stream survey locations. Stream sediment data are available from selected tributaries to Michel Creek and the Elk River. Within Michel Creek, data are available from a number of sites such as Crahan, Robert, Fir, Wheeler, Carbon, Marten, and Leach Creeks, as well as several unnamed tributaries. Analytical data are generally limited to concentrations of metals in sediment.

The recent study by Hauer and Sexton (2013) also included the collection of fine-grained sediments (<63 µm) where available, and in some cases the collection of sediment cores from alluvial soils along the stream banks. Sediment cores were collected from several sites on the Elk River and in Michel Creek, below the confluence of Corbin Creek and near the confluence with the Elk River. Key findings included:

- No differences were observed in metals, cations and anions in fine sediments collected from Elk River sites above and below existing coal mines; and
- Elevated cadmium concentrations were observed in stream sediments (from cores) in Corbin Creek and in Michel Creek below Corbin.

Sediment quality is being analyzed as part of baseline studies for the Project to determine the potential for any environmental effects.

6.8.4 Aquatic Investigations

Michel Creek provides habitat to multiple fish species. Westslope cutthroat trout (*Oncorhynchus clarkii lewis*i) can be found throughout the mainstem and tributaries of the watershed. Eastern brook trout (*Salvelinus fontinalis*), a non-native species to the area, are also quite widespread, but more so limited to the tributaries. Mountain whitefish (*Prosopium williamsoni*) and bull trout (*Salvelinus confluentus*) are less abundant and found primarily in the lower-mid section of the Michel Creek mainstem. Longnose sucker (*Catostomus catostomus*) and longnose dace (R*hinichthys cataractae*) are found in off-channel habitat. In 2010, westslope cutthroat trout were federally listed as a species of Special Concern throughout their range in Canada under the Species at Risk Act and are recognized by the Committee on the Status of Wildlife in Canada (COSEWIC 2006). Provincially, westslope cutthroat trout and bull trout (interior lineage) are species of Special Concern (BC MoE 2013).

Habitat within Michel Creek has been influenced by a number of factors, both natural and anthropogenic. There are several anthropogenic activities in the watershed. Forestry, including the associated road network, is arguably the largest landscape change from an area basis. Forestry is conducted in the Michel Creek watershed on both private and public lands.

Teck Coal currently operates open-pit coal mines at Elkview Operations within Michel Creek Reach 1 and Coal Mountain Operations in Reach 5. Additional mines are planned in the Alexander Creek sub-watershed (NWP Coal Canada Ltd.) and Wheeler Creek sub-watershed (Teck Coal). These operations have water quality implications that are relevant to the baseline assessment completed for CanAus Coal.

Linear development exists over much of the floodplain between the Elk River upstream to the Coal Mountain Operations. Linear development includes transportation corridors, (e.g., Highway 3 and the Corbin Road), the BC gas service line from the TransCanada line, and CP Rail routes. These features have resulted in stream habitat isolation primarily on the floodplain. Tributary and off-channel habitats have been isolated from the mainstem Michel Creek by impassible culvert barriers and complete isolation from road and rail beds. Linear development has also affected Michel Creek through encroachment. Rip-rap bank armouring is common where the stream and linear development interact. While effectively reducing the risk of bank erosion, rip-rap armouring has adverse effects on channel morphology and riparian cover.

Habitat in Michel Creek has also been altered by natural factors. Major floods in 1995, 2005, and 2013 severely altered habitat and damaged nearby infrastructure. Flooding appears to have stronger, adverse effects on areas with anthropogenic manipulation evidenced by larger channel movements (Burke 2014). This produces a cycle where further anthropogenic manipulation (i.e., rip-rap), following the flood to repair and re-protect infrastructure within the floodplain, potentially exacerbates further flooding.

Factors affecting habitat values in Michel Creek are numerous. In many cases, the effects are exacerbated by natural flow events and channel movement. This interaction typically leads to a cycle in which further anthropogenic manipulations follow as post-flood repairs, further influencing the system and affecting habitat. Mine planning for the Project will take into account the current sensitive state of the watershed.

Fish and fish habitat of Michel Creek drainage have received a moderate level of study to date. Information available includes 1:20,000 reconnaissance fish habitat assessments, most of which were completed in 2008. These assessments were completed in Michel Creek and several of its tributaries (i.e., Martin Creek, Fir Creek, Leach Creek, Robert Creek, Wheeler Creek, Little Wheeler Creek, Snowslide Creek, Carbon Creek, Fir Creek, and Alexander Creek).

Additional aquatic baseline investigations were initiated in 2014 at 42 separate stations throughout the Project area and will continue until 2016. The studies will focus on the following main key factors, amongst others:

- Benthic invertebrate and periphyton community surveys;
- Instream Flow Study (IFS);
- Identification of key habitat requirements of valued components;
- Fish Community Studies including, but not necessarily limited to:
  - Fish and fish habitat data in all streams and water bodies with the potential to receive direct or indirect effects;
  - Fish community, fish abundance and detailed fish habitat surveys;
  - Overwintering fish habitat survey;
  - Spring fish spawning survey;
  - Fall fish spawning survey; and
  - Identification of fish habitat offset potential and requirements.
- Calcite mapping; and
- Tissue collection and analysis:
  - Fish;
  - Invertebrates;
  - Periphyton;
  - Amphibians; and
  - Birds.

Eliminating potential environmental effects by design has led to the conceptual design presented in this document, which avoids, to the extent possible, fish-bearing streams and prevents the destruction of fish habitat. Although there is anticipated to be no loss of fish habitat due to the proposed mine development, there may be changes in flow in the lower reaches of some of the small streams on the property Figure 6-9.

6.9 Terrestrial Environment

6.9.1 Introduction

A number of database searches and literature reviews have been conducted related to the terrestrial environment in both the Project LSA and RSA. In addition, a series of baseline investigations have been initiated by CanAus to support an environmental assessment and for presentation in the EA application. The following section provides a brief summary of the most pertinent facts identified to date.

6.9.2 Habitat and Ecosite Classification

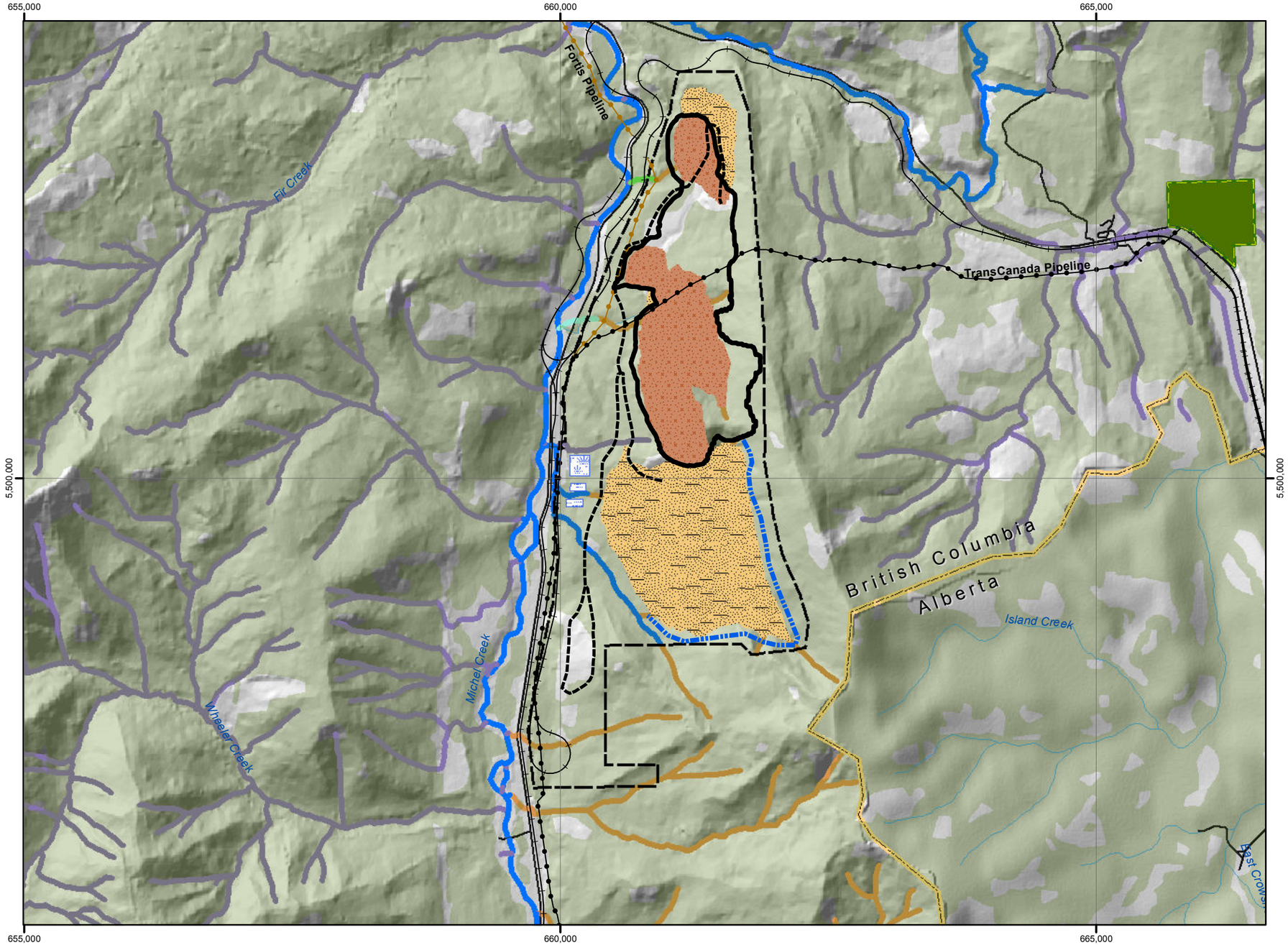
The Project area spans a number of biogeoclimatic zones and subzones as indicated in Table 6-4. These biogeoclimatic (BEC) zones are found in the Michel Creek watershed.

Map Key

- Provincial Boundary
- Conceptual Haul Road
- Proposed CanAus Open Pit
- Conceptual Rail Spur Line
- Diversion Ditch
- Drainage
- Fortis Pipeline
- TransCanada Pipeline
- Railroad
- Roads
- Ex-Pit Rock Dump
- In-Pit Rock Dump
- Treatment Wetland (Semi-Passive)
- Potential Disturbance Area Boundary
- Wooded Areas
- Parks

Fish Bearing

- Ephemeral
- Fish bearing
- No Seasonal Connection
- Non-fish bearing
- Unknown



Map Notes:
1. NAD 1983 UTM Zone 11N
2. Woodlots are present within the Dominion Coal Blocks.

Project No.:	**Project:** Michel Creek Coking Coal Project	**Figure: 6-9** Fish Bearing Streams	CanAus Coal Limited
Date: September, 2015			
Drawn By: SMART MAP	**Approved By:** Consult 5 Inc.		

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Table 6-4: Summary of BEC Zones Identified within the Michel Creek Watershed (MFLNRO, 2011)

Zone	Subzone
Montane Spruce dk1 (MS)	Dk1
Engelmann Spruce – Subalpine Fir (ESSF)	Dk1
Engelmann Spruce – Subalpine Fir	Dkw
Engelmann Spruce – Subalpine Fir	Dkp
Engelmann Spruce – Subalpine Fir	Wm
Engelmann Spruce – Subalpine Fir	Wmw
Interior Douglas Fir (ICH)	Un
Interior Mountain Heather Alpine (IMA)	Un

The coal license areas are located within Engelmann Spruce, Subalpine Fir (ESSF) and Montane Spruce (MS) zones, as well as associated sub-zones.

6.9.3 Soils

It has been noted that the Elk River Basin was subject to intense glaciation that modified the bedrock and topography and left deposits of glacial materials at elevations up to approximately 2,100 m. Glacial till deposited along steep hills has since been eroded, either leaving exposed bedrock or presenting eroded materials from the mountain sides (Dillon, 2013). The existing rocky soils are generally of low productivity. Detailed soils mapping is not readily available for the Michel Creek watershed. Overall, the soils in the Project license areas are expected to be influenced by topographic relief, parent materials, local climate, drainage, and vegetation. Site-specific soils will be evaluated as part of Project's Terrestrial Ecosystem Mapping (TEM) and geohazard investigations, which would be required as part of the detailed environmental baseline program. Soil mapping to date has revealed over 40 different soil types within the Project licence areas, partly due to the vast elevation changes that occur across the area. Two examples are shown in Figure 6-10.

Figure 6-10: Gleyed Podzolic Gray Luvisol (Left) and Gleyed Gray Luvisol (Right)

6.9.4 Vegetation

Plant species and ecosystems of concern for the Michel Creek watershed include those that are rare (BC-listed), endangered, or threatened (COSEWIC). The BC Conservation Data Centre (CDC) species search tool was used to produce a list of unique communities and plant species at risk that may potentially occur within the Project area (Appendix 2). This list was further refined to include only those plant species and plant communities found within the Rocky Mountain Forest District and the biogeoclimatic zones identified within the Project area. Species in these lists were further rated according to their likelihood of occurrence in the Michel Creek watershed using local knowledge (Keefer, 2014).

The complete list comprises 49 BC red-listed moss, fern, and angiosperm species and 91 BC blue-listed moss, fern, angiosperm and gymnosperm species (Appendix 2). No red or blue-listed lichens were identified in the initial search. It is expected that many of the plant species identified are not likely to occur in the Project area. However, site-specific surveys are being undertaken to confirm the presence or absence of plant species and communities.

Twelve rare plant communities were also identified in a CDC search, eight of which were considered moderately likely to occur within the area of interest (Appendix 2).

Potentially the most important plant species of concern found in the Project area is whitebark pine (*Pinus albicaulis*). Whitebark pine is a blue-listed species in British Columbia and has a federally endangered designation with COSEWIC. White pine blister rust *(Cronartium ribicola*), mountain pine beetle *(Dendroctonus ponderosae)*, and fire exclusion are all significant threats to the species and are expected to cause a species decline.

6.9.5 Amphibians and Reptiles

Three amphibians were identified to potentially occur within the Michel Creek study area and are considered a high priority for study. These species are:

- Western toad (*Anaxyrus boreas*);
- Rocky Mountain tailed frog (*Ascaphus montanus*); and
- Northern leopard frog (*Lithobates pipiens*).

Both the Western toad and Northern leopard frog have been recorded to occur in wet ecosystem types in the Elk Valley near both Elkford and Fernie (CDC 2013). The Western toad has been recorded during field investigations in the Project area in 2014. It is likely the Northern leopard frog population recorded in the 1960s is extinct (Northern Leopard Frog Recovery Team, 2012).

The Rocky Mountain tailed frog is only found in the East Kootenay Region (CDC 2013). Though it has not been confirmed to occur outside the Wigwam and Flathead basins, much of its desired habitat can be found at high elevations in the Elk Valley. This species inhabits stream bank habitat in

mountainous environments in the Englemann Spruce-Subalpine Fir BEC Zone; specifically streams with fast-moving water and coarse substrate as seen in the Michel Creek watershed (Dupuis and Wilson 1999).

Although rare, the Northern rubber boa (*Charina bottae*) occupies a range of habitats across the province. The species is predicted to potentially occur near Sparwood (COSEWIC 2003). Coarse woody debris and other shelter materials are critical for the species. Painted turtle (*Chrysemys picta*), specifically the Rocky Mountain Population, can be found in the valley bottoms and montane areas in the East Kootenay. The species is strongly associated with water bodies and may occur within the Michel Creek watershed.

Extensively studied in the West Kootenay, the Coeur d'Alene salamander (*Plethodon idahoensis*) is also thought to occur in the East Kootenay (Ohanjanian and Teske 1996). The species occupies a particular habitat niche and needs both fissured bedrock and moisture to survive. As such, it is often found in waterfall splash zones, caves with seepage and avalanche paths.

6.9.6 Birds

A substantial number of bird species are anticipated within the study area, utilizing both breeding habitat and migratory flight paths. Raptors, cavity nesters, ground- and low-nesting species, neotropical songbirds, and waterfowl are common in the area. The various listed and migratory birds are presented in Appendix 2. Two raptor (bird) species have been considered as high priority for previous field investigations conducted in the Elk Valley: Swainson's hawk (*Buteo swainsoni*) and the Western screech-owl, macfarlanei subspecies (*Megascops kennicottii macfarlanei*).

The Swainson's hawk is confirmed to use the high-elevation grasslands of the Elk Valley (EBA 2005), being tree nesters and found in open forests, grasslands and cultivated field edges.

The Western screech-owl has been extensively studied in the West Kootenay, Creston and Flathead Valleys. In addition, nesting sites have been located in the Elk Basin near Hosmer. Though no observations of Western screech-owls have been recorded for the Michel Creek watershed, suitable habitat exists in the area, including mature riparian woodlands dominated by large deciduous trees.

Short-eared owl (*Asio flammeus*), broad-winged hawk (*Buteo platypterus*), and Northern goshawk (*Accipiter gentilis*) do possibly occur in the Michel Creek drainage based on their known distributions and habitat characteristics. All three raptor species are considered a conservation priority, although only the short-eared owl is listed federally under COSEWIC. Flammulated owl (*Otus flammeolus*) and prairie and peregrine falcons (Falco mexicanus and *Falco peregrinus*) may also be considered potential species for consideration. However, these birds generally occupy low-elevation habitats only and may not occur in the Michel Creek watershed. This would be confirmed by site-specific baseline studies and discussions with regulators.

6.9.7 Wildlife

An inventory of wildlife was undertaken by McGillivray Mining Ltd. (Piteau and Townsend, 1995), and these findings are summarized below. Scoping studies undertaken for the broader Project area, which includes Loop Ridge (Keefer Ecological, 2013 and Dillion 2013), provide reconnaissance-level observations of wildlife and habitat. Wildlife inventories have been undertaken in 2013 and 2014, and will be repeated in 2015. Surveys for the red-listed Gillette's checkerspot *(Euphydryas gillettii)* butterfly have also been conducted in 2014, but although marginally suitable habitat exists, they have not been found in the Project area.

The ecosystem and vegetation diversity within the Local and Regional Study Areas provides an array of habitat types that host a wide variety of wildlife species. Large mammal species are known to exist in the study areas, including both grizzly (*Ursus arctos*) and black bear (*Ursus americanus*), whose habitat is well modelled within the region (Garth Mowatt pers com 2014). Ungulate species are well represented, with the following species occurring in the study areas: Rocky Mountain elk (*Cervus elaphus*), moose (*Alces alces*), mountain goat (*Oreamnos americanus*), bighorn sheep (*Ovis canadensis*), mule deer (*Odocoileus hemionus*) and white-tailed deer (*Odocoileus virginianus*). All three BC feline species reside in the study areas: cougar (*Felix concolor*), lynx (*Lynx canadensis*) and bobcat (*Lynx rufus*). Mustelid species are present as well, including wolverine (*Gulo gulo*), American badger (*Taxidea taxus*), American marten (*Martes americana*), and weasels (*Mustela spp*).

Considering their large home ranges and evidence of occurrence within the Elk Valley and Rocky Mountains, wolverines (*Gulo gulo luscus*), grizzly bears (*Ursus arctos*) and black bears (*Ursus americanus*) are expected to be species of interest related to baseline studies. Both grizzly and black bear are known to occur in the Elk watershed and travel over long distances to respond to seasonal food source availability. Although viable grizzly populations exist in the Southern Rockies, some neighbouring populations are known to be threatened, including the Yahk population (COSEWIC 2002).

Wolverines occur near the municipalities of Elkford and Fernie (CDC 2013), although studies conducted on wolverine ecology in the North Columbia Mountains (Krebs and Lewis 2000) and Rocky Mountain National Parks (Austin 1998) indicate that little is understood of their distribution within the Elk watershed. Wolverines are often associated with ungulate winter range, using riparian, upland and alpine habitats at high elevations.

American badger (*Taxidea taxus*) has been extensively studied in the Rocky Mountain Trench and Columbia Valley. Telemetry studies have confirmed the species to be much wider ranging than was originally predicted, with males occupying as much as 500 km^2 of habitat (Newhouse and Kinley 2000). Suitable habitat exists in the study area and it is possible that individuals will occur, given sufficient prey sources and workable soil. Of the prey species, one subspecies of southern red-backed vole (*Myodes gapperi galei*) is likely present in the area and is considered at risk.

Many ungulate species are found in the area, including, Rocky Mountain elk (*Cervus elaphus*), moose (*Alces alces*), mountain goat (*Oreamnos americanus*), bighorn sheep (*Ovis canadensis*), mule deer (*Odocoileus hemionus*) and white-tailed deer (*Odocoileus virginianus*). Aerial and telemetry studies have been conducted to assess these populations, including one notable study of the elk population specific to Natal Ridge (Gibson and Sheets 1997). Population estimates are up-to-date for most species (Jalkotzy 2002, Poole and Klafki 2005) and large-scale ungulate winter range polygons have been delineated for the whole province, with the dataset being available publicly from Data BC. Though some species use a diverse array of habitats, many ungulates have specific, facultative habitat requirements. There are documented observations of elk, moose, goat, sheep, and deer in and around the coal license areas.

In 1993-1995, when the baseline studies were undertaken for the McGillivray Pit project, the Project area was considered to provide generally high quality winter range for elk and moose, moderate winter range for mule deer, and calving and fawning areas were present above the mine pit, and near the CP rail line (Piteau and Townsend, 1995). More recent scoping studies (Dillon 2013) indicate that nearly 90% of the Loop Ridge Project area planned for development will disturb areas of ungulate winter range (UWR) through the creation of pits, waste dumps, and site infrastructure facilities. Areas of summer range for moose, elk, whitetail, and mule deer are also in the Project area, but are not considered limiting to those species.

The Provincial government has designated certain areas within the region as important for wildlife, including an approved ungulate winter range (UWR) for elk and moose. UWRs are protected and managed under the *Forest and Range Practices Act (2002).* Mitigation plans for UWR disturbance may include off-site range improvement through prescribed burns or selective logging prior to mining, and early reclamation of disturbances to species of palatable grasses, legumes and shrubs. A specific reclamation prescription for UWR is recommended that includes the addition of available soil to south to southwest slopes, seeding and planting a mosaic of trees and palatable shrubs, grasses and legumes. The objective of no net loss of ungulates during and subsequent to mining is also achievable, with this recommended management approach.

Detailed baseline and mitigation studies on all potentially affected wildlife species will be completed to support the necessary environmental effects assessments. Specific attention will focus on the subject of wildlife connectivity.

6.10 Rare and Endangered Species

A search of the BC Conservation Data Centre (CDC) produced a large list of vegetation and wildlife species with a conservation status, either Provincial, SARA, or COSEWIC, that have the potential to exist within the RSA, based on the ecosystems present. This list was narrowed down into confirmed species that have been identified within the study area (Table 6-5 to Table 6-7). Bird species are not included in the confirmed or likely tables yet as additional baseline studies will be initiated in 2015. The complete list of species that could potentially exist in the RSA is included in Appendix 2.

Table 6-5: Listed Vascular Plants Species with Confirmed Presence within the Project RSA

Species	Conservation Status			Detected during field survey^	
English name (*Scientific name*)	**BC List***	**SARA****	**COSEWIC*****		**Comments**
Ground plum *(Astragalus crassicarpus)*	Red				Reported by CDC (2014a)
Drummond's milkvetch *(Astrgalus drummondii)*	Red				Reported by CDC (2014a)
Sutherland's larkspur *(Delphinium sutherlandii)*	Blue			Y	CanAus survey data
Rocky Mountain willowherb *(Epilobium saximontanum)*	Red				Reported by CDC (2014a)
Sandberg's desert-parsley *(Lomatium sandbergii)*	Blue			Y	Reported by CDC (2014a), CanAus survey data
Purple oniongrass *(Melica spectabilis)*	Blue				Reported on Loop Ridge (BC CDC 2014a)
Shining penstemon *(Penstemon nitidus*)	Red			P	Likely found in low elevation, warm-aspect grasslands (BC CDC 2014a, KES 2014).
Whitebark pine (*Pinus albicaulis*)	Blue	1-E	E	Y	Found widely in higher elevation forests in RSA.
Limber pine *(Pinus flexilus)*	Red		E	Y	Reported by CDC (2014a) and tentative CanAus field finding
Parry's Townsendia *(Townsendia parryi)*	Red			Y	CanAus survey data
* Red - extirpated, endangered or threatened; Blue- special concern; Yellow- secure (BC CDC 2014)					
** 1 - Schedule 1; SC- special concern, T- threatened, E- endangered, NAR- not at risk					
*** SC- special concern, T- threatened, E- endangered, NAR- not at risk					
^ Y- Yes; N- No; P- Probable					

Table 6-6: Listed Wildlife Species with Confirmed Presence within the Project RSA

Species	Conservation Status			Detected during field survey^	Comments
English name (*Scientific name*)	**BC List***	**SARA****	**COSEWIC*****		
Western toad (*Anaxyrus boreas*)	Blue	1-SC	SC	Y	
Townsend's big-eared bat (*Corynorhinus townsendii*)	Blue				
Wolverine (*Gulo gulo*)	No Status		SC	y	
Little brown myotis (*Myotis lucifugus*)	Yellow	1-E	E		
Northern leopard frog (*Lithobates pipiens*)	Red	1-E	E	N	Synonym: Rana pipien; population likely extinct
American badger (*Taxidea taxus*)	Red	1-E	E	N	Presence reported by other crews
Grizzly bear (*Ursus arctos*)	Blue		SC	Y	
* Red - extirpated, endangered or threatened; Blue- special concern; Yellow- secure (BC CDC 2014)					
** 1 - Schedule 1; SC- special concern, T- threatened, E- endangered, NAR- not at risk					
*** SC- special concern, T- threatened, E- endangered, NAR- not at risk					
^ Y- Yes; N- No; P- Probable					

Table 6-7: Listed Fish Species that could occur in the Project RSA

Species	Conservation Status			Detected during field survey^	Comments
English name (*Scientific name*)	**BC List***	**SARA****	**COSEWIC*****		
Chiselmouth (*Acrocheilus alutaceus*)	Blue	1-E (Aug 2006)	NAR (May 2003)		
Westslope Cutthroat trout (*Oncorhynchus clarkii lewisi*)	Blue	1-SC	SC (Nov 2006)	Y	
Bull trout (*Salvelinus confluentus*)	Blue		SC (Nov 2012)	Y	
* Red - extirpated, endangered or threatened; Blue- special concern; Yellow- secure (BC CDC 2014)					
** 1 - Schedule 1; SC- special concern, T- threatened, E- endangered, NAR- not at risk					
*** SC- special concern, T- threatened, E- endangered, NAR- not at risk					
^ Y- Yes; N- No; P- Probable					

Townsend's big-eared bat (*Corynorhinus townsendii*) and the little brown myotis bat (*Myotis lucifugus*) are commonly found in the Rocky Mountain Trench. Though surveys have not been conducted to confirm species occurrences in the Elk Valley, suitable habitat for the bats exists within the study area and these bats may occur there. Roosting features and hibernacula (including anthropogenic structures) are critical to both species.

Three species, namely, fisher (*Martes pennanti*), mountain caribou (*Rangifer tarandus*) and a subspecies of least chipmunk (*Neotamias minimus selkirki*), potentially identified to occur within the Michel Creek drainage based on a CDC Species and Ecosystems Explorer search were removed from consideration for this review. These species are not known to occur in the Rocky Mountains (CDC 2013).

CanAus has initiated development of a Biodiversity Action Plan (BAP) with the goal of a Net Positive Impact (NPI) to biodiversity over the life of the Project (i.e., through exploration, construction, operations, decommissioning and reclamation). A biodiversity action plan (BAP) is an internationally recognized program addressing threatened species and habitats and is designed to protect and restore biological systems. Section 10.3 provides additional discussion of the BAP.

6.11 Valued Components

Valued components (VCs) are environmental attributes identified as having a legal, scientific, cultural, economic or aesthetic value. VCs have the potential to be affected by the Project and be susceptible to change as a result of project-related activities. This includes the potential for cumulative effects on the VCs in conjunction with other past, present or reasonably foreseeable future projects or activities in the area. VCs also provide a common basis that underlies the environmental baseline studies conducted in support of an EA, and are generally a significant consideration in the development of an effective monitoring program, should approval to proceed with the program be received.

Criteria for selection of VCs will be:

- Reflective of values, traditional knowledge, and traditional and current uses of the land and water resources by First Nations peoples;
- Reflective of the values of community members and other stakeholders such as non-government organizations;
- Potentially affected by the Project, either directly or indirectly;
- Sensitive to stressors produced by the Project, including interactions among stressors;
- Sufficient knowledge about the VC to allow selection of indicators that will respond in a way that can readily be measured; and
- Appropriate to the assessment of both Project-related and cumulative effects.

CanAus plans to engage with the Ktunaxa as well as all relevant stakeholders in the refinement of the above selection criteria and the identification of VCs related to the Project area.

6.12 Archaeological and Heritage Resources

The Michel Creek valley has been utilized by First Nations people well before contact with Europeans, and is known to contain archaeological and heritage resources based on the results of the 1973 Middle Elk River Drainage Archaeological Survey (Choquette, 1974). The McGillivray Pit was subject to an Archaeological Impact Assessment (AIA) (Choquette, 1995). The study did not include a literature review of known archaeological resources in the Regional Study Area, and only covered the northernmost 10 ha of the Loop Ridge Project area. No archaeological or historical resources were recorded.

Archaeological overview assessments (AOA) were undertaken for the Project area, including Loop Ridge between 2008 and 2013, and are guiding initial planning.

A number of Archaeological Overview Assessments (AOAs) of various scales have been conducted in and around the proposed Project areas, including AOAs of Provincial Forest Landscape Units C17, C19, C20, C24, C25 and C38 (Choquette 2001; 2003a;1999/2008; 2003b; 2000; and 1997, respectively), Managed Forest 27 (Choquette, 2004), and large-scale mine expansions and proposals (e.g., Choquette 2007a; 2007b).

Of particular relevance are recently completed AOAs for each of CanAus's coal license areas (Choquette 2013a, 2013b, 2013c). These studies delineated a number of archaeological potential polygons that are being used to guide initial planning of the Project.

6.12.1 Recorded Archaeological and Historic Sites

The Provincial inventory accessible by RAAD contains approximately 125 recorded archaeological and historical sites within and near to the Michel Creek watershed. Five additional archaeological sites recently recorded by Tipi Mountain EcoCultural Services ("TMECS") in this area have not yet been registered. These sites, varying considerably in size and density, have been recorded since the 1970s. Few archaeological studies have surveyed high-altitude areas, but at least one high-altitude site has been recorded to date, with the potential for more considered likely in the area.

6.12.2 Culture History of the Middle Elk River Drainage

The following summary has been excerpted from the AOAs cited in Section 6.12.

The Elk River and Michel Creek watershed areas are within the traditional territory of the Ktunaxa, a linguistically isolated cultural group who inhabited the watershed areas. The Ktunaxa bands were seasonally nomadic, travelling extensively throughout the mountains and valleys of the upper Columbia River drainage per the location, timing, abundance, and condition of local animal and

plant resources. Big game species, particularly deer, elk and sheep, were taken singly with bows and traps and in communal hunts, mostly in the spring and fall, and the meat dried and stored for winter consumption. From late spring through to early fall, game, fish, waterfowl and plant foods, such as roots and berries, were acquired.

Cooking by stone boiling was the preferred method of preparing food for immediate consumption, except for roots such as camas and bitterroot *(Lewisia rediviva*), which were baked in earth ovens. Foods not eaten directly (e.g., berries), were dried for winter storage. The Ktunaxa employed a wide range of materials in their traditional technology, including quarrying chert and quartzite for tool making, mining iron oxide for paint and collecting soft argillite for making pipes. The main dwelling of the Upper Ktunaxa was the hide-covered tipi.

At the time of European contact, a specific Ktunaxa band occupied the middle Elk River drainage. This group, known as the Gakawakam:tuk:n:k or `river running into, out again, and back into another river', (referring to the confluence of Michel Creek and the Elk River) (Schaeffer, n.d.), was the Michel Prairie Band. The Michel Prairie Band ranged between Crow's Nest Lake and Waterton Lakes and crossed to Michel Prairie by Crow's Nest Pass, taking advantage of the increased ungulate capability west of the continental divide after 2,000 years ago. This settlement pattern was identified as part of the middle Elk River drainage pre-contact land and resource use model, which identifies more seasonal inhabitation of the Elk Valley prior to this time (Choquette, 1979, 1999/2008, 2004).

In contrast to the Elk Valley, the Crowsnest Pass has some 10,000 years of continuous human inhabitation, due mainly to the presence of extensive ungulate resources, particularly bison. The relatively stable settlement pattern was named the "herd hunter" model, an adaptation that "concentrated primarily on exploitation of bison, particularly during late fall, winter and spring, when bison were the most accessible ungulate in the Crowsnest. At other times of year, other ungulates, notably elk and sheep, were hunted. The reliance upon other ungulates during the summer can be explained by changes in the seasonal distribution and behaviour of all ungulates in the Pass" (Driver 1978).

Based on this model, winter occupancy of the Crowsnest Pass was focused on bison hunting, and in summer, groups from the Crowsnest Pass moved to higher elevations where bison were still the dominant ungulate hunted, but other species (sheep and deer) were also very important. In this pattern, pre-contact human settlement was concentrated along the main pass, while subsidiary occupation took place in creek valleys with the greatest areas of grasslands.

6.12.3 Archaeological Assessment Program

In British Columbia, specific types of heritage resources, primarily archaeological sites, are protected by the Heritage Conservation Act 1996 (HCA). Archaeological Impact Assessments (AIAs) and any alterations to archaeological sites require permits issued by the British Columbia Archaeology Branch of the MFLNRO (Archaeology Branch). Archaeological sites on both private and Crown land are automatically protected by the HCA if they predate 1846 AD. Burial sites and Aboriginal rock arts sites are protected, regardless of age. As-yet unrecorded archaeological sites and archaeological materials from disturbed contexts are also protected. The objectives of the archaeological program are to conduct an AOA as a baseline study and an AIA under the HCA. The AOA baseline study will include background research on the RSA and fieldwork limited to examination of Project footprint areas.

The objectives of the AIA are:

- To identify, locate and map the distribution and density of cultural materials and deposits that are associated with the proposed Project mine site and associated development effect zones;
- To evaluate the overall integrity and heritage significance value of all identified cultural deposits within the proposed Project effect zones;
- To determine the nature, extent, intensity, and duration of proposed Project land-altering activities and how they could affect any intact cultural deposits; and
- Subsequent to the fieldwork, to formulate and present recommendations for the management, protection, and/or mitigation of any significant archaeological deposits within proposed Project effect zones that will be subjected to land-altering activities.

During the archaeological baseline study, background research will be conducted in the RSA. However, fieldwork will be limited to examining the Project footprint areas. Any cultural materials found will be documented, and a plan for their appropriate management will be developed. It is hoped that the Ktunaxa Nation and any other First Nation groups will be involved in this work, through local Traditional Knowledge studies that incorporate the archaeological program to meet their values and needs. The First Nation(s) will also be provided with the opportunity to request participation in the AIA fieldwork, as per the HCA Section 14 Inspection Permit Requirements. If they choose to participate, a First Nations representative will accompany the archaeologist and crew into the field for all AIA-related fieldwork.

6.13 Human Health Assessment

Baseline information regarding aspects of the environment that may affect human health (e.g., air quality, noise, drinking water quality, and country foods) will be collected and assessed to support the Project human health effects assessment component of the EA.

Country foods are animals, plants, or fungi used by humans for medicinal or nutritional purposes that are harvested through hunting, gathering, or fishing. The harvesting and degree of use of country foods within the Project LSA will be addressed through consultation with local stakeholder communities and the Ktunaxa Nation. The concentration of chemicals in country foods is directly related to the quality of the surrounding environmental media (e.g., soil, water, and vegetation). A baseline assessment of country foods used by country foods harvesters in the Project area will be conducted. The methodology for the country foods baseline assessment will be based on Health Canada's guidelines for assessing food issues in EAs (Health Canada 2004a and 2004b).

Other elements of human health (air quality, noise, drinking water) will also be investigated through coordination and shared use of concurrent baseline work from these related disciplines. These data will be used to provide an integrated evaluation of potential risks to human receptors in the Project area.

7 Land Use

CanAus acknowledges that the Project is located within the asserted traditional territory of the Ktunaxa Nation, within a land area known by the Ktunaxa as Qukin ʔamakis, or "Raven's Land" (as noted in a conversation with Robert Williams, 2015). The Ktunaxa communities of ʔaq'am (near Cranbrook) and Tobacco Plains (near Grasmere) are located nearby. The Ktunaxa are represented by the Ktunaxa Nation Council, which includes representation from four band-level governments within the East and West Kootenay region. The Ktunaxa Nation also has citizens within two bands in the United States, although these American bands are not represented by the Ktunaxa Nation Council (Regional District of East Kootenay, 2012).

The proposed mine falls within the asserted traditional lands of the Ktunaxa Nation and as such, CanAus intends to engage with the Ktunaxa Nation on this project. CEA Agency has advised that they will also approach the Shuswap Indian Band, the Stoney Nakoda Nation and the Piikani Nation, and that depending on their interest in the Project, CanAus should be prepared to consult with them as well. The proposed mine is also of potential interest to the the Métis Nation.

The Project site is within the Rocky Mountains of southeastern British Columbia, southeast of Sparwood, in Electoral Area A of the Regional District of East Kootenay. In addition to Sparwood, other communities located close to the Project footprint include Fernie, Elkford and Cranbrook, the nearest commercial centre. The Municipality of Crowsnest Pass, Alberta, is situated to the east. There are also unincorporated settlements near the Project, such as Hosmer and Corbin. According to the 2011 Census, population totals for the municipalities were as follows: Cranbrook (19,319); Fernie (4,448); Sparwood (3,667); Elkford (2,523); and Crowsnest Pass (5,565).

Sparwood, Fernie, Cranbrook and Crowsnest Pass all lie on the main east-west transportation corridor, Highway 3. Elkford and Sparwood are situated along the upper reaches of the Elk River, which is well known as a coal mining district, currently home to five major operating mines and several mine expansion and exploration proposals. The five large open-pit mines in the Elk Valley area produce approximately 70% of Canada's total annual coal exports (BC Ministry of Energy and Mines, 2013).

Coal forms the principal commodity transported by CP Rail on lines in the East Kootenay which link to the CP main line at Golden. The area's only commercial airport is at Cranbrook. In addition to mining, industries of importance in the area are forestry, recreation/tourism, and service industries. There is also some agriculture.

Communities surrounding the Project area include: Fernie, Hosmer, Corbin and Sparwood. The nearest Alberta community is Coleman, part of the Municipality of Crowsnest Pass. Brief descriptions of each of these communities and the Regional District of East Kootenay are provided below and their location shown in Figure 7-1.

7.1.1 Regional District of East Kootenay (RDEK)

The RDEK includes the area from the Ryan Bridge east of Yahk to just north of Spillimacheen, and from the height of land in the Purcell Mountains to the British Columbia/Alberta border. The RDEK functions as a partnership of the municipalities and electoral areas (unincorporated areas) within its boundary. These local governments work together through the RDEK to provide and coordinate services in both urban and rural areas. Regional districts are governed by the Local Government Act and other provincial legislation. The Project is located within Electoral Area A, which includes Elkford Rural, Fernie Rural, Flathead, Hosmer, Sparwood Rural and West Fernie.

7.1.2 Sparwood

The District of Sparwood is situated on Highway 3, a major travel corridor that links Alberta and British Columbia through the Crowsnest Pass. Sparwood has a population of about 3,700. Sparwood was originally a collection of five coal mining communities. During the 1960s, the communities were consolidated into one area or District.

7.1.3 Hosmer

The small unincorporated community of Hosmer is located on Highway 3 approximately midway between Fernie and Sparwood. The community was established in 1906 by CP Rail.

7.1.4 Fernie

The City of Fernie, with a population of approximately 4,400, is located on Highway 3. The community was founded in 1898 (incorporated as a municipality in 1904) based on an economy of natural resource extraction, primarily coal mining and forestry. Recent growth in the community has been less attributable to resource extraction than tourism and recreational activities (e.g., skiing, snowmobiling, hiking, golfing, and fishing).

7.1.5 Corbin

Corbin is reported to have a small seasonal community and lies to the southeast of the Project site and adjacent to the Coal Mountain mine.

This settlement was named after Spokane railroad entrepreneur Daniel Corbin, who formed the Corbin Coal and Coke Company in 1908. He established an underground mine and mining camp at the location, and built a spur line (the Eastern British Columbia Railway) for shipping the bulk of the production to the United States (via Corbin's Spokane International Railway) (Kinnear, 2012).

Operations terminated in 1935, following labour troubles and the rail line was removed. In 1943, the Corbin Mine was reopened and closed again in 1948. In 1951, the town, once home to a population of 600, was abandoned (Barlee, 1973).

The mine began production once again in 1974 as Byron Creek Collieries. It was taken over in 1981 by Esso Resources. Fording Coal Ltd. assumed control in 1994, renaming it Fording Coal Mountain. In 2004, Coal Mountain became part of the Elk Valley Coal Partnership, and in 2008, Teck acquired all interests in the partnership (Kinnear, 2012).

7.1.6 Municipality of Crowsnest Pass

The Municipality of Crowsnest Pass is located in southwest Alberta; it encompasses what had earlier existed as the Village of Bellevue, the Town of Blairmore, the Town of Coleman, the Village of Frank and Improvement District No. 5. Of the urban areas within Crowsnest Pass, Coleman is the closest to the Project.

7.2 Local Land Use Planning

The proposed mine does not impinge immediately near or adjacent to any known cabins, residences, or residential areas. The existing Teck Coal Operations in the Sparwood area are in a development area zoned for coal mining activities by both the RDEK (Government of British Columbia, 1995) and the District of Sparwood. The proposed Project would likely require some zoning modifications by local communities and the RDEK, consistent with the treatment of other local mines, to allow for property tax sharing.

Mining applications and plans will also have to be coordinated with the Southern Rocky Mountain Management Plan (SRMMP), prepared by the Ministry of Sustainable Resource Management (2003). Due to the private nature of the land, and the intent of resource use designations on Crown land nearby, it is not unreasonable to expect that the mining plans for the Project will be an accepted use within the SRMMPP.

7.3 First Nation Land Use

The Project is located within the asserted traditional territory of the Ktunaxa Nation, as represented by the Ktunaxa Nation Council (KNC), which is comprised of four member bands. The Akisq'nuk First Nation (formerly the Columbia Lake band, Windermere), ʔaq'am Community (St Mary's Band, Cranbrook), Tobacco Plains Indian Band (Grasmere) and Lower Kootenay Indian Band (Creston). Figure 7-2 shows the locations of reserve lands and the Ktunaxa Nation Territory. No First Nations reserve lands and no federal lands are being directly used for carrying out the proposed Project.

Traditional Use and Traditional Knowledge (TU/TK) studies for the Project are also intended to be developed during baseline studies and the EA process. These studies will be carried out within Ktunaxa guidelines and/or frameworks. The TU/TK studies are intended to complement contemporary scientific studies, provide important information on Ktunaxa interests, and clarify technical, academic, and indigenous information relating to the traditional and contemporary use

and knowledge of the Project area. CanAus will work with the leadership and knowledge-holders to collect and capture site-specific TK information. CanAus will assess impacts to current use of lands and resources for traditional purposes by Aboriginal groups.

7.4 Regional Land Use

The Project is located within the area zoned for coal mining activities within the Regional District of East Kootenay (RDEK), abuts areas designated for extraction on the District of Sparwood zoning maps and is adjacent to lands encompassed by the East Kootenay Land Use Plan (EKLUP) (Figure 7-2).

The Project is not included in the East Kootenay Land Use Plan, as it is entirely located on private land, presently held in fee simple by Jemi Fibre Corp. Private land is not included in provincial Land Use Plans. It is, however, near to Crown coal lands (4km) that have been designated for resource use and development, including coal mining (Government of British Columbia, 1995). This Crown land is also designated for resource use in the Southern Rocky Mountain Management Plan (SRMMP), a planning area located within the EKLUP. Under the Kootenay-Boundary Land Resource Management Plan Implementation Strategy (Kootenay Inter-Agency Management Committee 1997), the adjacent coal lands on Crown land within the Elk Valley watershed are within the Dedicated Land Use designation or the Integrated Resource Management Zone, defined as lands where management emphasis is on resource use and development, or where management emphasizes the use of land and resources under responsible stewardship. The Project also lies within East Kootenay Area A, where coal mining is an acceptable land use and as such, it is anticipated that the mining plans for the Project are compatible with Regional Land Use Plans, and local zoning.

Surface rights for the Project area are wholly held by Jemi Fibre Corp Inc. as part of their freehold Tent Mountain Block 21. Part of the Project area was, and portions of the property are still, forested. A TransCanada natural gas pipeline crosses the Project site, but will be relocated prior to mine development.

Commercial recreation areas, such as non-tenured land use in and adjacent to the Project area include hiking, camping, hunting, fishing, skiing, and motorized recreation with ATVs and snowmobiles. Historically, public access was permitted to most of the Jemi Fibre Corp private lands, with the exception of sensitive sites and seasonal road closures for motorized access. There are no oil and gas drilling activities on the property.

Sparwood, BC is the nearest town, with several other communities within a 100 km radius. These include Elkford, Fernie, Cranbrook, those within the Crowsnest Pass and the Ktunaxa communities of ʔaq'am (St. Mary's Band near Cranbrook) and Tobacco Plains Band (near Grasmere). These towns can provide workers with access to housing, retail stores, restaurants, health services, and other commercial services.

There are numerous interconnected roads and trails throughout the Project area. These roads service active commercial logging operations, access to natural gas infrastructure and CanAus coal exploration activities in the area. They can be accessed with four-wheel drive vehicles in the summer and with snowmobiles in the winter. The CP railway is located along the northern and western boundary of the Loop Ridge Property.

7.5 Federal and Provincial Lands

There are no federal or provincial lands within or immediately surrounding the Project area. The nearest Federal land is the Dominion Coal block about 4 km to the east, which is separated from the site by significant natural physical barriers. It is unlikely that the Project will affect the Dominion Coal Block due to significant natural barriers between the Project and the Federal Lands, however CanAus will be assessing potential effects to these federal lands in the EA. CanAus will also be assessing any potential transboundary effects that may be associated with water quality as Michel Creek is a tributary of the river system that crosses into the USA.

Map Key

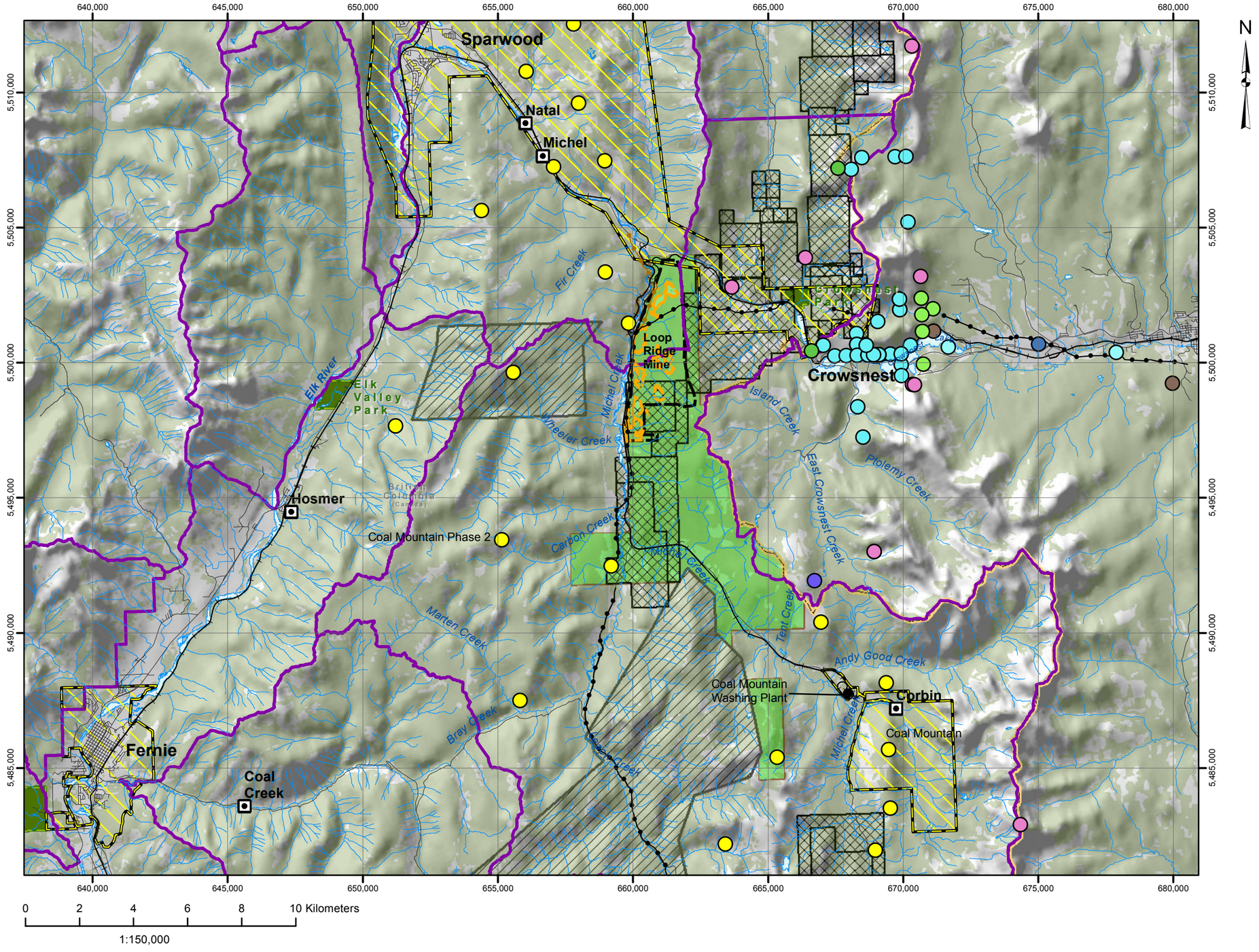
- Historical Sites
- Aggregate
- Building Stone
- Coal
- Industrial

Industrial Minerals

- Clay-Brick
- Clay-Stoneware/Refractory
- Clay/Shale
- Dolomite
- Limestone
- Phosphate
- Sulphur
- Fortis Pipeline
- TransCanada Pipeline
- Railroad
- Roads
- Rivers/Streams
- Provincial Boundary
- Disturbed Areas
- Trapline Areas
- Potential Disturbance Area Boundary
- Municipal Boundaries
- Wooded Areas
- Lakes
- Mineral Claim
- DOMINION COAL BLOCKS
- Parks

Coal Tenures

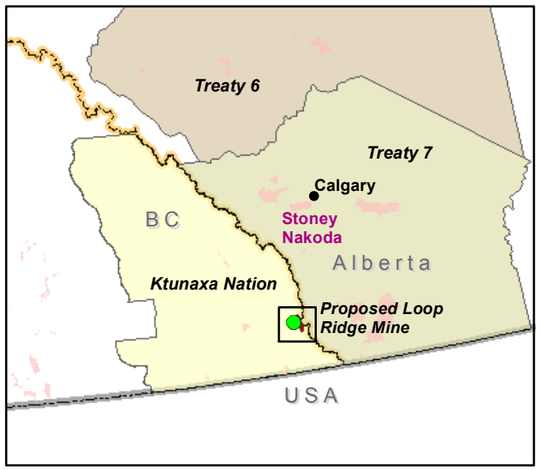
- CANAUS COAL LIMITED

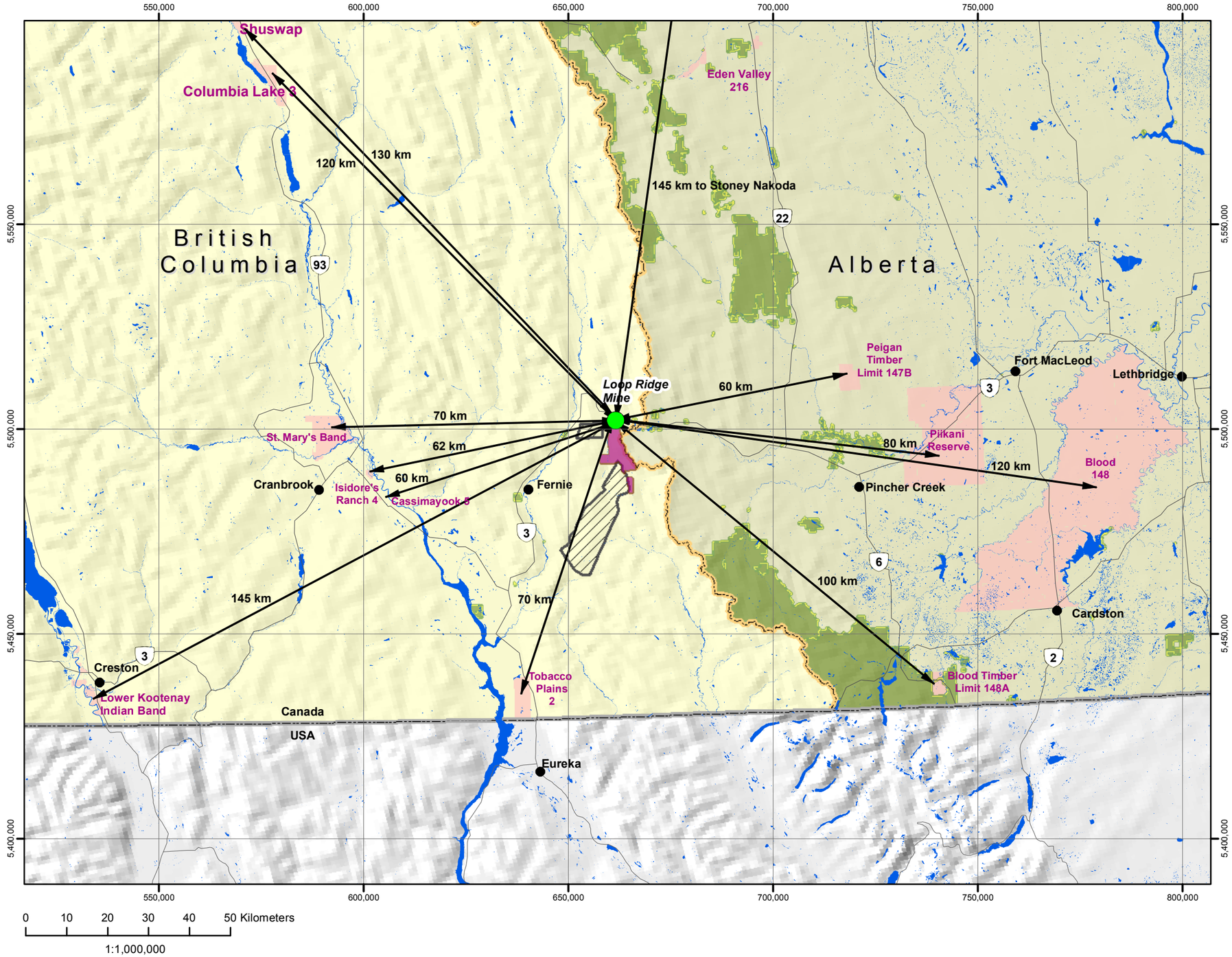


Map Notes:
1. NAD 1983 UTM Zone 11N
2. Woodlots are present within the Dominion Coal Blocks.

Document Path: D:\Projects\Consult_5\CanAus\MXD\Loop_Ridge\Project_Description\Revised_Maps\September_2015\Figure_7_1_Heritage_Sites_and_other details.mxd

Project No.:	**Project:** Michel Creek Coking Coal Project	**Figure: 7-1** Land Use and Regional Resources Around the Project	CanAus Coal Limited
Date: September, 2015			
Drawn By: SMART MAP	**Approved By:** Consult 5 Inc.		





Map Key

- Communities
- Major Roads
- International Boundary
- Provincial Boundary
- Lakes
- CANAUS COAL LIMITED
- DOMINION COAL BLOCKS
- Parks and Protected Areas
- Ktunaxa Nation
- Treaty 6
- Treaty 7
- First Nation Reserves
- Proposed Loop Ridge Mine

Map Notes:
1. NAD 1983 UTM Zone 11N
2.Service Layer Credits:

Document Path: D:\Projects\Consult_5\CanAus\MXD\Loop_Ridge\Project_Description\Revised_Maps\September_2015\Figure_7_2_Site_Resources_First_Nations_v2.mxd

Project No.:	**Project:** Michel Creek Coking Coal Project	**Figure: 7-2** First Nations Territories and Reserves
Date: September, 2015		
Drawn By: SMART MAP	**Approved By:** Consult 5 Inc.	CanAus Coal Limited

8 Assessment of Effects

8.1 Preliminary Assessment of Potential Effects and Mitigation Measures

A preliminary assessment of the potential effects of the Project, as described, has been completed and summarized in this section.

The potential effects presented in Table 8-1 are only theoretical and are based on current knowledge of the proposed Project and the local environment. The potential effects are grouped according to the five pillars that the BCEAO will require when the Valued Components are identified in the next step of the EA process. The environment component is split into the biological and physical environment to provide greater resolution of the potential effects.

The five pillars used to present the potential effects are:

- Environment:
  - Physical Environment; and
  - Biological Environment.
- Social;
- Economic;
- Health; and
- Heritage.

Table 8-1: Potential Effects Associated with the Project

Environment or Socio-Economic Component	Potential Effects	Potential Mitigation Measures
Physical Environment		
Air Quality	Fugitive coal dust and ambient particulate matter (PM) concentrations affecting: • Human health • Wildlife health • Dust fall on vegetation • Dust fall on water bodies. Combustion products: Nitrogen oxides (NOx), Sulphur oxides (SOx), Carbon monoxide (CO): • Human health • Wildlife health • Vegetation health. Greenhouse gases (GHG).	• Soil and dust management plan • Wetting of haul road surfaces in dry non-frozen conditions • Re-vegetating stock piles and open areas • Implementing a progressive reclamation plan • Use of surface binding compounds on coal in trains to eliminate dust • Use of covered conveyors and conveyor transfer points • Minimization of coal handling • Energy efficient vehicle choices and haulage minimization.
Noise and Vibration	Increase in noise and vibration levels: • Human health • Wildlife health.	• Use engineered systems to control noise emissions • Design operations to concentrate noise into fewer locations • Use of engineered berm structures to absorb, minimize and deflect sound • Do routine and regular blasting and controlling size of blasts • Create haul truck circuits to minimize reversing and beeper use • Create parking facilities for commercial and passenger vehicles • Retain trees and vegetation to assist with noise control.
Terrain and soils	Loss of vegetation and surface earth works affecting: • Loss of soil • Erosion • Run-off water increases • Water quality • Change of land shape • Stockpiles • Pit.	• Soil and dust management plan • Engineered design with tight footprints to minimize surface disturbance • Implementing a progressive reclamation plan • Stockpile contouring to retain landscape form • Water management plan • Collection of runoff water in sediment ponds and treatment through passive water treatment systems.

Environment or Socio-Economic Component	Potential Effects	Potential Mitigation Measures
Geochemistry	Metal Leaching and Acid Rock Drainage (ML/ARD) from waste rock piles and coal processing areas affecting: • Water quality • Selenium • Cadmium, • Sulphate • Total Dissolved Solids. Blasting residue: • Nitrate loading • Calcite precipitation in streams.	• Water management plan consistent with the requirements of the EVWQP • Blending of PAG and NAG materials to balance localized acid generation • Use of cover material and encapsulation • Maximizing saturated storage for PAG wastes as a means to mitigate sulphur and selenium oxidation early covering and reclamation of waste rock, clean water diversions and use of wetlands for residual Se reduction • PAG (ML/ARD) Management Plan • Selenium Management Plan • Development and implementation of Blasting Management Plan.
Hydrogeology	Land forming, stockpiles, topography changes and mine dewatering affect: • Ground water flows • Ground water levels • Ground water quality.	• Design, placement and construction of mine waste stockpiles • Implementing a groundwater management plan • Implementing a groundwater monitoring plan • Implementing a progressive reclamation and closure plan • Water management plan consistent with the requirements of the EVWQP • Development of diversion ditches to minimize contact water volumes • Development of catchment ditches, silt ponds and passive water treatment facilities.
Surface water hydrology	Changes in Michel Creek and tributary flow regime affecting: • Water quality • Erosion and deposition • Stream channel stability and morphology changes • Fish and fish habitat • Recreational use of Michel Creek • First Nations use of Michel Creek.	• Diversion of clean water flows around facilities • Water management plan consistent with the requirements of the EVWQP • Development of diversion ditches to minimize contact water volumes • Development of catchment ditches, silt ponds and passive water treatment facilities • Implementing a progressive reclamation plan • Minimizing disturbance to existing waterways.
Water Quality	Changes in water quality affecting: • Sediment loading • Fish and Fish habitat • Recreational use of Michel Creek • First Nations use of Michel Creek	• Mine waste management plan • Water management plan consistent with the requirements of the EVWQP • Development of diversion ditches to minimize contact water volumes • Development of catchment ditches, silt ponds and passive water treatment facilities • PAG (ML/ARD) Management Plan

Environment or Socio-Economic Component	Potential Effects	Potential Mitigation Measures
	• Downstream use of the Elk Valley river system • Transboundary river systems.	• Selenium Management Plan • Implementing a progressive reclamation plan.
Biological Environment		
Fish and Fish Habitat	Direct loss of creeks and streams to the pit and stockpile areas, affecting: • Stream flows • Fish usage of Michel Creek and small tributaries • Water quality • Calcite deposition • Fish and fish habitat availability • Recreational use of Michel Creek • First Nations use of Michel Creek.	• Diversion of clean water flows around facilities • Water management plan consistent with the requirements of the EVWQP • Development of diversion ditches to minimize contact water volumes • Development of catchment ditches, silt ponds and passive water treatment facilities • Implementing a progressive reclamation plan • Develop offset habitat in diversion ditch (i.e., habitat compensation).
Wildlife and wildlife habitat	Mine development and mining activities affecting: • Loss of wildlife habitat availability • Loss of wildlife habitat connectivity • Loss of wildlife winter range areas • Loss of riparian habitats • Amphibians • Water birds • Migratory birds • Sensory disturbance of wildlife • Disruption of wildlife movement • Loss of wildlife due to vehicle-wildlife collisions • Health effects on wildlife due to changes in air, water and soil quality • First Nations use of wildlife resources.	• Water management plan consistent with the requirements of the EVWQP • Development of diversion ditches to minimize contact water volumes • Development of catchment ditches, silt ponds and passive water treatment facilities • Implementing a progressive reclamation plan • Avoidance of critical migration corridors, where possible • Develop a habitat offsetting plan or compensation plan • Minimizing vehicle movements to reduce mortality due to vehicle collisions • Use engineered systems to control noise emissions • Design operations to concentrate site activities into a small footprint • Use of engineered berm structures to absorb, minimize and deflect sound • Do routine and regular blasting and controlling size of blasts • Create haul truck circuits to minimize reversing and beeper use • Create parking facilities for commercial and passenger vehicles • Retain trees and vegetation as far as is possible. • Early and progressive reclamation of disturbed areas.

Environment or Socio-Economic Component	Potential Effects	Potential Mitigation Measures
Vegetation	Mine development activities affecting: • Direct loss of vegetation • Direct loss of landscape and winter range due to pit and discard and stockpile development • Dust fall on vegetation and consequent vegetation health • Gaseous emissions and consequent vegetation health • First Nations use of vegetation resources.	• Retaining vegetation on the perimeter of operations to act as visual screens. • Water management plan consistent with the requirements of the EVWQP • Development of diversion ditches to minimize contact water volumes • Development of catchment ditches, silt ponds and passive water treatment facilities • Implementing an early and progressive reclamation plan • Develop a habitat offsetting plan or compensation plan • Minimizing vehicle movements • Wetting of haul road surfaces in dry non-frozen conditions • Revegetating stock piles and open areas • Use of surface binding compounds on coal in trains to eliminate dust • Use of covered conveyors and conveyor transfer points • Minimization of coal handling.
Social		
Community Assets	Mine development activities affecting: Human Assets • Population and demographics • Skills and labour • Education • Health and safety facilities and services • Social services Financial Assets • Employment • Business activity • Residential property values • Municipal finance and administration • Income Physical Assets • Housing • Municipal infrastructure and services	• Share information with local and regional land use planners and economic development officials regarding the timing and magnitude of meaningful changes in project labour requirements • Collaborate with local training facilities (e.g., College of the Rockies) • Identify additional training opportunities in consultation with the public and First Nations • Share information with local and regional health care providers as well as emergency services personnel regarding potential increases in demands for services • Enter in discussions regarding municipal finance (taxation) • Identify mitigation measures for any adverse effects on the availability of housing in the local communities • Collaborate with local user groups to mitigate any effects on the use and enjoyment of parks and recreational areas • Consult with labour unions and community representatives regarding mitigation of adverse effects of shift schedules on community cohesion • Ensure consideration of the Official Community Plans for each of the local communities with respect to identification of opportunities for creating

Environment or Socio-Economic Component	Potential Effects	Potential Mitigation Measures
	• Water supply • Land use • Transportation infrastructure • Nuisance Social Assets • Parks and recreational areas • Community recreational facilities and programs • Use and enjoyment of private property • Community cohesion.	synergies and/or additional benefits to physical or social assets of the communities • Development of end land-use plans in consultation with the public, regulators and First Nations. • Identify opportunities for corporate sponsorship of activities, events or projects • Mitigation of nuisance effects (e.g. dust and debris carried into communities on mine vehicles).
Visual	Mine development and operational activities affecting: • Vegetation removal • Transmission line construction • Processing plant development • Road and rail construction • Changes to hill profiles • Increased traffic.	• Retaining vegetation on the perimeter of operations to act as visual screens • Implementing a progressive reclamation plan • Minimizing vehicle movements • Early Revegetation of stock piles and open areas.
Land Use	Mine Development affecting: • Current use of lands and resources for traditional purposes by Aboriginal persons • Public use of land.	• Development of end land-use plans in consultation with the public, regulators and First Nations
Economic		
Economic well being	Mine development activities affecting: • Employment and income opportunities • Business opportunities and economic development • Government revenue from taxes.	• Development of end land-use plans in consultation with the public, regulators and First Nations • Development of training opportunities in consultation with the public and First Nations • Cooperating with other mines and educational institutions for training in mine-related skills.
Health		
Human Health	Mine development and operation affecting: • Respirable dust concentrations in the air • Uptake of polycyclic aromatic hydrocarbons (PAHs) by plants	• Development of end land-use plans in consultation with the public, regulators and First Nations • Soil and dust management plan

Environment or Socio-Economic Component	Potential Effects	Potential Mitigation Measures
	that are subsequently eaten by people • Runoff water contamination containing PAH, metals and other contaminants form mining that either directly affect people using the water or wildlife or fish that depend on the water • Increased levels of noise and traffic causing stress or direct harm • Loss of sense of place due to visual landscape changes causing stress.	• Wetting of haul road surfaces in dry non-frozen conditions • Re-vegetating stock piles and open areas • Implementing a progressive reclamation plan • Use of surface binding compounds on coal in trains to eliminate dust • Use of covered conveyors and conveyor transfer points • Minimization of coal handling • Retaining vegetation for screening • Water management plan consistent with the requirements of the EVWQP • Development of diversion ditches to minimize contact water volumes • Development of catchment ditches, silt ponds and passive water treatment facilities • Develop a habitat offsetting plan or compensation plan • Monitoring contaminant uptake in plants, wildlife and fish.
Terrestrial Ecosystem Health	Mine development and operation affecting: • Loss of habitat • Loss of species diversity • Respirable dust concentrations in the air • Uptake of polycyclic aromatic hydrocarbons (PAHs) by plants that are subsequently eaten by people • Runoff water contamination containing PAH, metals and other contaminants form mining that either directly affect wildlife using the water or wildlife or fish that depend on the water.	
Aquatic Ecosystem Health	Mine development and operation affecting: • Loss of habitat • Loss of species diversity and effects on population size • Respirable dust concentrations in the air • Uptake of polycyclic aromatic hydrocarbons (PAHs) by plants that are subsequently eaten by people • Runoff water contamination containing PAH, metals and other contaminants from mining that either directly affect the water habitat or wildlife or fish that depend on the water.	
Heritage		
Archaeological Resources	Mine development activities affecting: • Archaeological resources.	• Conduct archaeological impact assessment with input from the First Nation(s) • Design mine to minimize footprint areas and ground disturbance • Implement a Chance Find Management Plan • Protect and document to the extent possible any found archaeological resources.

The highest potential for significant residual adverse effects with respect to the Project are:

- The possible degradation of water quality through potential release of contaminants (i.e., selenium, sulphate, nitrate and trace elements) into surface water courses during operations and closure phases;
- The disturbance to wildlife and critical wildlife habitat through anticipated land clearance and operations, and effects on habitat connectivity; and
- Effects on local First Nations' communities through potential land use changes.

There will be potential positive effects on the local and provincial economy, as well as associated benefits that arise from direct and indirect job creation in the area and re-training and up-grading of skills for employees.

The context for understanding the potential water quality effects is based on the Elk Valley Water Quality Plan (EVWQP). The EVWQP is a comprehensive, B.C. Ministry of Environment (BCMOE)-approved, documented plan. The plan was developed by Teck Resources, in response to a B.C. Provincial Order under Section 89 of the Environmental Management Act, and in consultation with numerous stakeholders and First Nations including local communities, the Ktunaxa First Nation, and all levels of government. The purpose of the plan is "to identify a strategy and implement solutions to address increasing selenium and nitrate water concentrations within the Valley" (Teck Resources, 2014). Moreover, with a holistic focus on water quality, the plan also addresses the monitoring and evaluation of cadmium and sulphate concentrations, in addition to the extent of calcite formation in the Valley.

A key aspect of the EVWQP is the setting of short-, medium-, and long-term water quality targets for the parameters of concern throughout the Elk River watershed, with the aim of reducing concentrations and mitigating any potential impacts. All aspects of the EVWQP are intended to ensure the sustainability of aquatic resources and human health, while continuing to support metallurgical coal mining in the region.

Continued increases of the Contaminants of Potential Concern (COPC) (i.e., selenium, nitrate, cadmium and sulphate) addressed in the EVWQP, in addition to increased calcite formation, could have the potential to degrade water quality and aquatic habitat to a point at which populations of fish, invertebrates, plants and birds could experience adverse effects. The implementation of the EVWQP is a strategic and focused effort to ensure reductions in these parameters of concern in local water bodies over time and is meant to ensure that the Elk River, and its associated watersheds, continue to provide a clean and healthy environment for plants, animals and humans, while allowing for the continuity of sustainable mining in the region. In this context, CanAus will strive to integrate effective mine design, water management, waste management and passive treatment to minimize loadings to surface and groundwater receptors, in order that its operations are consistent with the EVWQP.

8.1.1 Potential Effects on Federal or Provincial Lands

In specific response to the Federal requirement to identify the potential effects of the proposed Project on Federal Lands, the proposed Project occurs in a region where several Federal or Crown Lands occur. However, none directly adjoin to, or are in close proximity of the proposed Project area.

The Federal lands are shown in Figure 2-1 and no Project activities are planned to occur on or near to these lands. The Dominion Coal Block (Federal Land), four kilometers directly to the west of the Project area, and the Crowsnest Provincial Park, five kilometers to the east of the Project, are the nearest lands in question. Both these lands are separated by pronounced physical catchment divides from the valley where the Project will occur. The area between the Project and the Federal Lands is also well forested, which acts as a natural barrier between the proposed Project area and these lands. It is therefore unlikely that water quality within the Dominion Coal Block or the provincial park will be affected by the Project. It is also unlikely that noise, dust or visual disturbance from the proposed Project will be experienced on these lands. Although unlikely, potential effects on federal land will be evaluated in the EA process.

The lands are also removed from the Project site by natural physical barriers such as catchment divides, ridges and streams, as well as anthropogenic barriers such as Highway 3 and the railway, so it is unlikely that the wildlife, ecosystems or ecosystem health of these lands will be affected by the proposed Project. Although species have ranges that may overlap the proposed mining activities, it is unlikely that these wide-ranging species will be negatively impacted by the Project. Potential effects associated with habitat connectivity will be evaluated in the EA process.

Furthermore, potential effects of the project on downstream water bodies, water users, and transboundary rivers, will also be evaluated as part of the EA process.

8.2 Environmental Assessment Scope and Methodology

This section presents a general overview of the assessment methodology that has been, and will be, used to assess the effects resulting from the Project as proposed. The assessment methodology reflects the requirements of the BC Environmental Assessment Act and the Canadian Environmental Assessment Act, 2012 (CEAA). It also defines the ‘scope of the Project’ and the ‘scope of the assessment’, which provides the framework used to conduct the environmental assessment.

8.2.1 Consideration of Alternative Means

One of the purposes of undertaking an environmental assessment is to determine whether there are alternative means of carrying out the project, which could meet the Project objectives, but would be preferable from environmental or other considerations. Therefore, it is important to

consider various alternatives early in the planning process and to provide a comparison of each based on both economic and environmental merit. CanAus will conduct an “alternatives assessment” during the EA and provide the results in the EIS.

Alternative means of completing the project are defined as the various technically and economically feasible ways that the project can be implemented. For the proposed Project, alternative means include alternative methods to access the resource, alternative site infrastructure configurations, alternative water withdrawal locations and sources, water management and discharge options, and alternative infrastructure. The criteria used to evaluate alternatives will reflect consideration of social, environmental, economic and technical feasibility, as well as the predicted short-term (during operations) and long-term (after decommissioning) effects of the project activity.

Where existing disturbed areas are available [i.e., existing access trails and areas previously disturbed by forestry or mining activity] and where operational and regional experience supports proven approaches and methodologies, alternate means may not be considered. For example, alternate site access routes may not considered, as the road currently exists. The existing route, with proposed alterations, maintains a minimum of 30 m distance from any fish-bearing water body and avoids the requirements for bridges and/or culverts to cross fish-bearing waters. As a result, any new routing of the access road would result in an additional level of environmental impacts and therefore an alternative route may not be considered.

8.2.2 Assessment Boundaries

To facilitate the assessment and the interpretation of potential effects associated with the proposed Project-environment interactions, it is necessary to define appropriate spatial and temporal boundaries.

Spatial Boundaries

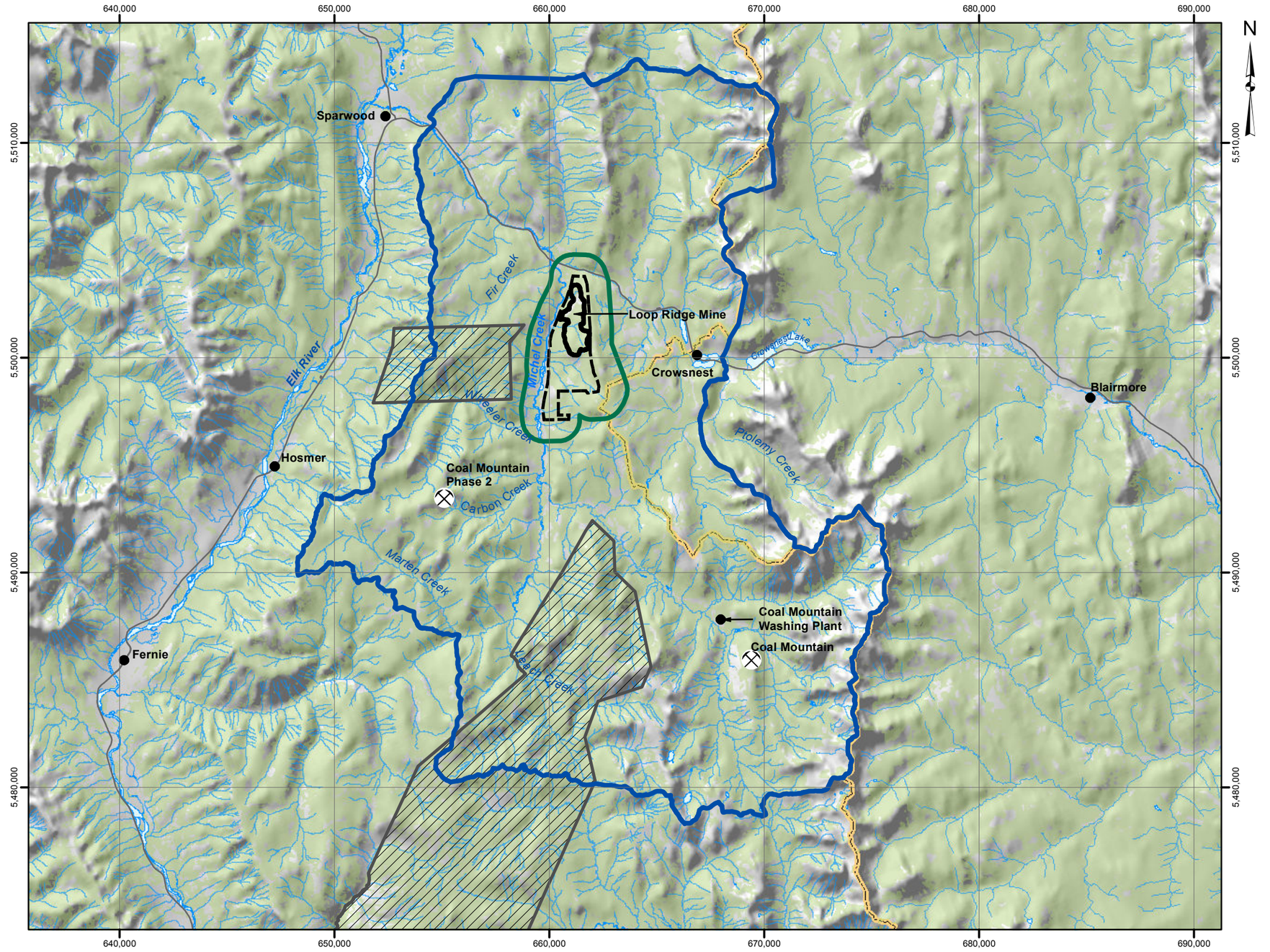
The preliminary spatial boundaries, the LSA and RSA, have been established based on the scale of potential effects and the requirements of the valued components (Figure 8-1). LSAs and RSAs are discipline-specific and will vary in size accordingly. The spatial boundaries will be confirmed through consultation with regulators, Aboriginal groups and stakeholders.

Temporal Boundaries

The temporal boundaries of the EA will encompass four events (or milestones) in the life of the Project: pre-development activities (i.e. baseline data collection and project planning), the construction phase, the “operational” period, and the post-operational period (decommissioning and transition phase monitoring period).

Map Key

- Towns
- Provincial Boundary
- Proposed CanAus Open Pit
- Rivers/Streams
- Potential Disturbance Area Boundary
- CanAus Local Study Area
- CanAus Preliminary Regional Study Area
- DOMINION COAL BLOCKS
- Lakes
- Forest Cover



Map Notes:
1. NAD 1983 UTM Zone 11N
2. Regional Study Are for Socio-economic Studies
Includes all Nearby Towns and Cities.

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Project No.:	**Project:** Michel Creek Coking Coal Project	**Figure:8-1** Preliminary Local and Regional Study Areas
Date: September, 2015		
Drawn By: SMART MAP	**Approved By:** Consult 5 Inc.	

CanAus Coal Limited

8.2.3 Overview of General Assessment Methodology

The CEA Agency Environmental Assessment reference guide outlines the need to systematically consider how project facilities and operations interact with the environment. Where potential 'adverse' effects are identified, feasible mitigation measures are to be identified, and an assessment carried out on the 'residual' effects.

The proposed Project will be undertaken using proven methods of pit mining, water management, treatment and discharge, etc. In addition, the following considerations will be taken into account:

- The Project will utilize a variety of infrastructure that currently exists, or areas that have been previously disturbed by mining or forestry, and an existing corridor to access the site from Highway #3;
- The effectiveness and success of a variety of operational practices, facility processes, and mitigation measures that have been determined from actual operational and environmental data available from existing operations in the Elk Valley;
- Prediction of environmental effects utilizes extensive regional operational and environmental data, which provides a sound basis for predicting future performance, and therefore impacts, with confidence;
- The description of the existing environment considers pre-development baseline conditions at the Project site; and
- A detailed consideration of potential malfunctions or incidents and their potential impacts.

In conducting the environmental assessment there will be a need to systematically consider how project facilities and operations interact with the environment. Where potential 'adverse' effects are identified, feasible mitigation measures will be identified, and an assessment carried out on the 'residual' effects.

Assessment Approach

A description of the existing environment will be provided by the baseline investigation currently underway. The baseline investigation will provide the basis to determine the likely interactions between the Project components/activities and the surrounding environment, and between the environment and the project. The environment will be characterized in terms of 'environmental components' that may be affected by the Project. The consideration of various aspects of culture, heritage, archaeology and traditional land and resource use will be limited to those that are likely to result from Project effects.

Valued Components [VCs] will be identified through professional experience and in consultation with appropriate community groups and local First Nations. These will be specifically considered in the environmental effect assessment (EA).

The starting point in conducting the EA will be to characterize the Project components/activities associated with various feasible alternatives (technically and economically) that have been defined, and to identify those that have the potential to interact with the surrounding environment. The potential Project-environment interactions for the assessment are associated with various 'inputs' and 'outputs' required for activities, such as surface disturbance from Project development, pit mining and transport of the coal, water management and discharge, air emissions as well as the operation of supporting facilities and infrastructure.

The inputs will largely consist of consumables (e.g., materials, fuel, and reagents) and labour. The outputs will consist of coal, treated effluent, air emissions and various waste products. There are also supporting facilities and activities, such as transportation, which can interact directly with the environment. The Project Description of the EA will focus on identifying each of the input and output components, and supporting facilities/activities, and characterizing their potential to interact with the environment.

The assessment of environmental effects will involve predicting and evaluating the likely environmental implications of the proposed Project and of feasible alternatives. The assessment will be carried out in a systematic manner, as discussed below.

A seven-step process will be used to assess Project impacts in order to ensure that the interactions between the Project components and the Project setting are adequately described, that the likely effects are identified and properly assessed, that mitigation measures are applied, and that the significance of any residual effect is determined. The steps are as follows:

- Step 1: Describe the Project facilities and activities;
- Step 2: Identify and describe those components of the Project setting (environmental, socio-economic, heritage, etc.) that will be or could be affected by the Project development;
- Step 3: Identify the nature and extent of the effect of any interaction between the Project and the existing project setting and identify adverse effects;
- Step 4: Identify proposed mitigation measure(s) available to manage and reduce the adverse impacts identified in Step 3;
- Step 5: Identify the magnitude, spatial extent, frequency, duration, and reversibility of each residual adverse impact;
- Step 6: Assess the significance of residual adverse effects; and
- Step 7: Identify a follow-up program to verify the accuracy of the EA and determine the effectiveness of mitigation measures.

Determination of Significance of Residual Adverse Effects

In assessing the potential impacts of the proposed Project, the following definitions are initially provided to describe the significance of potential effects on the environment and hence the potential risks associated with an activity. These definitions will be discussed and further refined, if required, during consultations with regulatory agencies, Aboriginal groups and the community:

- **No effect** - means that there is no interaction between the activity (or substances, etc.) and the population or that the interaction has no effect.
- **Negligible effect -** one affecting the population or specific group of individuals at a localized area and/or over a short period in such a way as to be similar in effect to small random changes in the population due to natural environmental fluctuations, but having no measurable effect on the populations as a whole.
- **Minor effect** –one affecting the population or specific group of individuals at a localized area, or over the period (one generation or less), but not affecting other trophic levels or the integrity of any population as a whole. It may be localized.
- **Moderate effect** –one affecting a portion of a population, which may result in a change in abundance and/or distribution over one or more generations of that portion of the population or any population dependent on it, but does not change the integrity of any population as a whole. It may be localized.
- **Major effect** –one affecting a whole population or species in sufficient magnitude to cause a decline in abundance and/or a change in distribution beyond which natural recruitment (reproduction, immigration, to affected areas) would not return that population or species, or any population or species, or any population or species dependent on it, to its former level within several generations.

8.3 Cumulative Effects

Cumulative environmental effects are residual effects on the environment (i.e., impacts that occur after mitigation measures have been implemented) combined with the environmental impacts of other past, present or reasonably foreseeable future projects or activities in the area. Cumulative effects can also result from the combination of different project-specific impacts acting on the same environmental component.

During the EA, CanAus will assess the cumulative impacts associated with the proposed Project, including the following:

- Combined effects from all stages of the Project lifecycle;
- Effect of the proposed Project when added to other past, present or reasonably foreseeable future projects or activities in the area;
- Combination of effects from the existing Project combined with the impacts of an expansion or alteration of the Project;
- Total effect or risk of effect from operating the Project over a long period of time (taking into account the likelihood of extensions or expansions to the Project's operating life);

- Effect of ancillary facilities that may not be part of the proponent's Project, but which are essential to the Project proceeding (e.g., pipelines, roads, transmission lines); and
- Any additional activities or developments that may be enabled or encouraged as a result of the Project proceeding.

During the conduct of the EA, the assessment of cumulative effects will be guided by the *Operational Policy Statement - Assessing Cumulative Environmental Effects under the* Canadian Environmental Assessment Act, 2012 (Version 1.1) and the *Draft Technical Guidance for Assessing Cumulative Environmental Effects under the Canadian Environmental Assessment Act, 2012* issued by the Canadian Environmental Assessment Agency in December 2014.

CanAus is a member of the Working Group of the Elk Valley Cumulative Effects Management Framework (CEMF) and, as such, will contribute to the assessment of valley-wide cumulative effects on the following VC identified under the CEMF: riparian habitat, old/mature forest, Westslope cutthroat trout, bighorn sheep, and grizzly. The Ministry of Forests, Lands and Natural Resource Operations is leading the CEMF and has a workplan that envisages completion of the assessment of cumulative effects on the above-listed VC by the end of 2015. CanAus will use the results of the CEMF assessment as broader context for its project-specific cumulative effects assessment and include the CEMF VCs in its project-specific cumulative effects assessment.

Projects to be included in the cumulative effects assessment will include, but not necessarily be limited to:

- NWP Coal Canada Limited: Crown Mountain Coking Coal Project;
- Teck Coal Limited: Coal Mountain Phase 2;
- Teck Coal Limited: Baldy Ridge Expansion Project;
- Centermount Coal Limited: Bingay Main Metallurgical Coal Project;
- Crowsnest Pass Coal Ltd. Coal Creek Project; and
- Other developments and mines that become known during the course of the Project.

8.4 Identification of Uncertainties

The EA will also identify and discuss any uncertainties identified during the assessment and propose specific actions to address such uncertainties. This may include such things as monitoring programs and/or the development of adaptive management plans designed to address the identified uncertainty and provide mitigation if necessary.

9 Effects of the Environment on the Project

9.1 Introduction

An environmental effect assessment will also take into account how the environment could adversely affect the Project, for example, seismic events, severe weather. The following provides a summary of the aspects of the environment that could have an effect on the Project. Each will be more fully assessed in the Project EA.

9.2 Forest Fire

All facilities associated with the Project will essentially be self-reliant for fire prevention and suppression. As such, programs, procedures and practices will be developed and implemented at the site in order to ensure that fire prevention and protection are of paramount importance.

Fire extinguishers and other firefighting equipment will be located at strategic points throughout the sites, including in the mine, and maintained in good working order. Appropriate training will be provided to ensure an effective and efficient force of appropriately trained individuals is always on site to perform necessary fire suppression duties.

All precautions will be taken to prevent and suppress forest fires near the sites as discussed previously.

9.3 Drought Conditions

The impacts of a short- or long-term drought in the Project area will have a minimal effect on the operations or decommissioning as proposed. The two most significant implications with regard to this condition would likely be the increased potential of forest fires in the area and a potential decrease in surface flows throughout the Project area. As the predicted discharges of all liquid effluents will have relatively low concentrations of contaminants of concern, and therefore not rely solely on dilution to reduce impacts to the receiving aquatic environment, reduced natural flows in natural streams due to short-term drought are not expected to have a significant effect on the Project or its environmental impacts.

9.4 Major Precipitation Event

Secondary containment facilities (bunded areas), ditches, diversion works, water settling and treated effluent ponds and contaminant retention structures will be constructed to accommodate precipitation events required by regulation, and are intended to prevent the inadvertent release of deleterious substances to the receiving waters.

Although not all facilities will be designed to individually contain a probable maximum precipitation event, they will be designed in a manner that ensures that if such an event were to occur, potentially contaminated runoff would report to surge ponds. No runoff and/or potential contaminants will enter the downstream receiving environment at a concentration likely to have a significant or long-term negative effect on the environment. This is particularly true if the dilution resulting from such a precipitation event is considered.

None of the proposed decommissioning and final closure scenarios contemplates a scenario in which a major precipitation event would threaten the post-closure chemical or physical stability of the site.

9.5 Climate Change

Assessing the potential changes in climate resulting from industrial activity in a particular region of Canada has been, and continues to be, a challenge. Generally, it can be stated that higher air temperatures are predicted for most of Canada, with noticeably warmer fall and winter periods. Climate change models also suggest that increased winter precipitation may lead to more intense run-off events. Extreme precipitation events are also predicted to become more frequent and intense in Canada.

Potential impacted features of the Project will be designed to handle significant precipitation events, and therefore potential increases in runoff do not pose a significant risk. None of the proposed decommissioning and final closure scenarios contemplates a scenario in which climate change would threaten the post-closure chemical or physical stability of the site.

As part of the planning for the Project, CanAus has initiated the quantification of greenhouse gas (GHG) emissions likely to be emitted from the development of the Project. As implementation of the Project proceeds, CanAus will quantify the greenhouse gas (GHG) emission rates for its activities, and continually pursue opportunities to reduce both greenhouse gas and air pollution emissions.

The largest emitter of GHG is currently predicted to be diesel combustion from mobile equipment exhaust. Maximizing fuel efficiency and a reduction in fuel consumption will reduce air emissions, as carbon-based petrochemical products are broken up in combustion to form carbon dioxide, carbon monoxide, volatile organic compounds, nitrogen oxides, sulphur oxides, and very fine particulate matter.

In order to ensure that the Project minimizes, to the extent possible, GHG and other pollutant emissions, CanAus will:

- Implement regularly scheduled maintenance of all fossil fuel burning equipment;
- Monitor fuel consumption;

- Minimize unnecessary use of vehicles;
- Use group transport to and from the mine sites;
- Reduce the amount of time that vehicles are left idling unnecessarily;
- Reduce heating (i.e., propane consumption) by appropriately insulating and operating all relevant facilities; and
- Reduce electrical demands through an energy conservation program for all Project facilities (e.g., by turning off lights in unoccupied buildings and using low energy lighting, such as LED’s or fluorescent lights).

10 Follow-up Programs

10.1 Introduction

"Follow-up programs" are an important component to assist the operator, relevant regulatory agencies and stakeholder communities in determining if the environmental and cumulative effects of the proposed Project have eventuated as predicted and to confirm whether the mitigation measures implemented to minimize those effects, to the extent possible, are effective.

The following sections provide a brief discussion of anticipated follow-up programs that will be undertaken over the life of the proposed Project.

10.2 Monitoring and Management Plans

During the conduct of the environmental assessment, CanAus will identify and develop appropriate follow-up programs, which will be discussed in detail within the EIS. At this stage in Project planning, these are expected to include:

- Environmental Inspection and Monitoring Plan, Including but not necessarily limited to:
  - Visual Inspections; and
  - Operational Environmental Monitoring:
    - Stream flow;
    - Snow pack;
    - Water quality;
    - Aquatic monitoring;
    - Air quality monitoring;
    - Post–decommissioning monitoring; and
    - Environmental reporting.
- Cumulative Effects Monitoring;
- MMER Environmental Effects Monitoring Program (if applicable);
- Vegetation Management and Monitoring Plan, including, but not necessarily limited to:
  - Avoidance plans to eliminate the introduction of foreign species;
  - Rare Plant Mitigation and Monitoring Plan; and
  - Vegetation Monitoring.
- Geotechnical Monitoring Program;
- Biodiversity Action Plan development, monitoring and reporting; and
- Socio-Economic Monitoring and Reporting.

10.3 Biodiversity Action Plan

CanAus has a goal of "net positive impact" (NPI) on biodiversity over the life of the Project (i.e., through construction, operations, decommissioning and reclamation). However, the Company will continually strive to achieve a NPI as early in the life of the operation as possible. This will be achieved by:

- Avoiding unacceptable impacts on biodiversity;
- Reducing the impacts that may occur;
- Restoring impacted ecosystems;
- Compensating for residual impacts with offsets; and
- Seeking additional opportunities to contribute to local conservation actions/measures.

This entails minimizing the impacts of our business activities and contributing to biodiversity conservation to ensure a region ultimately benefits as a result of our presence. Several components contribute to achieving this goal, including, but not necessarily limited to, avoiding impacts when possible, minimizing, to the extent possible, those impacts that are unavoidable and restoration of the biophysical environment at the cessation of operations. Equally important in achieving a NPI from the Project is the identification of, and contribution to, biodiversity conservation efforts in the region.

To achieve the NPI goal, CanAus has initiated the development of a biodiversity action plan (BAP) that reflects clearly the biodiversity features of the area in which it will operate and the values placed on those features by different sectors of society. A BAP is an internationally recognized program addressing threatened species and habitats and is designed to protect and restore biological systems.

In general terms, the Project BAP must be able to:

- Identify the important biological values on and off site at the species, habitat and ecosystem service level;
- Understand what impacts mining, processing and associated activities and infrastructure will have on the identified features; and
- Develop a plan to mitigate any identified effect (considering, in order of importance, avoidance, minimisation, rehabilitation, offsets and additional conservation actions).

The phases of developing the Project BAP are as follows:

- Phase 1: Develop the Project biodiversity baseline which includes:
  - An identification of key stakeholders;
  - Data compiled from existing sources (e.g. surveys);
  - Gaps in available data identified;

  - Work plan produced to gather additional data and work commissioned;
  - Information gathering; and
  - Biodiversity context and baseline sections of the BAP produced.
- Phase 2: Risk Assessment:
  - Identification of biodiversity features for the site and surrounding area;
  - Biodiversity features prioritised;
  - Conduct site biodiversity values assessment to identify and prioritize the key biodiversity values of relevance;
  - Identification of potential impacts of operation and wider drivers of environmental change;
  - Determination of direct and indirect effects of impacts on features of interest;
  - Complete initial risk assessment; and
  - Verify with stakeholders and review plan.
- Phase 3: Set objectives, targets and actions for the site:
  - Define objectives and actions using the mitigation hierarchy;
  - Identify BAP “actions”, associated costs, timetables and methods;
  - Select “indicator species” or “eco-sites” to monitoring progress and warn of the need to implement remedial action; and
  - Integrate BAP into Project environmental management systems and business planning processes.
- Phase 4: Implementation:
  - Identify appropriate implementation mechanisms for the BAP;
  - Review other Project management objectives to ensure no conflicts exist, and if conflicts do exist, attempt to resolve them; and
  - Ensure that there is a widespread understanding and acceptance that the BAP is a "live process" that will require regular updating.
- Phase 5: Management, monitoring and evaluation:
  - Identify and document indicators which will be used to monitor performance and outcomes; and
  - Ensure that objectives, actions and risks are reviewed based on monitoring results.
- Phase 6: Reporting:
  - Identify opportunities for reporting and implement;
  - Identify appropriate reporting media and venues; and
  - Fulfill reporting commitments.

11 Engagement and Consultations

11.1 Introduction

The purpose of this section is to provide a summary of actions to date and the planned future activities of the CanAus Engagement and Consultation Plan (EC Plan) related to the Project.

Engagement and consultation with the Ktunaxa Nation, provincial, federal, other First Nations' governments, the public, and stakeholders will be conducted throughout all stages of Project planning, regulatory review, and construction. The intent will be to provide all interested parties with opportunities to learn about the Project, identify issues, and provide input with the goal of positively enhancing Project planning and development. The scope of the consultation efforts will be consistent with the terms of the Section 11 Order under the BCEAA guidance, through the Technical Working Group or from CEAA.

11.2 Engagement and Consultation Plan (ECP)

CanAus recognizes the importance of full and open discussion of the issues and options associated with the development of the Project and the related concerns those individuals or communities may have in relation to the activities. In light of this, CanAus will maintain open and honest communications with local communities and individual stakeholders throughout all stages of the Project. CanAus intends to ensure that its operational practices, both now and into the future, reflect the values, expectations and needs of the community in which it is operating, based upon continued mutually respectful consultation with all stakeholders.

11.3 Engagement and Consultation Plan Goals and Objectives

Goals:

- Develop and maintain positive working relationships with the Ktunaxa, other First Nations groups, communities, non-government organizations, and all interested stakeholders;
- Build trust in CanAus as a company that makes socially and environmentally responsible decisions;
- Create and maintain transparency; and
- Build mechanisms for receiving and incorporating input.

Objectives:

- Provide opportunities for meaningful engagement that result in direct input to project design, environmental assessment, mitigation, and monitoring;
- Understand the cultural, traditional and unique interests of Aboriginal groups, including how the proposed Project may affect their ability to pursue hunting, fishing, trapping and other traditional activities;

- Hear and consider Aboriginal and stakeholder interests in all aspects of Project planning and delivery; and
- Assist, where requested and appropriate, the BC government in meeting its duty to consult, while respecting that the duty to consult ultimately resides with the Crown.

11.4 Engagement and Consultation Plan Guiding Principles

The following principles have been, and will continue to be, used by CanAus and its representatives in conducting consultations with stakeholders:

- Communicate clearly and at the right time;
- Solicit advice from individual communities on the most effective methods and tools for communications in their community;
- Provide full information promptly to encourage fair and informed discussion;
- Support consultation to the maximum by responding to information requests fully and quickly;
- Establish clear and realistic timetables for accepting requests, suggestions and submissions, and be sensitive to the limited resources available to individuals and groups;
- Provide information, particularly technical information, in plain language;
- Give practical help to people and groups to take part, with attention to equal opportunity;
- Provide frequent feedback, including the results of meetings, incoming suggestions and requests, key recommendations, and information about emerging technologies;
- Stimulate conciliatory and constructive exchanges of views and genuinely try to address, without prejudice, the major issues;
- Frequently monitor and evaluate the effectiveness of the consultation program during and at the end of each phase of the Project; and
- Share with the community the responsibility for effective consultations.

The consultations to date have been undertaken to ensure open and informed discussion of the various options that must be considered in developing the Project. In the end, all parties must be reasonably satisfied, to the extent possible that the Project and its associated activities protect worker health and safety, public health and safety, and the environment during operations. After decommissioning and reclamation are complete the site will, to the extent possible, allow for a productive use of the land similar to its pre-mining use or to an acceptable alternative.

Consultations with the Ktunaxa Nation, other First Nation groups, local communities, and the public in general, will be conducted during the pre-application and application review phases. Consultation with the Ktunaxa Nation and other First Nation groups is required and interests will be reflected in arrangements to address and/or accommodate issues, values, concerns, and collaboration. The public will also be involved in consultation and be given the opportunity to comment on designs and raise issues, values and concerns.

As part of the EA, a consultation program will be developed to be consistent with guidelines derived from the:

- BC Environmental Assessment Act (BCEAA);
- BCEAA's Public Consultation Policy Regulation (2002);
- Provincial Policy for Consultation with First Nations (2010);
- Supplementary Guide to Proponents: BC Environmental Assessment Process; and
- Aboriginal Consultation and Accommodation - Updated Guidelines for Federal Officials to Fulfill the Duty to Consult (March 2011).

The Public Consultation Policy Regulation sets out guidelines related to the proponent's consultation program, public notice, and public comment periods and, if it is determined to be a reviewable project under the BCEAA, documents to be available through the EAO's Project Information Centre (e-PIC).

11.5 Identification of Aboriginal Groups and Stakeholders

11.5.1 Introduction

Stakeholders are defined as those groups, sub-groups and/or individual people whom the Project might affect or who may have an interest in the Project. They all have a stake in the progress of the project, whether they are regulators, supporters or critics.

11.5.2 Preliminary List of Stakeholders

An initial list of individuals and organization that have been, and will continue to be, consulted on this Project is presented below. This list may not be complete and may grow as people and groups become aware of the Project:

- Local and regional communities;
- Elected officials and senior administrative staff;
- Groups and organizations such as Chambers of Commerce, Service Clubs, Fish and Game Associations, user groups such as ATV Associations and Ski clubs;
- Interested citizens;
- Industry groups such as Teck, Canfor, BC Hydro, CP Rail;
- Research groups working in the Elk Valley such as University of Calgary, University of Lethbridge, Simon Fraser University and the University of Waterloo;
- NGOs such as Wildsight, Elk River Alliance, Y to Y, Nature Conservancy;
- Professional and educational groups and institutions (e.g., College of the Rockies); and
- Columbia Basin Trust.

11.5.3 Aboriginal Groups

First Nation(s)

The Project is within the asserted territory of the Ktunaxa Nation and as such, CanAus will engage and consult with the Ktunaxa through the Nation Council. The Project may also be of interest to the Shuswap Indian Band, Stoney Nakoda Nation, Piikani Nation and the Métis Nation.

The bands that comprise of the Ktunaxa Nation Council's governance structure include:

- ʔakisq̓nuk First Nation (formerly the Columbia Lake Band, Windermere);
- ʔaq'am - St. Mary's Band (Cranbrook);
- ʔakink̓um‡asnuq‡iʔit - Tobacco Plains Indian Band (Grasmere); and
- Yaqan nuʔkiy - Lower Kootenay Indian Band (Creston).

First Nation(s) contact information for engagement and consultation that has been gathered is listed as follows:

Ktunaxa Nation Council

Ray Warden, Ktunaxa Nation Council Director of Lands and Resources Agency
7468 Mission Rd Cranbrook BC V1C 7E5
Fax Number: 250-489-2438
Email: rwarden@ktunaxa.org

- Dale LeClair, Ktunaxa Nation Council Chief Operating Officer
  - Email: dleclair@ktunaxa.org
- Robin Louie, Ktunaxa Nation Council Director of Economic Sector
  - Email: rlouie@ktunaxa.org
- Kerri Garner, Ktunaxa Nation Council Manager, Lands Stewardship
  - Phone: 250-420-2741, Fax: 250-489-2438, Email: KGarner@ktunaxa.org
- Nicole Kapell, Ktunaxa Nation Council Environment and Archaeological Stewardship Coordinator
  - Phone: 250-489-2464 ext 3123, Fax: 250-489-2438, Email: NJKapell@ktunaxa.org
- Bill Green, Director of CCRIFC
  - Email: BGreen@ccrifc.org

***ʔaq'am* – St. Mary's Band**

7470 Mission Road, Cranbrook BC V1C 7E5

- Chief Jim Whitehead
  - Email: jwhitehead@ktunaxa.org

- Julie Couse, Director of Lands and Natural Resources
  - Email: jcouse@aqam.net

ʔakinkum̓ǂasnuqǂiʔit - **Tobacco Plains Band**

PO Box 76, Grasmere BC V0B 1R0

- Chief Mary Mahseelah
  - Email: mmahseelah@ktunaxa.org
- Tom Phillips, Lands Manager
  - Phone: 250-887-3461 x3411
- Hugh Moore, Economic Development Officer
  - Phone: 250-887-3461 x3409, Email: hmoore@tobaccoplains.org

ʔakisq̓*nuk* First Nation

British Columbia 93, Windermere, BC V0B 2L2

- Chief Lorne Shovar
  - Phone: 250-342-6301, Email: lshovar@ktunaxa.org
- Adrian Bergles, Lands Manager
  - Email: abergles@akisqnuk.org

Yaqan nuʔkiy - **Lower Kootenay Band**

830 Simon Road, Creston BC V0B 1G2

- Chief Jason Louie
  - Phone: 250-428-4428 x.235, Email: mjasonlouie@gmail.com
- Keith Clement, Chief Operating Officer
  - Phone: 250-428-4428 x.224, Email: lkbcoo@lowerkootenay.com

Shuswap Indian Band
Chief Barb Cote
4846 Athalmer Rd, Invermere, BC, V0A 1K3
Phone: 250-342-6361

Stoney Nakoda Nation
Stoney Tribal Administration
PO Box 40, 40 Morley Road, Morley, AB, T0L 1N0
Phone: 403-881-3770, Fax: 403-881-2676, Email: communications@stoney-nation.com

Piikani Nation
Piikani Lands Department
PO Box 70, Brockett AB T0K 0H0
Phone: 403-965-3807
Fax: 403-965-2214

Piikani Consultation Office
PO Box 70, Brockett AB T0K 0H0
Phone: 403-965-3940
Fax: 403-965-2214

11.5.4 Métis

Initially, CanAus was unable to identify any representatives of Canada's Métis Nation in the region of the Project, however recent efforts have been successful in identifying Métis representation in the area and they will be engaged in future consultations.

Metis Nation contact details:

Elkford Metis Association – Elk Valley
President: Jean Sulzer
Phone: 250-423-3904, Fax: 250-423-7417 Email: jsulzer@telus.net

Rocky Mountain Metis Association – Cranbrook
President: Marlin Ratch
Phone: 250-426-9654, Email: rockymtnmetis@gmail.com

Métis Nation British Columbia
President: Marlin Ratch
Bruce Dumont
Phone: 604-557-5851, Fax: 604-557-2024, bdumont@mnbc.ca

11.5.5 Regulatory Agencies

An initial list of regulatory bodies that have been, or will be, consulted is presented below. This list may not be complete and may grow as the Project develops:

- BC Environmental Assessment Office (BCEAO);
- Canadian Environmental Assessment Agency (CEA Agency);
- BC Ministry of Energy and Mines (BCMEM);
- BC Ministry of Environment (BCMoE);
- BC Ministry of Forests, Lands and Resource Operations (BC FLNRO);

- BC Ministry of Health;
- BC Ministry of Aboriginal Relations and Reconciliation;
- Natural Resources Canada;
- Transport Canada;
- Health Canada;
- Parks Canada;
- Environment Canada (EC); and
- Fisheries and Oceans Canada (DFO).

11.6 Engagement and Consultation Activities to Date

11.6.1 Parties Consulted During Project Description Preparation

CanAus has consulted widely during exploration and as part of the process for preparation of the Project Description. This has included, but is not limited to:

- Ktunaxa Nation (Meetings have been held, but this is not considered formal Consultation until the Section 10 for the Project has been issued and they agree to engage);
- Shuswap Indian Band;
- Métis Nation (awaiting confirmation of meeting);
- CEA Agency;
- BC Environmental Assessment Office (BCEAO);
- BC Ministry of the Environment (BCMOE);
- BC Ministry of Forests, Lands and Natural Resource Operations (BCMFLNRO);
- BC Ministry of Energy and Mines (BCMEM);
- Local Governments;
- Fish and Game Associations; and
- Non-government organizations (Wildsight, Elk River Alliance).

A comprehensive list of meetings and summary notes from each is provided in Appendix 3.

11.6.2 Key Comments and Concerns Expressed To Date

Various people from the public have offered informal feedback to CanAus, with the main points presented below.

General Themes:

- People welcome a new mine and see it as a boost for the local economy and that it will create employment;

- Hunters have expressed concern about access to hunting areas and also loss of the open range land on the property;
- Fishermen have expressed concern about possible contamination of Michel Creek;
- General concern has been expressed about loss of access to the Michel Creek Valley as there already is a lot of linear development and the proposed mine would add to the space consumed by railways and roads;
- The general need to be in compliance with the EVWQP and to protect water quality; and
- Ensuring that groups working on the Cumulative Effects Process are included in consultation.

Environmental Concerns

- Water quality:
  a. Will CanAus adhere to the Elk Valley Water Quality Plan?
  b. Where will the required water for operations be coming from?
  c. How will CanAus control water throughout its operations?
- Selenium:
  a. How will CanAus control selenium loadings?
  b. Have those strategies been attempted at other mines?
  c. What selenium target/threshold will CanAus be held accountable to?
- Cumulative effects:
  a. Will CanAus be participating in the Elk Valley Cumulative Effects Management Framework (CEMF)?
  b. What is the mine disturbance footprint?
  c. Will CanAus be looking for opportunities for collaboration with other industrial players with operations in the Michel Creek Watershed to reduce the cumulative effects of its operation?
- Habitat connectivity:
  a. How will CanAus ensure habitat connectivity?
  b. Proposed CanAus operations are in the path of a critical wildlife corridor
- Waste rock dump design:
  a. Will CanAus be building from the bottom up or the top down?
  b. How will water be controlled in the dumps?
  c. Will cover and liner systems be incorporated into the designs?
- Active water treatment and tailings facilities:
  a. How will passive treatment facilities work?
- Air quality:
  b. Dust suppression.

Socio-Economic Concerns

- Job creation:
  c. Will employees be locally sourced?
  d. Has CanAus examined potential spin-off businesses?
  e. Will CanAus offer incentives to keep employees local?
  f. Split shifts for women, daycare, second mortgages offered for local housing?
  g. What is the proposed shift schedule?
- Mine life:
  a. How many years will the mine be in operation?
- Visual aesthetics:
  b. Will CanAus be conducting mountain-top mining operations?
  c. What part of operations will be visible from Highway 3?
  d. How will CanAus be controlling dirty traffic from its operations?
- Economic viability:
  a. Can the CanAus operation still be profitable given the environmental constraints?
- Recreational access:
  b. ATV and snowmobile trails
  c. Hunting and fishing grounds
  d. Hiking and mountain bike access

CanAus was informed through the Ktunaxa Nation Council representatives that the Ktunaxa Nation Council generally only engages on new projects in the Ktunaxa Territory once a Section 10 order has been issued in the EA process by the BCEAO. Under these circumstances, it is not possible to provide initial feedback and concerns. CanAus has retained consultants through MDG Contracting to assist with First Nations Consultation and to help the various specialist scientific and engineering groups become aware of, and sensitive to, a Ktunaxa worldview. The CanAus team has participated in a “Ktunaxa 101” training session through the Ktunaxa Nation Council’s Traditional Knowledge and Language Sector. This was aimed at providing CanAus engineers and scientists with the tools to think beyond western science when designing the mine and when considering the effects of management options.

The principles CanAus would like to fulfill when engaging with the Ktunaxa Nation include:

- To engage at an early stage to ensure project design includes consideration of Ktunaxa values;
- To build meaningful relationships with the Ktunaxa Nation and its citizens;
- CanAus is interested in innovating and in establishing meaningful and mutually beneficial business relationships and to seek cooperation or partnership with the Ktunaxa and other Aboriginal groups;

- To ensure that CanAus is enabled to fulfil its stewardship role as a user of the land, while recognising and being sensitive in its operations to the Ktunaxa value of the land and any spiritual values associated with the land;
- To ensure that CanAus activities leave a positive mining legacy and that the mutual ideals for sustainability are brought to bear during the life of the mine;
- To ensure that the Project enables people to live healthy lives through a balance of physical, spiritual, cultural and economic engagement; and
- Ensuring that CanAus is held to account during the EA process and during future mining.

The Ktunaxa Nation Council (KNC) has granted CanAus a pre-Section 10 audience and has conveyed the following main points for consideration in the Project Description and any potential future Project development:

- The KNC looks to develop an Engagement Protocol with CanAus early in the project exploration phase to encourage open dialogue;
- The KNC is not in the business of working with industry to “make projects better.” They assess net benefits and impacts and on that basis determine whether they approve or reject a project;
- The KNC is aware of cumulative effects and will require these to be addressed to ensure the safety of people and the environment. They note that the Tobacco Plains citizens have felt the impact of mining in the Elk Valley;
- The EVWQP is a tool to meet the Ktunaxa test of stewardship responsibility and will be used in the consideration of any new economic opportunities and as a framework for decision-making;
- The KNC considers enforceable conditions as a "must have" with industry and will seek the same enforceability with CanAus; and
- The Ktunaxa have lived with legacy impacts, and any future of coal mining in the Elk Valley needs to address the past in order to move forward in the future.

Further to the initial meeting with the Ktunaxa Nation, a second meeting was held with representatives from CCRIFC and the Ktunaxa Nation Council, specifically regarding water quality. The following information was discussed with CanAus:

- More information is desired with regards to Michel Creek and there is desire to be made aware of planning processes and how they may affect water quality;
- The Ktunaxa perspective on the Elk Valley Water Quality Plan is that it must be adhered to. There is a need to focus on continuous improvement and rigorous adaptive management;
- The Ktunaxa Nation Council is to hire a Southeast Coal Coordinator who will work with CanAus moving forward, especially with regards to follow-up questions and taking in information;
- The Ktunaxa Nation Council is open to taking part in a site tour;
- CanAus will be linking with the Employment Sector of the KNC regarding the participation of Ktunaxa people as field technicians to the Project. It was made clear that this is not part of the consultation process; and
- CanAus will be sharing all fieldwork program schedules with the KNC.

CanAus has made initial information available to the Shuswap Indian Band. An initial meeting was scheduled for late July, 2015.

11.7 Future Engagement and Consultations Plans

11.7.1 General Engagement and Consultation

Engagement and consultation will continue to be conducted throughout all stages of project planning, environmental assessment, regulatory review, and construction, to provide all interested parties with opportunities to learn about the Project, identify issues, and provide input with the goal of positively enhancing Project planning and development. Consultation and engagement methods will include:

- Community meetings (formal and informal);
- Meetings with key individual stakeholders;
- Conference calls or web meetings;
- Workshops on specific topics related to the EA Process (e.g. Project Description, selection of Valued Components, cumulative effects);
- Focus groups or advisory groups;
- Tours of the site;
- Informal discussion groups (meetings which involve small, revolving conversations among 3-4 people with a report-back to the single, larger group); and
- Open houses.

Consultation will be supported by a variety of information materials and mechanisms including dedicated website, posters for open houses, newsletters, and information sheets to encourage feedback, thereby providing all with the opportunity to be fully informed about the Project and to have convenient and accessible means to provide input. The outcomes of consultation and engagement will be fully recorded in a consultation database.

11.7.2 Future Engagement and Consultation Plan – First Nations and Métis

The objectives of the engagement and consultation plan will be defined in collaboration directly with the Ktunaxa Nation and any other interested Aboriginal groups. Some initial thoughts from the CanAus perspective are to:

- Facilitate relationship-building and ensure a respectful and effective two-way flow of information between CanAus, their consultants and the Ktunaxa Nation and other Aboriginal groups;
- Inform and support baseline studies and the EA process as issues and concerns are identified;
- Provide the Ktunaxa Nation and others with opportunities to collaboratively benefit from the Project; and
- Ensure that the methods, issues, resolutions, and outcomes of this process are documented in support of the Project's EA in a way that is informative and transparent.

In all cases, the intent of the consultations with the membership and elected leadership of the First Nations and Métis organization has and will continue to be, to:

- Provide information to First Nations and Métis communities to ensure they are reasonably informed as to the nature of the proposed activities and are aware of any potential environmental impacts, including short-, medium- and long-term plans in the area;
- Arrange meetings by mutual agreement with First Nations and Métis community elected officials, or their formally authorized designates, to discuss appropriate means of engagement, recognizing community-specific requirements;
- Engage with the First Nations and Métis to identify and discuss specific potential adverse impacts of the Project on the First Nations' and Métis' ability to exercise their right to hunt, fish and trap for food and carry out traditional uses; and
- Consider the views of First Nations and Métis communities and, where necessary, work with the communities involved to avoid or minimize adverse impacts on the First Nations' and the Métis' ability to hunt, fish and trap for food and carry out traditional uses.

Traditional Use and Traditional Knowledge (TU/TK) studies for the Project will also be developed during baseline studies and the EA process. TU/TK studies complement contemporary scientific studies, provide important information on Ktunaxa and Aboriginal interests, and clarify technical, academic, and indigenous information relating to the traditional and contemporary use and knowledge of the Project area. CanAus will work with the leadership and knowledge-holders of each First Nation to collect and capture site-specific TK information.

11.7.3 Future Engagement and Consultation Plan – Local Communities, Groups and Organizations

Planned public consultation activities for local communities, businesses, and stakeholders include the following:

- Open houses, information sessions, workshops, focus groups, and informal group discussions to raise awareness about, and interest in, the Project, and identify and address any public issues and concerns; and
- Public engagement and participation is fundamental to the EA. All consultations will be well advertised, well informed, tracked, reported on, and documented for government and public review.

11.7.4 Future Engagement and Consultation Plan – Regulators

The Mine Development Review Committee (MDRC) process will be established as part of provincial permitting, in particular the Mines Act permit, in support of the Project. There will be significant consultation as part of this process.

11.7.5 Identification of Community Issues and/or Concerns and Reporting

The consultation program has been, and will continue to be, structured to stimulate a broad understanding of all Project parameters, the potential impacts of the Project and the monitoring programs and results. This will continue during the preparation of the EA application process.

Within the EA process, CanAus will explain the results of consultation in a clear and direct manner in order to make the issues clear to as wide an audience as possible.

Specifically, the EA process will:

- Describe the past and ongoing consultation activities, tools employed during consultations and any commitments made;
- Summarize the comments made to, and responses provided by, CanAus during all consultation with respect to the Project; and
- Identify the key issues of concern raised by First Nations, Métis, communities, stakeholders and regulators and how CanAus has, or intends to, address them.

11.8 Ongoing Consultation

As interest in the Project may extend beyond the Project area, CanAus is prepared to provide Project information to, and address issues identified by, persons and/or organizations residing outside of the Project area.

CanAus is committed to continuing ongoing communication, consultation and engagement with communities and stakeholders in relation to activities at the Project, and any other activities undertaken (i.e., further exploration in the region), by scheduled public meetings in relevant communities, and/or on an individual meeting basis where appropriate. In addition, CanAus continues to seek advice from individual communities on the most effective methods and tools for communications in their community.

This consultation has been, and will continue to be, undertaken in a manner that ensures that the leadership and community members in the area are informed about the activities of the company in a manner that maximizes the opportunity for feedback on those activities.

CanAus is also committed to regular consultation and feedback on ongoing environmental activities and compliance during the operations and closure phases. This will allow Aboriginal groups, communities and regulators to understand how the mine is performing in relation to its commitments, provide feedback on issues they may have regarding mine performance, and to be involved in decision making for mine closure.

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Appendix 1

Environmental Certificate and Mines Act Permit for the McGillivray Mine 1999

PROVINCE OF BRITISH COLUMBIA
MINISTRY OF EMPLOYMENT AND INVESTMENT
ENERGY AND MINERALS DIVISION

PERMIT

APPROVING WORK SYSTEM AND RECLAMATION PROGRAM

(Issued pursuant to Section 10 of the **Mines Act** S.B.C. 1989, c. 56)

Permit: **C-210**

Issued to: **McGillivray Mining Ltd.**
P.O. Box 1916
Fernie, B.C.
V0B 1M0

for work located at the:

McGillivray Mine

Issued at Victoria, British Columbia this 28th day of August in the year 1996.

John C. Errington, Ph.D., P.Ag.
Deputy Chief Inspector of Mines

PREAMBLE

An application for permission to commence work dated July 29, 1996 was submitted to the District Inspector July 31, 1996. The application included a report and plan of the work system entitled "McGillivray Mining Ltd. Application for a Project Approval Certificate" dated November 30, 1995, in accordance with Part 6 Section 6.1.2 of the Health, Safety and Reclamation Code for Mines in British Columbia (Code). This report also included a program for the protection and reclamation of the surface of the land and watercourses affected by the mine in accordance with Part 10.1.2 of the Health, Safety and Reclamation Code for Mines in British Columbia.

The requirement to file in the local newspaper and Gazette has been waived.

The application was referred to other agencies in accordance with Part 10 Section 10.3 of the Health, Safety and Reclamation Code for Mines in British Columbia (Code).

This permit contains the requirements of the Ministry of Employment and Investment for reclamation. It also is compatible, to the extent possible, with the requirements of other provincial ministries for reclamation issues. The amount of security required by this permit and the manner to which this security may be applied, will also reflect the requirements of those ministries. However, nothing in this permit limits the authority of other provincial ministries to set other conditions, or to act independently, under their respective permits and legislation.

Decisions made pursuant to this permit by staff of the Ministry of Employment and Investment will be made in consultation with other provincial ministries and federal departments and agencies. Where these decisions directly affect the Ministry of Environment, Lands and Parks, all decisions will be made in concurrence with the appropriate Regional Manager (Environmental Protection, Water Management, or Fish and Wildlife).

CONDITIONS

The Chief Inspector of Mines (Chief Inspector) hereby approves the work system and the program for protection and reclamation of the land surface and watercourses subject to compliance with the following conditions:

General

1. Compliance with **Mines Act** and Code

   All work shall be in compliance with all sections and parts of the **Mines Act** and Code, and the owner, agent or manager (herein called the Permittee) shall obey all orders issued by the Chief Inspector or his delegate.

2. Departure from Approval

The Permittee shall notify the Chief Inspector and the District Inspector in writing of any intention to depart from the plan of the work system to any substantial degree, and shall not proceed to implement the proposed changes without the written authorization of the Chief Inspector.

Work System

1. Waste Dumps

(a) Dump construction shall adhere to the guidelines set out in the application.

(b) Special care shall be taken to ensure water is excluded from the dumps and dump foundation.

2. Geotechnical

(a) The geotechnical reports, designs and stability conclusion are acceptable. The open pit geotechnical design reports recommend continuing observation of the pit walls, and modifying the design as required. As there is possible folding and or thrust faulting in the pit area, constant monitoring shall be maintained.

(b) Existing road cuts at the natural gas right of way shall be inspected for signs of instability.

(c) During construction and operation of roads within 100 metres of the natural gas right of way, all road cuts, fills, and pipeline right of way soils shall be inspected and monitored for signs of instability.

Reclamation Program

1. Reclamation Security

(a) The Permittee shall cause to be deposited with the Minister of Finance and Corporate Relations, within 30 days of receipt of this permit, securities in the amount of Sixteen Thousand dollars ($16,000.00). The security will be held by the Minister of Finance and Corporate Relations for the proper performance of the approved program and all the conditions of this permit in a manner satisfactory to the Chief Inspector.

(b) Beginning on January 1, 1997, and annually thereafter, the security shall be increased at a rate equal to the previous year's annual increase in the British Columbia Consumer Price Index.

(c) The Permittee shall conform to all Ministry of Environment, Lands and Parks approval, licence, and permit conditions, including Contaminated Sites and Special Waste regulations, as well as requirements under the **Wildlife Act.** Should the Permittee not conform to these conditions then all or part of the security may be used to fulfill these requirements.

2. Annual Reclamation Report

By March 31 of each year, an annual reclamation report shall be submitted in a form and containing the information required by the Chief Inspector.

3. Land Use

The surface of the land and watercourses shall be reclaimed to forest producing merchantable timber and wildlife habitat. Wildlife requirements for forage and cover will be optimized on south-facing exposures.

4. Productivity

(a) The level of land productivity to be achieved on reclaimed areas on this site shall not be less than existed prior to mining on an average property basis unless the Permittee can provide evidence which demonstrates, to the satisfaction of the Chief Inspector, the impracticality of doing so.

(b) The final assessment of suitable tree growth and productivity will be determined by the Ministry of Employment and Investment, in conjunction with Crestbrook Forest Industries, McGillivray Mining Ltd., and on a survey by an independent forestry consultant.

5. Long-term Stability

Land and watercourses shall be left in a stable condition. To ensure long-term stability, engineered structures including waste dumps, and major haul roads, shall be constructed and maintained in accordance with part 9 of the Health, Safety and Reclamation Code for Mines in British Columbia .

6. Revegetation

Land shall be revegetated to a self sustaining state using appropriate plant species.

7. Use of Suitable Growth Medium

On all lands to be revegetated, the growth medium shall satisfy land use, productivity, and water quality objectives. As stated in the application, all topsoil from areas to be disturbed will be salvaged, stockpiled and used as the growth medium in the reclamation program.

8. Treatment of Structures and Equipment

Prior to abandonment, and unless the Chief Inspector has made a ruling otherwise, such as heritage project consideration or industrial use,

(a) all machinery, equipment and building superstructures shall be removed,

(b) concrete foundations shall be covered and revegetated unless, because of demonstrated impracticality, they have been exempted by the Inspector, and

(c) all scrap material shall be disposed of in a manner acceptable to the Inspector.

9. Waste Dumps

Waste dumps shall be reclaimed to ensure

(a) long-term stability,

(b) long-term erosion control,

(c) water quality released from waste rock dumps to the receiving environment is of a standard acceptable to the Chief Inspector, and

(d) land use and productivity objectives are achieved.

10. Watercourses

Watercourses shall be reclaimed to a condition that ensures

(a) long-term water quality is maintained to a standard acceptable to the Chief Inspector,

(b) drainage is restored either to original watercourses or to new watercourses which will sustain themselves without maintenance, and

(c) use and productivity objectives are achieved and the level of productivity shall not be less than existed prior to mining unless the Permittee can provide evidence which demonstrates, to the satisfaction of the Chief Inspector, the impracticality of doing so.

11. Pits

(a) Pit walls constructed in overburden shall be reclaimed in the same manner as waste dumps.

(b) Revegetation of pit walls constructed in rock, and/or on steeply sloping footwalls greater than 2:1, is not required. Pit wall seepage may require treatment to ensure that water is of a quality acceptable to the Chief Inspector.

(c) Where the pit floor is free from water, and safely accessible, vegetation shall be established.

(d) Where the pit floor will impound water and become a watercourse, provision must be made to create a body of water where use and productivity objectives are achieved.

12. Water Management Plan

(a) Any temporary water impoundment or diversion structures shall be stabilized and reclaimed to the approved land use.

(b) Prior to mine closure, a report shall be submitted to the Chief Inspector outlining the post-operational state of mine water deportment and post-operational monitoring.

(c) Water diversion routes shall be chosen to ensure channel and slope stability.

13. Roads

(a) All roads shall be reclaimed in accordance with land use objectives unless permanent access is required to be maintained.

(b) Individual roads will be exempted from the requirement for total reclamation under condition 13(a) if either:

(1) the Permittee can demonstrate that an agency of the Crown has explicitly accepted responsibility for the operation, maintenance and ultimate deactivation and abandonment of the road, or

(2) the Permittee can demonstrate that another private party has explicitly agreed to accept responsibility for the operation, maintenance and ultimate deactivation and abandonment of the road and has, in this regard, agreed to comply with all the terms and conditions, including bonding provisions, of this reclamation permit, and to comply with all other relevant provincial government (and federal government) regulatory requirements.

14. Disposal of Fuels and Toxic Chemicals

Fuels, chemicals or reagents which cannot be returned to the manufacturer/supplier are to be disposed of as directed by the Chief Inspector in compliance with municipal, regional, provincial and federal statutes.

15. Acid Generating Material

All potential acid generating material shall be placed in a manner which minimizes the production and release of acid mine drainage to a level that assures protection of environmental quality.

16. Monitoring

The Permittee shall undertake monitoring programs, as required by the Chief Inspector, to demonstrate that reclamation objectives including land use, productivity, water quality, and stability of structures are being achieved.

17. Temporary Shutdown

If this mine ceases operation for a period longer than one year, the Permittee shall either continue to carry out the conditions of the permit or apply for an amendment setting out a revised program for approval by the Chief Inspector.

18. Responsibility to Reclaim

Any reclamation that remains outstanding under the terms and conditions of Reclamation Permit CX-5-1, at the time of issuance of this permit, shall become the responsibility of the Permittee under the terms and conditions of this permit.

19. Permit Review

Based on reclamation results as described in the required annual reclamation report the Reclamation Advisory Committee may consider revisions to the permit. This provision shall not be construed as limiting the power of the Chief Inspector or the Ministry to amend this permit at anytime.

IN THE MATTER OF

THE *ENVIRONMENTAL ASSESSMENT ACT* (the "Act")

S.B.C. 1994, c. 35

AND

IN THE MATTER OF

AN APPLICATION BY MCGILLIVRAY MINING LTD. (the "Proponent")

FOR A PROJECT APPROVAL CERTIFICATE

TO DEVELOP THE MCGILLIVRAY COAL PROJECT

NEAR SPARWOOD, BRITISH COLUMBIA (the "Project")

PROJECT APPROVAL CERTIFICATE M96-04 (the "Certificate")

WHEREAS,

A. In December 1995, the Proponent submitted an application for a Project Approval Certificate under section 7 of the Act (the "Application"), for the development of the Project;

B. The Executive Director of the Environmental Assessment Office (the "Executive Director"), in accordance with section 8 of the Act, on December 28, 1995, accepted the Application for review;

C. A Project Committee (the "Committee") was established pursuant to section 9 of the Act, with representatives from local, provincial and federal governments, and First Nations, for the purpose of making recommendations to the Minister of Environment, Lands and Parks (the "Minister") and the Minister of Employment and Investment under section 19 of the Act;

D. The Committee reviewed the application documents listed in Schedule A to this Certificate to assess the potential environmental, economic, social, cultural, heritage and health effects of the Project and reported on the potential for significant effects in a report entitled "Report and Recommendations of the McGillivray Project Committee with respect to the Issuance of a Project Approval Certificate and the Reasons for those Recommendations, Pursuant to the *Environmental Assessment Act*, S.B.C. 1994, c. 35"

(the "Committee Report");

E. The Committee, as reported in the Committee Report, examined the application documents listed in Schedule A to this Certificate, and with the exception of the First Nation member, found that all issues relevant to the Project as identified by the Committee and public were adequately addressed, subject to the conditions in the Committee Report;

F. The Committee, except the First Nation member has recommended approval of the Application and issuance of this Certificate, and has given reasons for those recommendations;

G. The Executive Director, in accordance with section 19 of the Act has taken into account the application documents listed in Schedule A to this Certificate and the Committee Report and has referred the Application to the Minister and the Minister of Employment and Investment; and

H. The Minister and the Minister of Employment and Investment, in accordance with section 20 (a) of the Act, have considered the Application for this Certificate and the Committee Recommendations and accept those recommendations.

NOW THEREFORE,

The Minister, with the concurrence of the Minister of Employment and Investment, pursuant to section 20(b)(i) of the Act, hereby issues this Certificate to the Proponent, subject to the following Conditions:

CONDITIONS

1. The Proponent must cause the Project to be designed, located, constructed, operated and abandoned through reclamation, in accordance with the application documents listed in Schedule A to this Certificate.

2. Despite Condition 1 above, the Proponent may request from authorities required to give approvals, licenses, permits or other authorizations under other enactments, for variation of the design, construction, operation, and abandonment of the Project, in accordance with that authority's approval process, provided that the variation is not a project modification subject to the provisions of the *Environmental Assessment Reviewable Projects Regulation* (B.C. Reg. 276/95).

3. Where, in the reasonable opinion of the Minister, there is a conflict or inconsistency between any of the application documents listed in Schedule A, Condition 1 above shall be interpreted so that the contents of later dated documents listed in Schedule A to this Certificate, shall vary, rescind, repeal or supersede, as the case may be, the contents of earlier dated documents listed in Schedule A.

4. The Proponent must, in the reasonable opinion of the Minister, have substantially started the Project within five years of the date of issuance of this Certificate.

5. This Certificate is of no force and effect until validly executed by the Proponent and signed and dated by the Minister and the Minister of Employment and Investment.

6. The Proponent must, by July 31, 1996, submit to the satisfaction of the Senior Habitat Protection Biologist, Fish and Wildlife Section, Ministry of Environment, Lands and Parks, Cranbrook, a final report documenting the conclusions of the study activities for the Project area outlined in Appendix E (B) of the Application with respect to fisheries and wildlife.

7. The Proponent must, by July 31, 1996, submit to the satisfaction of the Head, Engineering Section, Water Management Section, Ministry of Environment, Lands and Parks, Nelson, the final report documenting the conclusions of the baseline study activities for the Project area outlined in Appendix E (B) of the Application, with respect to:

- completion of surface water sampling for the months of June and July 1996 from Michel Creek; and

- regional analysis of mean daily and peak instantaneous flows for Michel Creek.

8. This Certificate does not constitute a permit, licence, approval or any other authority required under any other enactment including, but not limited to, the *Mines Act*, S.B.C. 1989, c. 56, the *Waste Management Act*, S.B.C. 1982, c. 41 and the *Water Act*, R.S.B.C. 1979, c. 429.

9. The Proponent must comply with all applicable orders, directions and conditions, and obtain and comply with all applicable tenures, licenses, regulations, approvals, standards and permits which may include or result from all provincial enactments, and are not necessarily limited to, the following enactments which are listed for information only:

a) *Coal Act,* R.S.B.C. 1979, c. 51;

b) *Fisheries Act*, R.S.B.C. 1979, c. 137, for a licence to collect fish samples;

c) *Heritage Conservation Act*, R.S.B.C. 1979, c. 165, to alter a provincial heritage or archaeological site;

d) *Highway Act*, R.S.B.C. 1979, c. 167, for joining industrial roads to public highways;

e) *Mines Act*, S.B.C. 1989, c. 56, and the Health, Safety and Reclamation Code for a program for the protection and reclamation of the land and watercourses affected by a mine as well as mine plans, worker health and safety and mechanical and/or electrical

requirements;

f) *Motor Vehicle Act*, R.S.B.C. 1979, c. 288, for use of public roads;

g) *Municipal Act*, R.S.B.C. 1979, c. 290, for conformity to municipal and regional by-laws;

h) *Pesticide Control Act*, R.S.B.C. 1979, c. 322, for a permit to use pesticides;

i) *Waste Management Act*, S.B.C. 1982, c. 41, for emissions to the air, discharge of effluent, the storage and handling of industrial waste and solid refuse;

j) *Water Act*, R.S.B.C. 1979, c. 429, for changes to watercourses, mine site drainage, dam construction and water use.

B. SUSPENSION AND CANCELLATION OF CERTIFICATE

1. This Certificate may be subject to cancellation, suspension in whole or in part, amendment, or the attachment of new Conditions, for any of the following reasons:

a) the Project is not, in the reasonable opinion of the Minister, substantially started within 5 years of the date of issuance of this Certificate;

b) the Minister has reasonable and probable grounds to believe that the Proponent is in default of:

i) an Order of the Supreme Court under section 69(2), 80 or 82 of the Act,

ii) an Order of the Minister made under section 68 or 70 of the Act, or

iii) one or more Conditions of this Certificate;

c) the Proponent, or its officers or employees, when acting on behalf of the Proponent, have been convicted of an offence under the Act, with respect to the Project;

d) the Proponent, whether legally, beneficially or otherwise, except in connection with granting security to Project lenders, disposes of:

i) this Certificate, or any right, title, or interest conferred by this Certificate, or

ii) the Project,

without the consent of the Minister and such consent will not be unreasonably withheld;

e) an Order is made, or a resolution is passed, for the winding up, or dissolution of the Proponent, or the Proponent is in receivership or bankruptcy proceedings.

The Conditions of this Certificate are agreed to by the Proponent

this 6th day of July, 1996.

_____ { C/S }

Representative of

McGillivray Mining Ltd.

_____

Position

_____

Representatives of McGillivray Mining Ltd.

_____

Position

_____

_____

Representatives of McGillivray Mining Ltd.

_____

Position

_____

Minister of Employment
and Investment

Minister of Environment,
Lands and Parks

Issued this 24th day of July , 1996.

SCHEDULE A

- McGillivray Mining Ltd., November 30, 1995, Application for a Project Approval Certificate and Supporting Documentation:

Appendix A: Correspondence with Elkview Coal Corporation, March 1995

Appendix B: Correspondence with Crestbrook Forest Industries, April 1995

Appendix C: Resumes of Corporate Principles

Appendix D: Licensed Land Users

Appendix E (A): Environmental Baseline Study (Requirements from the Ministry of Environment, Lands and Parks, May 15, 1995))

Appendix E (B): Environmental Baseline Interim Reports:

- Baseline Fish and Wildlife Studies Interim Report, October, 1995. Prepared by Piteau Engineering Ltd. in conjunction with Townsend and Associates Environmental Specialists Ltd.

- Water Quality and Surface Water Hydrology Interim Report, November, 1995. Prepared by Piteau Engineering Ltd.

Appendix F: Preliminary Geotechnical Assessment of Open Pit Slopes for the McGillivray Mine, November, 1995. Prepared by Piteau Associates Engineering Ltd.

Appendix G: Geotechnical Assessment of Proposed Waste Dump, November 1995. Prepared by Piteau Engineering Ltd. and Appendix 1: Test Pit Logs. Compiled by Komex International Ltd.

Appendix H: Proposed Waste Rock Dump Sites - Forest Productivity Analysis, November 1995.

Prepared by Kimmur Forestry Consultants Ltd.

Appendix I: Results Of Archaeological Resources Impact Assessment Of The Proposed McGillivray Loop Coal Mine, November 1995. Prepared by Wayne Choquette, Ktunanxa/Kinbasket Tribal Council.

- December 13, 1995: Letter from Gerry Reeves (McGillivray Mining Ltd.) to Norm Ringstad (EAO) re: Kimmur Forestry Consultants Ltd.'s Addendum to Appendix H of the Application.
- February 1, 1996: Letter from Gerry Reeves (McGillivray Mining Ltd.) to Norm Ringstad (EAO) re: EAO Request of January 28, 1996 for a Revision and Expanded Discussion of Public and First Nations Consultation Program to Date and In the Future.
- March 11, 1996: Letter from Gerry Reeves (McGillivray Mining Ltd.) to Mark Strosher (MELP) re: Fax of March 6, 1996 Providing Comments on the Application.
- March 14, 1996: Letter from Gerry Reeves (McGillivray Mining Ltd.) to Mike Walls (BC Gas) re: Letter of February 28, 1996 and Two Points of Concern.
- March 28, 1996: Letter from Gerry Reeves (McGillivray Mining Ltd.) to Mike Ondrus (ANG) re: ANG Requests concerning the McGillivray Mining Ltd. Coal Project as Proposed in the Application.
- April 29, 1996: Letter from Gerry Reeves (McGillivray Mining Ltd.) to Norm Ringstad (EAO) re: McGillivray Coal Project, Proponent's Intent and Commitment.
- May 2, 1996: Fax from Gerry Reeves (McGillivray Mining Ltd.) to Norm Ringstad (EAO) re: March 22, 1996 Letter from Hugh Taylor.
- June 12, 1996: Letter from Bob Morris (Morris Geological Co. Ltd.) to Ms. Denise Taylor, KKTC Confirming Commitment to Advise KKTC of Potential Contract Work.
- June 13, 1996: Fax from Murray Fitch of Piteau Engineering Ltd. to Norm Ringstad of the EAO re: Brief summary of recent McGillivray mine project data

Appendix 2

Red and Blue Listed Species and List of Birds

English name (*Scientific name*)	BC Status (Red/Blue)	SARA	COSEWIC	General Status Canada	Name Category
Hairy-necked Tiger Beetle (*Cicindela hirticollis*)	Blue			4 - Secure (2005)	Invertebrate Animal
Mead's Sulphur (*Colias meadii*)	Blue			6 - Not Assessed (2000)	Invertebrate Animal
Pelidne Sulphur (*Colias pelidne*)	Blue			6 - Not Assessed (2000)	Invertebrate Animal
Coeur d'Alene Oregonian (*Cryptomastix mullani*)	Blue				Invertebrate Animal
Eastern Tailed Blue (*Cupido comyntas*)	Blue			6 - Not Assessed (2000)	Invertebrate Animal
Monarch *(Danaus plexippus*)	Blue	1-SC (Jun 2003)	SC (Apr 2010)	6 - Not Assessed (2000)	Invertebrate Animal
Silver-spotted Skipper (*Epargyreus clarus*)	Blue			6 - Not Assessed (2000)	Invertebrate Animal
Silver-spotted Skipper, clarus ssp. (*Epargyreus clarus clarus*)	Blue				Invertebrate Animal
Gillette's Checkerspot (*Euphydryas gillettii*)	Red			6 - Not Assessed (2000)	Invertebrate Animal
Variegated Fritillary (*Euptoieta claudia*)	Blue			6 - Not Assessed (2000)	Invertebrate Animal
Prairie Fossaria (*Galba bulimoides*)	Blue				Invertebrate Animal
Dusky Fossaria (*Galba dalli*)	Blue				Invertebrate Animal
Star Gyro (*Gyraulus crista*)	Blue				Invertebrate Animal
Pale Jumping-slug (*Hemphillia camelus*)	Blue				Invertebrate Animal
Nevada Skipper (*Hesperia nevada*)	Blue			6 - Not Assessed (2000)	Invertebrate Animal
Dione Copper (*Lycaena dione*)	Red			6 - Not Assessed (2000)	Invertebrate Animal
Bronze Copper (*Lycaena hyllus*)	Blue			6 - Not Assessed (2000)	Invertebrate Animal
Magnum Mantleslug (*Magnipelta mycophaga*)	Blue		SC (May 2012)		Invertebrate Animal
Jutta Arctic, chermocki ssp. (*Oeneis jutta chermocki*)	Blue				Invertebrate Animal
Rocky Mountainsnail (*Oreohelix strigosa*)	Blue				Invertebrate Animal
Subalpine Mountainsnail (*Oreohelix subrudis*)	Blue				Invertebrate Animal
Old World Swallowtail, dodi ssp. (*Papilio machaon dod*i)	Red				Invertebrate Animal
Tawny-edged Skipper, themistocles ssp. (*Polites themistocles themistocles*)	Blue				Invertebrate Animal
Black-footed Tightcoil (*Pristiloma chersinella*)	Blue				Invertebrate Animal
Checkered Skipper (*Pyrgus communis*)	Blue			6 - Not Assessed (2000)	Invertebrate Animal
Aphrodite Fritillary, manitoba ssp. (*Speyeria aphrodite manitoba*)	Blue				Invertebrate Animal
Aphrodite Fritillary, *whitehousei* ssp. (*Speyeria aphrodite whitehousei*)	Blue				Invertebrate Animal
Mormon Fritillary, *eurynome* ssp. (*Speyeria mormonia eurynome*)	Red				Invertebrate Animal
Striated Fingernailclam (*Sphaerium striatinum*)	Blue				Invertebrate Animal
Widelip Pondsnail (*Stagnicola traski*)	Blue				Invertebrate Animal
Glossy Valvata (*Valvata humeralis*)	Red				Invertebrate Animal

English name (*Scientific name*)	BC Status (Red/Blue)	SARA	COSEWIC	General Status Canada	Name Category
Threeridge Valvata (*Valvata tricarinata*)	Red				Invertebrate Animal
(*Atrichum tenellum*)	Red				Nonvascular Plant
(*Bryobrittonia longipes*)	Blue				Nonvascular Plant
(*Bryum uliginosum*)	Blue				Nonvascular Plant
(*Didymodon subandreaeoides*)	Red				Nonvascular Plant
(*Encalypta spathulata*)	Blue				Nonvascular Plant
(*Hygrohypnum alpinum*)	Blue				Nonvascular Plant
(*Mnium arizonicum*)	Blue				Nonvascular Plant
(*Orthotrichum pallens*)	Blue				Nonvascular Plant
(*Physcomitrium pyriforme*)	Blue				Nonvascular Plant
(*Pohlia longicollis*)	Red				Nonvascular Plant
(*Racomitrium pygmaeum*)	Blue				Nonvascular Plant
(*Schistidium atrichum*)	Red				Nonvascular Plant
(*Schistidium robustum*)	Blue				Nonvascular Plant
sweet-flowered fairy-candelabra (*Androsace chamaejasme* ssp. *lehmanniana*)	Blue				Vascular Plant
Canada anemone (*Anemone canadensis*)	Blue			4 - Secure (2010)	Vascular Plant
low sandwort (*Arenaria longipedunculata*)	Blue			3 - Sensitive (2010)	Vascular Plant
ground plum (*Astragalus crassicarpus*)	Red			4 - Secure (2010)	Vascular Plant
Drummond's milk-vetch (*Astragalus drummondii*)	Red			4 - Secure (2010)	Vascular Plant
bent-flowered milk-vetch (*Astragalus vexilliflexus* var. *vexilliflexus*)	Blue				Vascular Plant
upswept moonwort (*Botrychium ascendens*)	Blue			2 - May be at risk (2010)	Vascular Plant
dainty moonwort (*Botrychium crenulatum*)	Blue			3 - Sensitive (2010)	Vascular Plant
least moonwort (*Botrychium simplex* var. *compositum*)	Blue				Vascular Plant
spoon-shaped moonwort (*Botrychium spathulatum*)	Blue			3 - Sensitive (2010)	Vascular Plant
large-flowered brickellia (*Brickellia grandiflora*)	Red		NAR (May 1996)	3 - Sensitive (2010)	Vascular Plant
elk sedge (*Carex geyeri*)	Blue			4 - Secure (2010)	Vascular Plant
lakeshore sedge (*Carex lenticularis*)	Blue				Vascular Plant
Payson's sedge (*Carex paysonis*)	Red			3 - Sensitive (2010)	Vascular Plant
Cusick's paintbrush (*Castilleja cusickii*)	Red			3 - Sensitive (2010)	Vascular Plant
elk thistle (*Cirsium scariosum* var. *scariosum*)	Red			2 - May be at risk (2005)	Vascular Plant
obscure cryptantha (*Cryptantha ambigua*)	Blue			3 - Sensitive (2010)	Vascular Plant

English name (*Scientific name*)	BC Status (Red/Blue)	SARA	COSEWIC	General Status Canada	Name Category
Montana larkspur (*Delphinium bicolor* ssp. *bicolor*)	Blue				Vascular Plant
Sutherland's larkspur (*Delphinium sutherlandii*)	Blue			3 - Sensitive (2010)	Vascular Plant
Nuttall's draba (*Draba densifolia*)	Blue			3 - Sensitive (2010)	Vascular Plant
elliptic spike-rush (*Eleocharis elliptica*)	Blue			4 - Secure (2010)	Vascular Plant
beaked spike-rush (*Eleocharis rostellata*)	Blue			3 - Sensitive (2010)	Vascular Plant
smooth willowherb (*Epilobium glaberrimum* ssp. *fastigiatum*)	Blue				Vascular Plant
Hall's willowherb (*Epilobium halleanum*)	Blue			3 - Sensitive (2010)	Vascular Plant
Rocky Mountain willowherb (*Epilobium saximontanum*)	Red			2 - May be at risk (2010)	Vascular Plant
androsace buckwheat (*Eriogonum androsaceum*)	Red			4 - Secure (2010)	Vascular Plant
short-flowered monkey-flower (*Erythranthe breviflora*)	Blue			2 - May be at risk (2010)	Vascular Plant
little fescue (*Festuca minutiflora*)	Blue			3 - Sensitive (2010)	Vascular Plant
scarlet gaura (*Gaura coccinea*)	Red			4 - Secure (2010)	Vascular Plant
mountain bog gentian (*Gentiana calycosa*)	Red			4 - Secure (2010)	Vascular Plant
western St. John's-wort (*Hypericum scouleri* ssp. *nortoniae*)	Blue				Vascular Plant
Howell's quillwort (*Isoetes howellii*)	Blue			2 - May be at risk (2010)	Vascular Plant
northern linanthus (*Leptosiphon septentrionalis*)	Blue			3 - Sensitive (2010)	Vascular Plant
three-leaved lewisia (*Lewisia triphylla*)	Blue			3 - Sensitive (2010)	Vascular Plant
Sandberg's desert-parsley (*Lomatium sandbergii*)	Blue			4 - Secure (2010)	Vascular Plant
nine-leaved desert-parsley (*Lomatium triternatum* ssp. *platycarpum*)	Red			2 - May be at risk (2010)	Vascular Plant
Montana lupine (*Lupinus arbustus* ssp. *pseudoparviflorus*)	Red				Vascular Plant
Suksdorf's lupine (*Lupinus bingenensis* var. *subsaccatus*)	Red				Vascular Plant
sulphur lupine (*Lupinus sulphureus*)	Red			3 - Sensitive (2010)	Vascular Plant
purple oniongrass (*Melica spectabilis*)	Blue			3 - Sensitive (2010)	Vascular Plant
high alpine butterweed (*Packera contermina*)	Blue			4 - Secure (2010)	Vascular Plant
dwarf poppy (*Papaver pygmaeum*)	Red			3 - Sensitive (2010)	Vascular Plant
Gastony's cliff-brake (*Pellaea gastonyi*)	Blue			3 - Sensitive (2010)	Vascular Plant
shining penstemon (*Penstemon nitidus* var. *nitidus*)	Red				Vascular Plant
Lyall's phacelia (*Phacelia lyallii*)	Blue			3 - Sensitive (2010)	Vascular Plant
common twinpod (*Physaria didymocarpa* ssp. *didymocarpa*)	Blue				Vascular Plant
whitebark pine (*Pinus albicaulis*)	Blue	1-E (Jul 2012)	E (Apr 2010)	3 - Sensitive (2010)	Vascular Plant
limber pine (*Pinus flexilis*)	Red		E (Nov 2014)	3 - Sensitive (2010)	Vascular Plant
harsh popcornflower (*Plagiobothrys hispidulus*)	Red				Vascular Plant

English name (*Scientific name*)	BC Status (Red/Blue)	SARA	COSEWIC	General Status Canada	Name Category
arctic plantain (*Plantago canescens*)	Red			4 - Secure (2010)	Vascular Plant
alkali plantain (*Plantago eriopoda*)	Blue			4 - Secure (2010)	Vascular Plant
elegant Jacob's-ladder (*Polemonium elegans*)	Blue			3 - Sensitive (2010)	Vascular Plant
Austin's knotweed (*Polygonum austiniae*)	Red			3 - Sensitive (2010)	Vascular Plant
Engelmann's knotweed (*Polygonum engelmannii*)	Red			3 - Sensitive (2010)	Vascular Plant
diverse-leaved cinquefoil (*Potentilla diversifolia* var. *perdissecta*)	Blue				Vascular Plant
five-leaved cinquefoil (*Potentilla nivea* var. *pentaphylla*)	Blue				Vascular Plant
sheep cinquefoil (*Potentilla ovina* var. *ovina*)	Blue				Vascular Plant
arrow-leaved rattlesnake-root (*Prenanthes sagittata*)	Red			2 - May be at risk (2010)	Vascular Plant
Booth's willow (*Salix boothii*)	Blue			4 - Secure (2010)	Vascular Plant
Standley's selaginella (*Selaginella standleyi*)	Red			3 - Sensitive (2010)	Vascular Plant
sweet-marsh butterweed (*Senecio hydrophiloides*)	Red			3 - Sensitive (2010)	Vascular Plant
large-headed groundsel (*Senecio megacephalus*)	Blue			4 - Secure (2010)	Vascular Plant
Drummond's campion (*Silene drummondii* var. *drummondii*)	Blue				Vascular Plant
scarlet globe-mallow (*Sphaeralcea coccinea*)	Red			4 - Secure (2010)	Vascular Plant
blunt-sepaled starwort (*Stellaria obtusa*)	Blue			3 - Sensitive (2010)	Vascular Plant
sheathing pondweed (*Stuckenia vaginata*)	Blue			4 - Secure (2010)	Vascular Plant
Wyoming kitten-tails (*Synthyris wyomingensis*)	Blue			4 - Secure (2010)	Vascular Plant
purple meadowrue (*Thalictrum dasycarpum*)	Red			4 - Secure (2010)	Vascular Plant
prairie golden bean (*Thermopsis rhombifolia*)	Red			4 - Secure (2010)	Vascular Plant
Parry's townsendia (*Townsendia parryi*)	Red			4 - Secure (2010)	Vascular Plant
Wolf's trisetum (*Trisetum wolfii*)	Red			3 - Sensitive (2010)	Vascular Plant
pink water speedwell (*Veronica catenata*)	Blue				Vascular Plant
Northern Goshawk, *laingi* ssp. (*Accipiter gentilis* laingi*)*	Red	1-T (Jun 2003)	T (Apr 2013)		Vertebrate Animal
Western Toad (*Anaxyrus boreas*)	Blue	1-SC (Jan 2005)	SC (Nov 2012)	3 - Sensitive (2005)	Vertebrate Animal
Great Blue Heron, *herodias* ssp. (*Ardea herodias herodias*)	Blue				Vertebrate Animal
Rocky Mountain Tailed Frog (*Ascaphus montanus*)	Red	1-E (Jun 2003)	T (Nov 2013)	1 - At Risk (2005)	Vertebrate Animal
Short-eared Owl (*Asio flammeus*)	Blue	1-SC (Jul 2012)	SC (Mar 2008)	3 - Sensitive (2005)	Vertebrate Animal
American Bittern (*Botaurus lentiginosus*)	Blue			4 - Secure (2005)	Vertebrate Animal
Swainson's Hawk (*Buteo swainsoni*)	Red			4 - Secure (2005)	Vertebrate Animal
Common Nighthawk (*Chordeiles minor*)	Yellow	1-T (Feb 2010)	T (Apr 2007)	4 - Secure (2005)	Vertebrate Animal
Olive-sided Flycatcher (*Contopus cooperi*)	Blue	1-T (Feb 2010)	T (Nov 2007)	4 - Secure (2005)	Vertebrate Animal

English name (*Scientific name*)	BC Status (Red/Blue)	SARA	COSEWIC	General Status Canada	Name Category
Black Swift *(Cypseloides niger)*	Blue		E (May 2015)	4 - Secure (2005)	Vertebrate Animal
Rusty Blackbird (*Euphagus carolinus*)	Blue	1-SC (Mar 2009)	SC (Apr 2006)	3 - Sensitive (2005)	Vertebrate Animal
Prairie Falcon (Falco mexicanus)	Red		NAR (May 1996)	3 - Sensitive (2005)	Vertebrate Animal
Peregrine Falcon (*Falco peregrinus*)	No Status		SC (Apr 2007)	4 - Secure (2005)	Vertebrate Animal
Peregrine Falcon, *anatum* ssp. (*Falco peregrinus anatum*)	Red	1-SC (Jun 2012)	SC (Apr 2007)		Vertebrate Animal
Northern Pygmy-Owl, *swarthi* ssp. (*Glaucidium gnoma swarthi*)	Blue				Vertebrate Animal
Sandhill Crane (*Grus canadensis*)	Yellow		NAR (May 1979)	4 - Secure (2005)	Vertebrate Animal
Wolverine (*Gulo gulo*)	No Status		SC (May 2014)	3 - Sensitive (2005)	Vertebrate Animal
Wolverine, *luscus* ssp. (*Gulo gulo luscus*)	Blue		SC (May 2014)		Vertebrate Animal
Barn Swallow (*Hirundo rustica*)	Blue		T (May 2011)	4 - Secure (2005)	Vertebrate Animal
White-tailed Ptarmigan, *saxatilis* ssp. (*Lagopus leucura saxatilis*)	Blue				Vertebrate Animal
Western Screech-Owl, *macfarlanei* ssp. (*Megascops kennicottii macfarlanei*)	Red	1-E (Jan 2005)	T (May 2012)		Vertebrate Animal
Southern Red-backed Vole, *galei* ssp. (*Myodes gapperi galei*)	Blue				Vertebrate Animal
Little Brown Myotis (*Myotis lucifugus*)	Yellow	1-E (Dec 2014)	E (Nov 2013)	4 - Secure (2005)	Vertebrate Animal
Least Chipmunk, *oreocetes* ssp. (*Neotamias minimus oreocetes*)	Blue				Vertebrate Animal
Least Chipmunk, *selkirki* ssp. (*Neotamias minimus selkirki*)	Red				Vertebrate Animal
Red-tailed Chipmunk, *ruficaudus* ssp. (*Neotamias ruficaudus ruficaudus*)	Red				Vertebrate Animal
Cutthroat Trout, *lewisi* ssp. (*Oncorhynchus clarkii lewisi*)	Blue	1-SC (Feb 2010)	SC (Nov 2006)		Vertebrate Animal
Mountain Goat (*Oreamnos americanus*)	Blue			4 - Secure (2005)	Vertebrate Animal
Bighorn Sheep (*Ovis canadensis*)	Blue			4 - Secure (2005)	Vertebrate Animal
Fisher (*Pekania pennanti*)	Blue			4 - Secure (2005)	Vertebrate Animal
Hairy Woodpecker, *picoideus* ssp. (*Picoides villosus picoideus*)	Blue				Vertebrate Animal
Pine Grosbeak, *carlottae* ssp. (*Pinicola enucleator carlottae*)	Blue				Vertebrate Animal
Eared Grebe (*Podiceps nigricollis*)	Blue			4 - Secure (2005)	Vertebrate Animal
Vesper Sparrow, *affinis* ssp. (*Pooecetes gramineus affinis*)	Red	1-E (Dec 2007)	E (Apr 2006)		Vertebrate Animal
Caribou (*Rangifer tarandus*)	No Status			4 - Secure (2005)	Vertebrate Animal
Caribou (southern mountain population) (*Rangifer tarandus* pop. 1)	Red	1-T (Jun 2003)	E (May 2014)		Vertebrate Animal
American Avocet (*Recurvirostra americana*)	Blue			4 - Secure (2005)	Vertebrate Animal
Bull Trout (*Salvelinus confluentus*)	Blue		SC (Nov 2012)	3 - Sensitive (2005)	Vertebrate Animal
Western Bluebird (Georgia Depression population) (*Sialia mexicana* pop. 1)	Red				Vertebrate Animal

English name (*Scientific name*)	BC Status (Red/Blue)	SARA	COSEWIC	General Status Canada	Name Category
Williamson's Sapsucker (*Sphyrapicus thyroideus*)	Blue	1-E (Aug 2006)	E (May 2005)	1 - At Risk (2005)	Vertebrate Animal
Williamson's Sapsucker, *nataliae* ssp. (*Sphyrapicus thyroideus nataliae*)	No Status	1-E (Aug 2006)	E (May 2005)		Vertebrate Animal
Brewer's Sparrow, *breweri* ssp. (*Spizella breweri breweri*)	Red				Vertebrate Animal
American Badger (*Taxidea taxus*)	Red	1-E (Jun 2003)	E (Nov 2012)	3 - Sensitive (2005)	Vertebrate Animal
Grizzly Bear (*Ursus arctos*)	Blue		SC (May 2002)	3 - Sensitive (2005)	Vertebrate Animal

Birds Identified on the CanAus Site. (Current to June 2015)

English Name	Scientific Name
ANSERIFORMES: Anatidae	
Canada Goose	*Branta canadensis*
Bufflehead	*Bucephala albeola*
Barrow's Goldeneye	*Bucephala islandica*
Common Merganser	*Mergus serrator*
Harlequin Duck	*Histrionicus histrionicus*
Mallard	*Anas platyrhynchos*
Green-winged teal	*Anas crecca*
GALLIFORMES: Phasianidae	
Ruffed Grouse	*Bonasa umbellus*
Dusky Grouse	*Dendragapus obscurus*
Spruce Grouse	*Falcipennis canadensis*
CAPRIMULGIFORMES: Trochilidae	
Rufous Hummingbird	*Selasphorus rufus*
GRUIFORMES: Rallidae	
Sora	*Porzana carolina*
PELECANIFORMES: Ardeidae	
Great Blue Heron	*Ardea herodias*
CHARADRIIFORMES: Charadriidae	
Killdeer	*Charadrius vociferus*
CHARADRIIFORMES: Scolopacidae	
Common Snipe	*Gallinago gallinago*
Spotted Sandpiper	*Actitis macularius*
Black-necked Stilt	Himantopus mexicanus
ACCIPITRIFORMES: Cathartidae	
Turkey Vulture	*Cathartes aura*
ACCIPITRIFORMES: Pandionidae	
Osprey	*Pandion haliaetus*
ACCIPITRIFORMES: Accipitridae	
Golden Eagle	*Aquila chrysaetos*
Sharp-shinned Hawk	*Accipiter striatus*
Northern Goshawk	*Accipiter gentilis*
Red-tailed Hawk	*Buteo jamaicensis*

English Name	Scientific Name
STRIGIFORMES: Strigidae	
Northern Saw-whet Owl	*Aegolius acadicus*
Barred Owl	*Strix varia*
Great Horned Owl	*Bubo virginianus*
PICIFORMES: Picidae	
Pileated Woodpecker	*Dryocopus pileatus*
Northern Flicker	*Colaptes auratus*
Red-naped Sapsucker	*Sphyrapicus nuchalis*
Hairy Woodpecker	*Picoides villosus*
American Three-toed Woodpecker	*Picoides dorsalis*
CORACIIFORMES: Alcedinidae	
Belted Kingfisher	*Megaceryle alcyon*
PASSERIFORMES: Tyrannidae	
Western Kingbird	*Tyrannus verticalis*
Say's Phoebe	*Sayornis saya*
Willow Flycatcher	*Empidonax traillii*
Least Flycatcher	*Empidonax minimus*
Dusky Flycatcher	*Empidonax oberholseri*
Pacific-slope Flycatcher	*Empidonax difficilis*
Olive-sided Flycatcher	*Contopus cooperi*
Western Wood Pewee	*Contopus sordidulus*
PASSERIFORMES: Vireonidae	
Cassin's Vireo	*Vireo cassinii*
Warbling Vireo	*Vireo gilvus*
Philadelphia Vireo	*Vireo philadelphicus*
Red-eyed Vireo	*Vireo olivaceus*
PASSERIFORMES: Corvidae	
Gray Jay	*Perisoreus canadensis*
Clark's Nutcracker	*Nucifraga columbiana*
Common Raven	*Corvus corax*
Steller's Jay	*Cyanocitta*
PASSERIFORMES: Fringillidae	
Evening Grosbeak	*Hesperiphona vespertina*
Pine Grosbeak	*Pinicola enucleator*
Pine Siskin	*Spinus pinus*

English Name	Scientific Name
PASSERIFORMES: Passerellidae	
Chipping Sparrow	*Spizella passerina*
Dark-eyed Junco	*Junco hyemalis*
White-crowned Sparrow	*Zonotrichia leucophrys*
Fox Sparrow	*Passerella iliaca*
Song Sparrow	*Melospiza melodia*
Lincoln's Sparrow	*Melospiza lincolnii*
PASSERIFORMES: Parulidae	
Northern Waterthrush	*Parkesia noveboracensis*
Orange-crowned Warbler	*Leiothlypis celata*
MacGillivray's Warbler	*Geothlypis tolmiei*
Yellow Warbler	*Setophaga petechia*
Yellow-rumped Warbler	*Setophaga coronata*
Townsend's Warbler	*Setophaga townsendi*
Wilson's Warbler	*Cardellina pusilla*
PASSERIFORMES: Icteridae	
Red-winged Blackbird	*Agelaius phoeniceus*
Brown-headed Cowbird	*Molothrus ater*
Common Grackle	*Quiscalus quiscula*
PASSERIFORMES: Cardinalidae	
Black-headed Grosbeak	*Pheucticus melanocephalus*
Lazuli Bunting	*Passerina amoena*
Western Tanager	*Piranga ludoviciana*
PASSERIFORMES: Paridae	
Black-capped Chickadee	Poecile atricapillus
Mountain Chickadee	Poecile gambeli
PASSERIFORMES: Hirundinidae	
Cliff Swallow	*Petrochelidon pyrrhonota*
Tree Swallow	*Tachycineta bicolor*
PASSERIFORMES: Regulidae	
Ruby-crowned Kinglet	*Regulus calendula*
Golden-crowned Kinglet	*Regulus satrapa*
PASSERIFORMES: Bombycillidae	
Bohemian Waxwing	*Bombycilla garrulus*
PASSERIFORMES: Certhiidae	
Brown Creeper	*Certhia americana*

English Name	Scientific Name
PASSERIFORMES: Sittidae	
Red-breasted Nuthatch	*Sitta canadensis*
White-breasted Nuthatch	*Sitta carolinensis*
PASSERIFORMES: Troglodytidae	
Pacific Wren	*Troglodytes pacificus*
House Wren	*Troglodytes aedon*
PASSERIFORMES: Sturnidae	
Common Starling	*Sturnus vulgaris*
PASSERIFORMES: Cinclidae	
American Dipper	*Cinclus mexicanus*
PASSERIFORMES: Turdidae	
Mountain Bluebird	*Sialia currucoides*
Townsend's Solitaire	*Myadestes townsendi*
Varied Thrush	*Ixoreus naevius*
Swainson's Thrush	*Catharus ustulatus*
Hermit Thrush	*Catharus guttatus*
American Robin	*Turdus migratorius*

Appendix 3

Record of Consultation

CanAus Consultation and Engagement Record – Government and Stakeholders (Pre-Submission)

Date	Method of Communication/ Activity	Proponent Contact	Stakeholder Contact	Purpose	Notes/Follow-up
June/2013	Meeting	John Pumphrey	Bill Bennett, MEM	Presentation of CanAus corporate goals and objectives Discussion of potential challenges or barriers to project	Introduction Update on project
11/14/2013	Meeting	John Pumphrey	Fernie Chamber of Commerce	Presentation of CanAus corporate goals and objectives Review of project plans Review CanAus goals for investment into community	General questions answered, no concerns at this time
03/11/2014	Meeting	John Pumphrey	Glen Hendrickson and Bruce Hupman (MEM)	Review of project plans Discussion of past or existing permits in the project area Discussion of past or existing EAs in the project area Discussion of potential options for permitting	Questions answered to satisfaction
04/29-30/2014	Meeting	John Pumphrey	Mayors Lois Halko, Mary Giuliano, and Dean McKerracher	Review of project goals Discussion of implications of community plans for CanAus	Questions answered at this time
05/29/2014	Meeting	John Pumphrey	Kim Bellefontaine MEM	Presentation of 2014 Drilling Plans Presentation of outline for dates and milestones for project description Presentation of CanAus groups and environmental teams	Necessity for thorough geochemistry program, concerns re: water quality
07/12/2014	Meeting	John Pumphrey and David Thompson	Janet Randal MEM Geology Group	Discussion of 2014 Drilling plans and early results Presentation of road maps for project area Site visit of the project area	Questions answered to satisfaction. Chance to see local geology.
07/16/2014	Meeting	John Pumphrey and Mark Vendrig	Jerry Hamlin, Greg Ashcroft, and Jennifer Anthony EAO	Discussion of new personnel within EAO Discussion of compliance with exploration, drilling and road development Site inspection of project area	Input gained on regulatory process
08/22/2014	Meeting	John Pumphrey and Mark Vendrig	Glen Hendrickson and Gerald Crawford MEM	Discussion of compliance with exploration, drilling and road development Site inspection of project area	Follow-up processes complete
09/19/2014	Meeting	John Pumphrey and Mark Vendrig	Shelly Reid CP Rail	Presentation and discussion of stages of project Discussion of CP needs of CanAus for rail infrastructure Discussion on the capacity of existing lines	Planning work to be undertaken

Date	Method of Communication/ Activity	Proponent Contact	Stakeholder Contact	Purpose	Notes/Follow-up
10/21/2014	Meeting	John Pumphrey	Mayor Lois Halko and District of Sparwood Council	Presentation of CanAus corporate goals and objectives Review of project plans Review and discussion of CanAus goals for investment into community	Questions answered at this time Commitment to ongoing updates
10/22/2014	Meeting	John Pumphrey	Mayor Dean McKerracher and District of Elkford council, Mayor Mary Giuliano	Presentation of CanAus corporate goals and objectives Review of project plans Review and discussion of CanAus goals for investment into community	Questions answered at this time Commitment to ongoing updates
11/17/2014	Meeting	John Pumphrey	Sparwood Rod and Gun Club	Presentation of project update Discussion of implications of project for access to hunting and other recreational areas Discussion of how CanAus will manage water quality concerns Discussion of potential implications to wildlife in the project area	Questions answered at this time Commitment to ongoing updates
11/20/2014	Meeting	John Pumphrey and Mark Vendrig	Greg Ashcroft, EAO	Discussion of current stages of project Discussion of timelines for submission of project description Discussion of project description table of contents Confirm document details	Review of regulatory process
11/20/2014	Meeting	John Pumphrey and Mark Vendrig	Kim Bellefontaine, MEM	Discussion of timelines for submission of project description Discussion of project description table of contents Confirm document details Discussion of implications of Elk Valley Water Quality Plan for project	Ongoing work to be completed re: water quality
11/27/2014	Meeting	John Pumphrey and Mark Vendrig	Regina Wright, Averil Lamont, Robyn Mclean, CEAA	Discussion of daily production for project Discussion of timelines for submission of project description	Review of regulatory process
1/27/2015	Meeting	John Pumphrey, Mark Vendrig, and Stella Swanson	Lori Halls, David Morel, Peter Robb, Jennifer McGuire, Kathy Eichenberger, Michelle Carr, MEM, MoE, EAO	Presentation of the Project Description Identify potential constraints for the CanAus project Implications of the Elk Valley Water Quality Plan for CanAus Implications of the Elk Valley CEMF for CanAus	Discussion re: water quality issues – ongoing work to be completed

Date	Method of Communication/ Activity	Proponent Contact	Stakeholder Contact	Purpose	Notes/Follow-up
2/10/2015	Meeting	John Pumphrey, Stella Swanson, Jason Swanson	Mayor Dean McKerracher and District of Elkford Council	Presentation of the Project Description Identify potential constraints for the CanAus project Identify any concerns or specific items for CanAus to consider moving forward Answer any questions	Questions answered at this time Commitment to ongoing updates
2/16/2015	Meeting	John Pumphrey, Mark Vendrig, Stella Swanson, Jason Swanson	Mayor Mary Guliano, Mayor Cal McDougall, and District of Sparwood and City of Fernie council	Presentation of the Project Description Identify potential constraints for the CanAus project Identify any concerns or specific items for CanAus to consider moving forward Answer any questions	Questions answered at this time Commitment to ongoing updates
2/16/2015	Meeting	Mark Vendrig, Stella Swanson, Jason Swanson	Ryland Nelson and John Bergenske – Wildsight	Presentation of the Project Description Identify potential constraints for the CanAus project Identify any concerns or specific items for CanAus to consider moving forward Answer any questions	Questions answered at this time Commitment to ongoing updates
04/21/2015	Meeting	John Pumphrey, Stella Swanson, Jason Swanson	RDEK	Presentation of the Project Description Identify potential constraints for the CanAus project Identify any concerns or specific items for CanAus to consider moving forward Answer any questions	Questions answered at this time Commitment to ongoing updates
20/05/2015	Meeting	John Pumphrey & Mark Vendrig	Kathy Eichenberger	Update on process, PD Acquiring feedback re: Elk Valley Water Quality Plan	Questions and answers More work to be done on water quality planning
04/06/2015	Attendance at Open House	Mark Vendrig	Teck Open House	Understanding of Teck's current status/issues Continue to discuss/scope the potential for working together on environmental issues and permitting	CanAus gathered information
Ongoing	Meeting	John Pumphrey	Jemi Fibre Corporation	Meet to discuss setting land aside for conservation	No movement on proposal at this time
Ongoing	Meetings/ Emails/ Phone Conversations	John Pumphrey and Mark Vendrig	BCEAO & CCEEA	Ongoing direction on the permitting process solicited	Direction taken

Key Issues/Concerns

The following is a list of key issues/concerns documented throughout the consultation phase of the CanAus Coal Michel Creek Coking Coal Project Description submission as per BC Environmental Assessment Office (EAO) guidelines. For a complete list of issues/concerns please refer to the consultation minutes. Please note that this summary does not reflect First Nations consultation results.

Environmental Concerns

- Water Quality
  a. Will CanAus adhere to the Elk Valley Water Quality Plan?
  b. Where will required water for operations be coming from?
  c. How will CanAus control water throughout its operations?

- Selenium
  a. How will CanAus control selenium loadings?
  b. Have those strategies been attempted at other mines?
  c. What selenium target/threshold will CanAus be held accountable to?

- Cumulative Effects
  a. Will CanAus be participating in the Elk Valley Cumulative Effects Management Framework (CEMF)?
  b. What is the mine disturbance footprint?
  c. Will CanAus be looking for opportunities for collaboration with other industrial players with operations in the Michel Creek Watershed to reduce the cumulative effects of its operation?

- Habitat Connectivity
  a. How will CanAus ensure habitat connectivity?
  b. Proposed CanAus operations are in the path of a critical wildlife corridor

- Waste Rock Dump Design
  a. Will CanAus be building from the bottom up or the top down?
  b. How will water be controlled in the dumps?
  c. Will cover and liner systems be incorporated into the designs?

- Active Water Treatment and Tailings Facilities
  a. How will passive treatment facilities work?

- Air Quality
  a. Dust suppression

Socio-Economic Concerns

- Job Creation
  a. Will employees be locally sourced?
  b. Has CanAus examined potential spin-off businesses?
  c. Will CanAus offer incentives to keep employees local?
     i. Split shifts for women, daycare, second mortgages offered for local housing?
  d. What is the proposed shift schedule?

- Mine Life
  a. How many years will the mine be in operation?

- Visual Aesthetics
  a. Will CanAus be conducting mountain-top mining operations?
  b. What part of operations will be visible from Highway 3?
  c. How will CanAus be controlling dirty traffic from its operations?

- Economic Viability
  a. Can the CanAus operation still be profitable given the environmental constraints?

- Recreational Access
  a. ATV and snowmobile trails
  b. Hunting and fishing grounds
  c. Hiking and mountain bike access.

Meeting Date: 24 July 2014

Attendees:

Name	Organization	Rev	App	Name	Organization	Rev	App
Robyn McLean	CEAA			Guy Gilron	Borealis		
Regina Wright	CEAA			Mark Vendrig	CanAus		
Averil Lamont	CEAA						

Name	Discussion	Action
Guy and Mark	Introduced CanAus Coal and the project in general and made a presentation. Key points included: CanAus is privately funded, currently holds 14 coal licenses, current land owner is Tembec though it is likely to change ownership in the near future, 100-120 Mt coking coal resource, 20-yr LOM, 3-5 mtpa. With respect to transportation infrastructure, CP Rail has been approached and they do have capacity. The old (McGillivray) *Mines Act* permit has been rescinded, however, the EA certificate is still valid and available on the e-PIC website. CanAus anticipating Oct 2014 for submission of the PD. CanAus is already in discussions with the K'tunaxa, Shuswap Indian band and ACE. Anticipating EA Submission 2016. EA will be limited to Loop Ridge though other areas, Michel Head and Tent Mountain are being explored. Focus would be on Loop Ridge and that we would be interested in making use of the existing McGillivray EA Certificate. We noted that the McGillivray *Mines Act* Permit was rescinded and that a new permit would be needed. We also indicated that we would likely be seeking Substitution.	
All	The key point from the discussion was that CanAus would like to have Substitution and the various issues around that were explored. CEAA noted they will likely remain involved in the project, as they will take the lead on discussions with the U.S. regarding trans-boundary rivers and the potential for contamination crossing those boundaries.	
CEAA	In order to consider if Substitution would be possible, CanAus would be required to prepare a Project Description conforming to their guideline as well as the BCEAO's.	

Meeting Date: 24 June 2014

Attendees:

Name	Organization	Rev	App	Name	Organization	Rev	App
Gerry Hamblin	BC EAO			John Pumphrey	CanAus		
Greg Hammond	BC EAO			Guy Gilron	Borealis		
				Mark Vendrig	CanAus		

Name	Discussion	Action
Gerry	Welcomed CanAus representatives to the meeting and indicated that SE BC Coal has a high profile. It was noted that this was a good time to be entering the BC EA process as things were a little quiet and it would now likely be possible to review documents more rapidly.	
Greg	Noted that there were two new Teck projects that they were aware of. Baldy Ridge would be a good example of what we could expect.	
John	Made a presentation to Gerry and Greg. Key points included: CanAus is privately funded, currently holds 14 coal licenses, current land owner is Tembec though it is likely to change ownership in the near future, 100-120 Mt coking coal resource, 20-yr LOM, 3-5 mtpa. With respect to transportation infrastructure, CP Rail has been approached and they do have capacity. The old (McGillivray) *Mines Act* permit has been rescinded, however, the EA certificate is still valid and available on the e-PIC website. CanAus anticipating Oct 2014 for submission of the PD. CanAus is already in discussions with the K'tunaxa, Shuswap Indian band and ACE. Anticipating EA Submission 2016. EA will be limited to Loop Ridge though other areas, Michel Head and Tent Mountain are being explored.	
Gerry	Suggested that CanAus can officially focus on Loop Ridge for the EA, but should include mention of future plans for expansion (i.e., Michel Head, Tent Mountain).	
CanAus	Noted that the McGillivray EA was in good standing as the property was substantially mined in 1999. CanAus would like to enquire about extending the EA Certificate to the new mine and have permitting activities focus on the development of a new *Mines Act* permit.	
Gerry/Greg	Will investigate the current status and let CanAus know if the McGillivray EAC is still valid and if it could be extended. A new *Mines Act* permit would be required. It was acknowledged that this was a brownfield site that had, after mining, been substantially restored.	
Gerry/ Greg	The Teck Advisory Committee has developed the EVWQP, which was submitted to the BC government on July 23, 2014. Jennifer McGuire of MOE in Victoria would be the person we need to interface with to see how we can interact with this group to gain a better understanding as to how the EVWQP would impact on CanAus. We may be able to obtain WQ management plans, Geochemistry and Benthic Invertebrate data from other operations. This could be an efficient approach.	
Gerry/Greg	With respect to obtaining Substitution: Coal Mountain Phase II is seeking Substitution of CEAA to BC EAO. As they have the EVWQP, this may be possible. CanAus should get involved with the EVWQP to see if they can open this possibility. The issue (may or may not obtain approval for substitution) as it is in close the proximity to the US (i.e., Montana) and that rivers draining from the area are trans-boundary. Trans-boundary, provincial and national issues will likely keep a level of Federal involvement.	

Meeting Date: 24 July 2014

Attendees:

Name	Organization	Rev	App	Name	Organization	Rev	App
Kim Bellefontaine	BC MEM			Guy Gilron	Borealis		
				Mark Vendrig	CanAus		
				John Pumphrey	CanAus		

Name	Discussion	Action
Guy and Mark	Introduced CanAus Coal and the project in general. Focus for the EA would be on Loop Ridge; CanAus would be interested in making use of the existing McGillivray EA Certificate. We noted that the McGillivray *Mines Act* Permit was rescinded and that a new permit would be needed.	
Kim	To be able to reactivate the existing certificate we would have to demonstrate that there was a significant start within 5 years of the original certificate. She reinforced that the *Mines Act* permit for the mine was closed and that she felt it would be better to do a new EA and *Mines Act* permit given the sensitivity related to water quality in the area (e.g., EVWQP).	
Guy and Mark	Noted that McGillivray was mined and that a significant bulk sample was taken.	
Kim	To implement a certificate amendment, CanAus will need to "make the case" with new data. We would also have to demonstrate that there are analogues from other mines for an amendment to be acceptable. We would need to have a strong argument to use old data and Kim suspects that we will be required to present new data and therefore we may as well present a new EA. The data that will be required includes: • Spoil characterization; • Static and Kinetic geochemistry data; • Must collect data from old workings and spoil areas; and • Limestone layers and calcite will need to be comprehensively characterized. CanAus must get feedback from the regulators on how they are to work in the watershed. The Teck EVWQP may constrain future development in the catchment.	
Kim	BC MOE consultation is a priority. Jennifer McGuire is the key contact.	

End of Document