Grassy Mountain Coal Project
Project Description Summary

Prepared for:
Canadian Environmental Assessment Agency
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File #14-00201-01
1.0 GENERAL INFORMATION AND CONTACTS

1.1 Project Overview

Benga Mining Limited (Benga), a wholly owned subsidiary of Riversdale Resources Limited (Riversdale), is proposing to develop the Grassy Mountain Coal Project (the Project). The Project is located in south-west Alberta near the Crowsnest Pass, approximately 7 km north of the community of Blairmore (Figure 1). The Project involves a surface coal mine, a coal preparation plant, and associated infrastructure including a coal conveyor system, a rail load-out facility, an access corridor, maintenance shops, and other pertinent facilities (Figure 1).

This Project Description has been prepared by Riversdale and is being submitted to the Canadian Environmental Assessment Agency (CEAA) as the designated Project is described in the Regulations Designating Physical Activities (CEAA SOR/2012-147). The following document provides the pertinent project information as set out in the Prescribed Information for the Description of a Designated Project Regulations (CEAA SOR/2012-148), and follows the Guide to Preparing a Description of a Designated Project Under the Canadian Environmental Assessment Act, 2012 (CEAA 2014).

As per the schedule under the Regulations Designating Physical Activities the Project falls under section 16(d), which states the Project triggers CEAA 2012 as the designated Project involves the construction, operation, decommissioning and abandonment of a new coal mine with a coal production capacity of 3,000 t/d or more. Riversdale believes that CEAA will require an assessment to be completed for the Project. The intent of this document is to provide sufficient information about the Project to allow this determination to be made. The Project is not a component of a larger project not listed in the Regulations Designating Physical Activities. Riversdale also recognize that the rail component of the Project may fall under the Regulations Designating Physical Activities; however, its inclusion is pending as details of the rail component are currently in the preliminary planning phase.

1.2 Proponent Contact Information

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GRASSY MOUNTAIN COAL PROJECT

PROPOSED PROJECT FOOTPRINT

NOTES

AtlaLIS, 2015; NRCAN, 2015; Riversdale, 2015
Datum/Projection: UTM NAD 83 Zone 11
2.0 PROJECT INFORMATION

2.1 General Description

The intention of the Project is to develop a coal mine on Grassy Mountain, to ship high quality metallurgical coal to overseas steel producing markets. The Grassy Mountain coal mine would provide significant economic stimulus to the Municipality of Crowsnest Pass and the Municipality of Ranchlands, as well as to the neighbouring communities to the west (e.g., Sparwood, Elkford, and Fernie).

At the mine site, overlying rock above the coal will be drilled/blasted, then excavated and hauled to both in-pit and ex-pit waste rock disposal locations (Figure 1). Coal from the open pit mining operations will be trucked to the run of mine (ROM) raw coal dump station at the Coal Handling Process Plant (CHPP) using large scale mining trucks. The overall CHPP will serve to remove excess rock and impurities from the raw coal. This will be accomplished by sizing the raw coal, then feeding it to one of two coal processing plants (CPP), where it will be placed through a series of screening, cleaning, and mechanically dewatering. The reject material from the CPP will be trucked back into the mine for proper disposal.

The final coal product will be sent to the product coal stockpiles, where it will then be conveyed overland (via a covered conveyor) to the load out facility located near the existing Canadian Pacific Railway track located in the Towns of Blairmore and Coleman, Alberta. The coal will then be transported to marine terminal facilities located on British Columbia’s west coast. From the terminals the coal will be transferred on to ships destined for customers in the Asian coking coal market (i.e., steel production).

2.2 Physical Works Overview

2.2.1 Open Pit Mine

The coal in the open pit mine will be extracted using standard surface mining techniques found in other operating mines located in western Canada. Topsoil and sub-soil materials will be salvaged ahead of drilling and blasting operations using bulldozers to push the topsoil into windrows. An excavator and truck fleet will then follow behind and pick the topsoil up and haul it to designated stockpile areas until a suitable final reclamation placement area can be developed. Drilling and blasting activities will then begin to break up the waste rock ahead of excavation by diesel powered mining shovels and then hauled away in large haul trucks. Initially, the waste rock will be directed to ex-pit disposal areas until locations open up for in-pit backfill. Once the waste rock has been removed the coal is mined and hauled down to the raw coal stockpile area located near the coal
handling process plant (CHPP). Both coal and waste rock haul roads will be developed to allow access from the mining face to the disposal areas. Full details on reclamation areas and haul roads are currently under development by the Project’s Engineering Team.

The fine coal wastes will be largely dewatered in the CHPP and will be backhauled in trucks to the waste rock disposal areas. The dewatering equipment will replace the need for a large passive storage pond for the fine coal wastes that are common in the coal mining industry. Water collected in the bottom of the open pit will be directed to surface water impoundments, which will be constructed in strategic locations around the perimeter of the mine disturbance area, prior to release back to the environment. The final Water Management Strategy for the Project is still in development by the Project’s Engineering Team.

2.2.2 Coal Handling and Processing Plant

The CHPP will consist of the raw coal, reject coal, and product coal material handling components and two coal processing plant modules. The ROM raw coal from the open pit mine will be dumped from the mining trucks into the raw coal ROM bin. The raw coal will then be fed into a feed breaker at the bottom of the ROM bin for initial primary sizing. From there it is then fed onto a conveyor and into a secondary sizing station to ensure a top-size of 50 mm. From the secondary sizing station the material is fed to one of two surge bins, each one positioned prior to the respective coal processing plant modules.

Each coal processing plant module will be contained within a housed area complete with bunded concrete floor. HVAC systems will be included inside the shed to keep temperatures above freezing point. Each coal processing plant module will have a 3.5 m wide access way for maintenance vehicles inside. Maintenance will be assisted by an over-head travelling crane along the majority of the coal processing plant module length as well as monorails, which will also be installed above process equipment that require frequent change-outs.

The coal processing plants process water will be supplied from a reservoir from the mine infrastructure areas water raw water system. A pump station will send water from the reservoir and pipe it to the coal processing plant modules for use in the processing as well as other minor maintenance requirements. The coal processing plant process water system will be designed to fully recycle the process water, to minimize the amount of additional make-up water required from the reservoir.

Coal quality test work and process simulation modeling has shown the most efficient coal processing plant module design consists of a single stage dense medium cyclone (DMC) for processing coarse material, reflux classifiers for processing fine material, and two-stage flotation in a cleaner-scavenger
cell arrangement for processing ultrafine material. Product coal dewatering will be completed via vibrating and scroll centrifuges for coarse and fine material, respectively, and a hyperbaric disc filter for ultrafine material.

Each coal processing plant module will be capable of processing 535 tonnes per hour for a total of 6800 hours per year giving an annual feed rate of 3.64 Mt. Each CPP will produce 2 Mt of product annually at the expected yield of 55% based on the coal quality data to date.

2.2.3 Overland Conveyor and Train Load-Out Facility

The enclosed overland conveyor will deliver product coal to a 300 tonne surge bin located at a point along the existing Canadian Pacific Railway track located near the Town of Blairmore or Town of Coleman. From the surge bin, the product coal will be transferred to a train load-out bin feed conveyor via a vibratory feeder. The load-out bin will be housed in a heated structure, and will have a capacity of 350 tonnes. At the bottom of the bin a hydraulic gate will control the flow of product coal into train railcars; an industry standard tackifier will be applied to mitigate dust.

2.2.4 Rail System

The final route of the overland conveyor to the existing Canadian Pacific Railway track located in the Towns of Blairmore and Coleman is still in development with both municipal and provincial government agencies. It is anticipated that the final design will either be a rail siding (extending east of Blairmore to the west of Coleman) or a loop configuration on a portion of the existing golf course. Regardless of the final design, the construction and operation of the new railway infrastructure will likely require an approval from the Canadian Transport Agency as required by the Canada Transportation Act.

2.2.5 Road System

The existing Provincial Highway 3 will provide the access to and from the mine for personnel and supplies. An existing intersection to the east of Blairmore golf course will be upgraded to the applicable standards. From this intersection, a 1-km single-lane road will access the rail load-out facility and a 6-km two-lane road will access the mine and plant site. The majority of the access roads will be built over existing trails. A maintenance service road will also be constructed along the overland conveyor.

2.2.6 Production Capacity

During phase 1 and phase 2 of the operation, the mine production capacity will be greater than 3,000 t/day of product coal. The Project will achieve a target clean coal production rate of 2 Million
tonnes/annually (Mt/a) at the completion of phase 1 and a target production rate of 4 Mt/a at the completion of phase 2. Maximum production capacity will be 4 Mt/a.

2.3 Emissions, Discharges, and Waste Management Plan

2.3.1 Atmospheric Discharge

Fugitive Emissions

Fugitive dust emissions may be generated from a number of activities. The most probable activities to cause dust are:

- drilling and blasting activities;
- excavation of both waste rock and coal;
- heavy truck haulage of both waste and coal;
- coal dust generated during the feeding of the raw coal into raw coal ROM bin;
- coal dust generated during placement of product coal onto the product coal stockpile area; This dust generation is minimised by the use of luffing stackers which will minimise the drop height of the coal piling onto the stockpile, and will also minimise the drop time. Additionally the product coal will be wet and dust generation will be low as the coal particles will adhere together into lumps that will not easily stay suspended in the air;
- during transfer of coal material in transfer towers. Dust generation is minimised in transfer towers with the use of cladding on the sides of transfer towers where practical; and
- coal dust generated during the loading of the product coal into train railcars from the train loading bin. Dust generation is minimised during this process with full cladding on the sides of the structure, and with the discharge chute of the bin being situated as close as practical to the train railcars.

Greenhouse Gas Emissions

Greenhouse gas emissions will be generated from the following sources:

- combustion emissions generated from diesel powered equipment including excavators, drills, bulldozers, haul trucks, and coal trains;
- propane fueled heaters for the plant, office, and shop facilities; and
- electricity consumption on the Project site that will largely be required to operate the CPP.

An option analysis on outfitting the mine with electrically powered shovels and drilling equipment (instead of diesel) will be completed during the feasibility study.
2.3.2 Liquid Discharges

Domestic Wastewater

As the open pit progresses downward, groundwater in-flows can be expected. Rain and snowfall events will also cause water to collect at the bottom of the open pit. All mine wastewater will be directed to settling ponds located along the perimeter of the disturbance area. From these settling ponds, the suspended solids will be dropped out prior to release back to the environment. Diversion ditches will catch run-off from the haul roads and disposal areas and also direct this run-off to the settling ponds for treatment.

Domestic wastewater from the mine infrastructure area will be treated in a mechanical treatment plant and will be discharged to the natural environment once it meets the treatment requirements. Domestic wastewater from the train load-out ablution facilities will be stored in a tank and a truck will be required to suck the sewage out on a regular basis.

Water Treatment

A wastewater management plan will be developed to control pit dewatering and surface run-off from all components of the Project. All water will be treated and released to the natural environment, providing it meets release requirements.

Testing is currently being conducted to determine the presence/absence of selenium in the wastewater. A plan will be developed (or multiple plans) to manage or treat selenium if it is likely to be present as a result of the proposed activities.

2.3.3 Solid Waste Management

Solid waste will be generated and will be stored and managed separately from hazardous wastes. Wastes will be recycled if possible and if not will be disposed of at approved locations.

2.3.4 Hazardous Waste Management

Waste oil and lubricants from the mine maintenance facilities will be separated from water using an oil / water separator unit inside the workshop. The waste will be stored in a tank and will be required to be removed from a portable suction truck on a regular basis.

2.3.5 Mine Waste Management

Waste rock generated in the mine will be directed to dedicated in-pit and ex-pit disposal areas. These waste rock disposal areas will be constructed at their final slope angle, or re-sloped if required, to ensure long-term stability and reclamation success.
The coal processing plant modules will generate a coarse and fine reject coal stream. These streams will be combined in the coal processing plants and directed to the reject bin for loading into mine haul trucks for dry disposal back into the mine. The current mine plan is to co-dispose the reject coal in the waste rock disposal areas of the mining pit operations.

2.4 Planned Project Phases and Scheduling

The Project Application and Environmental Impact Statement (EIS) will be submitted to Provincial and Federal regulatory agencies to apply for approval for the Project. A Mine Permit and Coal Processing Plant Approval will be sought from the Province of Alberta. The detailed applications for Pit and Dump licences, an EPEA Approval, Approvals and Licences under the Water Act, and the Public Lands Act Dispositions will follow after submission of the Application and EIS. This integrated application is anticipated to be ready for submission at the end of the 2nd quarter of 2015.

Riversdale has also engaged the Federal Government, as some level of federal involvement is expected as per the CEAA (2012).

Pending all necessary approvals and permits, the current development schedule for the Grassy Mountain Project is:

- Construction: 2017 - 2018
- Commissioning & Operation: 2018 - 2020
- Full Operations: 2021 – 2042
- Decommissioning: 2043 – 2044
- Reclamation: On-going through life of mine.

3.0 PROJECT LOCATION

3.1 Description of the Project Location

The Project is located in southwest Alberta, about 150 km south of Calgary in the Crowsnest Pass (Figure 1). The Grassy Mountain coal lease is predominantly situated to the north of Highway 3, with a small section to the south within the Town of Blairmore. The proposed CHPP will be situated approximately seven (7) km north of Blairmore, and will be accessible via an existing high grade road.

The majority of the Project’s footprint will occur on Riversdale private land, with the remaining portions occurring on either Crown land or other private lands (Figure 1). The Project’s proposed Mine Permit boundary (areas within which all activities will occur) is approximately 6,121 ha in size with the centre of the Project being located at Latitude 49°40’36.4” N and Longitude -114°25’47.1”.
The provincial border between Alberta and British Columbia is located approximately 17 km west of the Project. The federal border between Alberta and Montana, USA is located approximately 75 km south of the Project (Figure 1). There are no federal lands that will be used for the purpose of carrying out the Project, with the exception of federal Aboriginal Groups reserve land. Several Aboriginal groups are located within a 100 km radius of the Project in both BC and Alberta (Figure 2). The First Nation reserves in Alberta within 100 km of the Project include the Peigan Timber Limit 147b, Piikani Reserve, Blood 148, Blood Timber Limit 148a, and Eden Valley 216. In BC, First Nation reserves within 100 km include the Bummer’s Flat 6, Kootenay 1, St. Mary’s 1a, Isidore’s Ranch 4, Cassimayooks 5, and Tobacco Plains 2. The closest populated First Nation reserve community to the Project is the Piikani Reserve, approximately 45 km to the east (Figure 2).

There are a number of existing land uses in the area that include considerable historical mining, oil and gas, recreation (i.e. ATV, hunting, fishing), grazing (Figure 3.2-1), timber harvesting (Figure 3.1-1), trapping, and traditional uses. Riversdale are committed to engaging all the existing users in the discussions regarding the proposed Project. There are no other restrictions that would prevent mining development from occurring.

The area within the Mine Permit Boundary contains seven properties that have existing dwellings, in the form of cabins (Table 3.1-1). The Historic Town of Lille and two additional dwellings are located just east of the Mine Permit Boundary. Two trapping cabins are located near the Project (Table 3.1-2), and two trap line dispositions exist within the Mine Permit Boundary under the Alberta Public Lands Act (TPA 1677 and TPA 2426).
Table 3.1-1  Residences within and near the Mine Permit Boundary

<table>
<thead>
<tr>
<th>Residence Number</th>
<th>Latitude</th>
<th>Longitude</th>
</tr>
</thead>
<tbody>
<tr>
<td>MDRL002</td>
<td>49°39'30.58&quot;N</td>
<td>114°25'7.62&quot;N</td>
</tr>
<tr>
<td>MDRL003</td>
<td>49°40'1.20&quot;N</td>
<td>114°25'1.54&quot;N</td>
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<tr>
<td>MDRL004</td>
<td>49°40'13.24&quot;N</td>
<td>114°24'9.40&quot;N</td>
</tr>
<tr>
<td>MDRL005</td>
<td>49°40'57.58&quot;N</td>
<td>114°24'25.76&quot;N</td>
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<td>MDRL006</td>
<td>49°41'13.44&quot;N</td>
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</tr>
<tr>
<td>MDRL007</td>
<td>49°39'48.43&quot;N</td>
<td>114°24'12.24&quot;N</td>
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<tr>
<td>MDRL008</td>
<td>49°39'32.15&quot;N</td>
<td>114°24'7.26&quot;N</td>
</tr>
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</table>

Near and Outside Mine Permit Boundary

<table>
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<tr>
<th>Residence Number</th>
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</tr>
</thead>
<tbody>
<tr>
<td>Historic Town of Lille</td>
<td>49°39'6.87&quot;N</td>
<td>114°23'44.32&quot;N</td>
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<td>MDRL009</td>
<td>49°39'21.67&quot;N</td>
<td>114°23'33.09&quot;N</td>
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<tr>
<td>MDRL010</td>
<td>49°40'14.05&quot;N</td>
<td>114°23'40.49&quot;N</td>
</tr>
</tbody>
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Table 3.1-2  Trappers Cabins near the Project

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<tr>
<td>MDRL011 – Trapper’s Cabin</td>
<td>49°42'54.43&quot;N</td>
<td>114°23'46.89&quot;W</td>
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<tr>
<td>MDRL012 – Trapper’s Cabin</td>
<td>49°45'8.46&quot;N</td>
<td>114°25'53.12&quot;W</td>
</tr>
</tbody>
</table>

The Project is located in an area that contains both privately owned and Provincial Crown surface rights (Figure 1). Riversdale commenced exploration drilling in 2013 and to date they have drilled on both crown land (leased by Riversdale) and private land. The privately owned land consists of land titled to Riversdale as well as other private land owners (Figure 1-1). The centre of the Project is located at Latitude 49°40’36.4” N and Longitude -114°25’47.1” (685425E, 5505866N, UTM Zone 11N), and the proposed project falls within the following legal land locations (township and range):

- Township 008- Range 03- West of the 5th Meridian
Riversdale Resources Limited
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- Township 008- Range 04- West of the 5th Meridian
- Township 009- Range 03- West of the 5th Meridian
- Township 009- Range 04- West of the 5th Meridian

The legal descriptions for surveyed Crown Land parcels that overlap with the project footprint are provided in Table 3.1-3.

<table>
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<th>Title Number</th>
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<td>891 051 606B</td>
<td>SW-14-008-04 W5M</td>
</tr>
<tr>
<td>901 155 112</td>
<td>SW-02-008-04 W5M</td>
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<td>122575A</td>
<td>NE-11-008-05 W5M</td>
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<td>133G111</td>
<td>SW-14-008-05 W5M</td>
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4.0 ENVIRONMENTAL SETTING AND POTENTIAL EFFECTS

4.1 Regional Environmental Studies

The federal Project Description requires reference to regional studies completed under CEAA 2012 (as per Sections 73 and 74 of the Act). There have not yet been any regional studies completed under Section 73 and 74 of CEAA 2012 within southern Alberta; consequently, no further information can be provided.

4.2 General Environmental Overview

Topography of the Grassy Mountain area consists of high rounded hills with <20° slopes at lower elevations to moderate grade (~30°) to steep (>45°) slopes at higher elevations. The elevation at the
Town of Blairmore at Highway 3 is 1,290 metres above sea level (masl). Elevation in the Grassy Mountain surface mine area ranges from 1,460 to 2,100 masl. The general setting is characterized as foothills with complex geology, underlain by structurally deformed sandstone, siltstone, mudstone, and coal.

4.2.1 Climate

Seasonal variations in temperature can be significant, where in the winter; temperatures can rise rapidly by 30°C during periods of warm Chinook winds. Snow can cover the ground from late September to the end of May at higher elevations. Warm to hot temperatures can extend from June through late September. Based on 20 year climate records collected from the Environment Canada climate station, Crowsnest (ID 3051R4R), the coldest month is December and the warmest month is July. Average monthly temperatures during these months are – 6.4 °C and 15.4 °C, respectively.

Precipitation is variable between years and seasons with the annual mean annual recorded at the Crowsnest Climate Station (recorded years of 1994 to 2013) as 361 mm, with rainfall contributing nearly three quarters of this (~270 mm) and snowfall one quarter (~90 mm). During spring and summer seasons, the greatest amount of rainfall occurs in June, with precipitation also recorded to occur in May, September, August and July (in decreasing order).

4.2.2 Water Resources

Blairmore Creek drains the valley west of the proposed Project and Gold Creek drains the valley to the east, with both draining into the Crowsnest River. Other water features on Grassy Mountain are associated as ponded areas in form of open pit excavations from historical surface mine activities. Groundwater flow is eastward and westward away from the topographic high of Grassy Mountain. Flow in the upper portion of these systems is rapid based on baseflow chemistry analysis from the upper headwater tributaries of Blairmore Creek or Gold Creek.

Gold Creek has been reported to contain populations of pure strain (100%) westslope cutthroat trout (Oncorhyncus clarkii lewisi) and is identified on the provincial westslope cutthroat trout recovery as critical habitat for the species. An impassable, natural barrier (falls) is present in Gold Creek; consequently, it prevents upstream migration of introduced species and therefore maintains the genetic purity of the system (Figure 3).

4.2.3 Terrestrial Resources

The Project lies within the Subalpine and Montane natural subregions of Alberta. Major soil types are Luvisols & Brunisols, with dominant tree species in the subalpine zone recorded as aspen, lodgepole pine, Douglas fir, subalpine fir, and Engelmann spruce. Grasslands are also present and Eutric
Brunisols are commonly found. Agriculture is also prominent in the region and livestock grazing occurs over much or the private and crown lands adjacent to the Project area. One species, whitebark pine, which is listed as a Schedule 1 “Endangered” species by the Species at Risk Act (SARA) has been observed to occur on Grassy Mountain (Figure 3).

As part of the Project’s wildlife observation program, to determine presence and distribution of medium- to large-sized mammal species, twenty-two wildlife cameras were set up throughout Grassy Mountain. Preliminary results indicate a total of 17 species of ungulates, carnivores, rodents, lagomorphs, and various species of birds were identified. Four ungulate species were detected; mule deer (Odocoileus hemionus) (most common occurrences), white-tailed deer (Odocoileus virginianus), moose (Alces alces), and elk (Cervus elaphus). Neither bighorn sheep nor mountain goats were detected by the wildlife cameras; however, their absence of detection does not suggest that these species are not present on Grassy Mountain.

Coyotes (Canis latrans), gray wolves (Canis lupus), and black bears (Ursus americanus) were the most common carnivores detected by the cameras, followed by cougars (Puma concolor), Canada lynx, red fox (Vulpes vulpes), grizzly bears, and American marten (Martes americana). The Canada lynx has a general provincial status of “Sensitive” and grizzly bears have a general provincial status of “At Risk”. COSEWIC designated the grizzly bear a species of “Special Concern” in 2012, but the species is not on a SARA Schedule at this time.

Wildlife species listed as a Schedule 1 “Special Concern” species under the Species at Risk Act (SARA) that were observed or reported to occur on Grassy Mountain include: Western toad (Anaxyrus boreas), olive-sided flycatchers (Contopus cooperi), common nighthawks (Chordeiles minor), and the little brown myotis (Myotis lucifugus), which is federally listed as “Endangered” (Figure 3).

4.2.4 Historical and Social Resources

The two primary historical resource elements of interest and concern regarding the proposed Grassy Mountain Coal Mine are archaeological sites and remains, including both Precontact (Prehistoric in the definition above) and Postcontact resources (historic in the definition above) and palaeontological locales and remains.

Environmental baseline studies for the Project were initiated in the fall 2013, and will continue to winter 2015. The studies have included data collection related to air quality, noise, hydrogeology, geochemistry, hydrology, water quality, fish and fish habitat, wetlands and vegetation, wildlife, soils and terrain, historical resources, traditional use and traditional ecological knowledge, as well as human health assessment (e.g., as part of vegetation and wildlife surveys).
The Project falls within portions of the Municipal District of Ranchland No. 66 and the Specialized Municipality (S.M.) of Crowsnest Pass. The region is a sparsely populated area: in 2011, the region was home to approximately 5,645 people, the majority of which were distributed throughout the S.M. of Crowsnest Pass in the communities of Coleman (1,065), Blairmore (2,088), Bellevue (803), and Frank (263). Population growth in the region during the 2001 to 2011 period was negative, as the population declined at an average annual rate of 1.18%.

The local wage economy of the region is driven primarily by mining, quarrying, and oil and gas extraction industry, which accounts for approximately 22% of all jobs in the region, which is well above the provincial average of 7%. Other key industries in the region include health care and social assistance, retail trade, and public administration, which, when taken together with the mining industry, account for slightly more than half of all employment in the region.

4.3 Potential Environmental Effects

4.3.1 Air Quality

For the impact assessment it is anticipated that the potential impacts that would be associated with the Project will include (but not limited to):

- potential impacts on air quality at residences (e.g., the nearest cabin is located approximately 500 m from the east side of the proposed pit) and sensitive environmental receptors near operations, (with emphasis on particulate matter);
- effects of acid and nitrogen deposition on vegetation and lakes from mine fleet exhaust; and,
- effects of dust deposition rates for nearby receptors.

4.3.2 Noise

A noise impact assessment compliant with AER’s Directive 038 will be completed for the EIS. Potential noise impacts of the Project include, but are not limited to:

- noise predicted at residences and communities adjacent to or in the vicinity of the mine and its associated infrastructure.
- noise impacts to wildlife – sensory disturbances may lead to changes in habitat use, health and body condition, reproductive behaviour and breeding success, and longevity.
- noise issues related to the health and safety of Project staff. Occupational health and safety guidelines will be followed to ensure potential health and safety issue arising from noise are appropriately mitigated.
4.3.3 Hydrogeology

A full hydrogeology impact assessment will be provided in the EIS; however, it is anticipated that the following potential impacts to groundwater may be associated with the Project. These include (but are not limited to):

- potential impacts of groundwater extraction and/or dewatering on groundwater quality, including surface water-groundwater interactions;
- potential impacts of mine spoil on groundwater quality; and,
- potential impacts of mine operations on shallow groundwater quality.

4.3.4 Hydrology

A detailed hydrology impact assessment will be completed for the EIS; however, it is anticipated that the following potential impacts are associated with surface flows:

- changes to surface runoff based on location of proposed pit, waste rock disposal areas, and other mining related infrastructure; and,
- potential impacts to neighbouring watercourse from dewatering or mine drainage plans.

4.3.5 Surface Water Quality

A detailed water quality impact assessment will be completed for the EIS. It is anticipated that the following potential impacts are associated with surface water quality:

- potential release of deleterious substances (e.g., TSS and turbidity); and
- potential impacts to neighbouring watercourse from mine waste such as selenium or other metals.

4.3.6 Fisheries and Aquatic Habitat

A detailed impact assessment on fish and aquatic habitat will be completed for the EIS. It is anticipated that following potential impacts are associated with fisheries and aquatic habitat:

- Loss of stream habitat from Project activities (pits, waste dumps and processing facilities) in the vicinity of watercourses;
- Potential changes to fish habitat from potential changes in hydrology as a result of earth moving mining activities; and,
- Potential changes in water quality from mining related activities.
4.3.7 Soils & Terrain

Project related activities that may have a potential impact on the existing soil resources and associated terrain include (but are not limited to):

- soil stockpiling – stockpiling of salvaged soil materials during the construction of the Project, both short term and long term, results in potential for soil erosion issues and effects to soil productivity;
- development of Project infrastructure – includes creation of roads, and all related Project infrastructure, will require soil removal and alteration of existing terrain;
- progressive reclamation – activities related to re-contouring of reclaimed landscapes and soil handling and replacement, may result in effects to the reclaimed soil profiles and terrain. Inappropriate re-contouring and/or soil replacement activities may result in impacts to the reclaimed soil profile and a decrease in land capability for the desired end land uses or delay in achieving land capability.

4.3.8 Vegetation and Wetlands

Project related activities that may have a potential impact on the existing vegetation and wetlands include (but are not limited to):

- loss of vegetation prior to slope re-contouring, road construction, borrow pit and mine pit excavation, and construction of site facilities.
- loss of existing vegetation from the placement of waste rock dumps and overburden storage piles;
- potential indirect disturbance to vegetation from changes in surface topography and microhabitat conditions, deposition of dust on foliage, changes in hydrology and road development; and,
- potential introduction of invasive species and expansion of invasive species populations with increased bare mineral soil.

4.3.9 Wildlife

The key regulatory issue with respect to wildlife is related to the potential occurrence of and potential effects to species at risk, species of management concern, and specific bird species protected under the Migratory Birds Convention Act (1994) reported to occur in the vicinity of the Project.

Potential Project impacts on wildlife will fall into four broad categories:
• a direct loss of habitat as a result of vegetation clearing;
• an indirect loss of habitat due to increased noise, human activity, and artificial lighting;
• habitat fragmentation and the disruption of natural movement patterns of wildlife; and,
• increases in wildlife mortality.

5.0 RIVERSDALE’S ENGAGEMENT AND CONSULTATION WITH ABORIGINAL GROUPS

5.1 Aboriginal Groups Potentially Interested in the Project

Riversdale initiated Aboriginal consultation in June 2013 with the following First Nations, prior to the formal acquisition of the Grassy Mountain coal lease:

• Treaty 7 Nations
  • Piikani Nation;
  • Kainaiwa Nation (Blood Tribe);
  • Siksika Nation:
  • Tsuu T’ina Nation: and,
  • Stoney Nations (Bearspaw First Nation, Chiniki First Nation and Wesley First Nation).

As part of the EIS process, Riversdale plans to consult with the following Aboriginal Groups:

• Ktunaxa Nation
• Treaty 6 Nation
  • Samson Cree Nation
• Métis
  • Métis Nation Alberta, Southern Alberta Region 3
  • Métis Nation British Columbia, Kootenay Region 4
• Other Aboriginal Groups
  • Foothills Ojibway Society

Riversdale will also consult with any other Aboriginal groups that may be identified throughout the EIS process.

5.2 Summary of Treaty 7 First Nations Site Visits

In 2014, Riversdale worked closely with the Treaty 7 First Nations groups to discuss field assessment methods, issues, themes, traditional knowledge and traditional land uses as it related to the Project.
Traditional Knowledge and Traditional Use (TK/TU) between each First Nation and Riversdale’s Aboriginal Consultation Team were shared during a preliminary site tour of the proposed Grassy Mountain Project in June 2014, in addition to ground-truthing efforts in September and October 2014. Workshops followed each field activity to discuss and interpret the field observations and add more of the stories of the area.

5.3 Key Comments and Concerns to Date

The EIA studies and consultation process are expected to enable all Aboriginal Groups to identify any specific comments and concerns related to the Project. Initial comments from the consultation discussion with all of the Treaty 7 First Nations groups (to-date) have made reference to potential adverse effects to:

- wildlife: potential impacts to species that are culturally, spiritually, and nutritionally important such as elk, dear, moose, bear, cougar, coyotes, squirrels, rabbit, frogs, hawks, woodpecker, snowbird, and owls;
- heritage, archaeological and cultural resources: potential impacts to travel routes, sacred areas (e.g., buffalo rock and vision quest sites), as well as cultural practices and customs;
- vegetation: potential impacts to plant species used for ceremonial, medicinal and subsistence;
- water quality: potential impacts to water quality from springs that may be connected to underground waterbodies; and,
- spiritual/sacred sites: potential impacts to spiritual sites as pointed out by Elders.

5.4 Aboriginal Consultation Approach

Through early discussions on coal exploration activities and future plans, Riversdale set out to engage each Aboriginal Group in proximity to the Project in a way that is respectful and meaningful. Through these initial discussions, Riversdale began engaging with Chief and Council, consultation staff, and other key staff members responsible for participation in Project studies, employment and contracting opportunities. Riversdale has continued to collaborate with Aboriginal leadership and staff to guide ongoing consultation and is collaborating with Aboriginal groups on Traditional Land Use studies in the project area.

While Riversdale understands that the Crown, or government, is ultimately responsible for ensuring that the duty to consult with Aboriginal groups is fulfilled, certain procedural aspects of consultation will be delegated to Riversdale. Mitigation measures proposed by Riversdale in consultation with Aboriginal groups, or mutually agreed outcomes arising out of consultation with Aboriginal groups, may be viewed by the Crown as acceptable forms of accommodation.
Throughout the Project, Riversdale will continue to share Project information and seek input from Aboriginal groups to develop a greater understanding of, potential impacts to Aboriginal and Treaty rights and traditional uses. This input will be considered and incorporated, as appropriate, into the Application and other regulatory documents.

Riversdale recognizes consultation must respect Aboriginal knowledge, culture, processes, and views. Riversdale will continue to demonstrate respect for these principles and seek positive relationships with Aboriginal groups potentially affected by the Project.

During engagement with Aboriginal groups, Riversdale plans to:

- Provide for effective two-way communication and ensure meaningful engagement between Riversdale and affected Aboriginal groups;
- Provide Aboriginal groups with timely and credible information on the Project and ensure meaningful discussions occur;
- Seek input of Aboriginal groups on Project design and environmental studies;
- Ensure Aboriginal groups’ rights, Treaty rights, traditional uses, other interests (socio-economic, community well-being) and issues relevant to the Project and assessment are identified through available sources, which may include information provided by Aboriginal groups, research, commissioned studies and Aboriginal traditional studies, so they may be appropriately addressed. Confidential information will be managed according to agreed protocols with Aboriginal groups.
- Ensure that Aboriginal groups’ input and concerns about potential effects are gathered, understood and integrated into the proposed Project design, the EA, and monitoring programs related to the construction and operation of the mine;
- Provide opportunities for dialogue on measures that could be used in the Project design, operation or closure to avoid, reduce, mitigate or accommodate potential adverse effects; and
- Work collaboratively with the Aboriginal groups on options to enhance positive effects and benefits of the proposed Project.

Specific consultation approaches may vary depending on the preferences, interests, or concerns expressed by the Aboriginal groups, or as directed by CEAA.

5.5 Financial Support

There is no proposed or anticipated federal or provincial financial support to Riversdale to carry out the Project. There is the potential that some federal support to Aboriginal Groups may be required.
6.0 CONSULTATION WITH THE PUBLIC AND OTHER PARTIES

6.1 Overview of Activities that Have Occurred

Timely and effective engagement with the public is a key aspect of the Project. Riversdale has held three Public Forums and one Open House in the Crowsnest Pass to inform the public about the Project. Numerous meetings have also been held with the regional municipalities, local stakeholders, local residents and land owners, special interest groups, provincial and federal government agencies, senior cabinet ministers and specific individuals with concerns.

In addition to the Public Forums and Open House, Riversdale has attended a local trade show in Blairmore and held numerous meetings with the municipalities in the region, particularly the Specialized Municipality of Crowsnest Pass and the Municipal District of Ranchland.

6.1.1 Future Public Engagement Plans

Riversdale expects to be holding additional focussed meetings with individuals and agencies in 2015. The Provincial Proposed Terms of Reference for the EIA were publicly filed and public comments were sought through a 45 day public notice period. Additional newsletters will also be produced and distributed.

In addition to these activities, Riversdale maintains an “open door” policy at their Blairmore office, whereby individuals can stop by at their convenience to discuss the Project. Riversdale will continue to operate its community office and employ a Community Relations representative. This will ensure the people have a physical location to go to ask questions and to obtain Project information.

These efforts will ensure that all interested individuals and agencies have an opportunity to become familiar with the Project, and that all pertinent environmental and social concerns have been identified and methods for mitigating these concerns have been investigated. Riversdale will continue the public engagement program throughout the Project’s life.

Copies of the provincial (AER) Terms of Reference, Summary Table, Project Description, or other documents are made available on the company website or can be obtained by contacting the company contacts noted in this document.

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