FINAL TERMS OF REFERENCE
ENVIRONMENTAL IMPACT ASSESSMENT REPORT

FOR COAL VALLEY RESOURCES INC. (CVRI) PROPOSED

ROBB TREND PROJECT

Located approximately 100 km Southwest from Edson, Alberta

Accessed by Highway 47

ISSUED BY: **Alberta Environment**

DATE: **August 4, 2011**

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PURPOSE OF THE TERMS OF REFERENCE

This document identifies for Coal Valley Resources Inc. (CVRI), Aboriginal communities and appropriate stakeholders the information required by government agencies for an Environmental Impact Assessment (EIA) report prepared under the Environmental Protection and Enhancement Act (EPEA) for the Robb Trend Project.

CVRI's Coal Valley Mine is located approximately 100 km southwest of Edson in the Coal Branch area of Alberta. This area has an extensive coal mining history dating back to the early 20th century when coal extraction was carried out using conventional underground mining methods. Surface mining was introduced into the Coal Branch Area during the 1930's.

CVRI has been in operation since 1978 employing both truck/shovel and dragline mining methods. Coal reserves within the existing permit area are reaching the end of their expected recovery. Access to additional coal reserves is required to enable the continuation of thermal coal supply to CVRI's customers, the maintenance of the existing workforce and a continuation of the closure activities within the existing depleted areas. CVRI is proposing to add the coal reserves in the Robb Trend Project area as an extension to the existing operations.

It is expected that the existing infrastructure and workforce will be used to service the proposed Robb Trend Project and that all office and maintenance facilities will be maintained at the present site, however, the proposed project will require additional infrastructure such as new road crossings, transportation and utility corridors to join the Project area to existing mining infrastructure. The coal will be brought from the Project areas to the existing processing plant where it will be cleaned and loaded into trains for transport to market. CVRI plans to maintain the current annual production rates of 4.0 million clean metric tonnes. A preliminary reserve estimate for the Robb Trend Project area indicates there is enough coal to operate for an additional 16 years.

SCOPE OF THE EIA REPORT

CVRI shall prepare and submit an EIA Report that examines the environmental and socio-economic impacts of the Robb Trend Project. The EIA Report shall be prepared considering all applicable provincial and federal legislation, codes of practice, guidelines, standards and directives.

The EIA Report shall be prepared in accordance with these Terms of Reference and the environmental information requirements prescribed under EPEA and associated regulations, and the Canadian Environmental Assessment Act if applicable. The EIA Report will form part of CVRI's application to the Energy Resources Conservation Board (ERCB). An EIA Report summary will also be included as part of the ERCB Application.

The Proponent shall refer to the *Guide to Preparing Environmental Impact Assessment Reports in Alberta* published by Alberta Environment (the Guide) and these Terms of Reference when preparing the Environmental Impact Assessment report. In any case where there is a difference in requirements between the Guide and these Terms of Reference, the Terms of Reference shall take precedence.

CONTENT OF THE EIA REPORT

1 PUBLIC ENGAGEMENT AND ABORIGINAL CONSULTATION

[A] Describe the concerns and issues expressed by the public and the actions taken to address those concerns and issues, including how public input was incorporated into the Project development, impact mitigation and monitoring.

[B] Describe the concerns and issues expressed by aboriginal communities and the actions taken to address those concerns and issues, including how aboriginal community input was incorporated into the Project development, impact mitigation and monitoring. Describe consultation undertaken with aboriginal communities and groups with respect to traditional ecological knowledge and traditional use of land.

[C] Describe plans to maintain the public engagement and aboriginal consultation process following completion of the EIA report to ensure that the public and aboriginal peoples will have an appropriate forum for expressing their views on the ongoing development, operation and reclamation of the Project.

2 PROJECT DESCRIPTION

2.1 The Proponent

[A] Provide:

a) a corporate profile; and
b) the name of the legal entity that will develop, manage and operate the Project and hold the operating approvals.

[B] Describe the Proponent and its history in Alberta, with specific reference to existing operations, compliance with its regulatory authorizations, proposed operations, mineral resources, environmental studies and community involvement.

2.2 Project Development

2.2.1 Relationship to the Existing Coal Valley Mine

[A] Describe the history of development of the overall Coal Valley Mine.

[B] Provide maps showing the EIA study areas for previous assessments and the proposed Robb Trend Project Area. Discuss the implications of any overlaps in the mapped areas, including the confidence CVRI has in the data and assessments from previous assessment as they apply to Robb Trend Project and the need for additional field studies to fill any gaps.

[C] Describe, for each EIA discipline, the lessons learned from the planning, design, construction, operation, mitigation and monitoring at the existing CVRI.

[D] Describe, for each EIA discipline, the lessons learned from the public engagement and Aboriginal consultation process and the approvals process for the Coal Valley Mine.

[E] Describe how the lessons learned have been incorporated into the design of the Robb Trend Project.

2.2.2 Project Schedule

[A] Provide a development plan that includes:
- a) the phases of development;
- b) transportation, infrastructure and access routes; and
- c) activities associated with each stage of the Project.

[B] Provide a schedule outlining the proposed phases of development and the sequence and duration of key project components, including the timing of key steps in the construction, operation, decommissioning and reclamation.

[C] Discuss the key factors controlling the schedule, restrictions for conducting certain development activities, and uncertainties.

[D] Discuss the implications of a delay in proceeding with the Project, or any phase of the Project, or not going ahead with the Project.

2.3 Evaluation of Alternatives

[A] Discuss the need for the Project including:
- a) any alternative means of carrying out the Project that are technically and economically feasible and where applicable indicate their potential environmental impacts;
- b) a comparison of identified alternatives to the Project or components of the Project and the anticipated impacts of the alternatives. Discuss reasons for not selecting any identified alternatives; and
- c) potential cooperative development opportunities (e.g., shared infrastructure).

[B] Discuss the route or site selection criteria for any linear or other infrastructure development or modification and provide the rationale for selecting the proposed alignment and design.

2.4 Project Processes and Facilities

[A] Provide maps and/or drawings of the Project components and activities including:
- a) existing infrastructure, leases and clearings, including exploration clearings;
- b) proposed mining excavation(s);
- c) proposed coal processing facilities;
- d) other buildings and infrastructure (pipelines, conveyors and utilities);
- e) temporary structures;
- f) transportation and access routes;
- g) on-site hydrocarbon storage;
- h) containment structures such as retention ponds and storage ponds;
- i) water wells/intakes, pipelines, and storage structures;
- j) dewatering and water control facilities;
- k) sources of aggregate resources, borrow material and other construction material and locations of any stockpiles that will be developed;
- l) waste storage, transfer treatment and disposal sites; and
- m) recycling and/or salvage facilities.

[B] Provide a list of facilities for which locations will be determined later.

[C] Describe the primary resource recovery process, any proposed follow-up recovery process and other related processes and process facilities of the Project.

[D] Discuss the amount and source of energy required for the Project.

[E] Describe the proposed method to transport product to markets.

[F] Provide a list of chemical products to be manufactured, processed or otherwise used for the Project and describe, in general terms, how these products will be stored and managed. Identify products containing substances that are:

a) *Canadian Environmental Protection Act*, 1999 toxics;
b) listed on the National Pollutant Release Inventory;
c) dangerous goods as defined by the federal *Transportation of Dangerous Goods Act*; and
d) on the Domestic Substances List and categorized as requiring further assessment under Canada's Chemicals Management Plan.

[G] Describe the nature and amount of on-site hydrocarbon storage. Discuss containment and other environmental protection measures.

2.5 Transportation Infrastructure

[A] Discuss the traffic implications of the Project, including the anticipated changes to traffic (e.g., type, volume) on highways. Consider other existing and planned uses of the same highway.

[B] Describe and map the locations of any new road or intersection construction, or any improvements to existing roads or intersections, related to the development of the Project, from the boundary of the Project Area up to and including the highway access point, and

a) discuss the alternatives and the rationale for selection of the preferred alternative;
b) describe the impacts to local communities of the changes in transportation infrastructure;
c) provide a proposed schedule for the work;
d) provide the estimated cost of the work; and
e) provide a summary of consultation with Alberta Transportation and the local authority, including their views on the compatibility of the proposed work with their own local or regional infrastructure development plans.

[C] Identify the type, volume, location and availability of road construction and reclamation materials for all road construction and road improvement work, related to the development of the Project, within and outside of the Project Area.

[D] Describe access corridors needed and/or planned by other resource development stakeholders including those responsible for Forest Management Areas and other timber quota holders, and

a) describe how their needs are accommodated to reduce overall environmental impact from resource development; and
b) describe opportunities for cooperation in access development.

[E] Indicate where Crown land dispositions may be needed for roads or other infrastructure for the Project.

[F] Describe crossings of watercourses or waterbodies required and provide example diagrams of each type of crossing. Discuss:
a) timing;
b) construction standards or methods; and
c) environmental protection plans.

2.6 Land Management

[A] Provide a description and timing of land clearing activities.

[B] Provide a timber salvage plan, highlighting end users and identifying proposed volumes for removal (by species and year) for all stages of the Project.

[C] Identify any access restrictions including where appropriate, measures taken to control access to the Project Area while ensuring continued access to adjacent wildland areas.

[D] Provide a fire control plan highlighting:
a) measures taken to notify authorities, the public and surrounding facilities in the event of a fire;
b) measures taken to ensure continued access for firefighters to adjacent wildland areas;
c) forest fire prevention, detection, reporting, and suppression measures, including proposed fire equipment;
d) measures for determining the clearing width of power line rights-of-way; and
e) required mitigative measures for areas adjacent to the Project Area based on the FireSmart Wildfire Assessment System.

[E] Describe how land management planning (end land use) initiatives in the area may be incorporated into the mine planning process.

2.7 Air Emissions Management

[A] Identify the type, volume and source of air emissions for the proposed Project:
a) identify all potential sources of emissions (total particulates, PM_{10}, $PM_{2.5}$, CO (carbon monoxide), NO_x (oxides of nitrogen) and SO_2 (sulphur dioxide)) from the Project, including, but not limited to, mining activities, coal handling facilities, vehicles, roadways, and other related activities;
b) describe any mitigation, monitoring and control systems that CVRI proposes to reduce potential impacts from emissions;
c) describe the air management program to address all relevant fugitive dust and other emissions;
d) describe the annual and total greenhouse gas emissions during all stages of the project. Identify the primary sources and provide examples of calculations; and
e) describe CVRI's overall greenhouse gas management plans.

2.8 Water Management

2.8.1 Water Supply

[A] Describe the water supply requirements for the Project.

2.8.2 Surface Water

[A] Describe the surface water management strategy for all stages of the project, including:

a) design factors considered, such as:
   i) site drainage,
   ii) run-on management,
   iii) road and plant run-off,
   iv) erosion/sediment control,
   v) geotechnical stability concerns,
   vi) groundwater and surface water protection,
   vii) muskeg dewatering,
   viii) mine pit dewatering,
   ix) groundwater seepage, and
   x) flood protection;
b) permanent or temporary alterations or realignments of watercourses, wetlands and other waterbodies;
c) the pre and post-disturbance alignment and condition of all ephemeral and permanent streams, wetlands and waterbodies including those created by the Project; and
d) factors used in the design of water management facilities with respect to the *Canadian Dam Safety Association Dam Safety Guidelines*, including expected flood and flood protection.

[B] Describe navigable waterways and the results of navigability assessment(s) provided by Transport Canada's Navigable Water Protection Program for waterways that may be affected by the Project.

2.8.3 Wastewater Management

[A] Describe the wastewater management strategy for the Project, including:

a) the source, quantity and composition of wastewater streams from each component of the proposed operation (e.g., coal mining, coal processing) for all Project conditions, including normal, start-up, worst-case and upset conditions;
b) the design of facilities that will handle, treat and store wastewater streams and the type and quantity of any chemicals used in wastewater treatment, including measures taken in the design to prevent or minimize potential impacts to the environment;
c) the options for wastewater treatment, including the rationale for selecting the preferred options, including a discussion of options not chosen and the rationale for their exclusion;
d) the options for the disposal of wastewater in the context of best management practices and best available technologies, including the rationale for choosing the preferred option and the measures taken to prevent impacts on potable groundwater, aquatic ecosystems and vegetation;
e) discharges to the surrounding watershed from existing and reclaimed sites, including end pit lakes and the management strategy for handling such releases; and
f) a monitoring plan for wastewater releases, including the rationale used to determine the frequency of sampling and the parameters to be measured.

2.9 Waste Management

[A] Characterize and quantify the anticipated dangerous goods, and hazardous, non-hazardous, and recyclable wastes generated by the Project, and:

a) describe the composition and volume of specific waste streams and discuss how each stream will be managed. Include a discussion of the physical and chemical characteristics of waste streams from the existing Coal Valley projects and explain any differences that are expected for waste streams from the proposed project;
b) describe the management plan for exploratory drilling wastes, overburden and other mining wastes, as well as any by-products;
c) describe how any disposal sites will be designed, constructed, operated and decommissioned; and
d) describe plans for pollution prevention, waste minimization, recycling, and management to reduce waste quantities over the life of the Project.

2.10 Conservation and Reclamation

[A] Outline CVRI's reclamation work to date at its existing operations. Include a discussion of changes that have been made over time to its reclamation programs and why, and any anticipated improvements that will be incorporated into reclamation plans for the Robb Trend Project.

[B] Provide a conceptual conservation and reclamation plan for the Project considering:

a) any existing Conservation and Reclamation Plan;
b) existing information with respect to land capability, vegetation, commercial forest land base by commercialism class, forest productivity, recreation, wildlife, aquatic resources, aesthetics, traditional land uses and land use resources;
c) integration of operations, decommissioning, reclamation planning and reclamation activities;
d) anticipated timeframes for completion of reclamation stages and release of lands back to the Crown including an outline of the key milestone dates for reclamation and how progress to achieve these targets will be measured;
e) constraints to reclamation such as timing of activities, availability of reclamation materials and influence of natural processes and cycles including natural disturbance regimes;
f) post-development land capability with respect to:
    i) self-sustaining topography, drainage and surface watercourses representative of the surrounding area,
    ii) existing traditional use with consideration for traditional vegetation and wildlife species in the reclaimed landscape,
    iii) end pit lakes,
    iv) wetlands,
    v) self-sustaining vegetation communities representative of the surrounding area, and
    vi) reforestation and forest productivity;
g) a revegetation plan for the disturbed terrestrial and aquatic areas;
h) water supply capability of post-mine landscape;
i) reclamation material salvage, storage areas and handling procedures;

j) reclamation material replacement indicating depth, volume and type;
k) existing and final reclaimed site drainage plans;
l) integrating surface and near-surface drainage within the Project Area; and
m) promotion of biodiversity.

[C] Describe objectives for the function of end-pit lakes and describe the specific criteria that will be used to gauge the attainment of those objectives.

[D] Provide a predicted Ecological Land Classification map for the post-reclamation landscape.

[E] Provide a conceptual plan to monitor reclamation performance and success (including soils, vegetation, wildlife and aquatic resources). Describe criteria that will be used to track vegetation development to demonstrate that reclamation targets will be met, including how sensitive habitat types may be replaced through reclamation.

[F] Discuss uncertainties related to the conceptual reclamation plan.

2.11 Regional and Cooperative Initiatives

[A] Discuss the Proponent's involvement in regional and cooperative efforts to address environmental and socio-economic issues associated with regional development, including:
a) potential cooperative ventures that the Proponent has initiated, could initiate or could develop with other operators and other resource users;
b) how the Proponent will work to develop and implement such cooperative opportunities;
c) the Proponent's participation in any regional forums;
d) how the Proponent would design and implement research programs; and
e) how regional environmental management initiatives will be incorporated into the Proponent's management practices.

3 ENVIRONMENTAL ASSESSMENT

3.1 Air Quality, Climate and Noise

3.1.1 Baseline Information

[A] Discuss the baseline climatic and air quality conditions including:
a) the type and frequency of meteorological conditions that may result in poor air quality; and
b) appropriate ambient air quality parameters.

[B] Provide representative baseline noise levels at receptor locations.

3.1.2 Impact Assessment

[A] Identify components of the Project that will affect air quality, and:
a) describe the potential for reduced air quality resulting from the Project and discuss any implications of the expected air quality for environmental protection and public health;
b) estimate ground-level concentrations of appropriate air quality parameters;

c) discuss any expected changes to particulate deposition or nitrogen deposition patterns; and
d) discuss interactive effects that may occur resulting from co-exposure of a receptor to all emissions.

[B] Identify stages or elements of the Project that are sensitive to changes or variability in climate parameters, including frequency and severity of extreme weather events. Discuss what impacts the change to climate parameters may have on elements of the Project that are sensitive to climate parameters.

[C] Summarize the results of the noise assessment conducted for the ERCB and:
a) identify the nearest receptor used in the assessment; and
b) discuss the design, construction and operational factors to be incorporated into the Project to comply with the ERCB's Directive 38: Noise Control.

[D] Describe how air quality and noise impacts resulting from the Project will be mitigated.

[E] Describe the residual air quality of the Project and the Proponent's plans to manage those impacts.

3.2 Hydrogeology

3.2.1 Baseline Information

[A] Provide an overview of the existing geologic and hydrogeologic setting from the ground surface down to, and including, the coal zones, and if applicable, to the base of any deeper strata that would be potentially impacted by mining. Document any new hydrogeological investigations, including methodology and results, undertaken as part of the EIA, and:
a) present regional and Project Area geology to illustrate depth, thickness and spatial extent of lithology, material (behavior) properties, stratigraphic units and structural features such as faults and fractures;
b) present regional and Project Area hydrogeology describing:
    i) the major aquifers, aquitards and aquicludes (Quaternary and bedrock), their spatial distribution, properties, hydraulic connections between aquifers, hydraulic heads, gradients, groundwater flow directions and velocities. Include maps and cross sections with the location of wells and/or control points,
    ii) the chemistry of groundwater aquifers including baseline concentrations of major ions, metals and hydrocarbon indicators,
    iii) the potential discharge zones, potential recharge zones and sources, areas of groundwater-surface water interaction and areas of Quaternary aquifer-bedrock groundwater interaction,
    iv) water well development and groundwater use, including an inventory of groundwater users,
    v) the recharge potential for Quaternary aquifers, and
    vi) potential hydraulic connection between coal zones and other aquifers resulting from Project operations.

3.2.2 Impact Assessment

[A] Describe Project components and activities that have the potential to affect groundwater resource quantity and quality at all stages of the Project.

[B] Describe the nature and significance of the potential Project impacts on groundwater with respect to:

a) inter-relationship between groundwater and surface water in terms of surface water quantity and quality;
b) implications for terrestrial or riparian vegetation, wildlife and aquatic resources including wetlands;
c) changes in groundwater quality and quantity;
d) conflicts with other groundwater users, and proposed resolutions to these conflicts;
e) potential implications of seasonal variations; and
f) groundwater withdrawal for Project operations, including any expected alterations in the groundwater flow regime during and following Project operations.

[C] Describe programs to manage and protect groundwater resources including:

a) the early detection of potential contamination; and
b) groundwater remediation options in the event that adverse effects are detected.

3.3 Hydrology

3.3.1 Baseline Information

[A] Describe and map the surface hydrology. Include flow regimes of streams in the Project Area.

[B] Provide surface flow baseline data, including:

a) characteristics of the average stream flow regime including mean monthly and annual flows and run-off depths (water yields), seasonal variation and year-to-year variability for all basins; and
b) estimates of peak flows and low flows for all watercourses.

3.3.2 Impact Assessment

[A] Discuss changes to watersheds, including surface and near-surface drainage conditions, potential flow impediment, and potential changes in open-water surface areas caused by the Project.

[B] Describe the extent of hydrological changes that will result from disturbances to groundwater and surface water movement:

a) include changes to the quantity of surface flow, water levels and channel regime in watercourses (during low, average and peak flows) and water levels in waterbodies;
b) assess the potential impact of any alterations in flow on the hydrology and identify all temporary and permanent alterations, channel realignments, disturbances or surface water withdrawals;
c) discuss both the Project and cumulative effect of these changes on hydrology (e.g., timing, volume, peak and minimum flow rates, river regime and lake levels), including the significance of effects for downstream watercourses; and
d) identify any potential erosion problems in watercourses resulting from the Project.

[C] Discuss changes in sedimentation patterns in receiving waters resulting from the Project.

[D] Describe impacts on other surface water users resulting from the Project. Identify any potential water use conflicts.

[E] Describe potential downstream impact if surface water is removed.

[F] Discuss the impact of low flow conditions and in-stream flow needs on water supply and water and wastewater management strategies.

[G] Discuss how potential impacts of temporary and permanent roads on wetland hydrology will be minimized and mitigated.

[H] Describe mitigation measures to address impacts during all stages of the Project including:
- a) alteration in flow regimes;
- b) potential water use conflicts; and
- c) increased sediment loadings.

3.4 Surface Water Quality

3.4.1 Baseline Information

[A] Describe the baseline water quality of watercourses and waterbodies. Discuss the effects of seasonal variations, flow and other factors on water quality.

3.4.2 Impact Assessment

[A] Identify Project components that may influence or impact surface water quality.

[B] Describe the potential impacts of the Project on surface water quality:
- a) discuss any changes in water quality resulting from the Project including impacts on drinking water quality;
- b) discuss the significance of any impacts on water quality and implications to aquatic resources (e.g., biota, biodiversity and habitat);
- c) discuss seasonal variation and potential impacts on surface water quality; and
- d) discuss the effect of changes in surface runoff or groundwater discharge on water quality in surface waterbodies.

[C] Describe proposed mitigation measures to maintain surface water quality at all stages of the Project.

3.5 Aquatic Ecology

3.5.1 Baseline Information

[A] Describe and map the fish, fish habitat and aquatic resources, (e.g., aquatic and benthic invertebrates) of the lakes, rivers, streams, ephemeral water bodies and other waters. Describe the species composition, distribution, relative abundance, movements and general life history parameters of fish resources. Also identify any species that are:
- a) listed as “at Risk, may be at Risk and Sensitive” in the Status of Alberta Species (Alberta Sustainable Resources Development);
- b) listed in schedule 1 of the federal *Species at Risk Act*; and
- c) listed as “at Risk” by COSEWIC.

[B] Describe and map existing critical or sensitive areas such as spawning, rearing and overwintering habitats, and seasonal habitat use including migration and spawning routes.

[C] Describe the current and potential use of fish resources by Aboriginal, sport or commercial fisheries.

[D] Identify the key aquatic indicators that CVRI used to assess the Project's impacts. Discuss the rationale for their selection.

3.5.2 Impact Assessment

[A] Describe the potential impacts to fish, fish habitat, and other aquatic resources (e.g., stream alterations and changes to substrate conditions, water quality and quantity) considering:

a) fish tainting, survival of eggs and fry, chronic or acute health effects, and increased stress on fish populations from release of contaminants, sedimentation, flow alterations, temperature and habitat changes;
b) potential impacts on riparian areas that could affect aquatic biological resources and productivity;
c) the potential for increased fishing pressures in the region that could arise from the increased workforce and improved access resulting from the Project. Identify the implications on the fish resource and describe any mitigation strategies that might be planned to minimize these impacts, including any plans to restrict employee and visitor access;
d) changes to benthic invertebrate communities that may affect food quality and availability for fish; and
e) the potential for increased fragmentation of aquatic habitat.

[B] Discuss the design, construction and operational factors to be incorporated into the Project to minimize impacts to fish and fish habitat and protect aquatic resources.

[C] Identify plans proposed to offset any loss in the productivity of fish habitat. Indicate how environmental protection plans address applicable provincial and federal policies on fish habitat including the development of a "No Net Loss" fish habitat objective.

[D] Describe the effects of any surface water withdrawals considered including cumulative effects on fish, fish habitat and other aquatic resources.

3.6 Vegetation

3.6.1 Baseline Information

[A] Describe and map vegetation communities for each ecosite phase.

[B] Describe and map wetlands and discuss their distribution and relative abundance.

[C] Identify, verify and map the relative abundance of species of rare plants and the ecosite phases where they are found.

[D] Discuss the potential of each ecosite phase to support rare plant species, plants for traditional, medicinal and cultural purposes, old growth forests and communities of limited distribution. Consider their importance for local and regional habitat, sustained forest growth, rare plant habitat and the hydrologic regime.

[E] Describe the regional relevance of landscape units that are identified as rare.

[F] Provide Timber Productivity Ratings for both the Project Area and the Local Study Area, including identification of productive forested, non-productive forested and non-forested lands.

3.6.2 Impact Assessment

[A] Identify the amount of vegetation and wetlands to be disturbed for all stages of the Project.

[B] Discuss any potential impacts the Project may have on rare plants or endangered species.

[C] Discuss temporary (include timeframe) and permanent changes to vegetation and wetland communities.

[D] Describe the regional impact of any ecosite phase to be removed.

[E] Discuss from an ecological perspective, the expected timelines for establishment and recovery of vegetative communities and the expected differences in the resulting vegetative community structures.

[F] Provide a predicted Ecological Land Classification map that shows the reclaimed vegetation.

[G] Discuss the impact of any loss of wetlands, including how the loss will affect land use.

[H] Provide a mitigation strategy that will minimize Project impacts addressing:

a) mitigation of the adverse effects of site clearing on rare plants, plant communities and plants for traditional, medicinal and cultural purposes. Identify any setbacks proposed around environmentally-sensitive areas such as surface waterbodies, riparian areas and wetlands; and
b) measures and techniques that will be used to minimize the impact of loss of wetlands on land use.

[I] Discuss weeds and non-native invasive species and describe how these species will be assessed and controlled prior to and during operation and reclamation.

[J] Discuss at multiple spatial scales, the predicted changes to upland, riparian and wetland habitats resulting from increased fragmentation.

3.7 Wildlife

3.7.1 Baseline Information

[A] Describe and map existing wildlife resources (amphibians, reptiles, birds and terrestrial and aquatic mammals) and their use and potential use of habitats.

[B] Identify key indicator species and discuss the rationale for their selection. Identify composition, distribution, relative abundance, seasonal movements, movement corridors, habitat requirements, key habitat areas, and general life history. Address those species:

a) listed as “at Risk, May be at Risk and Sensitive” in *The Status of Alberta Species* (Alberta Sustainable Resource Development);
b) listed in Schedule 1 of the federal *Species at Risk Act*; and
c) listed as “at risk” by COSEWIC.

[C] Describe, quantify and map all existing habitat disturbance (including exploration activities) and identify those habitat disturbances that are related to existing and approved Project operations.

3.7.2 Impact Assessment

[A] Describe Project components and activities that may affect wildlife and wildlife habitat.

[B] Describe and assess the potential impacts of the Project on key indicator species and relate those impacts to wildlife populations and wildlife habitats, addressing:

a) how the Project will affect wildlife relative abundance, movement patterns, distribution and recruitment into regional populations for all stages of the Project;
b) how improved or altered access may affect wildlife including potential obstruction of daily and seasonal movements, increased vehicle-wildlife collisions, and increased hunting pressures;
c) how increased habitat fragmentation may affect wildlife considering edge effects, the availability of core habitat, and the influence of linear features and infrastructure on wildlife movements and other population parameters;
d) the spatial and temporal changes to habitat availability and habitat effectiveness (types, quality, quantity, diversity and distribution);
e) potential impacts on wildlife resulting from changes to air and water quality, including both acute and chronic effects to animal health;
f) the resilience and recovery capabilities of wildlife populations and habitats to disturbance; and
g) the potential for the Project Area to be returned to its existing state with respect to wildlife populations and their habitats.

[C] Comment on the availability of species for traditional use considering habitat loss, habitat avoidance, vehicle-wildlife collisions, increased non-aboriginal hunting pressure and other Project related impacts on wildlife populations.

[D] Provide a strategy and mitigation plan to minimize impacts on wildlife and wildlife habitat for all stages of the Project and to return productive wildlife habitat to the area, considering:

a) consistency of the plan with applicable regional, provincial and federal wildlife habitat objectives and policies;
b) a schedule for the return of habitat capability to areas impacted by the Project;
c) the use of setbacks to protect riparian habitats, interconnectivity of such habitat and the unimpeded movement by wildlife species using that habitat and the use of buffers (e.g. treed buffers) to reduce visual or noise impacts on wildlife;
d) anticipated access controls or other management strategies to protect wildlife during and after Project operations;
e) measures to prevent habituation of wildlife to minimize the potential for human-wildlife encounters and consequent destruction of wildlife, including any staff training program, fencing camps, garbage containment measures or regular follow-up;
f) measures to mitigate habitat fragmentation considering impacts to habitat connectivity and wildlife movements resulting from linear features (e.g., above ground pipelines, roads etc.) and other Project infrastructure and activities; and

g) measures to mitigate mortality risks to wildlife from roads or other hazards related to Project infrastructure.

3.8 Biodiversity

3.8.1 Baseline Information

[A] Describe the terrestrial and aquatic biodiversity metrics that will be used to characterize the existing ecosystems and probable impacts of the Project, and:

a) describe the process and rationale used to select biotic and abiotic indicators for biodiversity within selected taxonomic groups;
b) determine the relative abundance of species in each ecosite phase;
c) provide species locations, lists and summaries of observed and estimated species richness and evenness for each ecosite phase;
d) provide a measure of biodiversity on baseline sites that are representative of the proposed reclamation ecosites; and
e) rank each ecological unit for biodiversity potential. Describe the techniques used in the ranking process.

3.8.2 Impact Assessment

[A] Describe the metrics used to assess the probable impacts of the Project. Discuss the contribution of the Project to any anticipated changes in regional biodiversity and the potential impact to local and regional ecosystems.

[B] Identify and evaluate the extent of potential effects of fragmentation on biodiversity that may result from the Project. Discuss those effects at all relevant scales (from site specific to landscape level).

[C] Discuss the mitigation measures proposed to minimize any anticipated changes in regional biodiversity.

3.9 Terrain and Soils

3.9.1 Baseline Information

[A] Provide descriptions and maps of the terrain and soils conditions, including:

a) surficial geology and topography;
b) soil types and their distribution. Provide an ecological context to the soil resource by supplying a soil survey report and maps to Survey Intensity Level 2 for the Project Area;
c) suitability and availability of soils within the Project Area for reclamation;
d) soils that could be affected by the Project; and
e) descriptions and locations of erosion sensitive soils.

3.9.2 Impact Assessment

[A] Describe Project activities and other related issues that could affect soil quality (e.g., compaction, contaminants) and:

a) indicate the amount (ha) of surface disturbance from mine, overburden disposal, reclamation material stockpiles, infrastructure (e.g., pipelines, power lines, access

roads), aggregate and borrow sites, construction camps, waste disposal and other construction and operation activities;
b) describe potential sources of soil contamination;
c) describe the impact of the Project on soil types and reclamation suitability and the approximate volume of soil materials for reclamation. Discuss any constraints or limitations to achieving vegetation/habitat reclamation based on anticipated soil conditions (e.g., compaction, contaminants, salinity, soil moisture, nutrient depletion, erosion, etc.); and
d) discuss the potential for soil erosion during the life of the Project.

[B] Discuss the potential impact of the Project (including blasting, excavation and tunneling) on slope stability.

[C] Discuss the potential impacts caused by the mulching and storage of woody debris considering, but not limited to vulnerability to fire, degradation of soil quality, increased footprint, etc.

[D] Provide a mitigation plan including:
a) possible measures to minimize surface disturbance including the use of existing clearings for the Project;
b) possible actions to mitigate effects of any constraint or limitation to habitat reclamation such as compaction, contaminants, salinity, soil moisture, erosion, nutrient regime, etc.;
c) possible actions to address impacts to land capability; and
d) any other measures to reduce or eliminate the potential impacts that the Project may have on soil capability and/or quality.

3.10 Land Use

3.10.1 Baseline Information

[A] Describe and map the current land uses in the study area, including all Crown land and Crown Reservations (Holding Reservation, Protective Notation, and Consultative Notation).

[B] Indicate where Crown Land dispositions will be needed for roads or other infrastructure for the Project.

[C] Identify and map unique sites or special features in the local and regional study areas such as Parks and Protected Areas, Heritage Rivers, Historic Sites, Environmentally Significant Areas, culturally significant sites and other designations (World Heritage Sites, Ramsar Sites, Internationally Important Bird Areas, etc).

[D] Describe and map land clearing activities, showing the timing of the activities.

[E] Describe the status of timber harvesting arrangements, including species and timing.

3.10.2 Impact Assessment

[A] Identify the potential impact of the Project on land uses, including:
a) impacts to unique sites or special features;

b) impacts caused by changes in public access arising from linear development, including secondary effects related to increased hunter, angler and other recreational access, decreased access to traditional use sites and facilitated predator movement;
c) potential impacts to aggregate reserves that may be located on land under CVRI's control;
d) the impact of development and reclamation on commercial forest harvesting and fire management in the study Area;
e) the amount of commercial and non-commercial forest land base that will be disturbed by the Project, including the Timber Productivity Ratings for the Project area. Compare the pre-disturbance and reclaimed percentages and distribution of all forested communities in the Project Area;
f) how the Project impacts Annual Allowable Cuts and quotas within the Forest Management Agreement area;
g) the potential impact on existing land uses of anticipated changes (type and extent) to the pre-disturbance topography, elevation and drainage pattern within the Project Area; and
h) impacts of the Project on public access, regional recreational activities, aboriginal land use and other land uses during and after development activities.

[B] Discuss possible mitigation strategies to address impacts on land use including:
a) access management during and after Project operations;
b) the process for addressing the needs of other land users in both the local and regional study areas; and
c) how potentially-affected aggregate reserves will be salvaged and stockpiled with input provided by Alberta Sustainable Resource Development.

4 HISTORIC RESOURCES

[A] Describe the Historic Resource Impact Assessment (HRIA) work done for the Project, and provide a schedule for any future work.

[B] Describe the implications of the findings of the HRIA work on Project design and scheduling.

[C] Describe any Project uncertainties arising from the need for future HRIA work.

5 TRADITIONAL ECOLOGICAL KNOWLEDGE AND LAND USE

[A] Provide:
a) a map and description of traditional use areas including fishing, hunting, trapping, nutritional or medicinal plant harvesting, and cultural use by affected Aboriginal peoples (if the aboriginal community or group is willing to have these locations disclosed);
b) a map of cabin sites, spiritual sites, graves and other traditional use sites considered historic resources under the *Historical Resources Act* (if the aboriginal community or group is willing to have these locations disclosed), as well as traditional trails and resource activity patterns; and
c) a discussion of:
i) access to traditional lands in the Project Area during all stages of the Project,

ii) the vegetation and wildlife used for traditional, food, ceremonial, medicinal and other purposes, and
iii) aboriginal views on land reclamation.

[B] Determine the impact of the Project on traditional uses and culture and identify possible mitigation strategies.

6 PUBLIC HEALTH AND SAFETY ASSESSMENT

[A] Describe any features or characteristics of the Project that may have implications for public health or the delivery of regional health services that are different from the existing Coal Valley Mine. Determine whether there may be implications for public health arising from the Project that are different from the existing Coal Valley Mine. Specifically:

a) assess the potential health implications of the compounds that will be released to the environment from the Project in relation to exposure limits established to prevent acute and chronic adverse effects on human health;
b) provide the data, exposure modeling calculations, and describe the methods the Proponent used to assess impacts of the Project on human health and safety;
c) provide information, including chemical analyses and modeling results, on samples of selected environmental media (e.g., soil, water, air, vegetation, wild game, etc.) used in the assessment;
d) discuss the potential for changes to water quality, air quality and soil quality to increase human exposure to contaminants taking into consideration all Project activities;
e) identify the human health impact of the potential contamination of country foods and natural food sources taking into consideration all Project activities;
f) document any health concerns raised by stakeholders during consultation on the Project;
g) document any health concerns identified by aboriginal communities or groups resulting from impacts of existing development and of the Project specifically on their traditional lifestyle and include an aboriginal receptor type in the assessment;
h) assess the cumulative human health impacts to receptors, including First Nations and Métis receptors;
i) as appropriate, describe anticipated follow-up work, including regional cooperative studies. Discuss how such work will be implemented and coordinated with ongoing air, soil and water quality initiatives;
j) describe the potential health impacts resulting from higher regional traffic volumes and the increased risk of accidental leaks and spills; and
k) discuss mitigation strategies to minimize the potential impact of the Project on human health.

[B] Describe those aspects of the Project that may have implications for public safety. Determine whether there may be implications for public safety arising from the Project. Specifically:

a) describe the CVRI's emergency response plan, including public notification protocol and safety procedures, to minimize adverse environmental effects, including emergency reporting procedures for spill containment and management;

b) document any safety concerns raised by stakeholders during consultation on the Project;
c) describe how local residents will be contacted during an emergency and the type of information that will be communicated to them;
d) describe the existing agreements with area municipalities or industry groups such as safety cooperatives, emergency response associations, regional mutual aid programs and municipal emergency response agencies;
e) describe the potential safety impacts resulting from higher regional traffic volumes; and
f) discuss mitigation plans to ensure workforce and public safety for all stages of the Project. Include prevention and safety measures for wildfire occurrences, accidental release or spill of chemicals to the environment and failures of structures retaining water or fluid wastes.

7 SOCIO-ECONOMIC ASSESSMENT

7.1 Baseline Information

[A] Describe the existing socio-economic conditions in the region and in the communities in the region.

[B] Describe factors that may affect existing socio-economic conditions including:
a) population changes;
b) CVRI's policies and programs regarding the use of regional and Alberta goods and services;
c) workforce requirements for the Project, including a description of when peak activity periods will occur; and
d) planned accommodations for the workforce for all stages of the Project.

7.2 Impact Assessment

[A] Describe the socio-economic impacts of construction and operation of the Project, including:
a) impacts related to:
   i) housing,
   ii) recreational activities,
   iii) hunting, fishing, trapping and gathering, and
   iv) effects on First Nations and Métis (e.g., traditional land use and social and cultural implications);
b) estimated total Project cost, including a breakdown for engineering and project management, equipment and materials, and labour for both construction and operation stages. Indicate the percentage of expenditures expected to occur in the region, Alberta, Canada outside of Alberta, and outside of Canada;
c) impacts of the Project on the availability of affordable housing and the quality of health care services. Provide a summary of any discussions that have taken place with the local municipalities and the local environmental public health office of Alberta Health Services concerning housing availability and health care services respectively;
d) the impact on local and regional infrastructure and community services, including consideration of municipal "hard services", education/training services, social

services, urban and regional recreation services, law enforcement and emergency services; and

e) municipal growth pressures as they relate to the Project and the need for additional Crown land to meet these needs.

[B] Discuss options for mitigating impacts including:

a) CVRI's policies and programs regarding the use of regional and Alberta goods and services;
b) plans to work with First Nations and Métis communities and groups and other local residents and businesses regarding employment, training needs, and other economic development opportunities arising from the Project;
c) the potential to avoid overlap with other Projects that are reasonably anticipated during all stages of the Project;
d) mitigation plans that will be undertaken to address issues related to the availability of affordable housing and the quality of health care services; and
e) strategies to mitigate socio-economic concerns raised by the local municipality and other stakeholders in the region.

8 RESIDUAL IMPACTS

[A] Describe the residual impacts of the Project following implementation of CVRI's mitigation measures and discuss plans to manage those impacts.

9 MONITORING AND ADAPTIVE MANAGMENT

[A] Describe CVRI's current and proposed local and regional monitoring programs with respect to Project impacts from:

a) Source air emissions, including fugitive emissions;
b) Wastewater treatment and release;
c) Hazardous and non-hazardous waste storage, transfer and treatment.

[B] Describe the monitoring programs proposed to measure the effectiveness of mitigation plans.

[C] Discuss how monitoring data will be disseminated to the public, Aboriginal communities and other interested parties.

[D] Discuss how the results of monitoring programs and publically available monitoring will be integrated with CVRI's environmental management system.

[E] Describe adaptive management plans that minimize the impact of the Project. Describe the flexibility built into the Project to accommodate future modifications required as a result of any changes in environmental standards, limits and guidelines, or as a result of findings from Project specific monitoring programs.