FINAL TERMS OF REFERENCE
ENVIRONMENTAL IMPACT ASSESSMENT REPORT

FOR MD OF ACADIA AND SPECIAL AREAS BOARD'S PROPOSED

MD OF ACADIA AND SPECIAL AREAS JOINT IRRIGATION PROJECT

Approximately 250 km east of Calgary and 100 km north from Medicine Hat, Alberta

ISSUED BY: **Environment and Protected Areas**

DATE: **October 10, 2025**

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PURPOSE OF THE TERMS OF REFERENCE

The purpose of this document is to identify for the Municipal District of Acadia (MD of Acadia), Special Areas Board, the public, Indigenous 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 MD of Acadia and Special Areas Joint Irrigation Project (the Project).

PROJECT BACKGROUND

The MD of Acadia and Special Areas Board (the Proponent) propose the Project to increase the irrigation capacity in areas within the MD of Acadia and Special Areas (Special Area No. 2).

The Project is approximately 250 km east of Calgary, AB, and 100 km north of Medicine Hat, AB. Centre point is located between ATS 22-3-W4M and 23-3-W4M, within the MD of Acadia, Special Area No. 2, and Special Area No. 3; however, the irrigation area will service only the MD of Acadia and Special Area No. 2.

The Project will include the creation of two preliminary reservoirs referred to as Reservoir A1, located approximately 1 km north of the Red Deer River, on the boundary between the MD of Acadia and Special Area No. 3, and Prince's Spring Reservoir, located approximately 5.5 km southwest of Bindloss, AB. Reservoir A1 will have a live storage volume of approximately 34,000,000 m3 and a maximum dam height of 30.5 m. Prince's Spring Reservoir will have a live storage volume of approximately 134,000,000 m3 and a maximum dam height of 40 m. The water in these reservoirs will be used to irrigate approximately 43,706 ha (108,000 acres) within the project's 54,450 ha (134,550 acres) of agricultural area. The 43,706 ha of irrigation is split with an estimated 19,900 ha (49,200 acres) in the MD of Acadia and 23,800 ha (58,800 acres) in Special Area No. 2. The total project area is approximately 56,047 ha (138,495 acres) including the agricultural area, and areas covered by dams, reservoirs, pumping stations, water intake, power generation and water conveyance.

The Project requires a new Red Deer River pump station, where water is diverted out of the Red Deer River and is pressurized for pumping. The maximum instantaneous diversion from the Red Deer River is estimated to be 15 m3/s. Various secondary pump stations, water conveyance canals, secondary reservoirs, and a pipeline network will be constructed within the project area. These ancillary components will provide water supply and delivery for the Project.

On-site generation is anticipated to power the pumps at the river intake, Acadia Booster Pumping Station and Prince's Spring Reservoir; grid-supplied energy will be available for reliability. Two gas powered generation facilities (30MW combined output) will be located in Special Areas Board lands near the Red Deer River and Prince's Spring, and one solar facility (approximately 20 MW) will occupy approximately 1/4 section of private land near the A1 reservoir in the MD of Acadia.

At present, irrigation infrastructure is limited, and dryland farming practices occur in these areas. Through the development of irrigation infrastructure, the Project aims to increase the yield and variety of crops that may be cultivated by producers and provide associated opportunities such as increased job growth, community growth, and stability, as well as benefits to the local, regional, and national economy.

SCOPE OF THE EIA REPORT

The Proponent shall prepare and submit an EIA report that examines the environmental and socio-economic effects of the Project.

The EIA report shall be prepared considering all applicable provincial and federal legislation, codes of practice, guidelines, standards, policies 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 Impact Assessment Act, if applicable. The EIA report will form part of the Proponent's application to the Natural Resources Conservation Board (NRCB). An EIA report summary will also be included as part of the NRCB Application.

The Proponent shall refer to the Guide to Preparing Environmental Impact Assessment Reports in Alberta published by Alberta Environment and Parks (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 INDIGENOUS CONSULTATION

[A] Document the public engagement program implemented for the Project including:

a) a list of meetings (including dates, attendees, and information discussed) and the specific comments or issues raised at the meetings;
b) a list of other consultation methods including communication via websites, radio, television, newspaper, and the intended audience reached;
c) a description and documentation of concerns and issues expressed by the public, the Proponent's analysis of those concerns and issues, and the actions taken to address those concerns and issues; and
d) a description of how the public input was incorporated into the Project development, impact mitigation, and monitoring.

[B] Document the Indigenous consultation program implemented for the Project including:

a) a list of meetings (including dates, attendees, and information discussed) and the specific comments or issues raised at the meetings;
b) a description and documentation of concerns and issues expressed by Indigenous communities and groups, the Proponent's analysis of those concerns and issues, and the actions taken to address those concerns and issues;
c) a description of how Indigenous values are considered in the framework of decision making;
d) how Indigenous knowledge helped shape project development, impact mitigation, monitoring, and reclamation; and
e) the consultation undertaken with Indigenous communities and groups with respect to traditional ecological knowledge and traditional use of land and water.

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

[D] Provide the presentation materials and associated documents (e.g., agendas, minutes, maps briefings) used for public meeting and Indigenous consultations.

2 PROJECT DESCRIPTION

2.1 Overview

[A] Provide a brief project description in sufficient detail to provide context for the EIA, including:

a) Proponent information;
b) the need for the Project and why this project was chosen over other projects;
c) roles of various government departments and agencies and non-governmental organizations;
d) the proposed uses of the water and the relative proportions among uses;
e) which communities would benefit from the Project;
f) amount and source of energy required for the Project;
g) the development plan and schedule of the project phases;
h) the legal entity that will manage and operate the completed Project and hold the operating approvals;
i) the governance structure that is being adopted by the proponents to make decisions on irrigation boundaries, land conversion, infrastructure and water allocation to irrigators; and
j) relationship between the governing body to municipal and provincial governments, including a description of their eligibility for capital funding, program funding, or other government financing streams.

[B] Describe how the Project links to and realizes the outcomes of the Alberta Irrigation Strategy and the Alberta Irrigation Modernization Program.

[C] Describe the effects of the Project, including jobs created, local training, employment and business opportunities, and royalties and taxes generated for each phase of the Project as they pertain to:

a) the Proponent;
b) local and regional communities, including Indigenous communities;
c) the local authority;
d) Alberta; and
e) Canada.

[D] Describe the rationale for the Project, explaining the need to improve irrigation water management to meet future demands. Identify opportunities for improvement in water management and sustainability based on potential changes in water supply and future demands.

[E] Describe the current users of the Project's water supply (i.e., Red Deer River), including junior licence holders, municipal and industrial uses, and Indigenous communities. Discuss:

a) past and existing contracts that the Proponent has entered into with non-irrigators to supply water for domestic, commercial, or industrial uses; and

b) whether alternative (non-irrigation) water contracts have been explored for water above the current Proponent requirements up to the Proponent's total licence allocation.

[F] Detail planned water conservation practices to be adopted by the Proponent and the outcomes on the water balance, including:

a) a description of the need for storage considering past and future gains realized through conservation and efficiency practices (e.g., enclosed distribution systems, low pressure pivots).

[G] Discuss the current need for the Project including:

a) the need for drought mitigation and climate resiliency;
b) rural and regional economic development objectives;
c) changes in agricultural practices on lands using the water supply from the Proponent on lands currently without a secure water supply; and
d) enhancement of public recreational opportunities.

[H] Provide an estimate of future trends in water demand throughout the Project as well as downstream of the reservoirs.

[I] Describe the decision-making process and priorities for allocating water to the separate reservoirs and irrigation networks during periods of drought or water shortage.

[J] Describe key project activities during construction and operations stages. Describe how mitigation measures and/or offsets will reduce environmental and socio-cultural effects. Provide a detailed schedule showing the phasing, overlap and dependencies of project construction, monitoring, mitigations and operations.

[K] Describe and provide maps, survey drawings, and/or preliminary engineering plans of the components of the Project, including but not limited to:

a) the proposed dam structures, water supply and diversion structures, water conveyance structures, return flow locations and outfalls, reservoirs, access roads, and any other associated works, showing adjacent land uses and important environmental features in the local area;
b) existing infrastructure, leases, and clearings;
c) proposed facilities, buildings, and infrastructure;
d) temporary structures;
e) transportation and access routes;
f) sources of aggregate resources, borrow material and other construction material and locations of any stockpiles that will be developed, if known;
g) chemical storage sites;
h) waste and debris storage and disposal sites;
i) borrow pits;
j) power generation facilities and related infrastructure (e.g. power lines); and
k) total potential flooded areas upstream of the dams in extreme precipitation events (e.g., 1 in 100-year, 1 in 200-year, 1 in 350-year, 1 in 500-year, 1 in 1000-year).

[L] Describe alternatives to the Project considered for addressing downstream irrigation needs, including technical design options and concepts to demonstrate the best available technologies. Examine other reservoir options, reservoir sizes and capacities, and other

methods to provide similar off-stream water storage. Discuss feasibility of implementation and likelihood of success for these options.

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

[N] Discuss the potential for future expansion of modification of the dam and reservoirs.

[O] Identify sources of construction materials, including use of in-situ aggregate materials, offsite borrow pits, or purchased materials.

[P] Describe the construction activities for the proposed dams and reservoirs and appurtenant structures, including:

a) site clearing and grubbing;
b) topsoil stripping;
c) construction and use of temporary works or structures (e.g., temporary roads, runoff controls, construction camps, and laydown areas);
d) excavations, slope stabilization, and foundation preparations;
e) construction of dams and appurtenant structures;
f) management and authorization of design changes during construction;
g) methods to ensure quality assurance and quality control (QAQC) during construction;
h) installation of impervious linings and erosion protection measures, if required;
i) installation of instrumentation, mechanical, and electrical equipment, if required;
j) upgrading existing access roads, if required;
k) testing and commissioning the facility; and
l) removal and reclamation of temporary construction facilities.

[Q] Discuss the overall positive and negative economic, environmental, and social impacts of the Project.

[R] Provide the adaptive management approach that may be implemented throughout the life of the Project. Include how monitoring, mitigation, and evaluation were incorporated.

[S] Provide a list of commitments the Proponent has made. This would include any mitigation, monitoring, and operational commitments made as part of this Assessment.

2.2 Constraints

[A] Discuss the process and criteria used to identify constraints to development, and how the Project was designed to meet the objectives and goals to accommodate those constraints, including the following:

a) any applicable Alberta Land Stewardship Act Regional Plan, sub-regional plan;
b) the apportionment agreement with Saskatchewan and the Master Agreement on Apportionment with the Prairie Provinces Water Board and how apportionment commitments are met;
c) Alberta Irrigation Strategy;
d) irrigation suitability of land parcels in the identified irrigation blocks;
e) applicable municipal and intermunicipal plans;
f) any approved water management plan enacted under the *Water Act*;

g) management plan implemented by Watershed Planning and Advisory Councils and/or Watershed Stewardship Groups;
h) RDR Municipal Users Group (RDRMUG);
i) the Government of Alberta Economic Development in Rural Alberta Plan (EDRAP);
j) Indigenous traditional land and water use;
k) land use policies, and resource management initiatives that pertain to the Project;
l) the environmental setting;
m) federal legislation and regulations;
n) Alberta Utilities Commission (AUC) Rule 007 for the gas powered generation facilities;
o) siting decisions and assessment results for the solar facility following standards and best-management practices outlined in the Wildlife Directive for Alberta Solar Energy Projects;
p) results of project-specific and regional monitoring;
q) potential for changes in the regulatory regime; and
r) climate change policies and objectives.

[B] Describe the process and criteria used and options considered to select sites for project components, including:
a) the dams and reservoirs;
b) water conveyance structures;
c) the source of water, including intake;
d) borrow sites;
e) material disposal sites, including materials from temporary facilities and storage sites;
f) energy sources and electric power required for the Project; and
g) access routes.

[C] Provide a list of project components for which locations, if any, will be determined later. Discuss the selection criteria that will be used to determine the specific location of these if any are proposed.

[D] Identify and describe potentially affected infrastructure including:
a) pipelines;
b) well sites;
c) power lines;
d) railways;
e) residential or commercial properties;
f) municipal roads and provincial highways; and
g) any other infrastructure.

[E] Document communication with the owner of infrastructure regarding potential impacts and relocation requirements and other measures required to mitigate permanent or short-term impacts.

[F] Describe proposed protection, relocation, or reconstruction of infrastructure and measures proposed to mitigate impacts during construction.

[G] Identify constraints related to on-site biophysical features, socio-economic conditions, and cultural activities in the local and regional areas, including:

a) important species and their habitats, ecological communities, landscape features, open water and wetland features, or environmentally sensitive features;
b) Indigenous traditional use sites;
c) cultural use and recreational use sites;
d) monitoring sites;
e) site inspection to determine suitability (i.e. a nuisance ground was found in the footprint of the reservoir) and protection of archeological material; and
f) protected sites.

[H] Describe public lands or public land uses that may conflict with the Project.

[I] Describe the cumulative effects of the Project in combination with any other activities in the Regional Study Area (RSA).

2.3 Regional and Cooperative Efforts

[A] Discuss the Proponent's involvement in regional and cooperative efforts to address environmental and socio-economic issues associated with regional development, including environmental stewardship and habitat improvement programs or initiatives, participation in regional organizations or forums, or multi-party research programs.

[B] Describe opportunities for sharing infrastructure (e.g., access roads, utility corridors, water infrastructure) with other resource development stakeholders, or the local municipality. Provide rationale where these opportunities will not be implemented.

[C] Discuss potential cooperation with other parties regarding water related infrastructure and management including, but not limited to, water supply, water intakes, pipeline, water storage and withdrawals, flow monitoring and reporting, and ecological monitoring.

2.4 Transportation Infrastructure

[A] Discuss the potential impacts of the Project on critical transportation infrastructure such as bridges and culverts on provincial highways and public roads, including:

a) assess structural and hydraulic capacity, scour impacts, and bank erosion impacts; and
b) discuss options and provide recommended solutions to address any adverse effects.

[B] Prepare a Traffic Impact Assessment as per the latest Transportation and Economic Corridor's Traffic Impact Assessment Guidelines (https://open.alberta.ca/publications/traffic-impact-assessment-guidelines), including the following:

a) describe and map the Project boundary, internal road network, and any existing or proposed access location to/from the provincial highway system;
b) discuss the options considered for the proposed highway access locations and provide rationale for selecting the preferred option;
c) discuss compatibility of the preferred option with Transportation and Economic Corridors' future highway plans;

d) describe existing and future background traffic and development traffic, and consider the cumulative effects from other existing and planned developments that are or will be using the same highways and highway accesses;
e) consider the potential traffic impacts for all stages of the Project (e.g., construction, operations, expansion, shutdown, etc.), and determine any necessary improvements to maintain the safe operations of the highway intersections and accesses; and
f) provide a schedule for undertaking the necessary improvements prior to commencing the Project.

[C] Describe any project infrastructure (e.g., utilities and facilities that cross or are in close proximity to a provincial highway) that may impact the provincial highways, and any effects from the Project (e.g., smoke, dust, light, noise, precipitation, etc.) that may affect highway operations, and provide solutions.

[D] Provide a summary of any discussions with Alberta Transportation and Economic Corridors in regard to the Project and its traffic impacts.

[E] If the Project involves the transport of Dangerous Goods by trucks, include the following:
a) state the classes, divisions, and characteristics of the dangerous goods;
b) state where the dangerous goods will be transported to; and
c) confirm the availability of an Emergency Response Assistance Plan (ERAP).

2.5 Air Emissions Management

[A] Discuss the selection criteria used, options considered, and rationale for selecting mitigation measures to minimize air emission and ensure air quality management.

[B] Provide emission profiles (type, rate, and source) for the Project's operating emissions including point and non-point sources, area, mobile and fugitive emissions. Discuss:
a) odorous and visible emissions from the Project;
b) amount and nature of criteria air contaminants emissions; and
c) control technologies and mitigative measures used to reduce emissions.

2.6 Dam Safety

[A] Describe how the Project (Reservoir A1 and Prince's Spring Reservoir dams) will adhere to the Alberta Dam and Canal Safety Directive, including:
a) the Project components and scope (e.g. providing project location, key components and layout plans (if available))
b) the overall approach for design and technical specifications;
c) any hypotheses and assumptions used;
d) data collection methods, models, and studies used to support the design;
e) assumptions used in developing designs and technical specifications;
f) planned duration of construction, reservoir filling, and operations;
g) the degree of uncertainty, reliability, and sensitivity of models and analytical techniques used to reach conclusions in the design process; and
h) any gaps in knowledge and understanding related to key conclusions on the designs and technical specifications, including steps to address these gaps.

[B] Describe the physical characteristics of the proposed reservoirs, including:

a) normal operating range;
b) spatial extent/overlap into other tributaries, if any;
c) surface area at the maximum normal reservoir level;
d) normal operation water volume; and
e) the volume between the maximum normal reservoir level and the minimum normal reservoir level.

[C] Propose and describe the preliminary Consequence Classification of the proposed dams, canals, and its appurtenant structures as per Schedule 1 of the Alberta Dam and Canal Safety Directive.

[D] Describe preliminary design of the proposed structures for each reservoir, including:
a) characteristics of the proposed site, including field and lab test results and geotechnical properties;
b) principal dimensions of the structures and related works including spillway/outlet structures;
c) anticipated quantities of materials required for construction;
d) seepage controls and drainage provision for both the dam and rim of the proposed reservoirs;
e) use of stability analysis under usual and unusual loading conditions, and factors of safety in the designs;
f) freeboard requirements;
g) potential challenges that could impact design and safety during construction and operation stages, and potential mitigation measures; and
h) the expected performance of the structures under usual and unusual loading conditions, including required mitigation measures for unusual conditions.

[E] Describe expected performance of the dams and their appurtenant structures during and after extreme weather events (e.g., floods, earthquakes, or local runoff events) including:
a) ability of the structures (e.g., earth dams, diversions, flow control) to withstand those events and potential challenges and mitigation measures;
b) potential challenges or issues that could impact the design and safety of the proposed structures; and
c) proposed measures to mitigate challenges identified.

[F] Describe construction activities of the proposed structures, including;
a) site clearing and grubbing;
b) construction and operation of any temporary structures required (e.g., cofferdam, river diversion, etc.) if any;
c) excavation and stockpiling of suitable material, including drilling, blasting, sorting, and screening in rock quarries, and moisture conditioning of impervious material;
d) excavated slope stabilization and foundation preparation;
e) placing impervious lining and erosion protection;
f) installation of instrumentation, mechanical and electrical equipment; and
g) testing and commissioning.

[G] Describe decommissioning, removal, and/or reclamation of the existing or temporary infrastructure, including:

a) removal of temporary structures (e.g., cofferdams, etc.); and
b) breach/removal of any existing structures, if applicable.

[H] Describe the operation of structures, including:
a) approach used for the first filling of each reservoir;
b) debris management during reservoir filling;
c) shoreline stabilization during reservoir filling, including stages, and potential impacts with higher reservoir water levels on the reservoir shoreline;
d) operation, maintenance, and surveillance needs for safe operation of the structures;
e) expected fluctuations in the reservoir and its impacts; and
f) approach to manage the reservoirs in usual and unusual conditions.

[I] Provide details regarding potential accidents or malfunctions, including:
a) identification of potential accidents and malfunctions that could occur during all stages of the Project's construction (e.g., cofferdam leakage or failure or other dam safety incidents) for all stages of the Project. Complete a risk management plan as per the Alberta Dam and Canal Safety Directive. Include, if warranted, an assessment of cascade failure of downstream irrigation canals and dams;
b) description of inundation areas caused by dam breach and estimated time for flood wave to arrive; and
c) assessment of the potential for cascade failure and the impacts of such a cascade failure if there are other dam or canal structures located in failure impacts areas.

[J] Identify if any blasting will be required; if so, list the frequency and method, types of explosives, and safe storage and use of explosives.

[K] Describe challenges that could affect safety of the proposed structures, and measures to minimize the risk of accidents and malfunctions during excavation, reservoir filling, dam operations, and maintenance activities.

[L] Describe planned mitigation measures and management practices to address accidents or malfunctions, water and debris management, emergency preparedness, and response plans.

[M] Provide details of dam, reservoir, canal and other infrastructure performance monitoring during construction, reservoir filling, and project operations, to ensure potential failures are identified and addressed proactively and to ensure the Project will meet environmental and performance objectives.

[N] Describe the normal operating characteristics of the proposed reservoirs, including:
a) operating depth and volume ranges; and
b) flooded surface area at maximum reservoir levels.

2.7 Water Management

2.7.1 Water Supply

[A] Describe the source of water supply for the Project, including:
a) the water requirements and sources for normal operation of each reservoir.
b) identify the volume of water to be diverted from the RDR and how this will be licensed;

c) the flow split between the Acadia (A1) and Prince's Spring Reservoirs during wet, normal and dry years;
d) the range in variability in the amount of water required on an annual and seasonal basis as the Project is implemented;
e) The security of the source of water supply (e.g., the source is expected to supply 85% of the Project water needed in 30 of 40 years)
f) the expected water balance prior to and resulting from all stages of the Project including, but not limited to:
    i) total annual diverted volumes of water;
    ii) water withdrawals from the source, water storage, water outflow to the irrigation distribution systems,
    iii) volume of water gained or lost from precipitation, run-off, evaporation, and seepage from canals and reservoirs including seasonal or annual patterns if available.
    iv) volume of return flows;
    v) licensed volumes used for other purposes than irrigation (e.g., agricultural and industrial water conveyance agreements);
    vi) volume of remaining licence water available for crop use; and
    vii) volumes of consumptive use.
g) a complete water balance for the reservoirs (including existing and proposed conditions using historical hydrologic data [especially watershed natural runoff yield and natural flow]); and
h) a discussion of assumptions made, or methods chosen to arrive at the water balances.

[B] Describe the water supply requirements for the Project as it relates to process and/or potable water needs during construction, operation, and/or decommissioning, including;
a) the process water, potable water, and non-potable water requirements and basin water supply sources for construction and normal operation of the reservoir. Identify the volume of water to be withdrawn from each of the sources and potential changes in the operation of upstream water supply reservoirs;
b) potable water treatment systems for all stages of the Project;
c) type, quantity, and process of potable water treatment chemicals used; and
d) measures for ensuring efficient use of water such as water use minimization, recycling, conservation, and technological improvements.

[C] Discuss preparation and filling of the reservoirs, including:
a) management of water levels in the reservoirs;
b) the planned approach to ensure successful first filling;
c) estimated time for the new reservoirs to be filled, and the expected water elevation, surface area and distribution of water, and volumes of water during the filling process;
d) management efforts to ensure dam safety during this activity, including development of a safety management plan and an emergency management plan, including an assessment of effects on downstream infrastructure if the new dam were breached while filling; and
e) methods for managing fish, wildlife, debris, and shoreline stability at the river diversion structure and the reservoirs during reservoir filling.

[D] Describe the annual operating schedule for the reservoir pumphouses, including:
- a) annual pumping volumes;
- b) scheduled duration and proposed dates of pumping;
- c) schedules for pump maintenance or replacement; and
- d) contingency plans for situations where the pumps are down for maintenance or if pumping restrictions are in place to meet Water Conservation Objectives (WCO) for the Red Deer River (RDR).

2.7.2 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 and run-off management;
  - iii) erosion/sediment control;
  - iv) geotechnical stability concerns;
  - v) surface water protection and groundwater interaction;
  - vi) wetland and waterbody draw-down or increases in water level;
  - vii) groundwater seepage; and
  - viii) flood protection.
- b) permanent or temporary alterations or realignments of drainages, watercourses, and wetlands (including the relevance of the Alberta Wetland Policy and Water Act); and
- c) the pre- and post-disturbance alignment and condition of ephemeral and permanent drainages, watercourses, streams, wetland, and waterbodies, including those created by the Project.

[B] Describe and map all roadway, pipeline, powerline, water conveyance structures and any other utility crossings of drainages, watercourses, and wetlands or waterbodies, pre- and post-construction.

2.7.3 Wastewater Management

[A] Describe the types and characteristics of wastewater that will be generated during the Project, including (as applicable) wastewater from construction camp facilities, portable toilets, personal washing/hygiene facilities, and industrial sources of wastewater, including accidentally contaminated surface waters, on-site precipitation, run-on and runoff stormwater.

[B] Describe the wastewater management strategy for each wastewater type generated during all stages of the Project, including:
- a) the criteria used, options considered, and rational for the selection of wastewater treatment and wastewater disposal, and a discussion of why the other options were not chosen;
- b) how wastewater will be collected, treated, stored, and disposed;
- c) whether temporary facilities will be brought to site or constructed on site to handle wastewater;
- d) the proposed mitigation and monitoring measures (of water management and wastewater management/treatment systems) to protect water quality; and

e) design and operation of facilities that will collect, treat, store, and release wastewater streams.

2.8 Waste Management

[A] Describe the types and characteristics of waste that will be generated during all stages of the Project.

[B] Discuss the selection criteria used, options considered, and rationale for waste disposal during construction and decommissioning. Include:
a) the location, availability of on-site and off-site waste disposal; and
b) site suitability from a water quality protection perspective, geotechnical perspective and with regard to existing and potential human activities.

[C] Characterize and quantify the anticipated dangerous goods, hazardous, non-hazardous, and recyclable wastes generated by the Project, and describe:
a) the composition and volume of specific waste streams and discuss how each stream will be managed, collected, sorted, and stored prior to disposal;
b) plans for pollution prevention, waste minimization, recycling, and management to reduce waste quantities for all phases of the Project;
c) planned methods for waste disposal during construction, including on-site or off-site disposal options; and
d) for on-site disposal, provide information supporting disposal site suitability considering water quality protection, geotechnical considerations, and environmental considerations including health of wildlife, vegetation, and human land uses.

[D] Describe the nature and amount of on-site hydrocarbon storage, such as fuel, lubricants, hydraulic fluids, or other chemicals. Discuss containment and other environmental protection measures used at storage sites.

2.9 Power Supply

[A] Provide details on the types, flow capacities and power requirements for the pumping systems.

[B] Describe the solar and gas-powered power plants that are proposed to power the water pumping systems including:
a) types, locations, and generation capacity of on-site power plants;
b) types, design, ratings and locations of transmission lines, storage facilities or other associated infrastructure;
c) sizing, capacity, routing and tie-in locations of natural gas pipelines;
d) sizes of the construction and operation footprints;
e) widths of the rights-of-way and the basis for their determination; and
f) construction and operation schedules;

[C] Provide details on the proposed ownership and operational responsibilities of the power plants installed for this Project and of the supporting infrastructure (e.g., transmission, storage infrastructure).

[D] Describe any electrical interaction that the facilities may have with other infrastructure, such as pipelines, railways, telephone, radio or television transmission facilities.

2.10 Conservation and Reclamation

[A] Provide a conceptual conservation and reclamation plan for all phases of the Project. Describe and map, as applicable:

a) water conveyance infrastructure (open channels and buried pipelines);
b) borrow pits;
c) waste material disposal sites;
d) temporary roadways or utility corridors;
e) any other potential disturbance;
f) current land use and capability and proposed post-development land use and capability;
g) anticipated timeframes for completion of reclamation stages including an outline of the key milestone dates for reclamation and how progress to achieve these targets will be measured;
h) constraints to reclamation such as timing of activities, availability of reclamation materials, and influence of natural processes and cycles including natural disturbance regimes;
i) a revegetation plan (including seed mixes, seed certificate review, and weed management) for the each of the disturbed terrestrial, riparian, and wetland areas;
j) reclamation material salvage, conservation of soils storage areas, and handling procedures including stockpile separation; and
k) existing and final reclaimed site drainage plans.

[B] Discuss from an ecological perspective, the expected timelines for establishment and recovery of vegetative communities and wildlife habitat, the expected success of establishment and recovery, and the expected differences in the resulting communities.

[C] Describe how the Proponent considered the use of progressive reclamation in project design and reclamation planning.

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

3 ENVIRONMENTAL ASSESSMENT

3.1 Air Quality and Noise

3.1.1 Baseline Information

[A] Identify residences or other facilities that could be affected by air emissions, dust, noise, or vibration from construction, operation, and decommissioning.

[B] Discuss baseline air quality conditions, including appropriate ambient air quality parameters.

[C] Discuss baseline noise conditions. Identify key sources of noise, including the intensity and frequency of sound generated and the distance to the Project site and to the nearest receptors.

[D] Discuss baseline soil erosion conditions, especially from the footprint of the proposed reservoirs.

[E] Provide information required in Section 4.5.2 of AUC's Rule 007 for the gas-powered generation facilities.

3.1.2 Impact Assessment

[A] Identify construction and operational components of the Project that have the potential to increase noise levels or affect air quality.

[B] Discuss the nature, severity, extent, and duration of activities (e.g. including power generation) likely to produce noise, vibration, dust, or affect air quality that could impact residences, livestock, other facilities or receptors during construction and operation.

[C] Assess the probability of soil drifting during draw-down from the reservoirs.

[D] Discuss the frequency, severity, and potential impacts of dust generation.

[E] Describe how air quality, dust, and noise impacts resulting from the Project will be monitored and mitigated. Include emissions, dust, and noise management and monitoring plans, and complaint resolution, if applicable.

[F] Discuss the Project's relative contribution to cumulative effects on regional air quality and noise.

3.2 Solar Glare

3.2.1 Baseline Information

[A] Identify and map receptors that may be subject to solar glare within 800 m of the Project boundary.

[B] Identify and map any registered aerodromes and known unregistered aerodromes within 4,000 m of the Project boundary.

[C] Characterize baseline solar glare conditions that may be caused by existing infrastructure.

3.2.2 Impact Assessment

[A] Describe the time, location, duration and intensity of solar glare predicted to be caused by the Project.

[B] Identify the potential solar glare at critical points along highways, major roadways and railways.

[C] Identify potential solar glare at any aerodrome, including potential effects on runways, flightpaths and air traffic control towers.

[D] Provide a tabular summary on the predicted intensity of solar glare and the expected duration of solar glare at each identified receptor, critical points along roadways and railways, and at any registered and known unregistered aerodromes.

[E] Discuss any proposed monitoring or mitigation options being considered to reduce the duration and intensity of solar glare at identified receptor locations.

3.3 Hydrogeology

3.3.1 Baseline Information

[A] Provide an overview of the existing geologic and hydrogeologic setting. Document new hydrogeological investigations, including methodologies, analysis, results, and interpretations undertaken as part of the EIA, and:

a) present regional and project area geology to illustrate depth, thickness, and spatial extent of lithology, stratigraphic units, and structural features; and
b) describe and review the geology of the region and project area, including both surficial and bedrock units (both aquifer and non-aquifer units).

[B] Present regional and project area hydrogeology describing:
a) 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, and sections, include maps and cross sections;
b) the chemistry of groundwater aquifers including baseline concentrations of major ions, metals, and hydrocarbon indicators; and
c) the potential groundwater discharge zones, potential sources and zones of groundwater recharge, areas of groundwater-surface water interaction, and areas of Quaternary aquifer – bedrock groundwater interaction.

[C] Provide a detailed review and inventory for the entire project area to determine what water wells are present, including:
a) an inventory of groundwater users who have existing approvals, permits, or licences, including traditional agricultural, residential, commercial and industrial and household users.
b) a determination of which party will be responsible for the cost of decommissioning and if replacement is required. Identify where the new wells will be installed;
c) an outline of how decommissioning will be completed. Identify what regulatory authorizations are required for the replacement of existing water wells; and
d) details of the compensation requirements if new wells cannot be installed.

3.3.2 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] Identify areas that may experience seepage from or that may discharge into the reservoirs and predicted interactions with aquifers or surface waterbodies. Describe mitigation measures to reduce or eliminate these effects, or seepage loses to the water table or surrounding aquifers.

[C] Describe the nature and significance of the potential project impacts on groundwater with respect to:
a) inter-relationship between groundwater and surface water within the reservoirs in terms of both water quantity and quality;
b) implications for terrestrial or riparian vegetation, wildlife, and aquatic resources, including wetlands, in the reservoirs and water conveyance structures;
c) changes in groundwater quality, quantity, and flow in the reservoirs;
d) potential conflicts with other groundwater users, and proposed resolutions to these conflicts in the reservoirs and water conveyance structures;
e) groundwater protection, including reclaiming wells in the Project area prior to construction of the reservoirs;
f) potential implications of seasonal variations in water storage within the reservoirs;

g) groundwater withdrawal for project operations, including expected alterations in the groundwater flow regime during and following project operations; and
h) a discussion of the groundwater vulnerability below the proposed reservoirs and along the water conveyance structures.

[D] Describe the proposals, monitoring and/or mitigation strategies to prevent the potential contamination of groundwater aquifers.

[E] Discuss the Project's relative contribution to cumulative effects on regional groundwater with respect to:
a) changes in regional groundwater quality and quantity; and
b) conflicts with regional groundwater users.

3.4 Hydrology

3.4.1 Baseline Information

[A] For the local and regional study areas:
a) describe meteorological conditions;
b) describe the environmental conditions that affect hydrology in the local and regional study areas, including climatic and topographical considerations;
c) describe and map the surface hydrology;
d) describe the sediment yield; and
e) derive daily evaporation and precipitation rates at the Project reservoirs for the evaluation period of record (e.g. using Morton's).

[B] Provide surface water licence information, including:
a) a list of all active senior surface water licences located downstream of the Project point-of-diversion (PoD) that withdraw directly from the RDR mainstem and estimate their combined daily diversion;
b) for valid water licences that diverts from the RDR between the PoD and the Saskatchewan boundary, categorize whether the licence environmental flow criteria is an Instream Objective (IO) or WCO; and
c) a list of all active surface water licenses within the project area.

[C] Describe baseline surface water quantity characteristics at the PoD, including:
a) determine the long-term mean daily flow at the PoD using QA/QC'd recorded flow data for the available historic period of record (e.g., Water Survey of Canada [WSC] Hydrologic (HY) Data [DAT]);
b) derive long-term mean daily naturalized flows at the PoD from the Government of Alberta (GoA) computed weekly historic natural flow dataset (e.g., using relevant WSC hydrometric stations);
c) For the evaluation period, estimate the available water supply from the RDR at the PoD, accounting for in-stream flow constraints. These include:
    i) WCO's (includes IO's and Senior Water Licenses);
    ii) apportionable volumes prescribed in the South Saskatchewan River Basin Master Agreement on Apportionment;
    iii) downstream senior priority water licence allocations;
    iv) maximum allowable daily diversion rates at the PoD for the evaluation period; and

v) sediment loads

d) describe the frequency and risk of droughts and consecutive low flow years that may restrict water withdrawals at the PoD across the evaluation period.

[D] Describe baseline surface water quantity characteristics of other watercourses likely to be affected by the Project, including:

a) seasonal variation, low, average, and peak flows for watercourses; and

b) low, average, and peak levels and trends for the waterbodies impacted by the Project.

[E] Identify local sites susceptible to erosion and sedimentation.

3.4.2 Impact Assessment

[A] Identify project activities that may affect surface water during all stages of the Project, including site preparation, construction, reservoir filling, operation, decommissioning and reclamation.

[B] Discuss potential hydrological changes (in terms of quantity, extent, frequency, duration, and seasonality) to watersheds due to the Project implementation, including changes in:

a) surface and near-surface drainage conditions;

b) channel regime (during minimum, average and peak flows);

c) water levels in waterbodies and watercourses;

d) evaporation, transpiration, and seepage amounts;

e) sediment transport and yield; and

f) open-water surface areas.

[C] Describe the extent of hydrological changes that will result from potential changes to groundwater and surface water movement, and:

a) include changes and timing of those changes to the quantity of surface flow and water levels in watercourses, waterbodies and wetlands (during minimum, average and peak flows);

b) assess the potential impact of alterations in flow and water levels on local or regional hydrology and identify temporary and permanent alterations or disturbances;

c) assess changes in runoff rates and volumes before, during and after construction of the Project; and

d) identify changes in erosion including changes in sedimentation in watercourses resulting from the Project.

[D] Discuss changes to surface and near-surface drainage conditions surrounding the proposed reservoirs such as flow impediments, run-off capture, and open water surface areas.

[E] Describe the natural surface runoff from the Project catchment areas that would be intercepted by the reservoirs or conveyance infrastructure and be used to supplement project area water supply. Indicate:

a) the locations of runoff interception and those that bypass the project area;

b) the contributing sub-catchment to each point of runoff interception;

c) the volume of intercepted mean annual surface runoff;

d) the volume of intercepted water diverted to supplement the project area water supply; and
e) potential downstream impacts resulting from any changes in the timing, duration and volume of pre-development surface runoff downstream of the PoD.

[F] Describe how the development of the Project would impact the following:
a) streamflow immediately downstream of the PoD relative to the baseline flow conditions;
b) the potential effects on the RDR's IO and WCOs; and
c) how the planned diversion changes the RDR's contribution to transboundary flow into Saskatchewan, relative to pre-diversion conditions and considering both immediate (near term) and future (long term: full build out with climate change towards end of century).

[G] Describe the impacts on other surface water users resulting from the Project, including:
a) identify any potential water use conflicts; and
b) describe how downstream diversions are considered in the analysis.

[H] Describe the frequency that diversion might be partially or fully interrupted due to downstream senior licence priority diversions, and WCO's under:
a) baseline flow regulation based on current upstream dam operations (e.g., Dickson Dam);
b) any proposed modifications to operations of existing upstream dams;
c) assumptions of the approval and construction of the Ardley Dam proposed to be located on the mainstem of the RDR;
d) combined effect of the proposed Ardley Dam and the existing upstream dams under baseline and modified operations; and
e) discuss steps that could be taken to coordinate dam operations to improve water security for the Project.

[I] Describe mitigation measures to address surface water quantity impacts during all stages of the Project including:
a) alteration in flow regimes;
b) potential drought events;
c) potential flood events;
d) potential water use conflicts; and
e) increased loading of water quality parameters of concern.

[J] Discuss how flow conditions on the RDR at the PoD will be monitored and integrated into operational decisions, including:
a) describe how project flow diversions will ensure compliance with WCOs and IOs;
b) describe sediment load monitoring and impact on diversions; and
c) describe reservoir water level monitoring and impacts on diversions.

[K] Discuss how potential hydrological impacts of new temporary and permanent roads, including on wetlands, will be minimized and mitigated. Identify if a Code of Practice notification for crossing a waterbody is required or if a Water Act application for approval of temporary to permanent direct or indirect effects on water bodies is required.

[L] Discuss the Project's relative contribution to cumulative effects on regional surface water, including:
   a) water quantity (e.g., timing, volume, peak and minimum flow rates of watercourses or water body levels); and
   b) conflicts with regional surface water users.

3.5 Surface Water Quality

3.5.1 Baseline Information

[A] Describe the baseline water quality of watercourses and natural and human-made water bodies. Provide a rationale for the selection of sampled waterbodies.

[B] For water bodies and water courses identified in [A], provide a summary of water quality parameters (e.g., field measurements of dissolved oxygen, temperature, total dissolved solids and pH), water sampling results of routine parameters, including ions, salinity, fluoride, and sodium adsorption ratio, total suspended solids, total and dissolved metals, including ultra-low mercury and methylmercury, nutrients, pesticides, biochemical oxygen demand (BOD), dissolved organic carbon (DOC), total organic carbon (TOC), bacteria, chlorophyll-a, volatile organic compounds (e.g. benzene, toluene, ethylbenzene, and xylene (BTEX)), polycyclic aromatic hydrocarbons benthic invertebrates, aquatic plants, and benthic and planktonic algae, and. For standing waters, include cyanotoxins (e.g., microcystins), and phytoplankton community composition. Compare water quality data to the Environmental Quality Guidelines for Alberta Surface Waters and the guidelines listed in Section 3.5.2 [B] a) for the applicable water uses.

[C] For water bodies and water courses identified in [A], discuss the effects of seasonal and flow variations, and other controlling factors, on temporal and spatial trends in water quality. Include water quality for high flow (such as 1 in 20-year and 1 in 100-year and 1 in 300-year) and low flow events (such as 7Q10) under current conditions.

[D] For water bodies and water courses identified in [A], provide a summary of existing information on surface water quality available from literature review(s).

[E] Identify, describe, and map the current point sources and non-point sources in the Local Study Area.

[F] Identify local sites susceptible to erosion and sedimentation.

3.5.2 Impact Assessment

[A] Identify project activities that may affect surface water quality during all stages of the Project, (including site preparation, construction, reservoir filling, operation, maintenance, decommissioning and reclamation). Determine the local and regional extent of potential impacts as well as their frequency, duration, magnitude, and seasonality.

[B] Describe and predict the potential impacts of the Project (during site preparation, construction, operation, maintenance, decommissioning, and reclamation) on surface water quality and downstream (natural or manmade) bodies of water using modelling or other scientifically defensible approach, including:
   a) changes in water quality that may exceed the Environmental Quality Guidelines for Alberta Surface Waters, the Canadian Water Quality Guidelines for the Protection of Aquatic Life, the Canadian Water Quality Guidelines for the

Protection of Agricultural Water Uses, Guidelines for Canadian Recreational Water Quality, the Federal Environmental Quality Guidelines, or limits outlined for mainstem reaches in the Prairie Provinces Water Board interprovincial water quality objectives for RDR Alberta/Saskatchewan Reach: Bindloss to Confluence with South Saskatchewan River;

b) changes in concentrations, loading amounts, and timing of water quality parameters that could impact downstream (natural or manmade) bodies of water, including:
   i) impacts on their use as a drinking water supply, recreation, agriculture, domestic use, aesthetics, and other water uses;
   ii) potential implications to water quality on downstream (natural or man-made) bodies of water due to the water drawn during the initial filling of the reservoirs;
   iii) potential implications to aquatic resources (e.g., aquatic and benthic invertebrates, biota, vegetation, algae, biodiversity, habitat);
   iv) changes in water quality due to seasonal and flow variation;
   v) changes in water quality due to changes in groundwater – surface water interactions;
   vi) changes in the quality of surface water runoff;
   vii) implications to the health and extent of riparian lands;
   viii) impacts in the event of a catastrophic failure of the structure; and
   ix) impact on creek banks during flood events.
c) the level of uncertainty derived from the models and tools used in the analysis.

[C] Describe the water quality expected in the Project and downstream (natural or manmade) bodies of water. Include water quality for high flow events (1 in 20-year and 1 in 100-year and 1 in 300-year) under expected reservoir conditions.

[D] Describe the potential and implications for metals (e.g., lead, arsenic, cadmium, selenium, and mercury) methylation in the Project to:
a) enter the aquatic food chain, including downstream in the Project and downstream (natural or manmade) bodies of water;
b) impact the Project and downstream (natural or man-made) water bodies in their various water uses, and
c) impact treatment of water from the Project and downstream (natural or manmade) bodies of water for drinking water purposes.

[E] Describe the potential and implications for changes in organic carbon and nutrients in the Project based on the proposed operating regime to:
a) impact the treatment of water from the Project and downstream (natural or manmade) bodies of water for drinking water purposes (e.g., disinfection by-products); and
b) impact productivity of aquatic vegetation (e.g., macrophyte, algae).

[F] Describe the potential and implications for cyanobacterial toxin generation in the proposed reservoirs to:
a) impact the treatment of water from the Project and downstream (natural or manmade) bodies of water for drinking water purposes; and

b) impact recreation in the Project and downstream (natural or manmade) bodies of water.

[G] Describe the potential and implications for release and contamination of hydrocarbons and associated materials from pipelines and other oil and gas infrastructure, farm infrastructure and/or contaminated surface soil or subsoil in the area, on water quality and aquatic environment.

[H] Describe the potential and implications for changes in surface water quality because of irrigation return flows to impact water uses in downstream (natural or manmade) bodies of water.

[I] Describe mitigation measures to address surface water quality impacts during all stages of the Project including:
a) alteration in flow regimes;
b) potential flood events;
c) potential water use and operations conflicts; and
d) increased loading of water quality parameters of concern.

[J] Provide a summary of the management plan to prevent or reduce impacts to surface water, and a spill response plan should an accidental release occur.

[K] Discuss the contribution of the Project to cumulative effects on water quality, including downstream (natural or manmade) bodies of water, and discuss the implications to the Prairie Provinces Water Board interprovincial water quality objectives or any other regional initiatives.

[L] Discuss the impact of low flow conditions (restrictive conditions under which instream guidelines must be met such as 7Q10 stream flow) and in-stream flow needs on water quality and water and wastewater management strategies.

3.6 Irrigation Water Quality

3.6.1 Baseline Information

[A] Describe the baseline water quality in the RDR in terms of its suitability for irrigation and livestock uses.

[B] Identify areas where water will be transported in earthen channels along the conveyance route and provide information on the types of soils that will contact the conveyed water.

3.6.2 Impact Assessment

[A] Identify the type and location of soils along the conveyance network that may negatively impact water quality for irrigation or livestock uses, particularly as it relates to elevating salinity and sodicity.

[B] Discuss the likelihood, location, and quality of agricultural, municipal, or industrial runoff entering the conveyance network.

[C] Describe and predict changes to the suitability of water for irrigation or livestock uses as it is conveyed through the planned conveyance system.

[D] Identify lands proposed for irrigation development that may be at risk of salinity and sodicity impacts that may be supplied with irrigation water.

[E] Describe any water quality monitoring programs that will be implemented to assess the quality of conveyed water for irrigation or livestock uses.

3.7 Aquatic Ecology

3.7.1 Baseline Information

[A] Describe and map the fish, fish habitat, and other aquatic resources (e.g., aquatic macrophytes, and benthic invertebrates) for water bodies and watercourses and other waters affected by the Project that may provide habitat for fish.

[B] Describe the fish species composition, distribution, relative abundance, quantitative population estimates, seasonal movement trends, and general life history parameters of fishes in the RDR, Acadia Creek, in the unnamed waterbody (ID #323318), and any other potential fish-bearing waterbodies within the project area, and:

a) qualify fish species occurrence based on spring and fall sampling events over one year of sampling, using methods that will minimize fish mortality;
b) identify any fish species that are:
    i) listed as "At Risk," "May Be at Risk" and "Sensitive" in the *General Status of Alberta Wild Species* (Alberta Environment and Protected Areas);
    ii) listed as "Threatened" or "Endangered" under the *Alberta Wildlife Act*;
    iii) listed as "Threatened" or "Endangered" under Schedule 1 the federal *Species at Risk Act*;
    iv) listed as "Threatened" or "Endangered" by The Committee on the Status of Endangered Wildlife in Canada (COSEWIC); and
    v) traditionally used species of cultural significance;
    vi) invasive fish species; and
    vii) sport fisheries.

[C] Quantitatively describe and map the current extent of aquatic habitat and resources in the RDR, Acadia Creek, in the unnamed waterbody (ID #323318), and any other potential fish-bearing waterbodies within the project area, and identify:

a) select key indicator fish species and provide the rational and selection criteria used;
b) habitat used by fish, whether seasonally or year-round, for waterbodies and watercourses and other connected waterbodies that may provide habitat for fish, including critical or sensitive areas, such as spawning, rearing, and over-wintering habitats;
c) water quality parameters in waterbodies and watercourses that may affect suitability for fish; and
d) current and potential use of the fish resources by Indigenous peoples.

3.7.2 Impact Assessment

[A] Describe and assess the potential impacts of the Project to fish, fish habitat, and other aquatic resources (e.g., aquatic macrophytes, and benthic invertebrates) in the RDR, Acadia Creek, in the unnamed waterbody (ID #323318), and any other potential fish-bearing waterbodies within the project area, during site preparation, construction, reservoir filling, and operation stages, including but not limited to:

a) change in habitat suitability and availability during construction and operation of the Project;
b) changes to hydrology on the RDR due to all aspects of water operations (e.g., low flow diversion especially during drought years)
c) survival of fish at multiple life stages (eggs, fry, juveniles, adults), chronic or acute health effects, and increased stress on fish populations from release of contaminants, bioaccumulation of methylmercury, sedimentation, flow alterations, temperature, and habitat changes;
d) entrainment and entrapment of fish at the diversion infrastructure, canals, pipes, and reservoirs, including:
    i) options and measures to avoid and prevent fish entrainment;
    ii) ability for entrained fish to return to the RDR system; and
    iii) population level impacts from added mortality or loss from the RDR system including cumulative effects (e.g., fish mortality, habitat loss, summerkill, winterkill, competition with non-native species).
e) mitigative measures to return fish to the RDR system in the event of fish stranding in canals, pipes, and reservoirs due to annual operations and drawdowns; changes to riparian areas that could affect aquatic biological resources and productivity;
f) changes to benthic invertebrate communities that may affect food quality and availability for fish;
g) the potential for increased fragmentation of aquatic habitat;
h) potential water quality and quantity changes;
i) acidification and/or eutrophication;
j) groundwater-surface water interactions; and
k) potential for thermal plumes to affect aquatic habitat.

[B] Discuss the design, construction, and operational factors including specific diversion and reservoir operations (annual operations and drawdowns) that will be incorporated into the Project to minimize impacts to fish and fish habitat (fish stranding and mortality) and to protect aquatic resources.

[C] Identify all aspects of potential death of fish and harmful alteration, disruption and destruction of fish habitat resulting from the construction and ongoing operations of all project components.

[D] Identify plans proposed to offset a reduction in the productivity of (or to enhance) fish habitat resulting from the Project. Indicate how environmental protection plans address applicable provincial and federal policies on fish habitat protection including the development of a no-net-loss fish habitat objective.

[E] Discuss the potential impacts of new water control structures on seasonal fish movements relative to baseline conditions.

[F] Discuss the potential effects on fish and fish habitat during the filling of the new reservoir, including mitigations to protect fish during the filling process.

[G] Discuss operation of the reservoirs and irrigation network including approaches for maintenance of water levels and water quality parameters to support aquatic life, fish habitat and recreational use during seasonal and annual reservoir operations.

[H] Discuss the potential for aquatic invasive species to occur and the potential for the Project to affect occurrence or distribution of these species. Describe measures to monitor and remove aquatic invasive species should they be encountered during project works.

[I] Discuss the potential increase in fishing pressures that could arise from the improved access from the Project in the region and how the sport fishery could change.

[J] Describe the effects of surface water withdrawals and water diversions from the RDR including cumulative effects on fish, fish habitat, and other aquatic resources.

[K] Discuss and identify plans for the new reservoirs on creation and maintaining recreational fishing opportunities.

[L] Discuss changes in the aquatic environment with predicted climate change scenarios, with and without the Project in the local and regional study areas.

3.8 Vegetation

3.8.1 Baseline Information

[A] Describe and map vegetation communities including types/classes of native grassland, forest/woodland, wetland, riparian, badland, sand-dune, and anthropogenically modified vegetation.

[B] Describe and map rare plants and rare ecological communities. Identify the occurrence, relative abundance and distribution, and identify any plant species that are:

a) listed as "At Risk," "May Be at Risk" and "Sensitive" in the *General Status of Alberta Wild Species* (Alberta Environment and Protected Areas);
b) listed as "Threatened" or "Endangered" under the *Alberta Wildlife Act*;
c) listed as "Threatened" or "Endangered" under Schedule 1 the federal *Species at Risk Act*;
d) listed as "Threatened" or "Endangered" by COSEWIC;
e) rare plant species tracked by the Alberta Conservation Information Management System (ACIMS); and
f) rare ecological communities tracked by ACIMS.

[C] Discuss ecosite phases, ecological range sites, ecological communities, or wetland types/classes that have a higher potential to support rare plant species and/or rare ecological communities of limited distribution.

[D] Describe the occurrence and distribution of known prohibited noxious and noxious weeds, invasive agronomics, and other non-native invasive plant species.

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

[F] Describe and quantify the current extent of native-habitat fragmentation and degradation due to anthropogenic land disturbances.

[G] Describe and quantify the local and regional relevance of native grassland, and:

a) discuss the distribution and relative abundance of native grassland units;
b) discuss locations and size of native grassland units;
c) characterize the flora and fauna of the native grassland units; and
d) evaluate and discuss native grassland integrity.

[H] Identify and describe plant species to the area that are considered important to Indigenous cultures for their traditional or ceremonial use.

[I] Identify, classify, and map wetlands as per the Alberta Wetland Classification System and the Alberta Wetland Policy and associated directives. Identify, describe, and map other surface hydrological features including springs, ephemeral water bodies, ephemeral drainages, watercourses, and anthropogenic water bodies. Describe these hydrological features, including:

a) distribution and relative abundance;
b) area of each class;
c) wetland type;
d) land use of the upland zone surrounding the wetland or riparian area;
e) dominant and indicator plant species, observed wildlife, basin characteristics, topographical influences and capture basins, soil characteristics, and hydrology including assessed hydroperiod and mineralogy; and
f) for wetlands classified under the Alberta Wetland Classification System, an evaluation of the wetland function and relative wetland value per the Alberta Wetland Rapid Evaluation Tool Actual (ABWRET-A), and ecosystem components that contribute to the integrity of the wetland.

[J] Describe and map general vegetation classes and wetlands within the Regional Study Area using regionally available datasets (e.g. including but not limited to Grassland Vegetation Inventory (GVI), Alberta Merged Wetland Inventory, Agricultural Region of Alberta Soil Inventory Database (AGRASID), Alberta Biodiversity Monitoring Institute (ABMI) mapping, etc.)

3.8.2 Impact Assessment

[A] Quantify and map the area of each terrestrial vegetation community type and wetland class that will be:

a) permanently altered or lost/removed by the Project; and
b) temporarily affected and reclaimed (e.g., temporary access routes, temporary roads, water pipelines).

[B] Discuss strategies to control and limit spread of prohibited-noxious weeds, noxious weeds, invasive agronomics, and other invasive non-native plant species during pre-construction earth work, construction, reclamation, and ongoing operations.

[C] Describe the Project's relative contribution to cumulative effects on:

a) native grassland communities;
b) populations of rare plants and rare ecological communities;
c) wetlands;
d) forests/woodlands;
e) riparian areas;
f) coulees and badlands;
g) sand-dune areas; and
h) ecological corridors, unique sites, and special features.

[D] Identify areas that will be avoided during construction.

[E] Discuss potential project impacts on rare plants (tracked by ACIMS), legally threatened or endangered plant species, and rare ecological communities (tracked by ACIMS). Describe any required regulatory authorizations and/or mitigation strategies to address these impacts.

[F] Describe and assess the potential impacts of the Project on vegetation communities considering:

a) both temporary (include time frame) and permanent impacts;
b) the potential for introduction and colonization of weeds and non-native invasive plant species and how those species will be managed;
c) potential increased fragmentation, degradation, and loss of native grassland, coulee/badland, forest/woodland, riparian, sand dune, and wetland habitats;
d) implications of vegetation changes for other environmental resources (e.g., terrestrial and aquatic habitat diversity and quantity, water quality and quantity, erosion potential), ecological corridors; and
e) the species that will be used to reclaim areas disturbed during construction and for erosion control and site stabilization.

[G] Discuss the expected timelines for establishment and recovery of plant community types in temporarily disturbed and reclaimed areas. Discuss indicators compared to natural or reference community classes (e.g. plant cover, species composition, and soil/site characteristics).

[H] Describe how the Alberta Wetland Policy was considered to assess impacts, including but not limited to:

a) avoidance, minimization, reclamation, or replacement of wetlands in accordance with the Alberta Wetland Mitigation Directive;
b) temporary and permanent alterations (direct and indirect) to wetlands classified under the Alberta Wetland Classification System;
c) any expected changes to wetland class or type and cause for this change; and
d) consideration of cumulative effects in the watershed to wetlands.

[I] Discuss the effect of loss or development of wetlands and riparian areas, including how the loss or development will affect land use.

[J] Discuss the regional significance regarding the indirect effects of the conversion of native grassland to tame pasture or cultivated lands with an increase in water availability.

[K] Provide maps and figures indicating the locations and extent of associated local and regional water and/or irrigation infrastructure (canals, irrigation networks, water pipelines, etc.) that may arise after the completion of the reservoir expansion.

[L] Provide a mitigation strategy that will avoid or minimize project effects on native grassland, shrublands, forests/woodlands, coulees/badlands, sand dunes, wetlands, riparian areas, and ecological corridors.

3.9 Wildlife and Wildlife Habitat

3.9.1 Baseline Information

[A] Describe and map current and potential wildlife resources (amphibians, reptiles, birds, and terrestrial and aquatic mammals). Describe species relative abundance, distribution, and their use and potential use of habitats. Also identify species that are:

a) listed as "At Risk," "May Be at Risk" and "Sensitive" in the *General Status of Alberta Wild Species* (Alberta Environment and Protected Areas);
b) listed as "Threatened" or "Endangered" under the *Alberta Wildlife Act*;
c) listed as "non-game animals" and 'upland game birds' under the *Alberta Wildlife Act;*
d) listed as "Threatened" or "Endangered" under Schedule 1 the federal *Species at Risk Act*;
e) listed as "Threatened" or "Endangered" by COSEWIC;
f) migratory bird species listed under the *Migratory Birds Convention Act*; and
g) species of cultural significance.

[B] Describe and map existing wildlife habitat and habitat disturbance including assessment activities. Identify habitat disturbances that are related to existing and approved projects.

3.9.2 Impact Assessment

[A] Describe and assess the potential impacts of the Project to wildlife and wildlife habitats, and biodiversity considering:

a) how the Project will affect wildlife relative abundance, habitat availability, habitat fragmentation, mortality, movement patterns, and distribution for all stages of the Project, including a prediction of future use due to habitat alteration;
b) how improved or altered access may affect wildlife, including future prediction of wildlife use and movements, potential obstruction of movements, and increased vehicle-wildlife collisions;
c) how altered habitat conditions (loss, change, fragmentation) may effect wildlife and biodiversity values. Consider habitat change (e.g., riparian), the availability of habitat and the influence of anthropogenic features and infrastructure on wildlife movements and predator-prey relationships;
d) the contribution of the Project to changes in regional biodiversity and the impact to local and regional ecosystems;
e) potential effects on wildlife resulting from changes to air and water quality, including both acute and chronic effects to animal health;
f) the potential and expected effects on wildlife, wildlife habitats and biodiversity from the loss of habitat due to the conversion of native prairie to irrigated cultivation; and
g) the resilience and recovery capabilities of wildlife populations and habitat to disturbance.

[B] Describe how wildlife may be affected during filling of the new reservoirs.

[C] Provide a strategy and mitigation plan to avoid or minimize impacts on wildlife and wildlife habitat for all stages of the Project 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 temporarily affected by the Project;
c) pre-clearing of vegetation prior to the breeding season, to reduce nesting and denning opportunities;
d) measures to prevent human-wildlife encounters, especially encounters between equipment/vehicles and wildlife, including activities within the project site and within access roads used by workers and equipment to travel to the project site;
e) use of wildlife surveys and pre-construction wildlife sweeps (as per the Sensitive Species Inventory Guidelines) to identify species in need of protection;
f) the use of setbacks to protect habitat areas, connectivity of habitat, and timing restrictions during critical periods to protect "species of conservation concern" during construction and operations;
g) plans to offset for the loss in the availability of wildlife habitat;
h) measures to prevent wildlife from contacting or ingesting harmful substances;
i) anticipated access controls or other management strategies to improve connectivity across access roads and protect wildlife during construction and operations;
j) habitat fragmentation and habitat connectivity resulting from linear features (e.g., above ground canals, roads etc.) and other project infrastructure and activities.
k) management of noise, lighting, and use of equipment to reduce sensory disturbance effects;
l) installation of offset habitat structures such as nesting platforms in suitable offsite areas;
m) programs to capture and transport sensitive wildlife to suitable offsite habitat areas;
n) use of habitat enhancements or planting of selected species to improve habitat quality in areas temporarily affected by the Project;
o) measures for monitoring and mitigating the impact of power plants on wildlife (conduct wildlife surveys in accordance with the Wildlife Directives for Alberta Renewable Energy Projects);
p) programs to monitor wildlife and habitat use post-construction;
q) measures to deter use of reservoir substrate for nesting or denning prior to filling of the reservoirs; and
r) measures to enhance use of the new reservoir for use by aquatic and semiaquatic wildlife species.

[D] Identify opportunities for habitat creation or enhancement which may occur as a result of the Project.

[E] Identify the key wildlife and habitat indicators used to assess project impacts. Discuss the rationale for their selection.

[F] Describe the Project's relative contribution to cumulative effects, if any, on:
a) wildlife habitat quality;
b) movement patterns and distribution; and
c) wildlife "species of conservation concern".

[G] For the solar facility project area:

a) Provide the renewable energy referral report received from AEPA and the renewable energy project submission report.

3.10 Terrain and Soils

3.10.1 Baseline Information

[A] Describe and map the terrain and soils conditions, including:

a) surficial geology and topography;
b) soil types and their distribution, including description of soil profiles;
c) agricultural land capability;
d) land classification for irrigation;
e) soil type capability of reclamation;
f) soils that could be affected by the Project;
g) specific locations of erosion sensitivity and saline-sodic soils; and
h) an inventory of geohazards, such as soils affected by erosion, landslides, floods etc., or human use.

[B] For the solar facility project area:

a) Address AUC Bulletin 2025-12: Introduction of interim information requirements for the consideration of cumulative effects and recent guidelines to evaluate agricultural land for renewable generation

3.10.2 Impact Assessment

[A] Describe project activities and other related issues during construction and operations that could affect the terrain and soil resources, soil quality (e.g., wetting/drying/rewetting of soil, salinization, silt accumulation, soil crusting, compaction, anaerobic decomposition of organic matter, contaminants) and:

a) indicate the amount (ha) of surface disturbance from the Project construction, operation, and decommissioning activities;
b) indicate the size and location of soil types and land capability classes that will be stripped, left intact, disturbed, and reclaimed;
c) describe potential sources of soil contamination (e.g., industry infrastructure and activities, agricultural infrastructure, and activities, contaminated sites, etc.), along with the appropriate Environmental Site Assessment (ESA) activities and/or remedial measures;
d) discuss the steps taken if unknown soil contamination were to be encountered (e.g., automotive or agricultural equipment used battery pits, used oil/fluid pits, etc.);
e) describe the impact of the Project on soil types and reclamation suitability, and approximate the volume of soil materials that are salvaged for reclamation;
f) discuss constraints or limitations to achieving vegetation/habitat reclamation based on anticipated soil conditions (e.g., compaction, contamination, salinity, soil moisture nutrient depletion, or erosion etc.), which occur naturally or due to the Project;
g) discuss potential changes to the rate and type of soil erosion;
h) discuss potential changes to slope instability, wind erosion, and other geohazards, in intact and reclaimed areas;

i) discuss the relevance of changes for the local landscape on biodiversity, productivity, ecological integrity, aesthetics, and future use; and
j) discuss relevance of changes to agricultural land capability and irrigable lands.

[B] Discuss the potential impacts on water demand if the potential irrigable soils are deemed not suitable for irrigation.

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

[D] Provide a mitigation plan including:
a) possible measures to minimize surface disturbance;
b) possible actions to mitigate effects of constraints or limitations to habitat reclamation;
c) possible actions to mitigate compaction, contamination, salinity, soil moisture issues, nutrient depletion, and erosion;
d) possible actions to address impacts to land capability; and
e) any other measures to reduce, eliminate, or offset the potential impacts that the Project may have on soil capability and/or quality including:
i) soil mapping and typical profiles;
ii) losses of agricultural soils;
iii) erosion issues; and
iv) characteristics related to handling, reclamation of site disturbance.

[E] Describe the Project's relative contribution to cumulative effects on terrain and soil resources.

3.11 Land Use and Management

3.11.1 Baseline Information

[A] Describe and map the ownership status of the subject lands, including lands owned by the Crown, local municipalities, and patented lands. Describe and map the current land uses in the project area, including private land, Crown land dispositions, and Crown land reservations.

[B] Describe and map the existing land and resource uses and potential conflicts that exist considering oil and gas development, renewable energy production, agriculture, tourism, Indigenous uses, and outdoor recreational activities.

[C] Identify and map unique sites or special features such as Parks and Protected Areas, Heritage Rivers, Historic Sites, Environmentally Significant Areas, culturally significant sites, and other designations (e.g., World Heritage Sites, Ramsar Sites, Internationally Important Bird Areas). Describe existing access control measures.

3.11.2 Impact Assessment

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

[B] Quantify and map the total number of public lands that would be impacted in the Project area.

[C] Identify the potential impacts of the Project on land uses, including:
- a) to unique sites or special features;
- b) effects caused by changes in public access, including secondary effects related to increased hunter, angler and other recreational access, and access to traditional use sites;
- c) implications of relevant land use policies and resource management initiatives for the Project, including constraints to development; and
- d) the anticipated changes (type and extent) to the topography, elevation, and drainage pattern within the project area.

[D] Discuss considerations and adherence to the Electric Energy Land Use and Visual Assessment Regulation for the solar facility.

[E] Identify existing private land uses that would be impacted by the Project and describe the:
- a) area of land affected and the nature of the impact;
- b) opportunities for mitigation and compensation, including the cost of implementation; and
- c) procedures that will be followed in compensating landowners for lands required for the Project and for associated damages or disturbances.

[F] Provide a fire control plan highlighting:
- a) fire prevention, detection, reporting, and suppression measures, including proposed fire equipment;
- b) measures taken to ensure continued access for firefighters to adjacent wildland areas; and
- c) coordination of fire control with municipal government or provincial departments.

[G] Discuss mitigation strategies, including:
- a) the need and plans for addressing access management during and after project operations (e.g., for public and traditional users);
- b) the process for addressing the other land users in the Project area; and
- c) project effects that may lead to changes in land use.

3.12 Climate Change

3.12.1 Baseline Information

[A] Describe climate norms and variability as they relate to agricultural productivity in the project area.

[B] Identify elements of the Project that are sensitive to changes or variability in climatology, including annual/seasonal patterns, frequency and severity of extreme events and discuss the potential impacts over the life of the Project.

[C] Discuss the baseline climatic conditions including the type and frequency of meteorological conditions.

[D] Describe the greenhouse gas emissions and carbon sequestration capacity of the project area.

3.12.2 Impact Assessment

[A] Describe and assess the greenhouse gas emissions during construction, operation, decommissioning and reclamation phases.

[B] Estimate the impacts of the Project to carbon sequestration capacity, including impacts on sequestration in soil and water systems across the new reservoirs.

[C] Discuss the benefits and consequences of the Project on the affected area with regards to its ability to counteract climate change impacts and the associated risks.

[D] Evaluate the feasibility of the Project under scenarios of climate change, including an explanation of:

a) how drier conditions would affect the long-term viability of local agriculture with or without the Project;
b) how potential adverse effects of excess rainfall events will be mitigated by the Project; and
c) how changes to the volume and timing of runoff and river flows may affect the supply of water from the RDR and/or the reservoirs and the risks posed to water availability for the reservoirs.

[E] Review and discuss potential changes in local climate under multiple climate projections; and:

a) identify representative climate change scenarios that reflect a full range of future climate variability (e.g., wet and dry conditions); and
b) evaluate potential changes in climate indices (e.g., annual/seasonal precipitation and temperature) between baseline and future periods.

[F] Describe potential effects of climate change on water demands and supply, including:

a) changes in water demand for irrigation;
b) potential changes in magnitude and timing of flow and impacts on downstream watercourses and water bodies;
c) how reliability to meet water demand for irrigation can be improved throughout the irrigation period by the Project under feasible climate change scenarios; and
d) a description of adaptations (e.g., reservoir operation) to climate change for sustainable water resource management.

4 HISTORIC RESOURCES

4.1 Baseline Information

[A] Provide a brief overview of the regional historic resources setting including a discussion of the relevant archaeological, historic, and palaeontological records.

[B] Describe and map known historic resources sites in the project area, considering:

a) site type and assigned Historic Resources Values; and
b) existing site-specific Historical Resources Act requirements.

[C] Provide an overview of previous Historic Resources Impact Assessments that have been conducted within the project area, including:

a) a description of the spatial extent of previous assessments relative to the project area, noting any assessment gap areas; and

b) a summary of *Historical Resource Act* requirements, conditions or approvals that have been issued for the Project to date.

[D] Identify locations within the project area that are likely to contain previously unrecorded historic resources. Describe the methods used to identify these areas.

[E] Describe consultation with Alberta Arts, Culture, and Status of Women (ACSW) concerning the program and schedule for *Historical Resources Act* requirements for the Project, including:

a) any historic resources issues or concerns raised during consultation/engagement on the Project; and
b) any *Historical Resources Act* programs required to evaluate and mitigate the impacts on historic resources.

4.2 Impact Assessment

[A] Describe project components and activities, including all ancillary activities, that have the potential to affect historic resources at all stages of the Project.

[B] Provide a summary of the results of any Historic Resources Impact Assessments that have been conducted for the Project.

[C] Describe the nature and magnitude of the potential project impacts on historic resources, considering:

a) effects on historic resources site integrity; and
b) implications for the interpretation of the archaeological, historic, and palaeontological records.

5 TRADITIONAL ECOLOGICAL KNOWLEDGE AND LAND USE

[A] If consultation with Indigenous groups reveals traditional use areas and spiritual sites within lands affected by the Project, provide:

a) a map and description of traditional land use areas including fishing, hunting, trapping, water use (e.g., for drinking, cooking, and navigation) and nutritional medicinal, or cultural plant harvesting by affected Indigenous peoples (if the Indigenous community or group is willing to have these locations disclosed); and
b) a map of cabin sites, spiritual sites, cultural sites, graves, and other traditional use sites considered historic resources under the Historical Resources Act (if the Indigenous community or group is willing to have these locations disclosed), as well as traditional trails and resource activity patterns.

[B] Discuss any limitations to access for traditional uses during all stages of the Project.

[C] Describe how Traditional Ecological Knowledge and Traditional Land Use information was incorporated into the Project, EIA development, the conservation and reclamation plan, monitoring, and mitigation.

[D] Determine the impacts and benefits of the Project on traditional, medicinal, and cultural land use and identify possible mitigation strategies.

[E] Discuss the species, abundance, and availability of vegetation, fish, and wildlife used for food, traditional, medicinal, and cultural purposes in the identified traditional land use areas, considering all project related impacts.

6 PUBLIC HEALTH AND SAFETY

6.1 Public Health

[A] Describe aspects of the Project's activities and emissions during construction and operation that may have implications for public health or the delivery of regional health services.

[B] Conduct a human health risk assessment following guidance from Alberta Primary and Preventative Health Services (formerly Alberta Health) for project components that have implications for public health and describe the results.

[C] Document any health concerns raised by stakeholders during consultation/engagement on the Project, and how these were addressed.

[D] Document health concerns identified by Indigenous communities or groups resulting from impacts of existing development and of the Project, specifically on their traditional lifestyle. Include an Indigenous receptor type in the assessment.

[E] Describe mitigation plans for adverse impacts to public health resulting from the Project.

[F] Describe any health impacts from the increased risk of contamination due to leaks and spills on water or soil resources and effects on food sources, including plant and animal sources.

6.2 Public Safety

[A] Describe aspects of the Project that may impact or have implications for public safety. Specifically:

a) describe the emergency response plan including public notification protocol and safety procedures to ensure public safety and minimize adverse environmental impacts effects, including emergency reporting procedures for:
   i) spill containment and management;
   ii) natural gas pipeline hazards; and
   iii) power plants and other power infrastructure;
b) document any safety concerns raised by stakeholders during consultation on the Project and the actions taken to address those concerns;
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 or other industry partner emergency response/spill response agreements; and
e) describe the potential safety impacts resulting from higher regional traffic volumes.

[B] Discuss mitigation plans to safeguard workforce and public safety for construction and operation of the Project.

7 SOCIO-ECONOMIC ASSESSMENT

7.1 Baseline Information

[A] Define the socio-economic RSA and describe the existing and projected baseline socio-economic conditions in the RSA including the following:

a) population;
b) economic activity (e.g., GDP, jobs);
c) land owners;
d) agricultural productivity and activities;
e) local and regional infrastructure and community services;
f) availability and quality of health care services;
g) local training, employment, and business opportunities;
h) housing and land values;
i) recreational activities;
j) protective services;
k) infrastructure services;
l) municipal finance; and
m) First Nations and Métis (e.g., traditional land use and social and cultural implications).

[B] Describe the socio-economic contribution of current agricultural operations (irrigated and non-irrigated) in the local and regional study areas including:

a) historic and current livestock operations;
b) historic and current cropping patterns;
c) historic and current irrigated acreages; and
d) other agricultural uses (e.g., greenhouses).

[C] Describe the current impact of drought on agricultural operations in the local and regional study area including:

a) revenue losses (e.g., productivity loss and forced timing of sale of products);
b) drought-related costs (e.g., emergency water supply, and trucking of livestock and feed);
c) impacts to operations (e.g., forced herd reduction);
d) costs related to drought recovery; and
e) long-term community impacts.

[D] Describe the relative value of the wetlands within the project area and the estimated compensation required for their disturbance.

7.2 Impact Assessment

[A] Describe factors that may affect existing socio-economic conditions including:

a) workforce requirements for all stages of the Project, including a description of when peak activity periods will occur;
b) planned accommodations for the workforce for all stages of the Project. Discuss the rationale for their selection;
c) the policies and programs regarding the use of local, regional, and Alberta goods and services;
d) the Project schedule;

e) the overall engineering and contracting plan for the Project; and
f) other major projects in the RSA during construction of the Project.

[B] Describe the impacts of construction and operation of the Project on the social and economic conditions of the province and regional study area as they pertain to:
a) population;
b) economic activity (e.g., GDP, jobs);
c) landowners (including noise, light and other impacts to direct neighbours);
d) agricultural productivity and activities;
e) local and regional infrastructure and community services;
f) availability and quality of health care services;
g) local training, employment, and business opportunities;
h) housing and land values;
i) recreational activities;
j) protective services;
k) infrastructure services;
l) municipal finance; and
m) First Nations and Métis (e.g., traditional land use and social and cultural implications).

[C] Provide a discussion as to which communities will benefit from the Project.

[D] Discuss opportunities to work with Indigenous communities and groups, other local residents, and businesses regarding employment, training needs and other economic development opportunities arising from the Project.

[E] Provide the estimated total project cost, including a breakdown for engineering and project management, equipment and materials, and labour for both construction and operation stages, including maintenance of the Project. Indicate the percentage of expenditures expected to occur in the region, Alberta, Canada, outside of Alberta, and outside of Canada.

[F] Explain how the Project will be financed, including public funding and subsidies, and the securities that will be held to cover decommissioning or reclamation in the event of prolonged delays or project failures.

[G] Describe the estimated amount or process proposed to determine the capital requirements for irrigated crop producers to connect to the irrigation system and the process proposed to establish annual rates ($/unit water) for supplying water to irrigated crop producers.

[H] Describe the demand for irrigation infrastructure in the planned service area, the estimated number of operations that will connect to the system, and the number of existing and new irrigable acres that will be serviced by the Project. Identify whether the crop producers assumed in these estimates are landowners or leaseholders.

[I] Provide an estimate of the Project's impact on crop producers (e.g., increased output, more stable output, increased demand) and on average annual farm income.

[J] Discuss considerations that will be made by the governing body when evaluating requests to add new irrigated parcels.

[K] Provide an estimate of the nature and cost of the development of recreational infrastructure.

[L] Demonstrate through economic comparison that the internal supply of power through on-site generation is the most economic source of power for the pumping systems following requirements of AUC Rule 007.

7.3 Cost-Benefit Analysis

[A] Complete a cost-benefit analysis for the Project in regard of the regional study area. Specifically:

a) describe the baseline or "business as usual" scenario to which costs and benefits of the Project will be compared;
b) describe the stakeholders of the cost-benefit analysis (whose costs and benefits are being considered) and say if socio-economic RSA accurately defines the stakeholders;
c) identify and, where possible, quantify all benefits associated to the Project. If second or higher round benefits are identified, provide rationale for their inclusion by justifying why these benefits would not be likely to occur without the Project. Where appropriate, include non-market benefits such as benefits associated with recreation opportunity gains;
d) identify and, where possible, quantify all costs (including second or higher round costs, if appropriate) associated with the Project. Where appropriate, include non-market costs such as costs associated with wetland and/or native grassland losses;
e) provide estimates for the present value of social benefits, the present value of social costs, and the net present value of the Project;
f) conduct sensitivity analyses on key variables and present the results; and
g) for any social benefits and costs of the Project that could not be quantified, discuss how these benefits and costs might affect the net present value of the Project.

8 MITIGATION MEASURES

[A] Discuss mitigation measures planned to avoid, minimize, or eliminate the potential impacts for all stages of the Project.

[B] Identify the mitigation objectives for each associated impact and describe those mitigation measures that will be implemented. Provide rationale for their selection, including a discussion on the effectiveness and key uncertainties and risks of the proposed mitigation.

[C] Describe the inputs, costs, and anticipated resourcing of the mitigation measures.

9 RESIDUAL IMPACTS

[A] Describe and characterize the magnitude, frequency and scale of residual impacts of the Project following implementation of project mitigation measures and the Proponent’s plans to manage those residual impacts.

10 MONITORING

[A] Describe the surface water quality monitoring program that will be implemented to assess the future impacts of construction and operation (including maintenance) of the new

reservoirs and the quality of irrigation water in the conveyance system. Consider appropriate water quality parameters (e.g., metals, nutrients, pesticides, temperature, BOD/TOC, bacteria, aquatic and benthic invertebrates, aquatic plants, algae, dissolved oxygen, etc.) and their spatial (e.g., lateral and depth) and temporal (e.g., seasonal) flow variations.

[B] Describe the proposed monitoring programs, including:

a) how the monitoring programs will assess any project impacts and measure the effectiveness of mitigation plans. Discuss how the Proponent will address any project impacts identified through the monitoring program;
b) how the Proponent will contribute to current and proposed regional monitoring programs;
c) monitoring performed in conjunction with other stakeholders, including Indigenous communities and groups;
d) new monitoring initiatives that may be required as result of the Project;
e) regional monitoring that will be undertaken to assist in managing environmental effects and improve environmental protection strategies;
f) how monitoring data will be disseminated to the public, Indigenous communities, or other interested parties; and,
g) how the results of monitoring programs and publicly available monitoring information will be integrated with the Proponent's environmental management system.