

# Analysis Report



WHETHER TO DESIGNATE THE **SNAKE LAKE RESERVOIR EXPANSION PROJECT** IN ALBERTA PURSUANT TO THE *IMPACT ASSESSMENT ACT*

August 2022



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## Purpose

The Impact Assessment Agency of Canada (the Agency) prepared this report for consideration by the Minister of Environment and Climate Change (the Minister) in responding to a request to designate the Snake Lake Reservoir Expansion Project (the physical activities referred to as the Project) pursuant to section 9 of the *Impact Assessment Act* (the IAA).

## Project

The Eastern Irrigation District (the Proponent) is proposing to expand the Snake Lake Reservoir located approximately 24 kilometres northwest of Brooks, Alberta. As proposed, the Project would increase the reservoir's water storage capacity by approximately 68 million cubic metres and expand the footprint of the flood area by approximately 779 hectares. The Project is proposed to support the irrigation of lands that currently have no or limited reservoir support within the Eastern Irrigation District.

## Context of Request

On April 12, 2022, the Minister received a request to designate the Project from Ecojustice on behalf of Alberta Wilderness Association, Bow Valley Naturalists, Society of Grasslands Naturalists, Sierra Club Canada Foundation – Prairie Chapter, Canadian Parks and Wilderness Society – Southern Alberta Chapter, Southern Alberta Group for Environment, Nature Alberta, Arlene Kwasniak and David Swann. Two additional requests were received on July 21, 2022, from Blood Tribe/Kainai and Siksika Nation. The requesters raised concerns regarding the potential effect of the Project on the environment including impacts to fish and fish habitat, species at risk, migratory birds, federal lands and the rights of Indigenous peoples as well as transboundary impacts on water.

The Agency sought input from the Proponent, federal authorities, the Government of Alberta, and five potentially affected Indigenous groups: Blood Tribe/Kainai, Piikani Nation, Siksika Nation, Tsuut'ina Nation and Metis Nation of Alberta Region 3. Public comments that were submitted to the Agency and the Minister of Environment and Climate Change were also considered.

The Proponent responded to the Agency on July 11, 2022, with information about the Project, a response to the requesters concerns, and its view that the Project should not be designated.

Alberta Environment and Parks (AEP) notified the Proponent on May 18, 2022 that an Environmental Impact Assessment (EIA) for the Project is required pursuant to Section 44(1)(a) the *Environmental Protection and Enhancement Act* (EPEA). At this time, the Terms of Reference have not been issued for the provincial EIA, but EIAs typically include:

- baseline environmental, social and culture information;
- an assessment of potential positive and negative environmental, health, social, economic and cultural effects of the Project as well as an assessment of cumulative effects;
- proposed mitigation measures; and
- information on public and Indigenous consultation.<sup>1</sup>

Advice on applicable legislative mechanisms and potential effects due to the Project was received from Canada Infrastructure Bank (CIB), Fisheries and Oceans Canada (DFO), Environment and Climate Change Canada (ECCC), Natural Resources Canada (NRCan), Health Canada (HC), Transport Canada (TC), Indigenous Services Canada (ISC), Department of National Defence (DND), Women and Gender Equality Canada (WAGE), and AEP.

## Project Context

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### Project Overview

The Proponent is proposing to expand the Snake Lake Reservoir (Figure 1), an existing reservoir off the East Branch Canal to increase the reservoir's water storage capacity by approximately 68 million cubic metres. The Project is proposed to support the irrigation of lands that currently have no or limited reservoir support within the Eastern Irrigation District. The Proponent plans to complete baseline studies for the Project by spring 2023, with construction expected to be completed by December 2027 and the commencement of operations in 2028.

The Project is part of an investment partnership between the Government of Alberta, the Canada Infrastructure Bank and a consortium of 10 Irrigation Districts to modernize irrigation district infrastructure and increase water storage capacity in southern Alberta. The investment is for infrastructure rehabilitation projects and the construction or enlargement of up to four off-stream irrigation storage reservoirs. The overall investment consists of grant funding from the Government of Alberta (30 percent contribution), up-front funding by the involved Irrigation Districts (20 percent contribution) and financing by the Canada Infrastructure Bank to be repaid by the Irrigation Districts (50 percent contribution). “The Canada Infrastructure Bank is responsible for meeting all of its legal obligations, including responding to the Duty to Consult Indigenous groups and ensuring that projects have met environmental assessment and other regulatory requirements.”<sup>2</sup> The preliminary cost estimate for the Project is \$170 million.<sup>3</sup>

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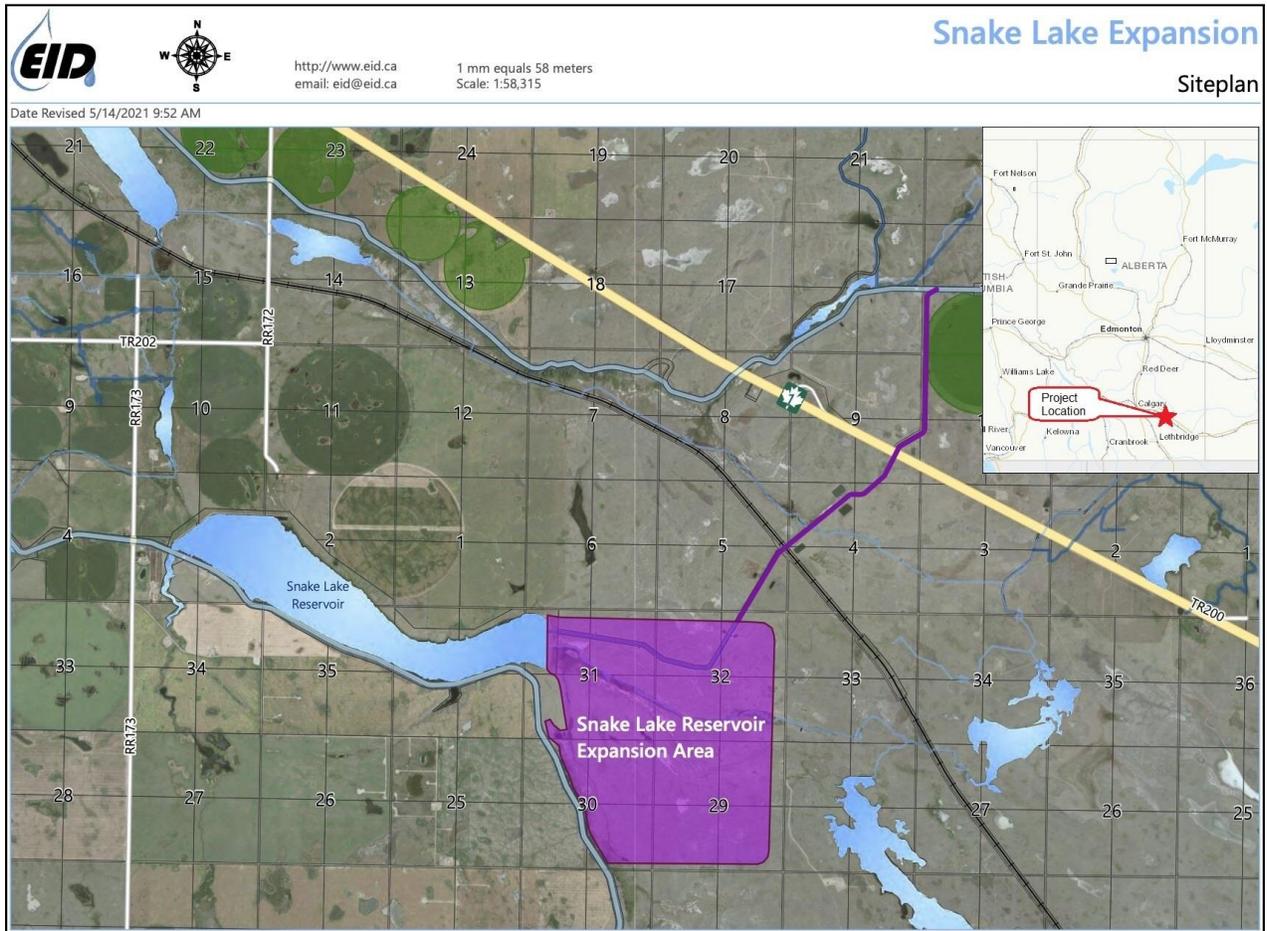
<sup>1</sup> From *Alberta's Environmental Assessment Process*. [Alberta's Environmental Assessment Process](#)

<sup>2</sup> From the *Statement of Priorities and Accountabilities*. [Infrastructure Canada - Statement of Priorities and Accountabilities – Canada Infrastructure Bank](#)

<sup>3</sup> From *Important Notice to All Irrigators: Proposed Increase in the Irrigation Expansion Limit*. [Eastern Irrigation District – Proposed Increase in the Irrigation Expansion Limit](#)



Figure 1: Location of the Project



Source: Eastern Irrigation District, 2021 (Base Map); IAAC GeolImpact, July 2022 (Inset Map)

**Figure Description:** Snake Lake Reservoir is south of Provincial Highway 1. The expansion area will extend southeast from the eastern side of the existing Snake Lake Reservoir and expand the footprint of the flooded area by approximately 779 hectares. The Snake Lake Reservoir and proposed expansion area are located in southeastern Alberta, southeast of Calgary and northeast of Lethbridge.

## Project components and activities

Inflow to the Snake Lake Reservoir is currently from the East Branch Canal via a gated inlet chute; outflow is through the East Dam Low Level Outlet Structure near the north end of the East Dam. The expansion of the Snake Lake Reservoir will require the decommissioning of the existing East Dam, the construction of approximately 10 kilometres of earthen banks up to 20 metres in height and the construction of a new outlet dam.



# Analysis of Designation Request

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## Authority to designate the Project

The *Physical Activities Regulations* (the Regulations) of the IAA identify the physical activities that constitute designated projects.

The most applicable entry in the Regulations to the Project is the following:

(59) The expansion of an existing dam or dyke on a natural water body, if the expansion would result in an increase in the surface area of the existing reservoir of 50 percent or more and an increase of 1 500 ha or more in the annual mean surface area of that reservoir.

The Project, as described in the information provided by the Proponent, includes the expansion of an existing dam which would result in a surface area increase of 779 hectares, resulting in a total surface area of 1,100 hectares, and, as such, is not included in the Regulations.

Under subsection 9(1) of the IAA the Minister may, by order, designate a physical activity that is not prescribed in the Regulations. The Minister may do this, if, in the Minister's opinion, the physical activity may cause adverse effects within federal jurisdiction or adverse direct or incidental effects, or public concerns related to those effects warrant the designation.

The carrying out of the Project has not substantially begun and no federal authority has exercised a power or performed a duty or function that would permit the Project to be carried out, in whole or in part.<sup>4</sup>

Given this understanding, the Agency is of the view that the Minister may consider designating the Project pursuant to subsection 9(1) of the IAA.

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## Potential adverse effects within federal jurisdiction

The Agency's analysis identified the potential for adverse effects within federal jurisdiction that may result from carrying out the Project. Overall, the potential adverse effects within federal jurisdiction would be limited and managed through project design, mitigation measures, and existing legislative mechanisms.

Relevant federal legislative mechanisms include the *Migratory Birds Convention Act, 1994*, the *Fisheries Act*, the *Canadian Environmental Protection Act, 1999*, and the *Species at Risk Act* (SARA), as applicable. Provincial legislative mechanisms relevant to the Project include the provincial EIA under the province of

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<sup>4</sup> The Minister cannot designate a physical activity if the carrying out of the physical activity has substantially begun, or a federal authority has exercised a power or performed a duty or function in relation to the physical activity (subsection 9(7) of the IAA).



Alberta's EPEA. The provincial EIA process can include terms and conditions to mitigate potential environmental effects for all stages of the development. Under the provincial regime, any future proposed amendments to the Project would require review via submission and approval of notices of alteration, or submission of a new proposal for major alterations.

Annex 1 provides a summary table of the potential adverse effects within federal jurisdiction and associated public concerns, mitigation measures proposed by the Proponent, and relevant legislative mechanisms that would apply, should the Project proceed. Annex 2 lists the potential federal and provincial authorizations relevant to the Project.

## Fish and fish habitat

The Agency considered information provided by the Proponent, DFO, ECCC, AEP, the requesters, Indigenous groups, and the public, and is of the view that, with appropriate project design and mitigation, the potential for effects to fish and fish habitat is limited.

Concerns expressed by the requesters included the potential for impacts to aquatic habitats due to project activities, including effects to riparian habitat availability and inadequate habitat offsets for aquatic species at risk including Rocky Mountain sculpin in the reservoir expansion area. Additionally, the requesters expressed concerns regarding the likelihood of project activities contributing to the existing issues of invasive fish and aquatic vegetation species in Alberta's fisheries. The requesters also noted potential effects to the Red Deer and Bow River sub basins as they are critical water supplies for the region and are facing significant pressure and demands.

Concerns expressed by the public related to fish and fish habitat included effects to aquatic ecosystem health, riparian habitat, and in-stream flows by project activities.

The Proponent indicated that dissolved oxygen levels in the existing Snake Lake Reservoir suggest the reservoir can support fish throughout the year and reservoir water chemistry data indicates the reservoir is suitable for the protection of aquatic life. Fish species observed in Snake Lake Reservoir included lake whitefish, burbot, white sucker, northern pike, spottail shiner and Prussian carp.

The Proponent indicated that the assessment of potential effects on fisheries and aquatic species will be included in the EIA required by AEP. Temporary effects to fish and fish habitat are expected with the removal of the existing East Dam and installation of a new dam. However, the expansion of the reservoir is expected by the Proponent to have long-term positive effects by creating aquatic habitat. The Proponent will submit an application for an authorization to DFO and acknowledges that it may be required to monitor and quantify changes in habitat; if habitat is lost, then compensation may be required. The Proponent stated that no SARA-listed fish species are found in the Nelson-Saskatchewan River system, which includes the Bow River.

DFO stated that there is currently insufficient information to determine whether the Project will result in adverse effects, but that a project of this nature has the potential to result in the harmful alteration, disruption or destruction of fish habitat and/or death of fish. As such, the Project may require authorization under the *Fisheries Act*. According to DFO, it is unlikely that a permit will be required under SARA for aquatic species at risk as there are currently no aquatic species at risk mapped for the project footprint. The Fish and Fish Habitat Protection Program of DFO reviews projects for the impacts to fish and fish



habitat, by ensuring compliance with the *Fisheries Act* and *SARA*. Through this program, DFO may provide information to the Proponent in order to avoid and mitigate the negative impacts of the proposed Project.

ECCC advised that construction of the Project may adversely affect air quality through the introduction of particulate matter; air contaminant emissions can result in contamination of nearby waterbodies and may affect fish and fish habitat. ECCC noted that the construction, expansion, operation, and maintenance of the Project could cause erosion and result in deposition of soils and sediments to waterbodies. Surface water quality may be degraded by hydrological changes, reduction of wetland function, and by increased runoff/mobilization of agricultural chemicals, wastes, and other contaminants due to agricultural expansion. Expansion of the reservoir may result in mobilization of mercury in newly flooded agricultural areas, which may release agricultural chemicals. The adverse effects to surface water quality could result in adverse effects to fish and fish habitat; however, adverse effects could be reduced through mitigation measures and confirmatory monitoring. ECCC noted that the Project will result in a loss of riparian habitat and wetlands; however insufficient information is available to determine the area of loss.

Potential effects of the Project to fish and fish habitat due to changes to water quality and quantity will be addressed through the EIA process under the provincial EPEA and *Water Act*. AEP noted there are general approval condition prohibitions related to the release of deleterious substances, to protect water quality. Additionally, AEP indicated that the Alberta Wetland Policy will be adhered to if any impacts to wetlands by the Project are identified.

## Migratory birds and species at risk

The Agency considered information provided by the Proponent, ECCC, the requesters, Indigenous groups, and the public, and is of the view that existing legislation provides a framework to address potential adverse effects to migratory birds and terrestrial species at risk.

The requesters expressed concern about adverse effects of the Project on migratory birds and species at risk due to habitat loss, habitat alteration, habitat fragmentation, inadequate habitat offsets, indirect mortality, and contribution to the existing issues of invasive species.

The requesters indicated the project footprint includes important permanent and temporary wetland habitats and native grasslands for many waterfowl and migratory bird species, including bird species at risk. The requesters additionally indicated that the cumulative impacts of the irrigation projects on the overall security of the South Saskatchewan River Basin could adversely affect migratory bird habitats.

Concerns expressed by the public included potential effects of the Project on species at risk and their habitats, including impacts to native grasslands.

The requesters stated that species at risk and their critical habitat are identified within the project area. A non-exhaustive list of species at risk that may be impacted by the Project provided by the requesters included SARA-listed endangered species (burrowing owl and great short-horned lizard), threatened species (tiny cryptantha, thick-billed longspur, and Rocky Mountain sculpin), and species of special concern (great plains toad and northern leopard frog). Lake sturgeon, listed as endangered by the Committee on the Status of Endangered Wildlife in Canada, were also included by the requesters.

The Proponent acknowledges that the Project could result in potential effects on migratory bird species through local loss or alteration of habitat, and direct effects (mortalities) and indirect effects (harassment,



reduced visibility) on nesting birds. The Proponent stated that the Project would have limited effects on migratory birds following implementation of mitigation (e.g. nest sweeps prior to vegetation clearing, deterrents) and monitoring.

The Proponent noted 43 migratory bird species were detected in the project area and surrounding area during baseline studies. The Proponent stated that an assessment of effects on migratory birds will be included in the EIA required by the AEP. A wildlife management plan and mitigation measures will be developed to reduce project impacts on migratory birds. The Proponent will submit an application for a letter of advice or approval from ECCC for implementing deterrent measures and an application for approval (Damage or Danger permit) will also be submitted if any migratory birds or nests need to be moved from the project site.

The Proponent identified the following SARA-listed species on the project site: northern leopard frog, Baird's sparrow, barn swallow, chestnut-collared longspur, common nighthawk, ferruginous hawk, long-billed curlew, Sprague's pipit, and American badger. The Proponent indicated that permitting to remove sensitive species features will be required and offsetting opportunities will be examined.

ECCC noted that activities associated with the Project will result in a loss of native prairie habitat, and habitat for migratory birds and SARA-listed species. Twenty-four SARA-listed species ranges overlap the project site: three endangered species (piping plover, burrowing owl, and little brown myotis), nine threatened species (common nighthawk, loggerhead shrike, barn swallow, bobolink, Spague's pipit, thick-billed longspur, lark bunting, chestnut-collared longspur, and ferruginous hawk), and twelve listed as special concern (Baird's sparrow, common nighthawk, horned grebe, long-billed curlew, short-eared owl, peregrine falcon, northern leopard frog, western tiger salamander, American badger, bull snake, Great Plains toad, and prairie rattlesnake). All of the bird species except burrowing owl, ferruginous hawk, short-eared owl and peregrine hawk are protected under the *Migratory Birds Convention Act, 1994*. The requesters identified concern related to three additional species at risk (tiny cryptantha, greater short horned lizard and great plains toad); however, their ranges do not overlap the project site.

Construction during migratory bird nesting season could disturb migratory bird eggs and nests. ECCC advised the Project may adversely affect surface water quality, which could result in adverse effects to migratory birds. ECCC noted that the Project is not located on federal lands and there are no SARA orders in place for the proposed project location. Only the SARA prohibitions pertaining to migratory birds would apply to the Project, they would not apply to critical habitat unless an order is put in place or additional activities or components are added to the project scope. As no species at risk critical habitat has been observed within or adjacent to the project footprint, ECCC has indicated that it is unlikely that a SARA permit will be required for the Project.

Potential effects to species at risk will be considered in the provincial EIA report required under EPEA and the *Water Act* approval application. The Proponent will also be required to adhere to applicable federal legislation, such as the *Migratory Birds Convention Act, 1994* and *SARA*.

## Indigenous peoples of Canada

The Agency considered information provided by Blood Tribe/Kainai, Siksika Nation, other requesters, the Proponent, AEP, ECCC, ISC, HC, DFO, WAGE, and the public. The Agency is of the view that the Project has the potential to cause adverse effects to the health, social, or economic conditions of Indigenous



peoples or environmental effects that would lead to adverse effects to physical and cultural heritage, the current use of lands and resources for traditional purposes, or structures, sites, or things that are of historical, archaeological, or paleontological significance to the Indigenous peoples of Canada. The Agency expects that existing legislation will provide a framework to address these potential effects.

Blood Tribe/Kainai and Siksika Nation expressed concerns regarding impacts associated with project flooding on Blackfoot historical resources, including that there is a high likelihood that Blackfoot historical resources and artifacts are present within the project area and have the potential to be lost or altered due to project activities. The areas around streams and rivers in southern Alberta are of significant historical and cultural importance to Siksika Nation. Red Deer River and Bow River flow through Blackfoot territory, the latter flows through Siksika Reserve No. 146. Blood Tribe/Kainai and Siksika Nation rely on the Red Deer and Bow River sub-basins to practice their section 35 rights. Fish, aquatic species, wildlife, and migratory birds are identified as components of the ecosystem in Blackfoot traditional territory that support the practice of section 35 rights of Blood Tribe/Kainai and Siksika Nation.

The requesters indicated concerns that the conversion of native grasslands to agricultural lands can lead to the destruction of important cultural sites, and water infrastructure can complicate and constrain access to and evaluation of archaeological sites. Effects to water rights were also raised as a concern in the South Saskatchewan River Basin where surface water is fully, or nearly fully, allocated. The requesters also highlighted the link between cultural and ecological resources of the land and the well-being of Indigenous peoples.

Concerns expressed by the public included potential effects of the Project on the health and well-being of communities near the Project and within the South Saskatchewan River Basin, including Indigenous communities.

ISC advised that the information provided regarding the Project is insufficient to determine whether the Project may pose adverse direct or incidental effects; however, ISC indicated changes from the project activities may interfere with land use/access, loss of traditional lands, and ability to hunt, fish, gather, and/or trap, as well as the ability for Indigenous peoples to practise their culture. ISC recommended the potential impacts of the proposed Project should be considered over an extended period of time (80-100 years) and include consideration of the impacts of advancing climate change on food security and traditional activities of Indigenous peoples.

ECCC advised that construction of the Project may adversely affect air quality through the combustion of fossil fuels by construction equipment and through physical disturbance of land introducing particulate matter into air. Air pollutants as a result of the Project could potentially affect human health and sensitive ecosystem receptors at local and regional extents. The Project could also impact water availability for downstream communities near the Project, including Indigenous groups, as irrigation and related canals and reservoirs increase the amount of water lost to evapotranspiration.

HC advised that, although the information provided is not sufficient to evaluate the extent of potential impacts, some project activities may lead to a risk of adverse human health effects and corresponding potential impacts to Indigenous health. The Project may impact human health through potential changes to air quality, water quality, noise, and country foods. A human health risk assessment that identifies all relevant contaminants and potential exposure pathways should be completed for the Project. AEP indicated that EIA reports under EPEA are required to identify issues related to human health.



WAGE indicated that the Project's potential effects relating to women and the advancement of gender equality could include impacts to cultural heritage and changes to health, social, and economic conditions of Indigenous peoples. Indigenous peoples may suffer adverse effects to cultural and ecological resources and water rights as a result of the Project, and Indigenous peoples' access to archaeological resources within the project footprint or in areas that may be impacted by the Project could be limited.

The Proponent noted that the project footprint is located on private lands. The Proponent submitted a pre-consultation assessment to the provincial Aboriginal Consultation Office and is awaiting a decision on Indigenous consultation under the *Water Act*. The Proponent will adhere to any Indigenous consultation requirements outlined by the Aboriginal Consultation Office. EIAs required by AEP typically include an assessment of current and traditional land uses and will be subject to public and Indigenous review.

Pursuant to the Alberta *Historical Resources Act*, the Proponent submitted a Historical Resource Application to Alberta Culture and the Status of Women. The Proponent is required to complete a Historical Resources Impact Assessment for all areas of high archaeological potential. The Proponent obtained an Archaeological Research Permit on June 10, 2021, and the Historical Resources Impact Assessment was completed June 30, 2021. A total of 22 new archaeological sites were recorded and one previously recorded archaeological site was identified during the assessment. Three potentially significant sites were identified, mapped and flagged so these areas can be avoided. Alberta Culture and Status of Women has determined that a Historical Resources Impact Mitigation study is required to mitigate impacts to intact cultural resources. A paleontological Historical Resources Impact Assessment is currently in progress. The Proponent has indicated that any requirements issued by Alberta Culture and the Status of Women will be followed.

Should DFO consider issuing a *Fisheries Act* authorization for the Project, consultation with Indigenous groups would be undertaken. The authorization process through the DFO Fish and Fish Habitat Protection Program may involve consultation and/or accommodation on potential impacts to Indigenous peoples of Canada. When making a decision under the *Fisheries Act*, the Minister shall consider any adverse effects that the decision may have on the rights of Indigenous peoples of Canada.

## Federal lands

The Agency considered information provided by the Proponent, DND, ISC and the requesters and is of the view that the potential for changes to the environment on federal lands is limited.

The requesters expressed concern regarding the potential for downstream impacts to federal lands, including reserve lands and Canadian Forces Base (CFB) Suffield from project activities. Potential adverse impacts noted by the requesters included possible water flow impacts on riparian corridors within the CFB Suffield National Wildlife Area, which could impact species at risk. Responses from both CFB Suffield and 3<sup>rd</sup> Canadian Division Support Base Detachment Southern Alberta indicated that DND does not have any concerns regarding impacts of the Project on CFB Suffield, including within CFB Suffield National Wildlife Area.

The Proponent indicated that they own the land for the planned expansion area of the Project and the project site is not within federal lands.

Potential adverse impacts to federal lands noted by the requesters included large withdrawals and altered flows through Bow River, which runs through Siksika Reserve No. 146. ISC noted that although the Project is not on federal reserve lands, reserve lands may potentially experience downstream effects from project activities, such as large withdrawals and altered flow regimes on riparian and aquatic ecosystems. Siksika Reserve No. 146 (the nearest federal reserve land) is approximately 23 kilometres northwest of the Project, Blood Reserve No. 148 is approximately 115 kilometres southwest, and CFB Suffield is approximately 84 kilometres southeast.

## Transboundary effects

Consideration of transboundary effects include transboundary waters, greenhouse gas (GHG), other air emissions and climate change. The Agency considered information from the Proponent, ECCC, the requesters and Indigenous groups with respect to transboundary effects. The Agency is of the view that existing legislation provides a framework to address the potential for adverse effects in other provinces.

The requesters indicated that the Project may decrease the water volume input and affect the water quality of the Oldman, Bow, Red Deer and South Saskatchewan rivers due to increased water diversions from the rivers and reduced return flows to the rivers. The Oldman, Red Deer and South Saskatchewan rivers flow from Alberta to Saskatchewan and concerns have been raised surrounding water quality and quantity into Saskatchewan and beyond if the Project proceeds. The requesters also noted the *Bow, Oldman and South Saskatchewan River Basin Water Allocation Order*<sup>5</sup> issued by the Province of Alberta that closed the watersheds to new surface water allocation licences. Concern regarding the potential of the Snake Lake Reservoir, cumulatively with other irrigation projects, to contribute to the expansion of total irrigated lands in Alberta was also noted, as this would enable conversion of dry cropland and native grassland habitats to irrigated agricultural land.

The Proponent noted that the Project will not require any amendments to their existing water licenses. The Proponent anticipates the Terms of Reference for the provincial EIA will consider impacts to hydrology, water quality and water management.

ECCC noted that the Project may impact water availability in downstream sections of the Bow and Red Deer rivers, including into the Province of Saskatchewan, as irrigation and related canals and reservoirs increase the amount of water lost to evapotranspiration. The provinces of Alberta and Saskatchewan are members of the Prairie Provinces Water Board, a Federal-Provincial governance body that helps facilitate collaborative transboundary water management in the prairie region. A Master Agreement on Apportionment<sup>6</sup> sets the requirements and responsibilities, and the Government of Alberta is responsible for ensuring compliance with that agreement. Compliance with the Master Agreement on Apportionment is expected to manage potential effects of the Project on water moving from Alberta to Saskatchewan.

The requesters indicated that irrigation agriculture can be a major emitter of GHGs and cultivation of native grasslands results in significant releases of GHGs. Concerns from members of the public included potential effects of emissions produced by project activities.

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<sup>5</sup> [https://open.alberta.ca/publications/2007\\_171](https://open.alberta.ca/publications/2007_171)

<sup>6</sup> <https://www.alberta.ca/master-agreement-on-apportionment.aspx>



ECCC indicated that the Project may hinder the Government of Canada's ability to meet its commitments in respect of climate change, as project activities may result in GHG emissions, or impact carbon sinks including native prairie grassland habitat.

Pursuant to the *Canadian Environmental Protection Act, 1999*, facilities are subject to federal GHG emissions reporting requirements if they emit ten kilotonnes or more of GHG emissions, in carbon dioxide equivalent units per year. The Project will be subject to these reporting requirements if GHG emissions exceed this threshold. The Proponent stated that the Project is not anticipated to result in significant GHG emissions and the extent of the Project's GHG emissions will be determined as part of the EIA required by AEP.

## Other considerations

### Cumulative effects

The Agency considered information provided by the Proponent, ECCC, ISC, HC, the requesters, Indigenous groups, and the public in relation to effects set out in subsection 9(1) of the IAA, and is of the view that existing legislation provides a framework to address cumulative effects.

Cumulative effects were mentioned as a concern of the requesters and Indigenous groups. Inclusion of the Project in the Alberta Irrigation investment partnership program and the associated cumulative effects of the projects involved were also noted by the requesters.

Members of the public expressed concerns regarding potential cumulative effects of the Project and other proposed irrigation projects in the area and supported a federal impact assessment to assess cumulative effects.

ECCC noted that Project-related effects on water quantity and quality would contribute to the cumulative effects of existing anthropogenic influences and future projects on the affected watershed (South Saskatchewan River Basin). ECCC has identified that the Project will contribute to the existing high cumulative effects of loss of native prairie grassland in Alberta, through direct loss of native prairie, and indirectly through the expansion of irrigated agricultural land area replacing native prairie grassland. ECCC recommends that the Proponent use conservation allowances to mitigate further loss and fragmentation of native prairie habitat near the Project.

ISC indicated that cumulative effects due to oil, gas, and agricultural activities over the past several decades is a common concern surrounding impacts to Indigenous groups. HC advised that there may be cumulative effects with other proposed irrigation projects.

AEP noted that there are native grassland management strategies to protect native grasslands under the South Saskatchewan Regional Plan. Effects of the Project on native grasslands will be addressed in the provincial EIA of the Project.

The Proponent noted that assessment of Project and cumulative effects and planned methods to manage these effects will be completed as part of the EIA required by the AEP. If adverse residual effects are likely to remain, mitigations will be developed and implemented.

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## Potential adverse direct or incidental effects

Direct or incidental effects refer to effects that are directly linked or necessarily incidental to a federal authority's exercise of a power or performance of a duty or function that would permit the carrying out, in whole or in part, of a physical activity, or to a federal authority's provision of financial assistance for the purpose of enabling that physical activity to be carried out, in whole or in part.

The Project may require a *Fisheries Act* authorization from DFO if the Project could cause harmful alteration, disruption, or destruction of fish habitat or death of fish. The CIB may provide funding for the Project in the form of a loan that would be repaid by the Proponent.

The carrying out of the Project has the potential to cause adverse direct or incidental effects; however, potential effects are expected to be addressed through the requirements set by the relevant federal authorities or the provincial EIA process under the EPEA.

Potential federal authorizations or approvals are listed in Annex 2.

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## Public concerns

Public comments that were submitted to the Agency and the Minister of Environment and Climate Change were considered. The public concerns expressed a desire for a comprehensive federal impact assessment to be conducted for the Project, including assessment of cumulative effects of the Project and other proposed irrigation projects in the region. The concerns expressed regarding the Project by the requesters, public, and Indigenous groups that relate to effects within federal jurisdiction are noted above in the relevant section and in Annex 1, along with the associated mitigation measures proposed by the Proponent, if any, and applicable regulatory mechanisms that may address these concerns. Additional concerns submitted to the Agency by the public included a lack of information regarding the location and extent of the Project and the resulting increased irrigated land area, and effects of the Project and subsequent irrigation on native grasslands, groundwater and surface water, and nearby communities.

The Proponent stated that in general, there has been strong support locally for the Project. Additional public interest and concerns will be addressed through consultation and outreach as part of the provincial EIA process.

The Agency is of the view that existing legislation provides a framework to address the concerns within federal jurisdiction and adverse direct or indirect effects and include opportunities for public participation and consideration of public comments (see Annex 2).

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## Potential adverse impacts on the section 35 rights of Indigenous peoples

The Agency considered submissions from Blood Tribe/Kainai and Siksika Nation, and relevant advice from federal and provincial authorities. In relation to subsection 9(2) of the IAA, the Agency is of the view that



while there is the potential for the Project to cause adverse impacts on rights that are recognized and affirmed by section 35 of the *Constitution Act, 1982* (section 35 rights), existing legislation provides a framework to address such impacts.

The Project is located within Treaty 7 territory and within the Métis Nation of Alberta Region 3. The Agency sought views from five potentially impacted Indigenous groups and received comments from two groups: Blood Tribe/Kainai and Siksika Nation. Both Nations noted that the Project would cause significant impacts to section 35 rights by impacting their ability to practice traditional activities such as hunting, fishing, gathering, and ceremonial practices within Blackfoot territory.

The Agency understands that the provincial decision is pending on whether the EIA process under Alberta's EPEA will include consultation.

Should DFO consider issuing a *Fisheries Act* authorization for the Project, consultation with Indigenous groups would be undertaken. The authorization process through the DFO Fish and Fish Habitat Protection Program may involve consultation and/or accommodation on potential impacts to Indigenous peoples of Canada. When making a decision under the *Fisheries Act*, the Minister shall consider any adverse effects that the decision may have on the rights of Indigenous peoples of Canada. The Canada Infrastructure Bank is responsible for meeting all of its legal obligations, including responding to the Duty to Consult Indigenous groups and ensuring that projects have met environmental assessment and other regulatory requirements.

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## Regional and strategic assessments

There are no regional or strategic assessments pursuant to sections 92, 93, or 95 of the IAA that are relevant to the Project.

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## Conclusion

To inform its analysis, the Agency sought and received input from the Blood Tribe/Kainai, Siksika Nation, the requesters, the public, the Proponent, ECCC, DFO, HC, NRCan, ISC, TC, WAGE, DND, CIB and the Government of Alberta.

The Agency is of the view that existing legislation provides a framework to address the potential for adverse effects, as described in subsection 9(1) of the IAA. These include the EIA process under Alberta's EPEA, which can include enforceable terms and conditions to mitigate potential environmental effects for all stages of the development, and federal legislative mechanisms such as an authorization under the *Fisheries Act* which would include additional Indigenous consultation activities (Annexes 1 and 2).

While there is the potential for the Project to cause adverse impacts on the section 35 rights of the Indigenous peoples of Canada, existing legislation will provide a framework to address potential impacts to section 35 rights caused by the Project.



# Annexes

## Annex 1: Analysis Summary Table

Adverse Effect or Public Concern in Relation to Subsection 9(1) of the <i>Impact Assessment Act</i>	Effects and Mitigation Proposed by the Proponent and Advice from Federal and Provincial Experts	Relevant Legislative Mechanisms
<p>A change to fish and fish habitat, as defined in subsection 2(1) of the <i>Fisheries Act</i></p>	<p><u>Public and Indigenous Communities:</u>            Concerns related to potential for adverse effects to fish and fish habitat due to project activities. Effects to fish habitat throughout the Saskatchewan River Basin and habitat for fish species at risk including the Rocky Mountain sculpin. Effects to riparian habitat availability and inadequate habitat offsets for aquatic species at risk in the reservoir expansion area. Concerns related to the contribution of the Project to invasive fish and aquatic vegetation species in Alberta’s fisheries.</p> <p><u>Federal Authorities:</u>            DFO stated that the Project has the potential to result in the harmful alteration, disruption or destruction of fish habitat and/or the death of fish and may require authorization under the <i>Fisheries Act</i>. It is unlikely that a permit will be required under SARA for aquatic species at risk because there are currently no aquatic species at risk mapped for the project area.</p> <p>ECCC advised that the Project may adversely affect air quality through the introduction of particulate matter through activities which cause a physical disturbance to land, such as earth moving, land clearing and transportation; air contaminant emissions can result in contamination</p>	<p>The Fish and Fish Habitat Protection Program of DFO reviews projects for their impacts to fish and fish habitat by ensuring compliance with the <i>Fisheries Act</i> and SARA. Through this program, DFO may provide information to the Proponent in order to avoid and mitigate the negative impacts of the proposed Project.</p> <p>DFO may issue a <i>Fisheries Act</i> paragraph 35(2) (b) Authorization if the Project is likely to cause the harmful alteration, disruption, or destruction of fish habitat and/or a <i>Fisheries Act</i> paragraph 34.4(2) (b) Authorization if the Project is likely to result in the death of fish.</p>



Adverse Effect or Public Concern in Relation to Subsection 9(1) of the <i>Impact Assessment Act</i>	Effects and Mitigation Proposed by the Proponent and Advice from Federal and Provincial Experts	Relevant Legislative Mechanisms
	<p>of nearby waterbodies and may affect fish and fish habitat. ECCC noted that the construction, expansion, operation, and maintenance of the Project could cause erosion and result in deposition of soils and sediments to waterbodies. Surface water quality may be degraded by hydrological changes, reduction of wetland function, and by increased runoff/mobilization of agricultural chemicals, wastes, and other contaminants due to agricultural expansion. Expansion of the reservoir may result in mobilization of mercury in newly flooded agricultural areas, which may release agricultural chemicals. The adverse effects to surface water quality could result in adverse effects to fish and fish habitat; however, adverse effects could be reduced through mitigation measures and confirmatory monitoring.</p> <p><u>Proponent:</u> Temporary effects to fish and fish habitat are expected with the removal of the existing East Dam and installation of a new dam. The expansion of the reservoir is expected to have long-term positive effects by creating aquatic habitat</p> <p>The Proponent will submit an application for an authorization to DFO and acknowledges that it may be required to monitor and quantify changes in habitat; if habitat is lost, then compensation may be required.</p> <p>No SARA-listed species are found in the Nelson-Saskatchewan River system (including the Bow River).</p>	<p>The <i>Species at Risk Act</i> (SARA) sets out prohibitions relating to harming at risk species or destroying any part of their critical habitat.</p> <p>Assessment of potential effects to fish and water quality will be addressed in the EIA report required under EPEA and the <i>Water Act</i> application for the Project.</p> <p>Approval under Alberta's <i>Water Act</i> regulates the allocation, protection and conservation of water and applies to the proposed construction, operation and maintenance of the reservoir, dam facilities, canals and alteration of wetland habitat and any loss or alteration of fish habitat or riparian habitat.</p>



Adverse Effect or Public Concern in Relation to Subsection 9(1) of the <i>Impact Assessment Act</i>	Effects and Mitigation Proposed by the Proponent and Advice from Federal and Provincial Experts	Relevant Legislative Mechanisms
A change to aquatic species, as defined in subsection 2(1) of the SARA	<p>See the section “A change to fish and fish habitat, as defined in subsection 2(1) of the <i>Fisheries Act</i>” for fish species at risk.</p> <p>The Project will not affect the marine environment so marine plants will not be affected.</p>	See the section “A change to fish and fish habitat, as defined in subsection 2(1) of the <i>Fisheries Act</i> ”.
A change to migratory birds, as defined in subsection 2(1) of the <i>Migratory Birds Convention Act, 1994</i>	<p><u>Public and Indigenous Communities:</u> Concerns were expressed regarding the potential of the Project to adversely affect wetlands and native grassland habitats for migratory bird species, including migratory bird species at risk. Cumulative impacts of the Project and other irrigation projects were noted to potentially contribute to expansion of irrigated agricultural lands into migratory bird habitats, and adversely affect the overall security of the South Saskatchewan River Basin leading to impacts on migratory bird habitats throughout the basin.</p> <p><u>Federal Authorities:</u> ECCC noted that activities associated with the Project will result in a loss of native prairie, and habitat for migratory birds and SARA-listed species. Construction during migratory bird nesting season could disturb migratory bird eggs and nests. ECCC advised that the Project may adversely affect surface water quality, which could result in adverse effects to migratory birds. ECCC noted that the Project is not located on federal lands and there are no SARA orders in place for the proposed project location; only the SARA prohibitions pertaining to migratory birds would apply and would not apply to critical habitat unless an order is put in place or if additional activities or components</p>	<p>Permitting requirements under SARA for migratory bird species at risk may be applicable under a specific set of circumstances, as described in section 73 of SARA. Prohibitions are in place for the migratory birds, their nests, eggs, and habitat (including native prairie grassland) under the <i>Migratory Birds Convention Act 1994</i>, wherever they occur regardless of land tenure.</p> <p>As part of the provincial EIA required by AEP, assessment of potential effects to migratory birds may be</p>



Adverse Effect or Public Concern in Relation to Subsection 9(1) of the <i>Impact Assessment Act</i>	Effects and Mitigation Proposed by the Proponent and Advice from Federal and Provincial Experts	Relevant Legislative Mechanisms
	<p>are included in the project scope. As no species at risk critical habitat has been observed within or adjacent to the project area, ECCC has indicated that it is unlikely that a SARA permit will be required for the Project. However, 24 SARA-listed species ranges overlap the project site and may utilize the area, including 13 species included in the <i>Migratory Birds Convention Act, 1994</i>.</p> <p><u>Proponent:</u> Assessment of effects on migratory birds will be included in the EIA required by AEP. Baseline studies were completed in 2021 to assess current occupancy in the project area. Negative effects will be managed throughout the planning and construction phases of the Project. A wildlife management plan and mitigation measures will be developed to reduce project impacts on migratory birds during construction and operation. Nest sweeps would be performed during any applicable breeding season for the project area during all stages of the Project.</p>	<p>included in the Terms of Reference.</p> <p>Approval under Alberta's <i>Water Act</i> regulates the allocation, protection and conservation of water and applies to the proposed construction, operation and maintenance of the reservoirs, dam facilities, canals and alteration of wetland habitat.</p>
<p>A change to the environment that would occur on federal lands</p>	<p><u>Public and Indigenous Communities:</u> Concerns regarding potential adverse impacts to reserve lands due to large water withdrawals and altered flow regimes on riparian and aquatic ecosystems, and potential adverse impacts to riparian corridors and species at risk within the CFB Suffield National Wildlife Area due to project-related changes in water flow.</p> <p><u>Federal Authorities:</u> Responses from both CFB Suffield and the 3<sup>rd</sup> Canadian Division Support Base Detachment Southern Alberta indicated that DND does</p>	<p>Not applicable</p>



Adverse Effect or Public Concern in Relation to Subsection 9(1) of the <i>Impact Assessment Act</i>	Effects and Mitigation Proposed by the Proponent and Advice from Federal and Provincial Experts	Relevant Legislative Mechanisms
	<p>not have any concerns regarding impacts of the Project on CFB Suffield land, including for CFB Suffield NWA.</p> <p><u>Proponent:</u> The Proponent noted that the project footprint is located on private lands and is not within federal lands.</p>	
<p>A change to the environment that would occur in a province other than the one in which the Project is being carried out or outside Canada</p>	<p><u>Public and Indigenous Communities:</u> Concerns regarding the decrease in water volume and effects to water quality of the Oldman, Bow, Red Deer and South Saskatchewan rivers due to increased water diversions and reduced return flows due to the Project. Concerns that the Project will impact water quality and quantity in Saskatchewan.</p> <p>Concerns were expressed regarding GHG emissions. Irrigation agriculture can be a major emitter of GHGs and cultivation of native grasslands results in significant releases of GHGs. The overall Alberta Irrigation investment partnership program that the Project is part of would also contribute to emissions.</p> <p><u>Federal Authorities:</u> ECCC noted the Project may impact water availability downstream, including into Saskatchewan, as irrigation and related canals and reservoirs increase the amount of water lost to evapotranspiration. Furthermore, project activities have the potential to be affected by future climate change, possibly resulting in impacts to the environment. Alberta and Saskatchewan are members of the Prairie Provinces Water Board and the Government of Alberta is responsible for</p>	<p>Alberta's EPEA requires cooperation with governments of other jurisdictions to prevent and minimize transboundary environmental impacts.</p> <p>Existing authorizations under Alberta's <i>Water Act</i> would remain in effect and any new authorizations, which are not anticipated, would be subject to provincial approval in accordance with the <i>Bow, Oldman and South Saskatchewan River Basin Water Allocation Order</i>.</p> <p>Facilities are subject to federal GHG emissions reporting requirements, pursuant to the</p>



Adverse Effect or Public Concern in Relation to Subsection 9(1) of the <i>Impact Assessment Act</i>	Effects and Mitigation Proposed by the Proponent and Advice from Federal and Provincial Experts	Relevant Legislative Mechanisms
	<p>ensuring compliance with the Master Agreement on Apportionment with Saskatchewan.</p> <p>ECCC noted that project activities may result in GHG emissions, or impact carbon sinks and may hinder the Government of Canada's ability to meet its commitments in respect of climate change. Combustion of fossil fuels during construction can result in the emission of air contaminants such as sulfur oxides, nitrogen oxides, volatile organic compounds, and fine particulate matter.</p> <p>HC indicated the potential for changes to air quality, but did not comment on the potential extent of such effects.</p> <p><u>Proponent:</u> The Proponent noted that the Project will not require any amendments to their existing water licenses and that the Project is not anticipated to result in significant GHG emissions. The extent of the Project's GHG emissions will be determined as part of the EIA required by AEP.</p>	<p><i>Canadian Environmental Protection Act, 1999</i>, if they emit 10 kilotonnes or more of GHG emissions, in carbon dioxide equivalent units per year.</p> <p>Assessment of effects related to carbon sequestration and water quality may be included in the EIA Terms of Reference required by AEP.</p>
<p>With respect to the Indigenous peoples of Canada, an impact - occurring in Canada and resulting from any change to the environment - on physical and cultural heritage</p>	<p><u>Public and Indigenous Communities:</u> Concerns were raised regarding the conversion of native grasslands to agricultural lands that can lead to the destruction of important cultural sites.</p> <p>Blood Tribe/Kainai and Siksika Nation expressed concerns regarding potential impacts to historical resources and artifacts belonging to the Blackfoot. The areas around streams and rivers in southern Alberta are of significant historical and cultural importance to Siksika</p>	<p>Section 49 of Alberta's EPEA requires the Proponent to include a description of potential positive and negative environmental, social, economic, and cultural impacts of the proposed activity, including cumulative,</p>



Adverse Effect or Public Concern in Relation to Subsection 9(1) of the <i>Impact Assessment Act</i>	Effects and Mitigation Proposed by the Proponent and Advice from Federal and Provincial Experts	Relevant Legislative Mechanisms
	<p>archaeological sites and impacts. The relationship to the area is crucial to cultural, social and economic well-being of families and communities within in the area.</p> <p><u>Federal Authorities:</u> ISC advised that changes from the project activities may interfere with land use/access, loss of traditional lands, and ability to hunt, fish, gather, and/or trap, as well as the ability for Indigenous peoples to practise their culture.</p> <p>WAGE indicated that the Project’s potential effects relating to women and the advancement of gender equality could include impacts to cultural heritage.</p> <p><u>Proponent:</u> The Proponent indicated that the Aboriginal Consultation Office has been provided with a pre-consultation assessment of the Project, but a final decision on Indigenous consultation requirements is outstanding. The Proponent will adhere to any Indigenous consultation requirements outlined by the Aboriginal Consultation Office.</p> <p>Pursuant to the Alberta <i>Historical Resources Act</i>, the Proponent submitted a Historical Resource Application to Alberta Culture and the Status of Women. The Proponent is required to complete a Historical Resources Impact Assessment for all areas of high archaeological potential. The Proponent obtained an Archaeological Research Permit on June 10, 2021, and the Historical Resources Impact Assessment was completed June 30, 2021. A total of 22 new archaeological sites</p>	<p>regional, temporal, and spatial considerations (unless otherwise determined by the Director of AEP).</p> <p>Alberta’s <i>Historical Resources Act</i> designates and protects moveable and immoveable historic resources. A Historical Resources Impact Assessment is required by Alberta Culture and Status of Women.</p>



Adverse Effect or Public Concern in Relation to Subsection 9(1) of the <i>Impact Assessment Act</i>	Effects and Mitigation Proposed by the Proponent and Advice from Federal and Provincial Experts	Relevant Legislative Mechanisms
	<p>were recorded and one previously recorded archaeological site was identified during the assessment. Three potentially significant sites were identified, mapped and flagged so these areas can be avoided. A paleontological Historical Resources Impact Assessment is in progress. Any requirements issued by Alberta Culture and the Status of Women will be followed.</p>	
<p>With respect to the Indigenous peoples of Canada, an impact - occurring in Canada and resulting from any change to the environment - on current use of lands and resources for traditional purposes</p>	<p><u>Public and Indigenous Communities:</u>            Concerns regarding potential effects to water rights in the South Saskatchewan River Basin where surface water is fully or nearly fully allocated. Concerns about the Project impacting Red Deer River and Bow River, the latter of which runs through Siksika Reserve #146, and both of which flow through Blackfoot traditional territory. Concerns about the Project impacting the quality and quantity of water available to support Treaty and Aboriginal rights.</p> <p><u>Federal Authorities:</u>            ISC noted that development activities can result in a potential loss of food security for Indigenous groups (i.e., traditional foods). The loss of lands with native habitats and associated wildlife, coupled with effects to soils, air, water, and fish habitat can have an effect on Indigenous groups' use of lands and resources for traditional purposes.</p> <p>WAGE identified that Indigenous peoples may suffer adverse effects to cultural and ecological resources and water rights as a result of the Project.</p> <p><u>Proponent:</u></p>	<p>Section 49 of Alberta's EPEA requires the Proponent to include a description of potential positive and negative environmental, social, economic, and cultural impacts of the proposed activity, including cumulative, regional, temporal, and spatial considerations (unless otherwise determined by the Director of AEP).</p> <p>Existing authorizations under Alberta's <i>Water Act</i> would remain in effect and any new authorizations, which are not anticipated, would be subject to provincial approval in accordance with the <i>Bow</i>,</p>



Adverse Effect or Public Concern in Relation to Subsection 9(1) of the <i>Impact Assessment Act</i>	Effects and Mitigation Proposed by the Proponent and Advice from Federal and Provincial Experts	Relevant Legislative Mechanisms
	<p>The Proponent indicated that the Aboriginal Consultation Office has been provided with a pre-consultation assessment of the Project, but a final decision on Indigenous consultation requirements is outstanding. The Proponent will adhere to any Indigenous consultation requirements outlined by the Aboriginal Consultation Office. The EIA documents will be subject to public and Indigenous review. Loss of cultural heritage sites can be assessed through the consultation and engagement process and by completion of a traditional land use study as part of the provincial EIA process.</p>	<p><i>Oldman and South Saskatchewan River Basin Water Allocation Order.</i> Approval under Alberta's <i>Water Act</i> regulates the allocation, protection and conservation of water and applies to the proposed construction, operation and maintenance of the reservoirs, dam facilities, canals and alteration of wetland habitat. Section 38(2) of the <i>Water Act</i> specifies that potential impacts to Indigenous peoples' current use of lands for traditional purposes must be considered, and may be considered by the Director, when making an approval decision.</p>
<p>With respect to the Indigenous peoples of Canada, an impact - occurring in Canada and resulting from any change to the environment - on any</p>	<p><u>Public and Indigenous Communities:</u>            Concerns were expressed regarding water infrastructure that can complicate and constrain access to and evaluation of archaeological sites.            Blood Tribe/Kainai and Siksika Nation expressed concerns regarding potential impacts to historical resources and artifacts belonging to the</p>	<p>Section 49 of Alberta's EPEA requires the Proponent to include a description of potential positive and negative environmental, social,</p>



Adverse Effect or Public Concern in Relation to Subsection 9(1) of the <i>Impact Assessment Act</i>	Effects and Mitigation Proposed by the Proponent and Advice from Federal and Provincial Experts	Relevant Legislative Mechanisms
<p>structure, site, or thing that is of historical, archaeological, paleontological or architectural significance.</p>	<p>Blackfoot. The areas around streams and rivers in southern Alberta are of significant historical and cultural importance to Blood Tribe/Kainai and Siksika Nation. The relationship to the area is crucial to cultural, social and economic well-being of families and communities within in the area.</p> <p><u>Federal Authorities:</u> ISC noted potential impacts to sacred sites and other cultural and heritage-sensitive areas and impacts to the ability of Indigenous peoples to practise their culture.</p> <p>WAGE stated that Indigenous peoples' access to cultural and archaeological resources within the project footprint or in areas that may be impacted by the Project could be affected.</p> <p><u>Proponent:</u> The Proponent indicated that the Aboriginal Consultation Office has been provided with a pre-consultation assessment of the Project, but a final decision on Indigenous consultation requirements is outstanding. The Proponent will adhere to any Indigenous consultation requirements outlined by the Aboriginal Consultation Office.</p> <p>Pursuant to the Alberta <i>Historical Resources Act</i>, the Proponent submitted a Historical Resource Application to Alberta Culture and the Status of Women. The Proponent is required to complete a Historical Resources Impact Assessment for all areas of high archaeological potential. The Proponent obtained an Archaeological Research Permit</p>	<p>economic, and cultural impacts of the proposed activity, including cumulative, regional, temporal, and spatial considerations (unless otherwise determined by the Director of AEP).</p> <p>Alberta's <i>Historical Resources Act</i> designates and protects moveable and immoveable historic resources. A Historical Resources Impact Assessment is required by Alberta Culture and Status of Women.</p>



Adverse Effect or Public Concern in Relation to Subsection 9(1) of the <i>Impact Assessment Act</i>	Effects and Mitigation Proposed by the Proponent and Advice from Federal and Provincial Experts	Relevant Legislative Mechanisms
	<p>on June 10, 2021, and the Historical Resources Impact Assessment was completed June 30, 2021. A total of 22 new archaeological sites were recorded and one previously recorded archaeological site was identified during the assessment. Three potentially significant sites were identified, mapped and flagged so these areas can be avoided. Alberta Culture and Status of Women has determined that a Historical Resources Impact Mitigation study is required to mitigate impacts to intact cultural resources. A paleontological Historical Resources Impact Assessment is currently in progress. Any requirements issued by Alberta Culture and the Status of Women will be followed.</p>	
Any change occurring in Canada to the health, social, or economic conditions of the Indigenous peoples of Canada	<p><u>Public and Indigenous Communities:</u> Concerns were raised regarding the link between cultural and ecological resources of the land and the well-being of Indigenous peoples.</p> <p><u>Federal Authorities:</u> ISC advised that the information provided regarding the Project is insufficient for the determination as to whether or not the Project may pose adverse direct or incidental effects; however, ISC indicated changes from the Project activities may interfere with land use/access, loss of traditional lands, and ability to hunt, fish, gather, and/or trap, as well as the ability for Indigenous peoples to practise their culture. ISC recommended the potential impacts of the proposed Project should be considered over an extended period of time (80-100 years) and include consideration of the impacts of advancing climate change on food security and traditional activities of Indigenous peoples.</p>	Section 49 of Alberta's EPEA requires the Proponent to include a description of potential positive and negative environmental, social, economic, and cultural impacts of the proposed activity, including cumulative, regional, temporal, and spatial considerations (unless otherwise determined by the Director of AEP).



Adverse Effect or Public Concern in Relation to Subsection 9(1) of the <i>Impact Assessment Act</i>	Effects and Mitigation Proposed by the Proponent and Advice from Federal and Provincial Experts	Relevant Legislative Mechanisms
	<p>HC advised that, though the information provided by the Proponent is not sufficient to evaluate the extent of potential impacts, some project activities may lead to a risk of adverse human health effects and corresponding potential impacts to Indigenous health. The Project may impact human health through potential changes to air quality, water quality, noise, and country foods. HC advised that a human health risk assessment that identifies all relevant contaminants and potential exposure pathways should be completed for the Project.</p> <p>ECCC advised that construction of the Project may adversely affect air quality through the combustion of fossil fuels by construction equipment and through physical disturbance of land introducing particulate matter into air. Air pollutants as a result of the Project could potentially affect human health and sensitive ecosystem receptors at local and regional extents. The Project could also impact water availability for communities near the Project, including Indigenous communities, as irrigation and related canals and reservoirs increase the amount of water lost to evapotranspiration.</p> <p>WAGE indicated that the Project's potential effects relating to women and the advancement of gender equality could include changes to health, social, and economic conditions of Indigenous peoples.</p> <p><u>Proponent:</u> The Proponent indicated that the Aboriginal Consultation Office has been provided with a pre-consultation assessment of the Project, but a final decision on Indigenous consultation requirements is outstanding. The Proponent will adhere to any Indigenous consultation requirements outlined by the Aboriginal Consultation Office.</p>	



Adverse Effect or Public Concern in Relation to Subsection 9(1) of the <i>Impact Assessment Act</i>	Effects and Mitigation Proposed by the Proponent and Advice from Federal and Provincial Experts	Relevant Legislative Mechanisms
Adverse direct or incidental effects	<p><u>Federal Authorities:</u> DFO stated that there is insufficient information to determine whether the Project will result in adverse effects. However, projects of this nature have the potential to result in the harmful alteration, disruption or destruction of fish habitat and/or the death of fish. As such, DFO may need to issue a <i>Fisheries Act</i> paragraph 35(2)(b) Authorization if the Project is likely to cause the harmful alteration, disruption or destruction of fish habitat and/or a <i>Fisheries Act</i> paragraph 34.4(2)(b) Authorization if the Project is likely to result in the death of fish.</p> <p><u>Proponent:</u> The Proponent will submit an application for an authorization to DFO.</p>	Activities that result in the death of fish or the harmful alteration, disruption or destruction of fish habitat are prohibited unless authorized under the <i>Fisheries Act</i> .
Effects on federally listed Species At Risk under the SARA	<p><u>Public Concerns:</u> Concerns regarding potential effects of the Project to species at risk due to critical habitat loss, habitat alteration, habitat fragmentation, functional habitat loss, inadequate habitat offsets, indirect mortality, and the contribution to existing issues with invasive species in fisheries. Cumulative effects of the Project and other regional irrigation projects were noted to potentially adversely affect the overall security of the South Saskatchewan River Basin leading to impacts on species at risk habitats throughout the basin.</p> <p><u>Federal Authorities:</u> ECCC noted that activities associated with the Project will result in a loss of native prairie habitat and habitat for migratory birds and SARA-listed species. ECCC noted that the Project is not located on federal</p>	<p>Compliance with SARA.</p> <p>Assessment of potential effects to species at risk may be included in the EIA under EPEA required by AEP.</p> <p>Approval under Alberta's <i>Water Act</i> regulates the allocation, protection and conservation of water and applies to the proposed construction, operation and maintenance of the reservoirs,</p>



Adverse Effect or Public Concern in Relation to Subsection 9(1) of the <i>Impact Assessment Act</i>	Effects and Mitigation Proposed by the Proponent and Advice from Federal and Provincial Experts	Relevant Legislative Mechanisms
	<p>lands and there are no SARA orders in place for the proposed project location; only the SARA prohibitions pertaining to migratory birds would apply and would not apply to critical habitat unless an order is put in place or if additional activities or components are included in the project scope. As no species at risk critical habitat has been observed within or adjacent to the project area, ECCC has indicated that it is unlikely that a SARA permit will be required for the Project. However, 24 SARA-listed species ranges overlap the project site and may utilize the area, including 13 species included in the <i>Migratory Birds Convention Act, 1994</i>.</p> <p><u>Proponent:</u> Based on 2021 onsite species surveys, the Proponent acknowledged that the following SARA Schedule 1 species occur on the project site: northern leopard frog, Baird's sparrow, barn swallow, chestnut-collared longspur, common nighthawk, ferruginous hawk, long-billed curlew, Sprague's pipit, and American badger. Permitting to remove sensitive species features will be required and offsetting opportunities will be examined. If required, northern leopard frogs will be relocated to suitable offsite habitats (under permit from AEP) and a known ferruginous hawk nesting site will need to be permitted for removal (with a suitable nesting structured considered to offset this removal).</p> <p>The Proponent stated that no SARA-listed fish species are found in the Nelson-Saskatchewan River system which includes the Bow River.</p>	<p>dam facilities, canals and alteration of wetland habitat and any loss or alteration of fish habitat.</p>



## Annex 2: Potential federal and provincial authorizations relevant to the Project

Authorization	Description
<b>Federal</b>	
<i>Fisheries Act</i> Authorization	<p>A <i>Fisheries Act</i> paragraph 35(2)(b) authorization would be required if the activities are likely to cause the harmful alteration, disruption, or destruction to fish habitat and/or a <i>Fisheries Act</i> paragraph 34.4(2)(b) Authorization if the activities are likely to result in the death of fish. As proposed, it is likely that the Project would cause the death of fish, and/or the harmful alteration, disruption, or destruction of fish habitat. DFO may be required to exercise a power or perform a duty.</p> <p>The <i>Fisheries Act</i> paragraph 36(3) prohibits the deposit of deleterious substances into waters frequented by fish, unless authorized by regulations or other federal legislation.</p>
<i>Species at Risk Act</i> Permit	<p>For non-aquatic species listed in Schedule 1 of SARA as Extirpated, Endangered, or Threatened, a permit may be required from ECCC (e.g., under section 73 of SARA) for activities that affect a listed terrestrial wildlife species, any part of its critical habitat, or the residences of its individuals, where those prohibitions are in place. Such permits may only be issued if: all reasonable alternatives to the activity that would reduce the impact on the species have been considered and the best solution has been adopted; all feasible measures will be taken to minimize the impact of the activity on the species or its critical habitat or the residences of its individuals; and if the activity will not jeopardize the survival or recovery of the species.</p> <p>However, as proposed, it is unlikely that a SARA permit would be required for the Project. It is possible that prohibitions may come into force in the future through Orders in Council for individuals, residences, and critical habitat on Project-implicated, non-federal lands. If such an order is put in place, it may require a SARA permit.</p>
<i>Canadian Environmental Protection Act, 1999</i>	<p>The Project may require GHG emissions reporting if ten kilotonnes or more of GHGs are emitted in carbon dioxide equivalent units per year. This would be in addition to reporting required from the Strategic Assessment of Climate Change, should an impact assessment be required.</p>
<i>Migratory Birds Convention Act, 1994</i> Permit	<p>The <i>Migratory Birds Convention Act, 1994</i> protects migratory birds and their eggs and nests, wherever they occur, regardless of land tenure. A permit would be required if construction and clearing activities are scheduled within the migratory bird nesting season.</p>



Authorization	Description
<b>Provincial</b>	
<i>Environmental Protection and Enhancement Act</i>	<p>EPEA supports and promotes the protection, enhancement and wise use of the environment. AEP reviews applications under EPEA to assess the potential environmental impacts of a proposed project.</p> <p>Pursuant to Schedule 1(c) of the Environmental Assessment (Mandatory and Exempted Activities) Regulation the Project is a mandatory activity. Pursuant to Section 44(1)(a) of the EPEA an EIA report for the Project is required. The EIA report is to be prepared in accordance with the provisions of Division 1 of Part 2 of EPEA.</p>
<i>Historical Resources Act</i>	<p>Provides for the use, designation and protection of moveable and immoveable historic resources. Projects such as this one that require a provincial EIA require an application under the <i>Historical Resources Act</i>. Clearance is required prior to any site preparation or construction work occurring. A Historical Resources Impact Assessment is required by Alberta Culture and Status of Women.</p> <p>In the case of incidental historical finds, all activities that may impact the resource are to cease while it is being evaluated.</p>
<i>Water Act</i>	<p>Regulates the allocation, protection and conservation of water and applies to the proposed construction, operation and maintenance of the reservoirs, dam facilities, canals and alteration of wetland habitat and any loss or alteration of fish habitat.</p> <p>The Proponent noted that the Project will not require any amendments to their existing water licenses.</p>
<i>Public Lands Act</i>	<p>Prohibits the disturbance of the bed and shore of water bodies and other public lands administered by the Minister of AEP.</p>
<i>Alberta Soil Conservation Act</i>	<p>Requires that appropriate measures be taken to prevent soil loss or deterioration from occurring. Mitigation and monitoring to protect soils during construction and operation may be included in the EIA required by AEP.</p>
<i>Weed Control Act</i>	<p>Prevention of the spread of invasive and noxious weeds. Mitigation and monitoring to control weeds during construction and operation may be included in the EIA required by AEP.</p>
<i>Wildlife Act</i>	<p>Prohibits the disturbance of wildlife and wildlife habitat as administered by the Fish and Wildlife Branch of AEP. Assessment of potential effects to rare plants,</p>



Authorization	Description
	wildlife, migratory birds, fish and species at risk may be included in the terms of reference for the EIA.
Alberta Wetland Policy	<p>Provides the strategic direction and tools to minimize the loss and degradation of wetlands; the goal is to conserve, restore, protect and manage Alberta's wetlands to sustain the benefits they provide to the environment, society and economy.</p> <p>The policy is administered by AEP under the <i>Water Act</i>.</p>
<b>Intergovernmental</b>	
<i>Master Agreement on Apportionment (MAA)</i>	Schedule A of the MAA governs the sharing of waters of eastward-flowing streams between Alberta and Saskatchewan. The Government of Alberta is responsible for ensuring compliance with the Agreement. Compliance with the Master Agreement on Apportionment is expected to manage potential effects of the Project on water moving from Alberta to Saskatchewan.