

Environmental Protection Operations Directorate
Prairie & Northern Region
9250 49 Street
Edmonton, AB T6B1K5

ECCC File: 4194-10-3/6336

IAAC Registry: 83566



May 12, 2022

via email to: pnr-rpn@iaac-aeic.gc.ca

Andrew Clarke
Impact Assessment Agency of Canada
1145-9700 Jasper Avenue
Edmonton, AB T5J 4C3

Dear Andrew Clarke,

RE: 83566– Designation Request for the Proposed Snake Lake Reservoir Expansion Project under the Impact Assessment Act

ECCC has reviewed the information provided for the above-noted project (the Project) as requested by the Impact Assessment Agency of Canada's (the Agency) April 22, 2022 letter.

Our advice is based on ECCC's mandate in the context of the *Species at Risk Act* (SARA), the *Migratory Birds Convention Act 1994* (MBCA), pollution prevention provisions of the *Fisheries Act*, and the *Canadian Environmental Protection Act 1999* (CEPA).

ECCC will provide support and provide our expertise to the Agency on an as-needed basis, when matters pertaining to our mandate and expertise are requested.

The Project Lead listed below can be considered your "one-window" contact into ECCC for coordination of ECCC's participation in future on this project.

- Heather Konopski, Environmental Assessment Officer, heather.konopski@ec.gc.ca
- The ECCC Prairie and Northern Region EA Generic Inbox at EASouthPNR@ec.gc.ca.

Sincerely,

<Original signed by>

Margaret Fairbairn
A/ Regional Director
Prairie and Northern Region



Cc: Gillian Brown, A/Head EA South, Environmental Assessment-Prairie and Northern Region
Gayle Hatchard, Senior Environmental Assessment Officer, Prairie and Northern Region

Attachment: ECCC's Federal Authority Advice Record – Snake Lake Reservoir

ATTACHMENT

Federal Authority Advice Record: Designation Request under IAA

Response due to Agency by **May 12, 2022**

Snake Lake Reservoir Expansion and Modernization Project

Department/Agency	Environment and Climate Change Canada
Lead Contact	Heather Konopski, Environmental Assessment Officer, Prairie and Northern Region, Environmental Protection Branch
Full Address	Environmental Protection Operations Directorate Prairie & Northern Region 150-123 Main Street Winnipeg, MB, R3C 4W2
Email	Heather.konopski@ec.gc.ca
Telephone	n/a
Alternate Departmental Contact	Gayle Hatchard, Senior Environmental Assessment Officer gayle.hatchard@ec.gc.ca, (587-341-9793) General Inbox: EASouthPNR@ec.gc.ca

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1. Has your department or agency considered whether it has an interest in the Project; exercised a power or performed a duty or function under any Act of Parliament in relation to the Project; or taken any course of action (including provision of financial assistance) that would allow the Project to proceed in whole or in part?

Specify as appropriate.

ECCC has not previously considered the Project, exercised a power or performed a duty, or taken any course of action as part of the Project.

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2. Is it probable that your department or agency may be required to exercise a power or perform a duty or function related to the Project to enable it to proceed?

If yes, specify that power, duty or function and its legislative source.

Based on the available information, ECCC does not expect that it will be required to exercise a power or perform a duty or function related to the Project to enable it to proceed. Once the scope of the Project and of the assessment are established by the Agency, this may change as additional activities or Project components could come into scope. Information on the Migratory Birds Convention Act and Species at Risk Act are provided below. With regards to the SARA; because the Project is not located on federal lands and there are no SARA orders in place, only the SARA prohibitions pertaining to migratory birds would apply and would not apply to critical habitat unless an order is put in place.

Migratory Birds Convention Act permits

The Migratory Birds Convention Act 1994 protects migratory birds and their eggs and nests, wherever

they occur, regardless of land tenure. It is prohibited to harm or kill migratory birds or to disturb, destroy or take nests or eggs incidental to activities. Incidental harm to migratory birds is not a permit-able activity. In rare instances, migratory bird permits may be required for activities that affect human health and safety, and that may cause injury to the use of the land, however the potential for permitting in these areas is anticipated to be case specific and at discreet locations, and unrelated to whether the Project is able to proceed.

Species at Risk Act permits

For species listed in Schedule 1 of the Species at Risk Act (SARA) as Extirpated, Endangered or Threatened, a permit may be required from ECCC (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. Prohibitions are in place for individuals and residences on federal lands in a province, reserve or any other lands under the Indian Act, or lands under the authority of the Minister of the Environment, and for birds listed under the Migratory Birds Convention Act, 1994 wherever they occur regardless of land tenure. Prohibitions may also be in force on land other than federal land pursuant to other orders or regulations under SARA. It is possible that further prohibitions may come into force in the future through orders in Council for individuals, residences and critical habitat on non-federal lands and / or through ministerial order for critical habitat on federal lands. It is also possible that, over the course of the assessment or after the assessment, additional species could be listed under SARA; permits may be required for project activities that affect these additional species. Proponents are advised to monitor for such developments on the SARA Registry.

ECCC will require detailed information on the potential effects of the Project, including locations and/or occurrences of species at risk, their use of habitat and critical habitat within the Project area, and specific effects on federal land, before ECCC can determine whether a SARA permit is required.

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3. If your department or agency will exercise a power or perform a duty or function under any Act of Parliament in relation to the Project, will it involve public and Indigenous consultation?

Specify as appropriate.

As per Question 2 above, it is unlikely that a SARA permit will be required. If a SARA permit is required for this Project, ECCC may require public and Indigenous consultation related to the issuance of a SARA permit during the impact assessment process and will determine and action accordingly.

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4. Is your department or agency in possession of specialist or expert information or knowledge that may be relevant to any potential adverse effects within federal jurisdiction caused by the Project or adverse direct or incidental effects stemming from the Project?

Specify as appropriate.

ECCC has specialist or expert information that may be relevant to the to the Project in the areas listed below; in each of these subject areas we have expertise related to establishing an adequate baseline, assessing potential effects to biophysical valued components, effectiveness of mitigation measures, methods for monitoring and follow-up, as well as information regarding federal policies, standards, and regulations that may be relevant to the assessment. This list may change if additional Project activities or components should come into scope.

Air Quality: ambient air quality; sources of emissions; emissions estimation and measurement; dispersion modelling; and follow-up monitoring.

Greenhouse gas emissions and climate change: estimations of greenhouse gas (GHG) emissions (net and upstream); carbon sinks; GHG mitigation measures and determination of Best Available Technologies/Best Environmental Practices (BAT/BEP); credible plans to achieve net-zero GHG emissions by 2050; climate change science to inform evaluation of potential changes to the environment and project resilience to effects of climate change; climate change policies; and national GHG projections.

Water quality and quantity: surface water quality insofar as it could affect fish and fish habitat; water quality predictions and modelling; contaminant sources for surface water; wastewater, seepage and runoff effects; management of contaminated soils or sediments; dredging; erosion and sedimentation; water impoundment; seasonal variation in water quality; nutrient effects; interactions and effects of groundwater on surface water quality; hydrology (streamflow rates data and modelling, flooding and extreme events management, drainage control, water levels, water balances); geochemistry; follow-up and monitoring.

Wildlife, species at risk, and habitat: Migratory birds, their nests, eggs, and habitat (including native prairie grassland) under authority of the Migratory Birds Convention Act 1994; COSEWIC assessed species, non-aquatic species at risk under authority of the Species at Risk Act, including, individuals, their residences, habitat and critical habitat including recovery strategies, action plans and management plans; ecological function of wetlands; ecotoxicology.

Environmental emergencies: emergency management planning and guidance; atmospheric transport and dispersion modelling of contaminants in air; fate and behaviour, hydrologic trajectory modelling of contaminants in water.

Climate and Meteorology: long-term climate patterns and norms; and weather.

5. Has your department or agency had previous contact or involvement with the proponent or other parties in relation to the Project?

Provide an overview of the information or advice exchanged.

Based on information readily available, ECCC-PNR has not been involved with the Proponent or other parties that would be relevant to the assessment of this Project.

6. From the perspective of the mandate and area(s) of expertise of your department or agency, does the Project have the potential to cause adverse effects within federal jurisdiction or adverse direct or incidental effects as described in section 2 of IAA? Could any of those effects be managed through legislative or regulatory mechanisms administered by your department or agency? If a licence, permit, authorization or approval may be issued, could it include conditions in relation to those effects?

Specify as appropriate.

Air Quality

The construction of canals, culverts, spillways, and re-alignment of highways and roads requires the use of on-road vehicles and mobile off-road equipment, which has the potential to adversely affect air quality. More specifically, the combustion of fossil fuels can result in the emission of "criteria air contaminants" such as sulphur oxides (SO_x), nitrogen oxides (NO_x), volatile organic compounds (VOCs), and fine particulate matter (PM_{2.5}) which are dispersed to the surrounding region during construction activities. Construction activities that cause a physical disturbance to land, such as earth moving, and transportation, can also introduce particulate matter (including dust) to the surrounding region. Emission of air pollutants can result in local or regional degradation of ambient air quality, with potential impacts on human health, as well as on sensitive ecosystem receptors.

When contaminants settle out of the air in the surrounding environment, their deposition may result in adverse impacts to terrestrial and aquatic ecosystems. Emissions of NO_x and SO₂ may also lead to acidification and potential exceedance of ecosystems' critical loads. Air contaminant emissions can result in contamination of nearby land and waterbodies, and may affect plants, wildlife, and fish and fish habitat.

Greenhouse Gas Emissions and Climate Change

The construction, operation, and decommissioning of the proposed Project may result in greenhouse gas (GHG) emissions or impact to carbon sinks, and may hinder or contribute to the Government of Canada's ability to meet its commitments in respect of climate change. Furthermore, the Project has the potential to be affected by future climate change, possibly resulting in impacts to the environment.

Climate change may alter the likelihood or magnitude of sudden weather events such as extreme precipitation that can contribute to flooding, as well as contribute to longer-term changes.

The [Strategic Assessment of Climate Change \(SACC\)](#) (published in October 2020) provides guidance related to climate change throughout the impact assessment process. The SACC outlines information that the Proponent should provide during the impact assessment process on GHG emissions, impact of the Project on carbon sinks, impact of the Project on federal emissions reduction efforts and on global GHG emissions, GHG mitigation measures climate change resilience, the circumstances in which an upstream GHG assessment will be required and the circumstances in which a credible plan for achieving net-zero GHG emissions by 2050 will be required.

More details are provided in the [draft Technical Guide Related to the Strategic Assessment of Climate Change: Guidance on quantification of net GHG emissions and impacts on carbon sinks, mitigation measures, and net-zero plan, and upstream GHG Assessment](#), published in August 2021, and the [Draft technical guide related to the Strategic Assessment of Climate Change: Assessing climate change resilience](#), published in March 2022.

Water Quality and Quantity

Construction, expansion, operation and maintenance of canals, bridges, culverts, and water control structures may cause erosion and result in deposition of soils and sediments to waterbodies. Soils and sediments can also enter waterbodies through streambed disturbance. These suspended solids can have adverse effects on water quality.

Activities that could result in deposit of contaminants to surface waters include watercourse crossings, hydrostatic tests, access road and right-of-way construction and maintenance, and excavation or movement of soils, sediments or rocks. Disturbance of soils, rock, streambanks, and streambeds during construction or operation may cause erosion/ sedimentation leading to mobilization and deposition of sediments in surface waters and elevated levels of total suspended solids and sediment-bound contaminants, such as metals. In addition, impacts to surface water quality could result through runoff, wastewater discharge, groundwater resurgence, and unexpected events, such as a spill. Surface water quality may be degraded by increased runoff/ mobilization of agricultural chemicals (e.g., pesticides, herbicides, fertilizers), wastes (e.g., manure, wastewater), and other contaminants due to agricultural and industrial expansion.

Expansion of water impoundments may result in mobilization of mercury in newly-flooded areas. If the current land use within the proposed reservoir footprint expansion is agricultural, newly-flooded areas may also release agricultural chemicals, such as nutrients, herbicides and pesticides.

Water quality may also be degraded by hydrological changes. If downstream dilution capacity is reduced, contaminant concentrations in surface water from existing downstream inputs (such as any municipal and industrial sources) could increase.

If the project results in changes to wetland flows (including ephemeral wetlands), wetland functions such as sedimentation and water quality polishing may be reduced, which may adversely affect downstream surface water quality.

Adverse effects to water quality could, in turn, result in adverse effects to sensitive ecosystem receptors, such as fish and fish habitat, migratory birds, plants and wildlife. These adverse effects could be reduced through mitigation measures and confirmatory monitoring.

The Project may impact water availability for both ecological and human needs in the downstream sections of the Bow and Red Deer Rivers, including into the province of Saskatchewan Irrigation and related canals/reservoirs increase the amount of water that is lost to evapotranspiration compared to the natural environment, particularly in low water availability conditions when irrigation demand is highest. In addition, low water availability is projected to be a serious issue for all Prairie Provinces due to climate change.

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, i.e., the South Saskatchewan River Basin.

Wildlife, Species at Risk, and Habitat

Activities associated with the construction of the reservoir expansion berm structure will result in negative effects on terrestrial wildlife, including migratory birds and species at risk (amphibians, arthropods, birds, lichens, terrestrial mammals, mosses, reptiles, and vascular plants) listed on the Species at Risk Act (SARA), their habitat (e.g., wetlands) and critical habitat.

The nature of effects to wildlife and habitat (including residences and critical habitat defined under the SARA) can vary based on a number of factors, including: project location, duration, scale, and configuration; ancillary project activities (e.g., land clearing, dredging, and flaring); existing cumulative effects; the type of habitat that may be disturbed; and sensitivity of species found in the Project area. The pathway through which potential effects are conveyed will depend on the land, air, and water constituents associated with the site along with the behavioral adaptability, presence and interaction with the species limiting factor (e.g., habitat supporting staging, nesting, roosting or foraging) and population resilience of native prairie, habitat for migratory birds and SARA listed species. If construction and land clearing occurs during the migratory bird nesting season there is also the potential to disturb migratory bird eggs and nests. Because no detailed project description was provided the mitigation measures to be employed remains unknown.

Flooding of the reservoir will result in the loss of at minimum 6.5 square kilometres of native prairie grassland, that is habitat for migratory birds and SARA listed species (Table 1). These species will be displaced to other remaining habitats. SARA listed reptiles and amphibians (Table 1) will need to be captured and relocated to prevent mortality from flooding.

The project will contribute to the existing high cumulative effects of loss of native prairie grassland in Alberta. This will occur directly through the flooding of extensive areas of native prairie habitat, and indirectly as the expanded reservoir will provide more water for irrigation, which may lead to cultivation of native prairie for irrigated croplands. The project is located in an area where there is a significant amount of remaining native prairie. Only 20 percent of the native grassland remains in the prairie provinces and much of it is fragmented. The current cumulative effects of native prairie loss are substantial. Native prairie habitat fragmentation is also an existing issue and the project will contribute to this by destroying part of a larger block of native grassland. Given the extensive loss and fragmentation of native prairie habitat, further losses should be mitigated through conservation allowances. These measures should be in place prior to the impact occurring.

The Federal Sustainable Development Strategy (2022-2026) recognizes the importance of conserving prairie habitat to promote biodiversity and maintain ecosystem functions. The Strategy identifies the need to take urgent and significant action to reduce the degradation of natural habitats, halt the loss of biodiversity and protect and prevent the extinction of threatened species.

The reservoir expansion will also result in the loss of riparian habitat and wetlands (insufficient information on hectares) important to waterfowl, shorebird and songbird species. Although wetlands are not uncommon in the area, much wetland habitat has already been lost through cultivation and significant wetland loss has occurred in the prairies overall. The project should ensure there is no net loss of wetland functions.

The expanded reservoir is not likely to create good breeding and nesting habitat for waterfowl and other aquatic migratory birds, because reservoir water levels fluctuate widely, most of the perimeter of the reservoir will be bermed, and emergent vegetation-cover, important for shelter and feeding and nesting, cannot establish. For example, the existing Snake Lake Reservoir is predominantly open water devoid of emergent vegetation cover. The expanded reservoir is more likely to provide loafing habitat, especially for migrant birds, but the region already contains numerous dams.

No species at risk critical habitat has been observed within or adjacent to the project area. However, a number of SARA listed species ranges overlap the project site and may utilize the area (Table 1). A number of these species are specifically adapted to the prairie ecosystem (e.g. Sprague's Pipit, Chestnut Collared Longspur, Thick Billed Longspur, Prairie Rattle Snake and Bull Snake).



Table 1: Species at Risk with potential to interact with the Project based on the location of recorded species occurrences, suitable habitat, and/or spatial overlap with described species ranges

Species Common Name	SARA Schedule 1 Designation	Notes
Species listed on Schedule 1 of the Species at Risk Act which have ranges that intersect the project area		
Piping plover	Endangered	<i>Migratory Birds Convention Act</i>
Burrowing owl	Endangered	-
Little Brown Myotis	Endangered	-
Common nighthawk	Threatened	<i>Migratory Birds Convention Act</i>
Loggerhead shrike, <i>excubitorides</i> subspecies	Threatened	<i>Migratory Birds Convention Act</i>
Barn swallow	Threatened	<i>Migratory Birds Convention Act</i>
Bobolink	Threatened	<i>Migratory Birds Convention Act</i>
Spague's pipit	Threatened	<i>Migratory Birds Convention Act</i>
Thick-billed longspur/McCown's Longspur	Threatened	<i>Migratory Birds Convention Act</i>
Lark bunting	Threatened	<i>Migratory Birds Convention Act</i>
Chestnut-collared longspur	Threatened	<i>Migratory Birds Convention Act</i>
Ferruginous hawk	Threatened	-
Baird's sparrow	Special Concern	<i>Migratory Birds Convention Act</i>
Common Nighthawk	Special Concern	<i>Migratory Birds Convention Act</i>
Horned grebe	Special Concern	<i>Migratory Birds Convention Act</i>
Long-billed curlew	Special Concern	<i>Migratory Birds Convention Act</i>
Short-eared owl	Special Concern	-
Peregrine falcon	Special Concern	-
Northern Leopard Frog	Special Concern	-
Western Tiger Salamander	Special Concern	-
American Badger	Special Concern	-
Bull Snake	Special Concern	-
Great Plains Toad	Special Concern	-
Prairie Rattlesnake	Special Concern	-

Environmental Emergencies

The proposed Irrigation Expansion project may include reservoirs, pipelines, waterway crossings, access road, construction trucks and right-of-way construction and maintenance, as well as inherent risks of fuel and hazardous materials spills in both the construction and operations phases. There is potential for adverse environmental and human-health effects from accidents and malfunctions from these projects. Optimized prevention, preparedness and response measures and systems will be important given the risk of spills of hazardous substances to water and to the surrounding environment.

7. Does your department or agency have a program or additional authority that may be relevant and could be considered as a potential solution to concerns expressed about the Project? In particular, the following issues have been raised by the requestor:
- effects to fish and fish habitat;
 - adverse effects on migratory birds and species at risk and their critical habitat. Special concern species at risk that may be affected includes Great Plains Toad and Northern Leopard Frog. Threatened species at risk that may be affected includes Thick-Billed McCown's Longspur, Tiny Cryptantha, and Rocky Mountain Sculpin. Endangered species at risk that may be affected includes Burrowing Owl, Greater Short-horned Lizard, and Lake Sturgeon (Endangered status under COSEWIC). Other species at risk that may be affected are noted in Appendix 1 of the Request for Designation;
 - changes to the environment on federal lands, including reserve lands and Canadian Forces Base Suffield;
 - changes to the environment that occur in a province or territory other than the one where the Project is taking place, including Saskatchewan;
 - changes to the environment that occur outside of Canada;
 - contribution to climate change due to greenhouse gas emissions and loss of carbon storage capacity by converting native grasslands to irrigated agricultural lands;
 - changes to the environment that could affect the Indigenous peoples of Canada; and, changes occurring to the health, social, or economic conditions of the Indigenous peoples of Canada.

If yes, please specify the program or authority.

Please see responses to Question 6.

It is the responsibility of the Proponent to comply with the following requirement:

Environment and Climate Change Canada administers Section 36(3) of the *Fisheries Act*, which prohibits the deposit of deleterious substances into waters frequented by fish, unless the deposit is authorized by regulations. The owner/operator will be required to ensure there are no deposits of deleterious substances that would degrade or alter or form part of a process of degradation or alteration of the quality of that water so that it is rendered or is likely to be rendered deleterious to fish.

ECCC is aware of the Prairie Provinces Water Board (PPWB), which is a long-standing Federal-Provincial governance body that helps facilitate collaborative transboundary water management in the Prairie region. Canada (ECCC and AAFC) and the Provinces of AB, SK and MB are members, and ECCC chairs the board. A Master Agreement on Apportionment (signed in 1969) sets the requirements and responsibilities, and central to this agreement is ensuring that apportionment is met annually (each province must pass an agreed-upon amount of water to the downstream jurisdiction), and that transboundary water quality monitoring and reporting are done each year. The PPWB role is principally to administer the Master Agreement on Apportionment (MAA) and to ensure MAA obligations are met and reported to governments. All four governments that signed the MAA are accountable for meeting the terms of the agreement. PPWB technical assessments can be done if a member jurisdiction has concerns that a proposed project will jeopardize the MAA requirements and/or have impacts downstream, and the PPWB can make recommendations to signatory governments on water issues within its mandate area. The PPWB typically does not participate in designation requests, but may consider the implications of this project as they relate to water supply requirements, downstream water quality, and climate change/future drought impacts on surface and groundwater supplies.

Commented [EC1]: Note to Agency: no Tiny Cryptantha or Greater Short-horned lizard identified at the project site.

Commented [EC2]: Note to Agency: Project is not located near Suffield.

8. Does your department or agency have information about the interests of Indigenous groups in the vicinity of the Project; the exercise of their rights protected by section 35 of the *Constitution Act, 1982*; and/or any consultation and accommodation undertaken, underway, or anticipated to address adverse impacts to the section 35 rights of the Indigenous groups?

If yes, please specify.

No, ECCC does not have information about the interests of Indigenous groups in the vicinity of the Project as they relate to the Project.

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9. If your department has guidance material that would be helpful to the proponent or the Agency, please include these as attachments or hyperlinks in your response.

SARA Registry

- <https://www.canada.ca/en/environment-climate-change/services/species-risk-public-registry.html>

Species at Risk Act Permits and Agreements:

- <https://www.canada.ca/en/environment-climate-change/services/species-risk-public-registry/permits-agreements-exceptions/permits-agreements-information.html>

ECCC's Guidelines to Reduce Risk to Migratory Birds

- <https://www.canada.ca/en/environment-climate-change/services/avoiding-harmmigratorybirds/reduce-risk-migratory-birds.html>

Federal Sustainable Development Strategy

- <https://www.canada.ca/en/services/environment/conservation/sustainability/federal-sustainable-development-strategy.html>

Operational Framework for the use of Conservation Allowances

- <https://publications.gc.ca/site/eng/9.696852/publication.html>

Strategic Assessment of Climate Change

- <https://www.strategicassessmentclimatechange.ca/>
- <https://www.canada.ca/en/environment-climate-change/corporate/transparency/consultations/draft-technical-guide-strategic-assessment-climate-change.html>
- <https://www.canada.ca/en/services/environment/conservation/assessments/strategic-assessments/consultation-draft-strategic-assessment-climate-change-technical-guide.html>

Environment and Climate Change Canada

Name of departmental / agency responder

A/ Regional Director

Title of responder

May 12, 2022

Date