



Environmental Protection Operations Directorate
Pacific and Yukon Region
101 - 401 Burrard Street
Vancouver, BC
V6C 3R2

September 3, 2021

ECPT: 21-BC-001
CIAR: 82839

Christal Nieman
Project Manager, Pacific and Yukon Region
Impact Assessment Agency of Canada

Dear Christal Nieman:

Re: Eskay Creek Revitalization Project- Federal Authority Advice Record

Environment and Climate Change Canada (ECCC) received a request from the Impact Assessment Agency of Canada (IAAC) on August 9, 2021 to review Skeena Resources Ltd. (the Proponent)'s Initial Project Description for the Eskay Creek Revitalization Project (the Project).

ECCC's response to this request is included as an attachment to this letter (Annex 1: ECCC's Federal Authority Advice Record for the Eskay Creek Revitalization Project). ECCC's comments are founded upon departmental mandate and are related to air quality, greenhouse gases and climate change, water quality and quantity, wildlife, species at risk, migratory birds, wetlands, and environmental emergencies.

Please note that ECCC provides only technical, science-based advice to support the relevant authorities in their assessment of whether the Project may result in significant adverse effects to the environment. ECCC does not review projects for regulatory compliance. Comments provided do not constitute legal advice. Following these comments will not necessarily ensure compliance with federal, provincial, and/or any other regulatory requirement. In case of discrepancy between this information and any Acts of Parliament, the Act of Parliament and associated regulations take precedence. Notwithstanding any other regulatory or permitting requirements, any deposits, discharges and releases from proposed operations or activities must comply with all applicable federal Acts and regulations.

If you have any questions or concerns regarding the advice provided in the attached, please do not hesitate to contact Christie Spry at 236-427-6073 or Christie.Spry@ec.gc.ca.



Environment and
Climate Change Canada

Environnement et
Changement climatique Canada

Canada

Sincerely,

Christie Spry
Senior Environmental Assessment Officer
Environment and Climate Change Canada / Government of Canada

Annex 1: ECCC's Federal Authority Advice Record for the Eskay Creek Revitalization Project

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Federal Authority Advice Record Form

Eskay Creek Revitalization Project – Skeena Resources Ltd.

Response due by September 7, 2021

Please submit the form to: EskayCreek@iaac-aeic.gc.ca

Agency File: 005791 Registry Reference No.: 82839

Department/Agency	Environment and Climate Change Canada (ECCC)
Lead Contact	Christie Spry, Senior Environmental Assessment Officer
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- 1. 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 the Act of Parliament and that power, duty or function.

Based on the Initial Project Description (IPD), ECCC expects that it may 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.

Authorization to use a water body frequented by fish as a Tailings Impoundment Area under subsection 5(1) of the *Metal and Diamond Mining Effluent Regulations* of the *Fisheries Act*.

Environment and Climate Change Canada (ECCC) is responsible for the administration of subsection 36(3) to (6) of the *Fisheries Act* and the implementation of the *Metal and Diamond Mining Effluent Regulations* (MDMER). Subsection 36(3) of the *Fisheries Act* prohibits the deposit of a deleterious

substance in waters frequented by fish unless authorized by regulations. The MDMER authorizes the deposit of a deleterious substance under specified conditions, including deposits into a Tailings Impoundment Area (TIA) that is a water or place set out in Schedule 2 of the Regulations.

The use of waters frequented by fish for mine waste disposal can only be authorized by amending the MDMER to list the water body in Schedule 2 of the Regulations, designating it as a TIA. ECCC, on the expert advice from the Department of Fisheries and Oceans, will determine the water bodies that require listing in Schedule 2 of the MDMER.

Two waterbodies located near the existing Eskay Creek Mine are currently listed as TIAs in Schedule 2 of the MDMER: Albino Lake and Tom Mackay Lake. Tailings from the Eskay Creek Revitalization Project are planned to be stored in an expanded Tom Mackay Lake TIA.

Section 27.1 of the MDMER requires the development and implementation of a fish habitat compensation plan (FHCP) to offset the loss of fish habitat that would occur as a result of the use of a fish-frequented water body for mine waste disposal. The owner or operator of a mine is also required to submit an irrevocable letter of credit to cover the plan's implementation costs. Mining proponents must also demonstrate that the disposal of tailings (including effluents) in these water bodies is the best approach from an environmental, technical, economic and socio-economic perspective in accordance with Environment and Climate Change Canada's "Guidelines for the Assessment of Alternatives for Mine Waste Disposal" (<https://www.canada.ca/en/environment-climate-change/services/managing-pollution/publications/guidelines-alternatives-mine-waste-disposal.html>). Providing this information during the impact assessment can reduce the time required for the regulatory amendment process under the MDMER, following the completion of the impact assessment. The timing of the submission of the assessment of alternatives and the FHCP, is however, determined by the Proponent.

The Governor in Council (Treasury Board), on the recommendation of the Minister of the Environment, makes the final decision to list water bodies in Schedule 2 of the MDMER.

The timeline for completion of the regulatory process is between 12-18 months following the completion of consultation with Indigenous groups and the public on the assessment of alternatives for mine waste disposal and the fish habitat compensation plan. For projects that meet certain conditions, however, a streamlined approach for approvals may be recommended to the Governor in Council as per the Department's policy on "Streamlining the Approvals Process for Metal Mines with Tailings Impoundment Areas" (<https://www.canada.ca/en/environment-climate-change/services/managing-pollution/sources-industry/mining/approvals-process-metal-mines-impoundment-areas.html>). Where possible, consultations on amendments to Schedule 2 of the MDMER will be coordinated with the consultations undertaken during the impact assessment.

If not fully described in the IPD, the Proponent should provide in the Detailed Project Description, information on water bodies that may require listing on Schedule 2 of the MDMER. More specifically, maps or figures identifying the water bodies and information regarding fish studies or any other information that could support a determination on the presence of fish in the area that may be impacted by the disposal of mine waste.

For more information, visit www.canada.ca/metal-diamond-mining-effluent or contact the MDMER inbox, mdmer-remmmd@ec.gc.ca.

Further information regarding amendments to Schedule 2 of the MDMER will be provided in the Permitting Plan.

International River Improvement Licence, under Section 4 of the *International River Improvements Act*

A license under the *International River Improvements Act* (IRIA) is required from ECCC to construct, operate or maintain an international river improvement, such as a dam or water diversion. Information required for the permit include details of how the improvement affects the level or flow of water at the Canadian border; details of how the improvement affects the use of water outside Canada; details of the adverse effects of the improvement on flood control and other uses of water, along with information on plans to minimize such effects. Licenses are not required for the following exceptions: (a) the improvement has or will have in its operation an effect of less than 3 cm on the level or less than 0.3 m³/s on the flow of water at the Canadian boundary; or (b) the improvement is of a temporary nature, to be operated for a period not exceeding two years. A person who intends to construct an international river improvement that is excepted from the application of the Act must still notify and provide the Minister in writing with the information referred to in paragraphs 6(a) to (e) of the *International River Improvements Regulations*.

Issuing a licence under the IRIA is considered Crown conduct, which can give rise to a duty to consult. In some cases, ECCC will carry out additional consultations with Indigenous groups to ensure that the Government's duty to consult in a reasonable and meaningful way is fully discharged. Even when there appears to be no duty to consult, ECCC often engages with Indigenous groups to explain the intention of licenses under the IRIA. The IRIA license process also includes consultation and engagement with various stakeholders such as provincial and federal regulating agencies, local water control boards, industry, interest groups and communities.

Consultation with Indigenous communities and stakeholders usually begins with an initial letter to the concerned group. This initial contact is then followed by emails, phone calls and/or in person discussions as appropriate. Consultation on any license on the IRIA will be coordinated with consultation during the assessment where possible.

Further information regarding licenses under the IRIA will be provided in the Permitting Plan.

2. Is your department or agency in possession of specialist or expert information or knowledge that may be relevant to the conduct of an impact assessment of the Project?

Specify as appropriate.

ECCC has specialist or expert information that may be relevant to the impact assessment 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. Once the scope of the Project and of the assessment are established by the Agency, 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; contamination sources for surface water and groundwater, including effluent; wastewater, water quality predictions and modelling; seepage and runoff effects; management of contaminated soils or sediments; hydrology (streamflow rates data and modelling, flooding and extreme events management, drainage control, water levels, water balances); cumulative effects and follow-up and monitoring.

Wildlife, species at risk, and habitat: migratory birds, their nests, eggs, and habitat under authority of the *Migratory Birds Convention Act* 1994; species assessed by the Committee on the Status of Endangered Wildlife in Canada (COSEWIC); species at risk, individuals, their residences, habitat and critical habitat including recovery strategies, action plans and management plans under ECCC's mandate; ecological function of wetlands; and ecotoxicology.

Environmental emergencies: emergency management planning and guidance, including where the release of hazardous substances could affect species at risk and/or migratory birds; atmospheric transport and dispersion modelling of contaminants in air; fate and behaviour; and hydrologic trajectory modelling of contaminants in water.

Climate and Meteorology: long-term climate patterns and normals;

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3. **Has your department or agency considered 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 that would allow the Project to proceed in whole or in part?**

Specify as appropriate.

No.

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4. **Has your department or agency had previous contact or involvement with the proponent or other party in relation to the Project? (for example, enquiry about methodology, guidance, or data; introduction to the project)**

Provide an overview of the information or advice exchanged.

On June 14, 2021, ECCC sent a letter to the Proponent to provide them with information regarding the MDMER under the *Fisheries Act*, relevant contacts, and details regarding actions that must be taken within 60 days in respect of reporting obligations. On June 18, 2021, a follow-up meeting occurred between ECCC, the Impact Assessment Agency of Canada (the Agency) and the Proponent to discuss the MDMER Schedule 2 Amendment process in relation

to the Project. ECCC notes that the 60 days notice provided in the June 14, 2021 letter expired on August 14, 2021 and the requested information has not yet been received.

On August 4 and 10, 2021, the Agency and the BC Environmental Assessment Office (EAO) led two identical information sessions on the Project. At the meetings, the Agency and EAO described the environmental assessment/impact assessment process and upcoming steps, and the Proponent gave a project overview. ECCC asked questions about the substitution process, baseline studies and water quality modelling.

5. Does your department or agency have additional information or knowledge not specified, above?

Specify as appropriate.

Not at this time.

6. From the perspective of the mandate and area(s) of expertise of your department or agency, what are the issues that should be addressed in the impact assessment of the Project, should the Agency determine that an impact assessment is required?

For each issue discussed, provide a concise, plain-language summary that is appropriate for inclusion in the Summary of Issues and Engagement.

Air Quality

Mining

The construction, operation, and decommissioning of mines can result in adverse effects on air quality. Mining operations, processing (crushing and milling), and activities associated with combustion (including transportation and waste incineration) can result in the emission of contaminants such as sulfur oxides (SO_x), nitrogen oxides (NO_x), volatile organic compounds (VOCs), and particulate matter (PM_{2.5}, PM₁₀ and PM). Activities which cause a physical disturbance to land and ore material, such as earth moving, land clearing, blasting, crushing, and transportation, can also introduce particulate matter (e.g., dust and soot) to the surrounding region. The emission of these air contaminants can result in local or regional degradation of ambient air quality, with potential impacts on human health as well as on sensitive ecosystem receptors. Furthermore, emissions of air contaminants as a result of the Project may add cumulatively to the emissions from other activities, contributing to degradation of air quality in the region.

When contaminants settle out of the air in the surrounding environment, their deposition may result in adverse impacts to terrestrial and aquatic ecosystems. For example, metals and polycyclic aromatic compound (PAC) emissions from mining activities may result in elevated concentrations of these contaminants in water, soil, flora, and fauna. 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.

Marine emissions

Projects which involve marine shipping (e.g., mining projects where product will be exported by ship) have the potential to adversely affect air quality. More specifically, the combustion of fossil fuels to power the vessel engines can result in the emission of air contaminants such as sulfur oxides (SO_x), nitrogen oxides (NO_x), volatile organic compounds (VOCs), and fine particulate matter (PM_{2.5}). When some contaminants settle out of the air in the surrounding environment, their deposition may result in acidification and potential exceedance of ecosystems' critical loads. Generally, emission of air contaminants can result in local or regional degradation of ambient air quality, and contamination of nearby land and waterbodies, and may affect plants, wildlife, and fish and fish habitat.

Road and Rail Transportation emissions

Projects which involve an increase in capacity for rail traffic and/or projects which will result in an increase in demand for rail traffic as a direct result of the Project (e.g., mine product will be transported by rail) have the potential to adversely affect air quality. More specifically, the combustion of fossil fuels to power the rail engines can result in the emission of air contaminants such as SO_x, NO_x, VOCs, and PM_{2.5}. When some contaminants settle out of the air in the surrounding environment, their deposition may result in acidification and potential exceedance of ecosystems' critical loads. The emission of these air contaminants can result in local or regional degradation of ambient air quality, with potential impacts on human health as well as sensitive ecosystem receptors.

Projects which involve on-road vehicles and mobile off-road machines for construction, operation and decommissioning, or that lead to an increase in road traffic (e.g. hauling of material by truck from mine to shipping terminal), have the potential to adversely affect air quality. More specifically, the combustion of fossil fuels can result in the emission of air contaminants such as SO_x, NO_x, VOCs, and PM_{2.5}. When some contaminants settle out of the air in the surrounding environment, their deposition may result in acidification and potential exceedance of ecosystems' critical loads. The emission of these air pollutants can result in local or regional degradation of ambient air quality, with potential impacts on human health as well as sensitive ecosystem receptors.

Transboundary Air Notification

The Project may also require a transboundary air notification as per the Canada-US Air Quality Agreement requiring notification to the US of pollution sources within 100 km of the Canada/US border. The objective of the notification is to allow the U.S. to participate in the Project review if they wish to do so. The notification should be made as soon as possible, in advance of the Project decision or any deadline for participation in the review.

Further information is available at: <https://www.canada.ca/en/environment-climate-change/services/air-pollution/issues/transboundary/canada-united-states-air-quality-agreement.html>.

Greenhouse Gas Emissions and Climate Change

The construction, operation, and decommissioning of the proposed Project may result in GHG emissions, 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 such as sea level rise, permafrost thaw and changes to migration patterns. Changes related to warming are already evident in many parts of Canada, and are projected to continue in the future with further warming. If not properly considered, such changes may cause issues such as equipment failures that can threaten the environment, human health and safety, interrupt essential services, disrupt economic activity, and incur high costs for recovery and replacement.

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, and 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, impact on carbon sinks, mitigation measures, net-zero plan and upstream GHG assessment*, published in August 2021.

Net GHG Emissions

In section 4.5.1 of the IPD, the Proponent has provided total net GHG emissions for the Project lifetime. Based on direct and acquired energy GHG emissions for the construction, operations and decommissioning/closure phases of the Project, the total net GHG emissions over the Project lifetime is 434,376 t CO₂ eq (33,510 t CO₂ eq for construction, 367,294 t CO₂ eq for operations, 33,572 t CO₂ eq for decommissioning/closure). Maximum annual net GHG emissions for each phase are as follows:

- Construction (Year-1): 22,320 t CO₂ eq
- Operations (Year 5): 42,820 t CO₂ eq
- Decommissioning/Closure (same for all years): 11,191 t CO₂ eq

The Proponent has identified and quantified direct emissions from mobile and stationary combustions and industrial processes. The Proponent has identified land use change as an emission source, but has not quantified the GHG emissions in Table 4.5-1 and 4.5-2. The Proponent has provided estimates of diesel fuel usage and explosives, but estimates for propane usage (to heat Project buildings) is not available at this time (assuming emissions from propane will be much lower than those from diesel). Electricity will be purchased/acquired from BC Hydro.

ECCC recommends the Proponent quantify GHG emissions from land use change, as well as the emissions associated with the post-closure stage. ECCC also recommends the Proponent provide the methodology, data, emission factors and assumptions used for the quantification (as stated in section 4.1.1 of the SACC).

If the Proponent is required to develop an Impact Statement, further information on GHG emissions would be required through the Tailored Impact Statement Guidelines (TISG), as per section 5.1.1 of the SACC.

Upstream GHG Emissions

The Project will likely not be required to complete an upstream GHG emissions assessment. If the Proponent is required to conduct an Impact Statement, this will be confirmed through the TISG (or equivalent document).

Carbon sinks

The Project as described could have adverse effects on carbon sinks (i.e., forests, oceans or other natural environments that absorb carbon dioxide from the atmosphere), with a Project footprint of 460.3 ha. Proponents are required to provide in their Detailed Project Description:

- a description of the activities that would result in an impact on carbon sinks; and
- land areas expected to be impacted by the Project, by ecosystem type (forests, cropland, grassland, wetlands, and built-up land) over the course of the Project lifetime, including any areas of restored or reclaimed ecosystems.

The TISG (or equivalent document), if required, will provide further information on the information requirements related to impacts to carbon sinks (refer to section 5.1.2 of the SACC).

Mitigation measures, alternative means of carrying out the Project, and net-zero emissions by 2050

Measures to mitigate emissions from the Project include minimizing removal of vegetative cover and land clearing footprint, selection and maintenance of equipment with lowest fossil fuel consumption, efficient operation of Project vehicles, sourcing electricity from the Volcano Creek hydroelectric facility, using electrified equipment/building heating designs where possible, implementing energy conservation programs, and targeting higher efficiency transportation methods (IPD, pp. 128-129).

In the Detailed Project Description, the Proponent:

- should discuss the potential impacts of the alternative means of carrying out the Project on GHG emissions and how GHG emissions were considered as a criterion in the alternatives selection;
- is encouraged to provide information on the mitigation measures being considered to reduce the Project's GHG emissions on an ongoing basis, including technologies and practices measures (including best available technologies and best environmental practices); and
- is encouraged to provide an overview of the measures being considered to ensure the Project is net-zero emissions by 2050 if the Project has a lifetime beyond 2050.

In the upcoming TISG (or equivalent document), the Proponent will be required to provide details regarding alternative assessments, mitigation measures including their BAT/BEP determination, and a credible plan that describes how the Project will achieve net-zero emissions by 2050 for projects with a lifetime beyond 2050.

Further information can be found in the SACC, and in the *draft Technical Guide on quantification of net GHG emissions, impact on carbon sinks, mitigation measures, net-zero plan and upstream GHG assessment*, available at: <https://www.strategicassessmentclimatechange.ca>.

Climate Change Resilience

As climate over the lifetime of a project is projected to be different from past and current climate in the area, and the lifetime of the proposed Project is 13-16 years (not including post-closure), climate change considerations are relevant to the Project review. There is potential for climate

change to affect the Project which, in turn, may have impacts on the surrounding environment (e.g. through accidents or malfunctions). Climate changes in the Project area, such as possible changes in mean and extreme precipitation and temperature and related environmental conditions, may alter baseline conditions, with implications for climate sensitive aspects of Project design and associated effects on the environment.

For example, Project components and activities for which climate change resilience could be important for the Project include those related to water management. The Proponent will be required, via the TISG, to provide information in the Impact Statement on how the Project is resilient to, and at risk from, both the current and future impacts of a changing climate.

Water Quality and Quantity

The activities and components linked to the construction, operation, closure and post-closure of metal mining projects can have adverse effects on the quality of surface water and groundwater, and may affect the hydrological regimes of watercourses and water bodies. All phases of metal mining projects may include the following activities: land clearing, overburden and topsoil stockpiling, blasting associated with open pit or underground mine workings, operating heavy equipment, constructing haul roads, transporting mined material on haul roads, ore storage and processing, waste management (including but not limited to tailings and waste rock), constructing and operating non-contact and contact water diversions, dam construction, and other activities.

Physical disturbances associated with earthworks are a primary environmental effect of mining, as exposing previously buried rock can result in acid generation and/or metal leaching. The exposure of waste rock, overburden, pit walls, and ore to the atmosphere allows for the weathering and oxidation of sulphide materials, which may result in the generation of acid rock drainage and metal leaching. Depending on the geochemistry of the Project site, neutral metal leaching could also be of concern. Subsequent interaction of acidic and neutral contact water with soluble minerals can result in leaching of metals into groundwater and surface water that will eventually discharge into the aquatic receiving environment, potentially affecting aquatic life. As a result, discharge or seepage from mine and waste management infrastructure (e.g., tailings management facilities, waste rock storage piles, ore stockpiles, water treatment facilities, sedimentation ponds, open pits, end-pit lakes, etc.) has the potential to result in adverse effects on surface water and groundwater quality.

Other adverse effects to surface water and groundwater quality include increased erosion and sediment generation, transport, and deposition to nearby waterbodies, dissolution of nitrates from explosive use, deposition of particulate matter (dust) to surface water, and discharges of other contaminants from mining operations or mineral processing.

Mine activities have the potential to alter surface water flows and quantities, which in turn could impact water quality in the receiving environment. Mining projects may also affect surface water quantity through “drawdown” of the water table – that is, a lowering of the water table underground. Water table drawdown can happen because of construction of open pits, underground mines as well as through pumping out groundwater that seeps into an open pit or underground mine. It can also happen due to removal of water from constructed wells for water-intensive operational processes in the mine. The “drawdown” of a water table can have an impact on surface water quality by reducing the quantity of groundwater available to recharge surface water bodies. This, in turn, could reduce the total volumes of water in nearby lakes or rivers and potentially increase the concentration of contaminants in those water bodies, thereby resulting in adverse effects on water quality.

Wildlife, species at risk, and habitat

The activities linked to the construction, operation, and decommissioning of a mine and associated infrastructure could have negative effects on terrestrial wildlife, migratory birds and species at risk (e.g., amphibians, arthropods, birds, lichens, terrestrial mammals, mosses, reptiles, and vascular plants) listed on the *Species at Risk Act* (SARA), and their habitat (e.g. wetlands).

The nature of effects to wildlife and their 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, blasting and vehicle traffic); 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 breeding, overwintering, migration/movement or foraging) and population resilience.

Migratory birds, species at risk and their habitat

Individual mortality and the destruction of nests and eggs or any other structure necessary for the reproduction and survival of species of risk could occur during all Project phases, Exploration and construction of mines and associated infrastructure usually contribute to large-scale land clearing activities, which leads to destruction, disturbance and fragmentation of habitat (e.g., foraging, nesting, hibernating), habitat avoidance, sensory disturbance, and the inadvertent disturbance and destruction of individuals, nest and eggs of migratory birds and species at risk.

There is a higher risk that these effects would be more severe for migratory birds that are also species at risk and species where habitat is sensitive to disturbance (e.g., wetlands) or where there is already a high degree of cumulative effects to habitat or individuals. Destruction and/or disturbance of habitat can have increased impacts on species at risk individuals, residence and their critical habitat, which can lead to changes in prey and predator dynamics, loss of food resources, loss of breeding areas, changes in migration or movement, and increased risk of mortality. Certain species at risk and migratory birds (e.g. bank swallows and common nighthawk) may nest in large piles of soil left unattended/unvegetated during the most critical period of the breeding season.

Where a mining project requires new road infrastructure or an increase in capacity to existing road networks, the increase in road traffic volumes are likely to result in an increase in wildlife injury and mortality, the introduction of invasive species, and more hunters/poachers. Although adverse direct effects to migratory birds and their nests are typically managed through appropriate scheduling of activities outside of the breeding season, collisions with vehicles and associated infrastructure can result in direct mortality of wildlife. Effects will be most acute during the operation phase as this is when the most pronounced and sustained increase in vehicle volume is expected.

The construction, operation and decommissioning of mines may impact wildlife directly and indirectly through impacts to habitat and changes in geomorphological processes (e.g., sedimentation processes, water quality and quantity). Additionally, changes to water quality and quantity can affect migratory birds, wildlife, and their habitat. Birds that land on and/or frequent waste water (e.g., submerged tailings in tailings ponds, pit water) have the potential to come into contact with toxic substances which can result in on and off site mortality. During construction, operation, maintenance and decommissioning, there is the potential for harmful substances to enter or be spilled into the receiving environment that may negatively

affect wildlife, species at risk and migratory birds through destruction or disturbance of nests and eggs, feather contamination (waterfowl), and exposure to elevated concentrations of contaminants through soil, water and dietary pathways. The suspension of contaminants in sediment layers can also impact wildlife health. Depending on the nature of the release (e.g., toxicity, volume released, exposure pathways), effects to wildlife health could be acute, chronic, or both.

Noise, vibrations, artificial lighting and disturbances from construction, operation and decommissioning activities may result in injury, mortality, sensory disturbance and change in habitat use. Attraction to lights at night or in poor visibility conditions may cause birds to collide with lit structures or their vertical support structures, resulting in injury or death. In other instances, birds can be disoriented while circling an artificial light source and may deplete their energy reserves and either die of exhaustion or drop to the ground where they are at risk of predation.

Based on the IPD, the following SARA-listed species are found within the Project area:

- Mammals: Grizzly bear (Special Concern), Wolverine (Special Concern), Northern myotis (Endangered), Little brown myotis (Endangered);
- Amphibians: Western toad (Special Concern);
- Birds: Northern goshawk (Threatened), Peregrine falcon (Special Concern), Short-eared owl (Special Concern), Western screech owl (Threatened), Western grebe (Special concern), Horned grebe (Special Concern), Bank swallow (Threatened), Barn swallow (Threatened), Common nighthawk (Threatened), Great blue heron (Special Concern), Olive-sided flycatcher (Threatened), Red-necked phalarope (Special Concern), and Rusty blackbird (Special Concern).

Wetlands

The activities linked to the construction, operation, and decommissioning of a mine could have negative effects on wetlands and their ecological functions. Carrying out the Project, particularly the activities related to construction, is likely to alter the existing hydrological regimes essential for maintaining wetlands and thus affect the quality or availability of habitat for migratory birds, species at risk, and other wildlife. The destruction and modification of wetlands is likely to have adverse effects on migratory birds and species at risk that use these areas for breeding, foraging, resting and migration.

Environmental Emergencies

The proposed Project includes a tailings storage facility with three impoundment dams, propane storage area, hazardous waste storage facility, fuel and lube storage area, and water treatment facilities such as a new water treatment plant and existing water settling ponds. As such, there is potential for adverse environmental effects from accidents and malfunctions, such as a failure of the tailings dam, spills from the wastewater-holding pond, failure of the water treatment system, propane release and fuel spills. Adverse effects to air quality, water quality, wildlife and wildlife habitat could result from the accidental release of high concentrations of ammonia, hydrocarbons, and other contaminants to surrounding waters. Optimized spill prevention, preparedness and response measures and systems will be important given the risk of spills of hazardous substances to the environment, especially to nearby waterways and environmentally sensitive areas.

Part 8 of the *Canadian Environmental Protection Act* (CEPA) 1999 on environmental emergencies (sections 193 to 205) addresses the **prevention** of, **preparedness** for, **response** to and **recovery** from environmental emergencies caused by uncontrolled, unplanned or accidental releases. It also addressed the reduction of any foreseeable likelihood of releases of toxic or other hazardous substances listed in

Schedule 1 of the *Environmental Emergency Regulations*. This act may apply if Schedule 1 substances onsite meet or exceed the threshold to be regulated under CEPA 1999.

Christie Spry

Name of Departmental / Agency
Responder

Senior Environmental Assessment
Officer

Title of Responder

September 3, 2021

Date