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Gestion des écosystèmes
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Ecosystems Management
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By email only

Votre réf./Your ref.

Ms. Véronique Lalande
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Notre réf./Our ref.
9540-35-071

Subject: Final Advice from Fisheries and Oceans Canada for the Environmental Assessment of the Rose Lithium-Tantalum Mining Project (File Number 80005)

Dear Ms. Lalande

Staff responsible for the Fish and Fish Habitat Protection Program of Fisheries and Oceans Canada (DFO) received your request for expert advice on the environmental assessment of the above-mentioned project on January 13. DFO's final advice is attached.

If you have any questions, please contact Marie-Josée Abgrall by email at Marie-Josée.Abgrall@dfo-mpo.gc.ca or Joanie Carrier by email at Joanie.Carrier@dfo-mpo.gc.ca.

Yours sincerely,

Original signed by Simon Trépanier

Simon Trépanier
Manager, Fish and Fish Habitat Protection – Regulatory Reviews
Regional Directorate of Ecosystem Management

Att. Final Advice from Fisheries and Oceans Canada – Rose Lithium-Tantalum Mining Project

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APPENDIX 1 – Valued Components Identified by the Committee for the Environmental Analysis of the Project

The environmental assessment report will address the assessment of effects on the following valued components:

- Transboundary effects – greenhouse gas emissions
- Wetlands¹
- Fish and their habitat, including species at risk*
- Migratory birds, including birds at risk
- Other species at risk
- Health of the Cree Nations
- Current use of lands and resources for traditional purposes by the Cree Nations
- Socio-economic conditions of the Cree Nations
- Natural and cultural heritage of the Cree Nations

¹ As defined in: Environment Canada, 1991. Federal Policy on Wetland Conservation, 16 pages.

APPENDIX 2 – Questions on Valued Components for which DFO has Expertise

The Committee is seeking a detailed expert advice on the following valued components:

- Fish and fish habitat,² including effects on fish populations caught on the RE01 trapline, to assist the Committee in its assessment of effects on the traditional use of resources.
- Fish species at risk³ and their habitat, where applicable

To obtain the expert advice, please answer the following questions:

Project Setting and Baseline Conditions

- 1) Are the baseline conditions for each of the valued components adequately described and documented? Please explain your answer and identify any information gaps or areas where uncertainties remain. Please explain the extent to which these may influence the environmental analysis.

DFO Response:

The characterization of fish populations and their habitats, the inventories carried out, as well as the distribution of the fish species presented are valid.

However, Lakes 8, 9, 10, 11, 12, 13 and 17, as well as some of their tributaries and outlets, have not been subjected to inventory fieldwork. The characterization of fish populations and their habitats is based solely on the similarities they share with water bodies and watercourses with which an upstream or downstream water connection exists. Maps were used to determine the habitat surface areas of these lakes and an arbitrary width of two metres was assigned to these watercourses.

Despite these information gaps, DFO believes that it has sufficient information to complete its assessment of the habitat functions affected by the project. Additional inventories may be required in the regulatory phase to document fish populations and habitats more accurately, particularly in Lakes 11, 12 and 13.

For the valued component *Fish Species at Risk and their Habitat*, see the responses provided in Appendix 4.

² Definition of fish under the *Fisheries Act*. 2 (1) fish includes (a) parts of fish; (b) shellfish, crustaceans, marine animals and any parts of shellfish, crustaceans or marine animals, and (c) the eggs, sperm, spawn, larvae, spat and juvenile stages of fish, shellfish, crustaceans and marine animals. (*fish*) Fish and fish habitat: as defined in the *Fisheries Act*.

³ Species at risk are those defined under the *Species at Risk Act* [SARA]

Potential Environmental⁴ Effects

- 2) Has the proponent adequately identified and documented the potential environmental effects on each of the valued components? Please explain your answer and identify any information gaps or areas where uncertainties remain. Please describe potential environmental effects that may have been misidentified or unidentified.

DFO Response:

The main potential environmental effects on fish and fish habitat during the construction, operational and maintenance, and closure phases have been identified by the proponent. The potential direct effects on fish habitat associated with the draining of Lakes 1 and 2 are well documented for the construction phase. The assessment of potential indirect effects was carried out through hydrological, hydraulic, and hydrogeological modelling that was deemed valid.

In terms of the project's indirect effects, the expected changes in the hydrological regime would primarily be due to the drawdown of the water table (i.e. a decrease in groundwater inflow to the surface water environment). In some cases, this drawdown would be combined with decreases and increases in surface water inflows resulting, respectively, from reductions in watershed area and four-effluent discharges. These changes to the hydrological regime would result in lower water levels and flows in several water bodies and watercourses on the periphery of the mine site, leading to their gradual dewatering. The continuous discharge at three effluent points located in Lakes 3, 4, and 6 from groundwater pumped from the wells peripheral to the pit, and the discharge at the final effluent point, could lead to increases in water levels, flows, and current velocities downstream of the discharge points. The free movement of fish could be hindered in some watercourses due to obstacle formation.

DFO is of the opinion that the proponent has made an adequate effort to document the potential indirect effects of the project, given the difficulty of assessing these parameters for small watercourses and the uncertainties associated with this type of analysis. Current and projected conditions are modelled using a limited number of field survey data obtained over a limited time frame.

Nevertheless, the following gaps were identified by DFO in the assessment of potential indirect effects on fish and fish habitat:

- Only the four discharge point variant, i.e., four effluents, was examined by the proponent for this valued component. As a result, DFO's advice is based solely on this variant.
- Should the quality of the groundwater from the peripheral wells not be in compliance, a stoppage of the discharge at one or more effluents located at Lakes 3, 4, or 6 may be necessary and could last up to six months so that a

⁴Environmental effects are those specified in Section 5 of the *Canadian Environmental Assessment Act* (2012)

treatment plant can be set up. The effects of this scenario on fish habitat were not assessed by the proponent.

- The proponent had originally planned a dike at Lake 3, which included the dewatering of the upstream portion of this lake, but this plan was abandoned. This change was not taken into account in the last update of the effects on the hydrological regime. The proponent believes that the hydrogeological modelling was not significantly affected and that its results remain conservative. DFO believes that a reduction in groundwater inflows that is below the predicted levels, combined with the continuous discharge at the three effluents of water from the peripheral wells, could result in an increase in flows and current velocities downstream of the receiving lakes that are higher than those anticipated by the proponent.

In the closure and post-closure phase, the proponent expects habitat functions to be restored in the affected watercourses and water bodies (except for Lakes 1 and 2, and Watercourses B, K and the upstream portion of A) after dewatering of the pit has stopped and the pit is gradually filled over an expected period of 26 years. DFO has some doubts that these habitats will return to a natural state due to the prolonged disruption to which they would have been subjected. The long operating period of the pit and the estimated time for its filling (26 years) also create uncertainties. Although the pit would be flooded, DFO believes that it is unlikely that it will provide fish with a suitable habitat in the future.

Mitigation Measures

- 3) Among the mitigation measures proposed by the proponent, please identify those that you consider essential.⁵ Please propose any required corrective measures or recommend any other measures not proposed by the proponent that you consider essential to prevent or mitigate environmental effects.

DFO Response:

The proponent plans to implement several mitigation measures such as draining Lakes 1 and 2 by pumping, groundwater discharges at three effluent points (4-point discharge variant), culvert construction, and erosion and sediment transport control.

The project variant, which consists of four discharge points, involves diverting groundwater pumped from wells at the periphery of the pit, designed to ensure dewatering, to Lakes 3, 4 and 6 (three effluents) and to a final effluent in Watercourse A. The choice of this variant is presented as a mitigation measure by the proponent. This would help mitigate the effects of lowering the groundwater tables for Lakes 3, 4 and 6 as well as several bodies of water downstream. DFO considers this to be an interesting approach, as far as water quantity is concerned, to maintain fish habitat. However, since the proponent has not assessed the potential effects of other variants on fish and fish

⁵ Key Measures: Mitigation measures that are essential for preventing or mitigating environmental effects and that could be turned into conditions under the CEAA, 2012

habitat, DFO does not consider this to be a mitigation measure as such. Nevertheless, DFO believes that it is still an essential measure that should be implemented.

DFO cannot provide an exhaustive list of mitigation measures at this stage since the analysis of some effects or work methods will only be conducted in detail at the regulatory phase. The following are some general and preliminary mitigation measures that may be required for the review of the project under the *Fisheries Act*.

Project Timetable

1. Carry out work in the water outside sensitive periods for the fish species present and minimize the duration of work in the aquatic environment.

Erosion and Sediment Transport Control

2. Minimize tree removal on both sides of the high water mark as much as possible and preserve plant cover as long as possible before the work begins.
3. Keep stripping, clearing, grading and levelling in work areas to a strict minimum.
4. Apply effective measures to limit contribution of sediment and other suspended matter from the worksite into the receiving aquatic environment and maintain them (e.g., sediment barriers, berms, sediment traps, sedimentation basins, temporary talus stabilization, divert water toward vegetation areas). The measures must remain effective during flood periods, heavy rain or frost periods. This also includes limiting the influx of fine particles into the spawning grounds.
5. Dispose of excavated material outside the high water mark. Contain or stabilize this material (e.g., impermeable tarpaulin, sediment barrier) if required to prevent sediment from migrating into the aquatic environment.
6. Isolate the work area when work has to be carried out in water so as to work on dry land or limit the influx of sediment into the aquatic environment (e.g.: cofferdams, diking and pumping, temporary diversion, turbidity curtain).
7. Promote the use of turbidity curtains to enclose work area and contain sediment in suspension. Deploy the curtain in a manner that limits the trapping of fish within the enclosure.

Debris Management

8. Do not release any debris into the aquatic environment. Any debris that accidentally enters the water must be removed as quickly as possible.

Temporary Structures

General Measures

9. Limit the cumulative encroachment of temporary structures to one third of the width of the watercourse, measured from the width at the high water mark, to restrain the flow-restriction increase in current velocity, thereby avoiding interference with fish passage and erosion problems.
10. Ensure sufficient water circulation and supply at all times to maintain fish habitat functions (feeding, rearing, spawning) downstream of the work area. Take the necessary measures to avoid impacts upstream and downstream of the work area (e.g.: flooding, exposure, erosion, suspended matter).
11. Design and stabilize temporary structures so that they can withstand flooding that may occur during the construction phase, and to prevent bank or bed erosion.
12. Natural weirs upstream and downstream of structures should be protected during construction. Should the weirs be destabilized during the work, they should be restored to protect the watercourse from any scouring, while limiting work in the natural watercourse and ensuring the free passage of fish (e.g.: embedment of stabilization materials, waterproofing, and effective minimum flow channel).

Cofferdams

13. Promote the use of cofferdam types that minimize encroachment into fish habitat (e.g. sheet piling, concrete blocks, sandbags).
14. If rockfill cofferdams are used, construct them using clean materials.
15. Take the necessary steps to waterproof cofferdams and minimize the quantities of water to manage.
16. Give preference to work methods that improve the quality of the water to be managed (e.g., rock fill the bottoms of excavations, pits and resurgences, put blinding slabs in place, etc.).
17. Treat water from inside the cofferdam enclosure before it returns to the aquatic environment in order to limit sediment inflow (e.g., buffer vegetation area, settling pond, trench filter, Envirobags, weir container, combination of several methods).
18. Carefully recover, under certain conditions, any fish trapped in the confined or isolated sections of the work site and immediately return them to the aquatic environment to prevent fish mortality.

Temporary diversion of a watercourse

19. The free passage of fish must be maintained in the temporary watercourse diversion channel, if deemed necessary.
20. In the case of a temporary diversion with granular materials, use materials with a continuous grading so that the bed is sealed to ensure a sufficient water depth above the substrate. Also build a low-water channel (thalweg) to concentrate the flow in periods of low flow.
21. In the case of a temporary diversion made of waterproof membranes, ensure that the structure is stable and watertight. This can be done by installing the membranes starting from downstream and working upstream, making sure that they overlap, and by placing clean granular material on the bottom of the diversion at the junction between two membranes.
22. Ensure a smooth connection between the downstream end of the temporary diversion channel and the natural watercourse to limit the risk of causing pockets of erosion to form in the opposite bank.

Diking and pumping water from upstream to downstream

23. Install a structure (e.g. screen) at the pumping hose inlet to prevent the intake of fish.
24. Direct the pumping hose outlet to limit the risk of causing pockets of erosion to form along the shoreline due to the returning water downstream of the work area.
25. Avoid watercourse fording by machinery. If fording is justified, limit the crossing of essential machinery to a single round trip. Should it be necessary to cross the watercourse several times, construct a temporary structure for this purpose.
26. Promote the use of temporary bridges or crossings that minimize encroachment on fish habitat and provide for the free passage of fish, if it is deemed necessary.
27. Use clean granular materials for the construction of temporary by-pass roads, except for road surfaces and portions of the road above the high water mark. During dismantling, remove all the existing materials.

Watercourse Connections at Culvert Approach Points

28. Ensure that the tops of riprap upstream and downstream of culverts are placed below the upstream and downstream invert elevations of the culvert so as not to interfere with fish passage.
29. Design the reprofiling of the slope of the banks to ensure their stability.

Water Intake

30. Implement the measures found on the Fish and Fish Habitat Protection Program website (<https://www.dfo-mpo.gc.ca/pnw-ppe/measures-mesures-eng.html>) concerning the design and installation of fish screens at the entrance of freshwater intakes to prevent the entrainment or impingement of fish. Entrainment occurs when a fish is lured into an intake and cannot escape. Impaction occurs when a trapped fish is held in contact with the intake screen and cannot free itself.

Blasting

31. Do not use unconfined explosives.
32. Blasting activities will have to comply with the “Guidelines for the use of explosives in or near Canadian fisheries waters” (Can. Tech. Rep. Fish. Aquat. Sci. 2107, Wright and Hopky, 1998) to reduce the likelihood of killing or injuring fish.

Bank Stabilization

33. Design the stabilization to limit the tip effect. To do so, the stabilization must gradually follow the natural profile of the existing banks on either side of the structure.

Temporary Closure of the Work Site

34. Temporarily stabilize and protect the disrupted sites at risk of erosion and of transporting sediment to the aquatic environment using methods suited to the site, the duration of the work site closure, and the time of year.
35. Divert runoff before it reaches disturbed land (e.g. intercepting ditch and dissipation trench toward vegetation areas).
36. Ensure that the measures put in place to limit the flow of sediment from the work site to the aquatic environment are working properly and that their maintenance is carried out before the closure of the work site.

Site Reclamation

37. Restore the banks and beds of watercourses affected by the work to their original condition (e.g. grain size, bed profile, vegetation, etc.) following dismantling of the work site at all disturbed areas (temporary structures, access, etc.).
38. Recirculate water to the work area in a gradual manner to allow for the adjustment and overlapping of the reconstituted bed materials, thus ensuring that the bed is watertight. During this period, the turbid water must be pumped out of the work area to appropriate water management systems (pumping through vegetation, settling pond, etc.).
39. Limit the use of riprap on the banks of watercourses up to the high water mark and replant the shoreline at the minimum possible elevation using recognized vegetation engineering techniques that encourage overhanging shrub, herbaceous strata, and the use of indigenous species. Replanting must be done as soon as possible after completion of the work, during a favourable period, and in a manner that maximizes

plant recovery. Restore ditches damaged by machinery (e.g. damage to gradient, embankment shoulders).

Residual Environmental Effects

- 4) Has the proponent adequately identified and documented (after the implementation of mitigation measures) the residual environmental effects on each of the valued components? Please explain your answer and identify any information gaps or areas where uncertainties remain. Please describe residual environmental effects that may have been misidentified or unidentified.

DFO Response:

Residual environmental effects affecting fish and fish habitat were identified and described by the proponent for the construction, operations and maintenance, and closure phases. However, DFO finds that Table 13-3: *Summary of Environmental Effects on the Biological Environment* (see Update – December 2020) for the valued component *Aquatic Fauna*, is not adequate because it does not report all of the expected residual effects. Tables 4 to 7 (see CCE-27 Responses to the Non-Compliance of the Second Request for Information – December 2020) describe the effects on fish and fish habitat, including the anticipated overall losses. DFO believes that they provide a more accurate picture of the residual effects on this component. Only the *Overall Loss* columns in Tables 5 and 7 should be considered regarding area of lost habitat.

DFO considers indirect effects during the 23-year operations phase, referred to as “*temporary alteration*” of fish habitat by the proponent, to be permanent. They would be a disruption of fish habitat under the *Fisheries Act*, as several years will have elapsed between the onset and potential end of the anticipated effects after closure, which could extend up to 26 years later when the pit is eventually filled.

The proponent estimates that the residual effects on Lake 3 would be limited to the loss of riparian habitats, included in its summary of habitat losses of 0.43 ha, and that fish habitats and populations would be maintained. DFO is of the opinion that there is a significant risk that the combined effect of the altered hydrological regime and the dust from the nearby mining pit will eventually lead to a disruption of fish habitat in Lake 3 that will significantly alter the fish communities there. Thus, an additional residual effect involving an overall disruption of Lake 3 could occur. A follow-up of the effects on Lake 3 will have to be conducted to verify this. It is possible that more susceptible species such as lake whitefish may disappear in favour of more tolerant species such as white sucker. In addition, the anticipated loss of grass beds in the nearshore area of Lake 3 and at the mouths of its tributaries, which are good breeding and feeding areas for northern pike and yellow perch, could also reduce the lake’s productivity. The free passage of fish in Watercourse E (between Lake 3 and the Eastmain-1 reservoir, to the right of the culvert under the Nemiscau-Eastmain-1 road), could also be disturbed due to changes in the hydrological regime or silting of the lake. This could have a negative effect on fish populations in the area and will need to be verified through follow-up.

DFO is also concerned with the potential effect of dust generated by mining activities on Lakes 18 and 19 (adjacent to the waste rock co-disposal area). This effect, combined with changes in the hydrological regime of these lakes and their current habitat characteristics (shallow lakes), could cause their harmful alteration in the long term. A follow-up of the effects on these lakes will also have to be conducted to verify this.

DFO is of the opinion that the magnitude, extent and duration of the residual environmental effects on fish and fish habitat could, in the long term, be greater than anticipated by the proponent due to the uncertainties and gaps identified. However, DFO currently believes that adequate follow-up can address these uncertainties. Any additional demonstrated residual effects would have to be offset by further measures to protect fish habitat.

5) What are, according to DFO, the residual environmental effects of the project on each of the components?

DFO Response:

According to the information provided by the proponent, the residual effects of the project for the construction and operational phases, and considering the four-point discharge variant, would consist of fish habitat losses estimated at 42.3 ha. Several types of habitats, habitat functions and fish species would thus be affected directly or indirectly. The project is expected to result in:

- The harmful alteration of 12.4 ha of lake habitat and 0.2 ha of stream habitat, as well as fish kills due to the dewatering of Lakes 1 and 2 for pit construction and the consequent dewatering of streams B and K, plus a portion of stream A upstream of the final effluent discharge point. The downstream portion of watercourse A, which covers 0.6 ha, would be altered. Lake 1 and Watercourse A support the reproduction, rearing, and feeding of brook trout. Lake 2 and Watercourses B and K provide rearing, feeding and spawning areas for northern pike.
- The harmful alteration of 15.9 ha of lake habitat and 0.4 ha of stream habitat, i.e. Lakes 8, 11, 12, 13 and 15 and their outlets (L8-CE1, L11-CE1, L12-CE1, L13-CE1 and Watercourse C') and tributaries (L15-CE1 and L15-CE2), by the gradual drying up caused by the drawdown of the water table. These habitats are favourable for northern pike and brook trout.
- The harmful alteration of approximately 0.5 ha of nearshore habitat in Lake 3, its tributaries (Watercourses G, H), and part of its outlet (Watercourse E) by the reduction of surface water inflows and the drawdown of the water table. Grass beds favourable for the feeding and rearing of lake whitefish and yellow walleye, as well as for the reproduction of northern pike and yellow perch, would be mainly affected. The free passage of fish in Watercourse E, connecting Lake 3 and the Eastmain-1 reservoir, could also be affected.
- The disruption of approximately 9.1 ha of lake habitat (Lakes 18 and 19) and 3.2 ha of stream habitat in their associated watercourses (L18-CE1, L19-CE1, M and N), through the gradual dewatering caused by the presence of the co-disposal

pond and the drawdown of the water table. These habitats support the reproduction, rearing, and feeding of brook trout. The free passage of fish in Watercourses M and N would also be affected by lower water levels.

On the basis of choosing the four-point discharge variant, the proponent does not anticipate any residual effects on Lakes 4, 6, 7, 9, 10, 14, 16, and 17, their outlet, and tributary (C and F). The proponent believes that groundwater discharges to Lakes 4 and 6 would be sufficient to mitigate the effects of the water table drawdown, and that Lake 3 would be able to support the existing fish communities. At this stage, based on the available information, DFO is not expecting any additional losses. However, DFO raised concerns on this issue, which are addressed in the responses to questions 2 and 4, and noted the required actions and follow-up in the response to questions 10 to 13.

In the closure and post-closure phase, if additional residual effects on fish and fish habitat are anticipated, not assessed in this environmental assessment, and not authorized in the upcoming regulatory phase, it will be the proponent's responsibility to comply with all applicable laws and regulations prior to carrying out the work.

- 6) Do the mitigation measures, including the follow-up plans proposed by the proponent (if applicable), address the remaining uncertainties? Please explain your answer and propose any other measures you consider essential to prevent, mitigate, monitor or follow up on residual environmental effects.

DFO Response:

The proponent is considering the use of several work methods, work sequences, mitigation measures, and monitoring and follow-up measures to reduce the risk of negative impacts and address remaining uncertainties regarding effects on fish and fish habitat. Although one of the proponent's proposals for compensatory measures is currently deemed appropriate by DFO to offset some of the habitat losses of the project, it remains uncertain whether all losses near the mine site can be fully offset. The offsetting plan will have to be developed to DFO's satisfaction during the regulatory phase.

The measures and follow-ups identified to date by the proponent would allow the residual environmental effects to be prevented, mitigated or offset:

- The mitigation measures proposed by the proponent and the standard measures recommended by DFO are listed in the response to question 3.
- During the operational phase, the proponent undertakes to apply monitoring and follow-up measures for water flows and levels, as well as for the quality of fish habitats and populations, to validate the residual effects and the risks of additional effects on the aquatic environment. Measures and follow-ups identified as essential by DFO are addressed in the response to questions 10 to 13.
- The assessment of the proposed offset measures is presented in the response to question 35 (see Appendix 4).

Cumulative Effects

- 7) Have the cumulative effects⁶ on each of the components for which a residual effect remains been adequately documented? Please explain your answer and identify any information gaps or areas where uncertainties remain. Please explain the extent to which these may influence the environmental analysis.

DFO Response:

DFO is of the opinion that the proponent has adequately documented cumulative effects related to fish and fish habitat. According to the proponent, the area affected would represent a small proportion of the region's watercourses and water bodies.

According to the available information, the project's effects on fish and fish habitat could add to those previously generated in the area by the operations of the Eastmain-1 reservoir. In fact, Lakes 2 and 3 have a direct water connection with this reservoir. However, as mentioned by the proponent, the spatial scale at which fish and fish habitat were affected by the Eastmain-1-A/Sarcelle/Rupert and Eastmain-1 complexes is such that the addition of the effects of the project under study is probably not significant.

The Whabouchi-Nemaska lithium mining project is located near the project under study. However, the infrastructures and the final effluent from this project are located in the Nemiscau and Rupert River watershed, south of the Pontax River watershed.

- 8) Has the proponent proposed adequate mitigation measures to prevent or mitigate cumulative effects? If not, please explain and suggest alternative measures.
- 9) Among the mitigation measures proposed by the proponent to reduce cumulative effects, please identify those that you consider essential. Please propose any required corrective measures or recommend any other measures not proposed by the proponent that you consider essential to prevent or mitigate cumulative effects.

DFO Response to Questions 8 to 9:

DFO believes that the application of all mitigation measures proposed by the proponent and required by DFO (see Response 3), the implementation of an adequate monitoring and follow-up program (see Responses 10 to 13), as well as the implementation of offset measures (see Response 35) will contribute to preventing, mitigating and offsetting the project's effects on fish and fish habitat.

⁶ **Cumulative Effects:** Cumulative effects are defined as changes to the environment caused by the project in combination with other past, present, and reasonably foreseeable future work or projects

Monitoring⁷ and Follow-Up Programs⁸

- 10) Does the monitoring program verify and control the implementation of the mitigation measures and ensure that they are appropriate to reduce, prevent or mitigate the environmental effects on each of the components? Please justify your answer.
- 11) Please identify the measures in the monitoring program that are essential to verify and control the implementation of mitigation measures and to ensure that they are appropriate to reduce, prevent or mitigate environmental effects. Please propose any required corrective measures or recommend any other actions you consider essential.
- 12) Can the follow-up program verify the accuracy of the effects assessment or determine the effectiveness of the measures implemented to mitigate the environmental effects of the project? Please justify your answer.
- 13) Please identify the measures in the follow-up program that can verify the accuracy of the effects assessment or determine the effectiveness of the measures implemented to mitigate the environmental effects of the project. Please propose any required corrective measures or recommend any other actions you consider essential.

⁷ **Monitoring Program:** The goal of a monitoring program is to ensure that proper measures and controls are in place in order to decrease the potential for environmental degradation during all phases of project development, and to provide clearly defined action plans and emergency response procedures to protect human and environmental health and safety.

⁸ **Follow-Up Program:** A follow-up program is designed to verify the accuracy of the effects assessment and to determine the effectiveness of the measures implemented to mitigate the adverse environmental effects of the project.

DFO Response to Questions 10 to 13:

The monitoring and follow-up programs should help document the effectiveness of mitigation measures and validate any negative impacts of the project that may be observed on fish and fish habitat.

They should also validate the accuracy of the modelling used to assess changes in the hydrological regime of water bodies and watercourses in the study area, following the recommendations of the relevant authorities. Residual effects on fish and fish habitat are primarily dependent on these.

Follow-up programs on fish and fish habitat will have to be developed by the proponent and approved by DFO. Protocols must be submitted for approval to the relevant authorities, within a reasonable time frame, prior to their implementation.

Here are the measures and follow-ups identified as essential by DFO:

- Establish an action plan to prevent and mitigate additional residual effects on fish and fish habitat in case the ECCC requires that effluent discharges be stopped for non-compliance with water quality requirements.
- Ensure regular monitoring of dissolved oxygen concentration, temperature, and groundwater flow from peripheral wells prior to discharge to Lakes 3, 4, and 6.
- Monitor fish passage conditions during critical periods in Watercourse E, in the area of the culvert under the Nemiscau - Eastmain-1 road. This follow-up will have to be adapted to species that are likely to move between Lake 3 and the Eastmain-1 reservoir.
- Develop and implement a follow-up program that can demonstrate the preservation of habitats and fish populations in Lake 3, particularly lake whitefish, during the operational phase. This follow-up should include an appropriate baseline condition. Particular attention should be paid to the frequency and methods of sampling to limit fish mortality.
- Develop and implement a follow-up of physicochemical parameters relevant to fish habitat, including but not limited to dissolved oxygen and temperature profiles, which will allow the assessment of the project's effects on Lakes 3, 4, and 6, as well as on Lakes 18 and 19, during the operational phase. This follow-up should be carried out at the right times and at the right frequency. It should also include an appropriate baseline condition.
- Develop and implement a follow-up program to determine the extent to which dust and sediment contributions from mining activities are likely to affect fish habitat in Lakes 3, 18 and 19, particularly lake depths, sediment grain size, and water turbidity, until the mine closes. This follow-up should include an appropriate baseline condition.
- Develop and implement an offsetting plan, in collaboration with the Cree communities and approved by DFO, that is relevant and sufficient to offset all of the residual effects on fish and fish habitat caused by the project. Follow up on this offsetting plan to the satisfaction of DFO. The plan may have to be improved if the

follow-up studies show residual effects that are greater than expected during the environmental assessment or regulatory phase.

Current Use of Lands and Resources for Traditional Purposes by Indigenous Peoples

- 14) Based on your mandates and expertise, what are the fish species of interest (subsistence, traditional and cultural fishing, etc.) for Indigenous peoples that are likely to be affected by the project?

DFO Response:

Among the species identified during the inventories, white sucker, lake whitefish, and burbot are reserved exclusively for Indigenous peoples under the *Act respecting hunting and fishing rights in the James Bay and New Québec territories*. Northern pike, yellow walleye and brook trout are also species of interest for fishing. Lake sturgeon, which is found in the river system of the study area, is of particular importance to Cree communities.

These species could be of particular interest to Indigenous peoples. More details may be obtained during consultations as part of the environmental assessment or during the regulatory phase.

- 15) How could the construction or operational phase of the project potentially impact traditional activities related to fish and fish habitat for these Indigenous peoples?

DFO Response:

The project's impacts on traditional activities involving fish and fish habitat have been discussed during various consultations with First Nations held to date by the proponent and the IAAC. Among these, water contamination, toxicological risks related to fish consumption, the loss of lakes located on trapline RE01, and the increase in fishing pressure on the resource were discussed.

Consultations with First Nations will continue during the regulatory phase, where the impact of the project on traditional and current activities will have to be discussed in greater depth.

- 16) Have the concerns of Indigenous peoples regarding fish and fish habitat been addressed by the proponent? Explain your answer.

DFO Response:

DFO believes that the IAAC is better positioned to address this issue since it has an overall perspective of the concerns expressed by First Nations (e.g. toxicological risks associated with food consumption and contamination, health effects of contaminants), which may have been conveyed in different ways (e.g. briefs, public consultations, formal question sessions). However, DFO will work to provide ongoing support to the IAAC on

this issue (e.g., participation in consultations with Indigenous communities, discussions, etc.).

- 17) Could the expected loss of habitat adversely affect the fishing of certain species on trapline RE01?

DFO Response:

According to the proponent, not much fishing is done in the study area. The most recent information provided indicates that there would be no more fishing in the project area and in the lakes located in the study area for fear of water and fish contamination. Users would not value Lake 2 for fishing. However, previous information seems to indicate that Lake 3, where lake whitefish, northern pike and yellow walleye are found, was being fished, and that Lake 2, where northern pike is found, was considered a good fishing spot.

Lakes 1 and 2, which would be drained to construct the pit, would be destroyed. This would inevitably jeopardize any possibility of fishing in these two lakes in the future. DFO believes that the project's effects on Lake 3 and its tributaries, particularly on the grass beds that support reproductive, rearing and feeding functions, would probably result in a decrease in the lake's productivity and alterations to the existing fish communities. This may therefore affect fishing activities.

The proponent expects that some of the fish from Lake 1 would be fished by Cree land users before it is drained, and that the fish would be distributed to Indigenous communities.

- 18) Is the fish habitat that would potentially be lost also found in other areas around the project, or is it a rare habitat? Explain your answer.

DFO Response:

Due to the limited information available and the absence of a detailed characterization of the other areas surrounding the project, it is difficult for DFO to make a definitive statement on this matter. However, it is likely that the fish habitat that would be lost is found in other areas of the study area's water system.

APPENDIX 3 – Questions Regarding Other Effects to be Considered Accidents and Malfunctions

- 19) Has the proponent identified the sensitive elements of the environment (biophysical and human) that could be affected by potential accidents and malfunctions? According to your expertise and based on available information, should other sensitive elements of the environment have been identified? Please specify these elements and describe the uncertainties associated with not taking them into account.
- 20) Have the environmental effects of accidents and malfunctions been adequately documented by the proponent? Please explain your answer. Where applicable, please identify any gaps or areas where uncertainty remains and describe any residual effects that may have been misidentified or unidentified.
- 21) Does DFO have concerns regarding the environmental effects of the project caused by potential accidents or malfunctions?
- 22) Among the measures proposed to reduce the risk of accidents and malfunctions or to minimize their consequences, please identify those that you consider essential. Please propose any other measures not proposed by the proponent that you consider essential to prevent or mitigate residual environmental effects.

DFO Response to Questions 19 to 22:

DFO has little expertise to discuss these issues in detail. However, DFO recognizes that spills of harmful substances (e.g., hydrocarbons or chemicals), non-compliance of water quality in effluents, or long-term changes to the quantities of water discharged into water bodies could have negative effects on fish and fish habitats. DFO points out the presence of lake whitefish in Lake 3, which receives one of the effluents, and lake sturgeon, (although outside the study area) in the water system downstream of the effluents.

Environmental Effects on the Project

- 23) Based on your mandates and expertise, are you concerned about the effects that the environment⁹ may have on the project? If so, please explain your concerns and identify any gaps or areas where uncertainties remain.

DFO Response:

DFO does not have the expertise to address this issue.

⁹Under CEAA 2012, the environment is defined as all the natural components of the Earth

APPENDIX 4 – Issues Related to the Administration of the *Species at Risk Act* and the *Fisheries Act*

Administration of the *Species at Risk Act*

The Committee is seeking expert advice from Fisheries and Oceans Canada (DFO) on the following issues related to fish species at risk.¹⁰

- 24) Based on the information submitted by the proponent and your expertise, which fish species at risk under the *Species at Risk Act* (SARA) or with COSEWIC¹¹ status are likely to be affected by the project? Please provide justification.
- 25) Has the proponent adequately identified the project's adverse effects on these species at risk and their critical habitats?¹² Please explain your answer and identify any gaps or areas where uncertainties remain. Please describe the harmful effects that may have been misidentified or unidentified.
- 26) Would the mitigation measures proposed by the proponent prevent, diminish or control the effects? Explain your answer.
- 27) Are the proposed mitigation, monitoring and follow-up measures consistent with the best available information, including applicable recovery strategies, action plans or management plans, and do they respect SARA conditions regarding the protection of individuals, residences, and critical habitats of species at risk? Please explain your answer and identify any gaps or areas where uncertainties remain.
- 28) Which of the mitigation measures proposed by the proponent are considered essential to prevent or diminish harmful effects? Please recommend any other measures that were not proposed by the proponent and that you consider essential.
- 29) Which of the monitoring and follow-up measures proposed by the proponent are required to monitor harmful effects? Please recommend any other measures that were not proposed by the proponent and that you consider essential.

DFO Response to Questions 24 to 29:

No aquatic species at risk under the *Species at Risk Act* (SARA) were captured during the inventories in the water bodies and watercourses under study. However, the proponent indicated that, according to the Ministère des Forêts, de la Faune et des Parcs, the water system in the study area is a habitat for lake sturgeon, a species likely to be designated threatened or vulnerable.

Lake sturgeon, Southern Hudson Bay-James Bay populations' unit, is a species that was assessed as Special Concern by COSEWIC in 2006 and 2017, and listed as a Species

¹⁰ Species at risk: a wildlife species that is extirpated, endangered, threatened or of special concern.

¹¹ Status assessed by the Committee on the Status of Endangered Wildlife in Canada

¹² As defined in the *Species at Risk Act*

at Risk with the status of Special Concern in 2019. No recovery strategy, action plan or management plan is applicable and no critical habitat is designated for this population. DFO believes that lake sturgeon is likely to frequent localized habitats downstream of the study area, namely the Pontax River, to which most of the watercourses at the mine site flow, and the Eastmain-1 reservoir, to which Lakes 2 and 3 flow.

DFO believes that the fish habitat avoidance, mitigation, and offset measures that would be implemented by the proponent would also minimize the effects on this species of special concern.

- 30) Based on the information provided by the proponent, will DFO be required to issue a permit or agreement under SARA? Please specify if so.
- 31) Based on the information you have at this time, has the proponent considered all alternatives that could minimize the project's negative impact on the critical habitat of the species and demonstrated that the best alternative has been selected? Explain your answer.
- 32) Based on the information you have at this time, has the proponent demonstrated that it will take all measures to minimize the negative impacts of project activities on the critical habitat of the species, if applicable? Explain your answer.
- 33) If a fish species at risk is accidentally affected by the project or there is a risk of affecting or destroying an element of that species' critical habitat, based on the information you have at this time, can measures be implemented to ensure that the maintenance or recovery of that species is not adversely affected? Please explain.

DFO Response to Questions 30 to 33:

Based on the available information, DFO would not need to issue a permit under SARA sections 73(1) and 74 since no at risk, threatened or endangered aquatic species under SARA have been inventoried in the water bodies under study or are likely to be found in them.

No critical habitat for aquatic species at risk is currently designated in or near the study area.

Administration of the *Fisheries Act*

- 34) Based on the information provided by the proponent, will DFO be required to issue authorizations under the *Fisheries Act*? Please specify if so.

DFO Response:

The Rose Lithium-Tantalum mining project would result in habitat loss, i.e. the harmful alteration and disruption of habitat for several fish species, including brook trout, northern pike, yellow perch, white sucker and, potentially, lake whitefish and yellow walleye. In addition, the death of fish by means other than fishing would result, in particular, from the drying up of Lakes 1 and 2. Therefore, to proceed with the project, the proponent would require an authorization under paragraphs 34.4(2)(b) and 35(2)(b) of the *Fisheries Act* (FA). DFO will ensure that the project is in compliance with the FA during the regulatory phase, following the completion of the environmental assessment, and at its successful conclusion, where applicable.

- 35) If there is a harmful alteration, disruption or destruction of fish habitat, is it eligible for compensation under the *Fisheries Act*? If so, will the preliminary compensation plan submitted by the proponent be able to address this harmful alteration, disruption or destruction of fish habitat? Please explain.

DFO Response:

This project would involve the loss of approximately 42 ha of fish habitat. Compensation measures are mandatory in this context. Taking into account the value, nature and extent of the habitat that would be affected by the work, DFO assesses that any losses of fish habitat that would occur could be offset under the *Fisheries Act*.

However, DFO believes that it may be potentially difficult to compensate for losses of this magnitude by remaining only in the vicinity of the mine site. The Proponent is encouraged to work with the Cree First Nations affected by the project and DFO to develop offset proposals that are consistent with the [Policy for Applying Measures to Offset Adverse Effects on Fish and Fish Habitat Under the Fisheries Act](#) of DFO.

With the information available to DFO and based on the proponent's current assessment of habitat losses, DFO assesses that the current offset proposal to improve the lake sturgeon spawning grounds at PK 113 of the Eastmain River is relevant but insufficient to offset all the losses. The proponent will therefore be required to complete its currently proposed offsetting plan to the satisfaction of DFO during the regulatory phase.

The proposals to set up embankment bays in the Eastmain-1 reservoir and borrow pits in fish habitat were not deemed acceptable by DFO. The proposed offset measures for brook trout may be considered, but the appropriateness of these measures and the real gain expected will have to be demonstrated. Furthermore, the magnitude of the gains generated by this type of development would probably be limited compared to the magnitude of the residual effects to be offset.