



December 10th, 2010

Your file *Votre référence*

EA 1011-001

Our file *Notre référence*

YK-09-0126

Mr. Paul Mercredi
Environmental Assessment Officer
Mackenzie Valley Environmental Impact Review Board
Box 938, #200 Scotia Centre
5102-50th Avenue
Yellowknife, NT
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Dear Mr. Mercredi,

RE: Draft Terms of Reference for Avalon Rare Metal's Inc. Nechalacho Project –Thor Lake and Pine Point area, NT

The Department of Fisheries and Oceans (DFO) would like to thank the Mackenzie Valley Environmental Impact Review Board (Review Board) for the opportunity to review and comment on the draft Terms of Reference (ToR) for the Avalon Rare Earth Metal's Inc. Nechalacho project.

As you are aware, DFO is the federal department responsible for developing and implementing policies and programs in support of Canada's scientific, ecological, social and economic interests in oceans and freshwater. DFO would like to provide the following comments on the draft ToR within the scope of our mandate and regulatory responsibilities.

In addition to providing specific comments on parts of the draft Terms of Reference, DFO has outlined below (by topic) our information requirements to assist the proponent in assessing potential impacts of the project on fish and fish habitat pursuant to the habitat provisions under the *Fisheries Act*.

DFO's Project-Specific Information Requirements

Fish Presence/ Absence

Drizzle, Murky and Egg Lakes - In addition to the information requested for Ring and Buck Lake, as stated in section 3.3.5 of the draft ToR, DFO still requires additional studies to confirm presence/absence of fish as well as to determine connectivity between Drizzle Lake and Murky Lake. Since Egg Lake could be potentially fish-frequented, DFO has asked that Avalon assess connectivity between Egg Lake and Drizzle Lake to determine if there is potential for fish passage between these lakes at any time of the year.

DFO requires that the Developer's Assessment Report (DAR) address any and all connectivity between the various waterbodies at the main project site, throughout the year, in order to accurately determine the presence of fish on a permanent or seasonal basis.

Aquatic Species at Risk – DFO requires the developer to identify any threatened or endangered aquatic species that may occur in the study area that is listed in the *Species at Risk Act*, or by the Committee on the Status of Endangered Wildlife in Canada (COSEWIC) or by a territorial or regional equivalent.

Water Quantity

Avalon has proposed Thor Lake as the main source of freshwater and process water supply for the main project site. DFO would require more information on the projected annual freshwater and process water withdrawals including a breakdown of quantities of water usage during under ice periods.

DFO is less concerned with water withdrawals at the Pine Point site, since Avalon is proposing to only use water from the current open pits. If Avalon should change the location of water withdrawals, the exact location, quantities of withdrawals and discussion on if the waterbodies are fish frequented must be provided.

In the project description, Avalon mentions that an excess water pipe will be installed to divert water directly from Drizzle Lake into Thor Lake, thereby removing the flows into Murky Lake. DFO would require that Avalon discuss potential impacts of the water diversion on fish and fish habitat within Murky Lake and outline the measures Avalon proposes to implement to mitigate those impacts.

Water intake and outfall design

Avalon must provide the location and conceptual design, including details on the anchoring and footprint of all the water intakes and outfalls structures for the project. Specifics must be given on fish use and type of habitat within the area of influence from the construction and operation of the intakes and outfalls. Avalon must also describe the methods for the installation, maintenance and subsequent decommissioning of all the structures as well as identify mitigation measures for reducing disturbances to substrate and the mobilization of sediment.

Road Development – water crossings

The construction, operation, maintenance, upgrading and decommissioning of all potential watercourse crossings, including intermittent waterways, has the potential to impact fish and fish habitat. Avalon must discuss mitigations measures that will be incorporated into the design of these crossings to reduce or avoid these potential impacts, including sediment and erosion control considerations.

Dock Facilities

DFO will require that Avalon provide the location and conceptual design of the dock facilities, including details on the construction, operation and

seasonal decommissioning of the two dock facilities on both side of Great Slave Lake. Details on the potential impacts to fish and fish habitat must be assessed and consideration for mitigation measures.

Aquatic Effects Monitoring Plan

DFO supports the development of a conceptual framework for an Aquatic Effects Monitoring Plan as discussed in Section 3.3.10 and recommends that this occur in conjunction with the requirements under the Metal Mining Effluent Regulations (MMER) for an Environmental Effects Monitoring program (EEM) along with other required water quality programs (ie. a Surveillance Network Program under a Water Licence).

DFO also recommends that the proponent focus on small bodied benthic feeding fish species as a means of identifying and predicting potential impacts before they reach higher trophic level fish communities, where possible. We encourage the proponent to discuss the monitoring program with Environment Canada and ourselves, as it is being developed.

Recommendation on the draft Terms of Reference

Section 2.2.2

Under bullets 6 and 8, it states that the road between Hay River and Pine Point site, roads between Fort Resolution, Fort Smith and Pine Point site as well the rail line between Hay River to the NWT-Alberta border are included in the scope of the assessment. It is our understanding that these right-of-ways already exist as part of the current Northwest Territories public and commercial transportation network. Thus DFO recommends that the Review Board limit inclusion of these components to the cumulative effects assessment in consideration of potential impacts of increased traffic, due to Avalon's activities, on specific valued ecosystem components (i.e. caribou).

Section 3.3.2

Under the heading Thor Lake, Avalon is required to "*predict what metals or any other substances would leach from a given amount of concentrate if left under water under varying acidic conditions*". It is our understanding that Avalon would not be storing concentrate under water as part of their mine operations. If, in the event of an accident or malfunction, concentrate could be submerged in a waterbody, then the risk and potential impacts of this type of event should be assessed and the results considered as part of any emergency response plan. Similarly the mention of "tailings facility leakage" in this section would also be more appropriately assessed under the accident and malfunction section of the ToR.

In the second sentence in the above mentioned bullet, "*a discussion on how project-related changes to any and all discharge into aquifers at both sites may affect the local water quality of Great Slave Lake*" is required. DFO is not aware of any plans to discharges effluent directly into any aquifers. All effluent will be contained within the tailings management facilities at each

site. Treated sewage or greywater, at the Pine Point site, will be placed into a tailings sump and comingled into the tailings slurry. More details may be needed to assess potential impacts of groundwater-sump interactions.

Section 3.3.3

The title for this section is "Cumulative effects at the Pine Point site area". DFO recommends that the title be changed to Cumulative effects for the Nechalacho Project to reflect all components of the project.

Section 3.3.5

With respect to the reference to water withdrawals from Drizzle Lake, it is DFO's understanding, based on the project description, that Drizzle Lake will not be used as a water source and that water will only be taken from Thor Lake.

As mentioned above, DFO requires more information about the impacts to Murky Lake due to the excess water bypass from Drizzle Lake to Thor Lake. DFO has also requested that Avalon provide details on the design of the intakes and outfall structures for the project.

Appendix A, Item 5(a)

This item should also consider "quantity". This will assist in determining connectivity between various waterbodies that may be impacted by the project.

Appendix B, Item 29

Please include DFO's previous comments on Section 3.3.5 for this item.

Appendix E

Please see DFO's information requirement related to water intake and outfall design. These requirements should be included in Appendix E. Avalon should be aware that conceptual details plans, mitigation and an assessment of potential impacts to fish and fish habitat within the zones of disturbance for the construction, operation of the intakes and outfalls, with consideration for the effluent plume, may require an authorization under Section 35(2) of the *Fisheries Act* as a harmful alteration of fish habitat.

Avalon should also gather baseline fisheries information for portions of Great Slave Lake for the areas that may be affected by the two barging facilities.

Appendix L

It is also recommended that the barging facilities be included as part of the considerations for Closure and Reclamation.

Please note, the DAR should provide detailed information related to potentially affected fish and fish habitat, and the loss in productive capacity of fish habitat for the entire project must be quantified. If a loss of fish habitat is anticipated, the developer should provide as part of the DAR a draft Fish Habitat Compensation Plan, or No Net Loss Plan, which includes follow-up and monitoring, to ensure that there will be no net loss in productive capacity as a result of this project. Any harmful alteration, disruption or destruction of fish habitat and/or the deposition of deleterious substances into waters frequented by fish occurring as a result of a change in plans or failing to implement the necessary mitigation measures may result in contravention of the *Fisheries Act*.

DFO looks forward to providing more specific recommendations throughout the review of the project. If you have any questions on DFO's comments regarding the Terms of Reference, please contact Nicola.Johnson@dfo-mpo.gc.ca at (867) 669-4933.

A handwritten signature in black ink, appearing to be 'S. Olivier', with a long horizontal flourish extending to the right.

for Sarah Olivier
Senior Environmental Assessment Analyst
Central and Arctic Region
Fisheries and Oceans Canada

c.c: Rick Walbourne (Fisheries and Oceans Canada)
Kelly Burke (Fisheries and Oceans Canada)
Bev Ross (Fisheries and Oceans Canada)
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