



5019 – 52nd Street
Yellowknife, NT X1A 2R3

November 12, 2020

Karen D. Costello
Executive Director
Nunavut Impact Review Board
P.O. Box 1360
Cambridge Bay, NU X0B 0C0

Via e-mail: info@nirb.ca

Government of Canada Technical Review Comments for Agnico Eagle Mines Limited's "Saline Effluent Discharge to the Marine Environment" Project Proposal

Dear Ms. Costello,

Thank you for your letter dated October 14, 2020, requesting that interested parties submit technical review comments for Agnico Eagle Mines Limited's (AEM) "Saline Effluent Discharge to the Marine Environment" Project Proposal (the Project). The Canadian Northern Economic Development Agency's Northern Projects Management Office (NPMO) is responding on behalf of federal departments including Crown Indigenous Relations and Northern Affairs Canada (CIRNAC), Fisheries and Oceans Canada (DFO), Environment and Climate Change Canada (ECCC), Health Canada (HC), and Transport Canada (TC).

The federal departments have reviewed the information in the Final Environmental Impact Statement (FEIS) Addendum and the proponent's responses to the information requests. The technical review comments from the federal departments are enclosed in this package.

The Government of Canada looks forward to continued participation in the Board's reconsideration process. If you have any questions or concerns, please contact Saba Qazi, Senior Project Manager, NPMO, at saba.qazi@canada.ca, (867) 975-1945.

Sincerely,

Lisa Dyer
Director General
Northern Projects Management Office



- c. Krista Henriksen, Regional Director General, Crown-Indigenous Relations and Northern Affairs

Mary Taylor, Environmental Protection Operations Directorate, Environment and Climate Change Canada

Margaret Fairbairn, A/Regional Director, Environmental Protection Operations Directorate, Prairie Northern Region, Environment and Climate Change Canada

Tom Hoggarth, Director General, Ecosystems Management, Fisheries and Oceans Canada, Central and Arctic Region

Shari Currie, Regional Director General, Prairie and Northern Region, Transport Canada

Chantal Roberge, Director, Environmental Health and Internationally Protected Persons, Health Canada



Table of Contents

Abbreviations 4

Crown-Indigenous Relations and Northern Affairs Canada..... 5

 Executive Summary 5

 Introduction..... 6

 Technical Review Comments..... 9

Fisheries and Oceans Canada..... 25

 Executive Summary 25

 Introduction..... 26

 Technical Review Comments..... 27

Environment and Climate Change Canada..... 30

 Executive Summary 30

 Introduction..... 30

 Technical Review Comments..... 31

Health Canada..... 34

 Executive Summary 34

 Introduction..... 34

 Technical Review Comments..... 35

Transport Canada 40

 Executive Summary 40

 Introduction..... 40

 Technical Review Comments..... 41



Abbreviations

AEM:	Agnico Eagle Mines Limited
AWAR:	All-Weather Access Road
AWPPA:	Arctic Waters Pollution Prevention Act
CEPA:	Canadian Environmental Protection Act
CIRNAC:	Crown Indigenous Relations and Northern Affairs Canada
CNWA:	Canadian Navigable Waters Act
CSM:	Conceptual Site Model
DAS:	Disposal at Sea
DFO:	Fisheries and Oceans Canada
ECCC:	Environment and Climate Change Canada
FA:	Fisheries Act
FFHPP:	Fish and Fish Habitat Protection Program
FEIS:	Final Environmental Impact Statement
HADD:	Harmful Alteration, Disruption, or Destruction of Fish Habitat
HC:	Health Canada
HDD:	Horizontal Directional Drilling
HDPE:	High Density Poly Ethylene
HHRA:	Human Health Risk Assessment
ICRP:	Interim Closure and Reclamation Plan
IR:	Information Request
KIA:	Kivalliq Inuit Association
KWB:	Kivalliq Wildlife Board
MBCA:	Migratory Birds Convention Act
NIRB:	Nunavut Impact Review Board
NPA:	Navigation Protection Act
NPMO:	Northern Projects Management Office
NuPPAA:	Nunavut Planning and Project Assessment Act
NWB:	Nunavut Water Board
NWNSRTA:	The Nunavut Waters and Nunavut Surface Rights Tribunal Act
ODMP:	Ocean Discharge Monitoring Plan
PCA:	Parks Canada Agency
the Project:	Saline Effluent Discharge to Marine Environment Project Proposal
RFR:	Request for Review
SARA:	Species at Risk Act
SETP:	Saline Effluent Treatment Plant
SWTP:	Saline Water Treatment Plant
TC:	Transport Canada
TRC:	Technical Review Comment
TSS:	Total Suspended Solids



Crown-Indigenous Relations and Northern Affairs Canada

Executive Summary

Crown-Indigenous Relations and Northern Affairs Canada (CIRNAC) has undertaken a technical review of the FEIS Addendum submitted by AEM to the NIRB in support of its applications for the Project. The scope of the proposed Project includes the construction and operation of a waterline system to transport treated saline groundwater effluent from the mine site to Itivia Harbour and discharge to Melvin Bay at Rankin Inlet, Nunavut. The Project is being assessed by the NIRB as a reconsideration process and potential amendment to the Meliadine Gold Mine Project Certificate 006, Amendment 001.

CIRNAC's technical review consists of the assessment of biophysical and socio-economic aspects of the Project under its mandate and areas of jurisdiction. The technical review was preceded by one round of Information Requests (IRs) and associated responses from AEM.

In general, the information, analysis and presentation of the submissions by AEM are good. In some instances, aspects of the proposed activities are not clearly described or require further assessment. As a consequence, a variety of potentially significant uncertainties regarding the design and environmental performance of the proposed amendment remain. CIRNAC's assessment of biophysical and socio-economic aspects of the proposed amendment resulted in ten Technical Review Comments (TRCs) and recommendations for consideration by the NIRB and AEM. These technical review comments are described in detail in the TRCs presented in this report and are summarized below:

- Additional clarification from AEM is required regarding the predicted greater in-flows of saline groundwater to the underground mine, as compared to prior predictions;
- Further clarification is required regarding the extent to which surface contact water from the mine site will be transported by the two proposed waterlines for discharge to Melvin Bay;
- Further information is required regarding contingencies that AEM will put in place in order to deal with situations that might lead to sub-standard performance of the Saline Effluent Treatment Plant (SETP);
- Additional clarification is required as to how AEM will conduct conformity checks of treated effluent prior to discharge to Melvin Bay via the proposed waterlines;
- An updated Water Quality and Load Balance model is required to reflect the altered site water management plan in terms of treating both surface contact water and saline groundwater by the SETP and discharging to Melvin Bay via transporting through waterlines;
- A detailed assessment of waterline failure modes and potential effects needs to be completed by AEM to address uncertainty associated with the environmental consequences of spills and the effectiveness of the proposed mitigation measures;
- An analysis of the potential impacts of the release of saline effluent from waterlines to ice-rich soils is required;



- Additional information is required regarding the design and function of the proposed fiber optic leak detection system that will be used to detect and mitigate potential spills from waterlines;
- Detailed information is required regarding what steps AEM will take to confirm the integrity of the waterlines prior to each operating season, given that the proposed waterlines will remain idle between the start and end of operating periods (winterization); and,
- An updated Interim Closure and Reclamation Plan of the proposed amendment is needed in order to reflect AEM's proposed modified scope of the Project: burying 80-90% of the proposed waterlines.

By addressing the issues identified during the technical review, CIRNAC anticipates that AEM will provide increased certainty that the proposed amendment of the Meliadine Gold Mine Project Certificate 006, Amendment 001 would achieve the desired environmental and socio-economic goals and objectives established for the Project.

Introduction

On March 18, 2020, the NIRB received an application from AEM to modify operations of the Meliadine Gold Mine Project Certificate 006, Amendment 001. The application proposes changes to the scale and scope of activities related to components of the existing project associated with the management of treated saline groundwater effluent.

The scope of the activities described in the Project proposal focused on developing and operating a waterline system along the all-weather access road (AWAR) and by-pass road, to convey treated saline groundwater effluent from the Meliadine Mine Site to the existing marine discharge facility at Rankin Inlet's Itivia Harbour, in lieu of the currently approved trucking method. The scope of the Project involves the following:

- Install and operate two (2) waterlines with a diameter of 16-inches alongside the existing all-weather access road (AWAR) and by-pass road from the Project site to the existing Itivia Harbour facility;
- Install, operate and decommission a new waterline extending from the existing Itivia facility pump house to a new discharge location in Melvin Bay approximately 250 meters northwest of the existing approved waterline; and,
- Increase saline effluent discharge into Melvin Bay from 6,000 m³ to 12,000 m³ per day.

Construction of the infrastructure was proposed to begin this past summer to allow the discharge of saline groundwater effluent as early as May 2021.

On August 17, 2020, the NIRB received a revised FEIS Addendum submission from AEM in support of the Project Proposal. The revised FEIS Addendum was in response to the NIRB's July 17, 2020, determination of non-conformity for the initial FEIS submission of April 7, 2020.



On August 27, 2020, the NIRB formally initiated the public technical review of the FEIS Addendum and invited interested parties to submit IRs and TRCs on or before September 25, 2020 and November 12, 2020, respectively.

During the IRs Phase, on September 9, 2020, the NIRB requested clarification from AEM regarding several aspects of the scope of activities proposed as part of its Project Proposal. The NIRB acknowledged receipt of the requested clarification from AEM on September 16, 2020. On October 22, 2020, the NIRB circulated the following additional information regarding the finalized scope of the proposed Project:

- Approximately 80 to 90 percent of the waterline's length would be buried, with remainder above ground;
- Potential alternative option to also divert on-site treated surface contact water for discharge to the marine environment via the waterlines to reduce the volume of contact water being discharged to Meliadine Lake. If the alternative is required, the maximum volume of surface contact water that would be discharged to Melvin Bay would be 8,000 m³ per day, for a total maximum volume of 20,000 m³ per day; and,
- Construction of the infrastructure is proposed to begin in 2021 and would be used for the discharge of treated saline effluent as early as May 2021 and remain in place for the life of the mine.

Crown Indigenous Relations and Northern Affairs Canada's Mandate, Roles, and Responsibilities

CIRNAC has a broad mandate for the co-management of land and water resources in Nunavut, as well as the management of Crown land under the following applicable acts and regulations:

- The *Department of Crown-Indigenous Relations and Northern Affairs Act*;
- The *Nunavut Land Claims Agreement Act* and the *Nunavut Agreement*;
- The *Nunavut Planning and Project Assessment Act (NuPPAA)*;
- The *Arctic Waters Pollution Prevention Act (AWPPA)* and Regulations;
- The *Nunavut Waters and Nunavut Surface Rights Tribunal Act (NWNSTRA)* and Regulations; and
- The *Territorial Lands Act* and Regulations.

As set out in the *Nunavut Agreement* (Section 12.8.3) and *NuPPAA* (Section 112(6)), the Minister of Northern Affairs, in concurrence with other Responsible Ministers, will have a decision-making role on the proposed amendment application's approval to proceed based on the NIRB's Reconsideration Report. If the amendment proposal is approved to proceed, CIRNAC will be responsible for the enforcement of the terms and conditions of the NIRB's Project certificate, Crown land authorization, and water licences issued for the Project.

As part of the NIRB's review process, CIRNAC, along with other parties, acts as an intervenor in the reconsideration process, providing advice and expertise to the NIRB by way of this submission. Based on CIRNAC's regulatory mandate and decision-making roles,



CIRNAC is participating in the review process by providing the following expertise related to the Project proposal's works, activities, and associated management, mitigation and monitoring plans:

- Environmental impact assessment methodology and best practices, including cumulative effects assessment;
- Surface water quality and quantity;
- Groundwater management;
- Marine water quality only as affected from land (discharge from the modified pump house / sampling station at the Itivia Harbour facility to marine environment at Melvin Bay and drainage at marine laydown site);
- Permafrost;
- Waste management (sludge resulting from the proposed expanded saline effluent treatment plant);
- Vegetation;
- Crown land contamination/degradation (closure and reclamation planning); and,
- Socio-economic impact assessment and monitoring.

In addition, CIRNAC administers the Northern Participant Funding Program to help Indigenous Peoples and Northerners access the resources and expertise needed to participate effectively in impact assessments of major resource or infrastructure development projects in the North. To facilitate participation in the NIRB's review process of the Project, CIRNAC has provided funding allocations to eight Indigenous and community organizations who have an interest in the Project.

CIRNAC has undertaken the technical review of AEM's Project proposal, as part of the NIRB's reconsideration of Meliadine Gold Mine Project Certificate 006, Amendment 001, to assess whether environmental and socio-economic impacts, including cumulative impacts and alternative means to carry out the Project proposal, have been adequately identified and evaluated. In addition, CIRNAC has reviewed the original and updated management and monitoring plans and proposed mitigation measures to ensure that they are appropriate for impact assessment purposes.

This TRC submission summarizes the results of CIRNAC's technical review of the proposed FEIS Addendum, taking into consideration the relevant documents submitted by AEM. In general, the information, analysis and presentation of the material within the FEIS Addendum and relevant documents was good. In some instances, aspects of the proposed activities require clarifications or further assessment. CIRNAC's review of the assessment of the Project Proposal resulted in the generation of 10 TRCs for consideration by the NIRB and AEM.

Addressing the issues identified during this technical review will provide increased certainty that the proposed Project would achieve the desired environmental and socio-economic outcomes.



Technical Review Comments

Review Comment Number	CIRNAC-TRC #1
Subject / Topic	Clarification of Underground Mine Groundwater Inflows
References	<p>FEIS Addendum - Page vi (Need and Purpose of the Project) and Section 3.2.1 (Groundwater Inflow Predictions)</p> <p>Water Management Plan (March 2020, Version 9)</p> <p>FEIS Addendum - Appendix B (Groundwater Management Plan)</p> <p>CIRNAC Information Requests (September 25, 2020)</p> <p>AEM Responses to Information Requests (October 13, 2020)</p> <p>AEM Responses to Final Review Comments for Amendment 001 of Project Certificate 006 (August, 2018)</p>
Summary	<p>AEM indicates that the Project is required because groundwater inflows to the underground mine at the Tiriganiaq deposit are higher than originally anticipated. The FEIS Addendum presents information and interpretation that is inconsistent with this conclusion. Additional data is therefore required to support the conclusion that groundwater inflow rates have been or are anticipated to be sufficiently greater than originally predicted.</p>
Importance of Issue to Impact Assessment	<p>Based on the information presented by AEM, there is currently insufficient clarity regarding the volume of saline groundwater to be managed under the Project, as compared to the currently approved Meliadine Gold Mine Project Certificate 006, Amendment 001. In the absence of this information, CIRNAC is unable to confirm whether potential impacts described in the FEIS Addendum are attributable to the approved Meliadine Gold Mine Project Certificate 006, Amendment 001 (i.e., greater than anticipated saline groundwater flows from mining) or the proposed Project (i.e., conveyance and discharge of treated saline groundwater effluent).</p>
Detailed Review Comment	<p>AEM is seeking approvals to increase the volume of effluent discharge to Melvin Bay from 800 m³/day to 12,000 m³/day. The FEIS Addendum indicates that the Project is necessary to manage saline groundwater inflows to the underground mine that are greater than originally anticipated. For</p>



	<p>example, page vi of the FEIS Addendum states: “Agnico Eagle continues to have challenges to reach the requirements to discharge the water necessary to free-up the capacity for the next freshet due to the large volumes of water from the underground workings that continue to require on-site storage”. Similarly, in response to CIRNAC-IR#4, AEM indicated, “What has changed is that due to higher than originally anticipated groundwater flows to the underground, more water must be managed on site, requiring increased discharge to Melvin Bay.”</p> <p>CIRNAC notes these statements are inconsistent with other parts of the FEIS Addendum which state that current predictions of groundwater flows to the mine are similar to the groundwater inflow predictions for the current Meliadine Gold Mine Project Certificate 006, Amendment 001. Specifically, Section 3.2.1 (Groundwater Inflow Predictions) of the FEIS Addendum states: “The predicted groundwater inflow rates from this 2019 analysis are similar to the groundwater inflow predictions in the FEIS, which ranged from 420 m³/day to 640 m³/day).” CIRNAC also notes that as part of the approval process for Amendment 001, AEM “acknowledged that the estimated volumes of groundwater have decreased” (As indicated in AEM’s response to CIRNAC Final Comment #1 for Amendment 001 of Project Certificate 006).</p> <p>Based on the information provided by AEM (as described above), additional information is required to clarify the volumes of saline groundwater reporting to the mine.</p>
Recommendation / Request	<p>CIRNAC requests that AEM:</p> <ul style="list-style-type: none"> a) provide a data summary that compares the current predictions of groundwater inflow rates with those that were originally predicted. This information is necessary to verify that Project is justified based on saline groundwater inflow rates being greater than previously predicted. The data summary should span the entire anticipated operational period for the mine (i.e., 2019 to 2027).

Review Comment Number	CIRNAC-TRC #2
Subject / Topic	Surface Contact Water Discharge via Waterline to Melvin Bay



References	<p>Water Management Plan (March 2020, Version 9)</p> <p>FEIS Addendum - Section 3.5.1 (Source Water and Discharge Volumes)</p> <p>FEIS Addendum - Appendix A (Meliadine Mine Bay Diffuser Conceptual Design - Effluent Near Field Modelling)</p> <p>FEIS Addendum - Appendix B (Groundwater Management Plan)</p> <p>FEIS Addendum - Appendix F (Ocean Discharge Monitoring Plan, Section 2.1 - Discharge Review)</p> <p>FEIS Addendum - Appendix H (Water Balance)</p> <p>CIRNAC Information Requests (September 25, 2020)</p> <p>AEM Responses to Information Requests (October 13, 2020)</p>
Summary	<p>There is a lack of clarity regarding the extent to which surface contact water originating from affected areas on surface will be conveyed by the proposed waterline for discharge to Melvin Bay.</p>
Importance of Issue to Impact Assessment	<p>The modelling and impact assessment presented in the FEIS Addendum are based on the discharge of treated saline groundwater, without considering the potential implications associated with the discharge of surface contact water. As a result, the FEIS Addendum does not account for the fact that blended water with lower salinity and density could affect dispersion of the plume in the receiving environment (e.g., through buoyancy effects). Any changes to the dispersion of the plume could affect the accuracy of water quality impact predictions.</p>
Detailed Review Comment	<p>As indicated in CIRNAC-IR#1, there was ambiguity regarding the extent to which the proposed waterlines would be used to convey surface contact water. Based on the FEIS Addendum, it was CIRNAC’s prior understanding that the waterline would convey only treated saline groundwater if flow volumes remained below the proposed maximum discharge rate of 12,000 m³ per day. For example, the Ocean Discharge Monitoring Plan (ODMP, page 3) states “Only groundwater effluent from development of the underground mine will be discharged to Melvin Bay”. The</p>



	<p>FEIS Addendum does, however, include an alternative that, if approved, in the future would increase the system capacity to 20,000 m³/day, with the incremental 8,000 m³/day coming from surface contact water.</p> <p>In its response to CIRNAC-IR#1 AEM clarified that: “The combined flows of Saline and Surface Contact Water will be pumped to the SETP for treatment prior to discharge to the waterline.” Based on this statement, it is CIRNAC’s understanding that AEM proposes to mix and discharge saline groundwater with surface contact water even if the 20,000 m³/day alternative is not warranted.</p> <p>In an effort to understand the implications of AEM’s proposal, CIRNAC reviewed the FEIS Addendum to determine the extent to which surface contact water would be conveyed by the proposed waterline. Based on a review of Table 1 of Appendix H to the FEIS Addendum, AEM predicts that between 30% to 50% of the waterline capacity is required to convey treated saline groundwater generated by the mine in any given year of operations. For example, in 2022, AEM anticipates that out of a total discharge volume of 11,630 m³/day, 3,478 m³/day (i.e., 30%) would be saline groundwater. The remaining 70% would be attributable to the drawdown of AEM’s surface water inventory which presumably includes a combination of stored saline groundwater and surface contact water. There is a lack of clarity regarding the potential range of volumes of saline groundwater and surface contact water that may be conveyed by the waterline and how this might affect the environmental performance of the conveyance/discharge system. For example, CIRNAC notes that dispersion modelling (as presented in Appendix A of the FEIS Addendum) was based on the discharge of treated saline groundwater without considering the implications of incorporating surface contact water. In responding to KWB-IR-4, AEM indicated that its use of saline groundwater in modelling was a conservative approach that serves as an upper bound of potential salinity concentrations and environmental impacts. However, that conclusion does not account for the fact that blended water with lower salinity and density could affect dispersion of the plume in the receiving environment (e.g., through buoyancy effects). Any changes to the dispersion of the plume could affect the accuracy of water quality impact predictions. Additional modelling is therefore required to confirm that all applicable water quality criteria are met at the edge of the mixing zone</p>
--	---



	<p>if waterline discharges have lower salinities than was assumed in current modelling.</p> <p>In its response to CIRNAC-IR#4, AEM provided the current conceptual flow diagram (Figure CIRNAC-IR-4a) which indicates that the combined discharge of saline groundwater and surface contact water is sent to the SETP for treatment prior to discharge via trucking to the ocean at Melvin Bay. AEM also noted that the flow diagram is consistent with that provided in the SETP Design Report (AEM 2020) approved by the Nunavut Water Board (NWB) on September 9, 2020. It is unclear to CIRNAC if AEM's response infers that AEM presently has approval for discharge of surface contact water to the ocean at Melvin Bay.</p>
<p>Recommendation / Request</p>	<p>CIRNAC requests that AEM:</p> <ul style="list-style-type: none"> a) provide a table summarizing and differentiating between the anticipated volumes of saline groundwater and surface contact water that will be conveyed by the proposed waterline on an annual basis; b) estimate the range of effluent salinities likely to be discharged to Melvin Bay; c) perform a sensitivity analysis of effluent dispersion modelling to confirm that lower salinity effluents will not affect the general conclusions presented in the FEIS Addendum; d) confirm whether or not its current practice of trucking and discharging effluent to Melvin Bay combines saline groundwater and surface contact water; and, e) confirm whether approval of the SETP Design Report by NWB provides AEM with authorization for the discharge of surface contact water to the ocean at Melvin Bay.

<p>Review Comment Number</p>	<p>CIRNAC-TRC #3</p>
<p>Subject / Topic</p>	<p>SETP Increased Treatment Capacity and Relevant Contingency Plan</p>
<p>References</p>	<p>FEIS Addendum - Section 3.5 (Current Groundwater Management Practices)</p> <p>FEIS Addendum - Appendix B (Ground Water Management Plan)</p>



	<p>FEIS Addendum - Appendix F (Ocean Discharge Monitoring Plan)</p> <p>FEIS Addendum - Appendix H (Water Balance)</p> <p>Water Management Plan (March 2020, Version 9)</p> <p>CIRNAC Information Requests (September 25, 2020)</p> <p>AEM Responses to Information Requests (October 13, 2020)</p>
Summary	<p>All water conveyed by the proposed waterline and discharged to Melvin Bay will be treated by the SETP. This will require an increase in the SETP treatment capacity and the volume of water processed by the facility. The FEIS Addendum does not include this required activity, nor does it describe contingencies that will be put in place to manage situations where the SETP is unable to treat all water that is discharged to Melvin Bay.</p>
Importance of Issue to Impact Assessment	<p>AEM proposes to increase the volume of water processed by the SETP by up to 1,150%. The expansion of the facility and increased water treatment has the potential to result in incremental environmental impacts that have yet to be assessed. For example, increased water treatment by the SETP will generate greater quantities of water treatment sludge which, under some circumstances, could cause incremental environmental impacts (e.g., seepage of metals from sludge).</p>
Detailed Review Comment	<p>AEM's response to CIRNAC-IR #1 indicates that all water conveyed through the proposed waterline will be treated by the SETP. AEM has stated that the maximum treatment capacity of the SETP is currently rated at 1,600 m³/day (after upgrade). In its response to NIRB-IR #2, AEM indicated that the SETP will be expanded to achieve a treatment capacity ranging from 12,000 m³/day to 20,000 m³/day (i.e., an increase between 650% and 1,150%). CIRNAC assumes this expansion will result in incremental impacts. To illustrate, the volume of water treatment sludge and other by-products produced by the Project are expected to increase in proportion to the volume of water treated by the SETP. By extension, this could result in an increase of environmental impacts unless appropriate mitigations are put in place.</p>



	<p>In addition, CIRNAC notes that the SETP will be a critical piece of infrastructure in AEM’s water management efforts. In this regard, CIRNAC seeks clarification regarding what contingencies AEM is putting in place to manage situations where the effective treatment capacity of the SETP is less than required (e.g., sub-standard plant performance and/or increases in the volume of water requiring treatment).</p> <p>The scope of the Project does not include increasing the treatment capacity of the SETP or other water treatment facilities. By extension, the effects assessment presented in the FEIS Addendum does not consider the incremental environmental interactions or potential impacts associated with the expansion of the SETP treatment capacity.</p>
Recommendation / Request	<p>CIRNAC requests that AEM:</p> <ul style="list-style-type: none"> a) provide additional details on the operation and management aspects related to water treatment and sludge management for the proposed expanded SETP; and, b) clarify what contingencies will be put in place to manage situations where the treatment capacity of the SETP is less than required.

Review Comment Number	CIRNAC-TRC #4
Subject / Topic	Process Modifications to Avoid Non-Compliance Issues
References	<p>FEIS Addendum - Section 6.1.3 (Water Quality)</p> <p>FEIS Addendum - Appendix B (Ground Water Management Plan, Section 3.4.2.1)</p> <p>FEIS Addendum - Appendix H (Water Balance, Section 2.1)</p> <p>Water Management Plan (March 2020, Version 9, Sections 3.9.4 and Section 3.9.5)</p> <p>CIRNAC Information Requests (September 25, 2020)</p> <p>AEM Responses to Information Requests (October 13, 2020)</p>
Summary	<p>There is a lack of clarity regarding how AEM will confirm that all treated effluent is compliant for release prior to being discharged to Melvin Bay via the waterline system.</p>
Importance of Issue to	The discharge of effluent that does not conform with



Impact Assessment	applicable regulatory criteria has the potential to result in significant adverse environmental impacts. For example, the discharge of non-compliant water to Melvin Bay could cause acute or chronic effects to biota within the receiving environment of Melvin Bay. Additional measures are necessary to verify that treated effluent meets applicable criteria prior to discharge to Melvin Bay.
Detailed Review Comment	<p>AEM has experienced several non-compliance events including two acute lethality failures associated with its current practice of discharging trucked water to Melvin Bay. In its response to CIRNAC-IR #5, AEM describes measures that will be taken to mitigate similar events from occurring in the future. It is unclear to CIRNAC how those measures will identify and prevent the release of non-compliant effluent prior to its release. Specifically, according to AEM's response to CIRNAC-IR #1 (Figure CIRNAC-IR-1a), treated effluent from the SETP will be released on a batch basis to a holding pond (SP3) from which it will subsequently be conveyed by the waterline to Melvin Bay on a continual (or batch) basis during the open water season.</p> <p>Based on its response to the NIRB-IR #28, AEM is evaluating whether there is a need to have an intermediate pond (such as SP3) between the treatment plant and the waterline. In this regard, AEM has concluded that: "The most favorable option would be not using the intermediate pond and feed directly the pumping station with treated water."</p> <p>Considering the prior non-compliance events experienced by AEM, additional evidence is required to verify that discharges of treated effluent, whether indirect (through temporary holding saline ponds – SP3) or direct (from the SETP), into the proposed waterline will be compliant.</p>
Recommendation / Request	<p>CIRNAC requests that AEM:</p> <ul style="list-style-type: none"> a) describe the actions that will be taken to test and store treated effluent until confirmation that the treated water is compliant with applicable regulatory criteria prior to its discharge to Melvin Bay, whether by indirect or direct means to the waterline.

Review Comment Number	CIRNAC-TRC #5
Subject / Topic	Water Quality and Load Balance Conceptual Model
References	<p>Water Management Plan (March 2020, Version 9)</p> <p>FEIS Addendum - Appendix B (Groundwater Management</p>



	<p>Plan)</p> <p>FEIS Addendum - Appendix D (Roads Management Plan)</p> <p>FEIS Addendum - Appendix H (Water Balance)</p> <p>CIRNAC Information Requests (September 25, 2020)</p> <p>AEM Responses to Information Requests (October 13, 2020)</p>
Summary	The FEIS Addendum does not indicate what changes would occur at the Meliadine Mine Site in terms of its water management strategy if the Project is approved. Additional information is necessary to address this gap.
Importance of Issue to Impact Assessment	The Project involves a significant change to the water management strategy that is regulated under the Meliadine Gold Mine Project Certificate 006, Amendment 001. The FEIS Addendum focuses on the new activities (i.e., the waterline) without describing the associated changes to water management practices at the Meliadine Mine Site. In the absence of this information, CIRNAC is unable to confirm the accuracy of AEM's impact predictions.
Detailed Review Comment	<p>As indicated in CIRNAC-IR #4, the Project involves changing multiple aspects of the water management strategy for Meliadine Gold Mine Project Certificate 006, Amendment 001. For example, in addition to the discharge of up to 12,000 m³/day of effluent, it is CIRNAC's understanding that the following changes may occur if the Project is approved: 1) reduced reliance on the Saline Water Treatment Plant (SWTP); 2) increased saline groundwater and surface contact water processing by the SETP; 3) potential changes to Meliadine Lake discharges; 4) elimination of saline effluent trucking; and 5) modifications to the operation of water management structures at the Meliadine Mine Site.</p> <p>In an effort to understand how these and other changes will affect the overall water management strategy of the Project, CIRNAC expected that the revised FEIS Addendum would include a Water Quality and Load Balance Conceptual Model for the entire Meliadine Mine Site water management system. This model, which should include process flow diagrams, is necessary to systematically identify and assess changes and potential environmental impacts that would occur if the Project is approved. Without such a model, there</p>



	<p>is ambiguity regarding changes that are associated with the Project. By extension, there is also uncertainty with regard to potential environmental interactions and impacts that might occur in the vicinity of the mine if the Project is approved. For example, it is unclear how the diversion of up to 20,000 m³/day of saline groundwater and surface contact water to Melvin Bay will affect water bodies that currently interact with the Meliadine Gold Mine Project Certificate 006, Amendment 001.</p> <p>Based on CIRNAC's technical review of the FEIS Addendum and supporting documentation (including Appendix H – Water Balance) as part of the IR stage, it was noted that AEM's submission did not include Water Quality and Load Balance Conceptual Model. As a result, CIRNAC-IR #4 requested that AEM provide a conceptual Water Quality and Load Balance Model associated with the Project and that the model clearly indicates all proposed changes relative to the Meliadine Gold Mine Project Certificate 006, Amendment 001. While the simplified conceptual flow diagrams of the current and proposed water management strategy (including water conveyance and discharge) that AEM provided to CIRNAC help to clarify some aspects of the Project, it does not illustrate what on-site changes would occur to overall water management strategy/practices in the event the proposed amendment is approved.</p>
Recommendation / Request	<p>CIRNAC requests that AEM:</p> <ul style="list-style-type: none"> a) provide a revised conceptual Water Quality and Load Balance Model for all aspects of the Project, assuming the proposed amendment is authorized to proceed. The model should clearly indicate all proposed water management changes (quality and quantity) relative to the Meliadine Gold Mine Project Certificate 006, Amendment 001.

Review Comment Number	CIRNAC-TRC #6
Subject / Topic	Waterline Failure Modes and Potential Effects Assessment
References	<p>FEIS Addendum - Section 3.4.6 (Spill Management)</p> <p>FEIS Addendum - Section 7 (Environmental Assessment Methodology)</p> <p>FEIS Addendum - Section 8 (Effects Assessment)</p>



	<p>FEIS Addendum - Appendix C (Spill Contingency Plan)</p> <p>FEIS Addendum - Appendix D (Roads Management Plan – Section 9)</p> <p>FEIS Addendum - Appendix G (Effects Assessment Methodology Supplementary Information)</p> <p>FEIS Addendum – Appendix C (Spill Contingency Plan (Appendix H (General Response Procedures for Spilled Saline Water))</p> <p>CIRNAC Information Requests (September 25, 2020) AEM Responses to Information Requests (October 13, 2020)</p>
Summary	<p>AEM has not yet completed a detailed assessment of waterline failure modes and potential effects. As a result, there is currently insufficient information to identify and characterize potential spills and their environmental impacts. By extension, there is uncertainty regarding the potential environmental consequences of spills and the extent to which they can be effectively mitigated by the proposed mitigation measures.</p>
Importance of Issue to Impact Assessment	<p>The unplanned release of saline water from the waterline may, under some circumstances, result in significant impacts to the terrestrial, aquatic, or marine environments. In order to operate the proposed waterlines without causing such impacts, the Project designs should explicitly identify, characterize, avoid and mitigate all potentially significant waterline failure modes. This will help to ensure that all relevant failure modes are factored into the final designs and management plans for the waterlines.</p>
Detailed Review Comment	<p>CIRNAC-IR#9 requested that AEM identify potential failure modes and effects associated with the waterline system. As part of the response, AEM provided a qualitative summary of potential accidents and malfunctions along with consequences and likelihood and measures that would be implemented. But, as indicated in its response, AEM has yet to complete a detailed quantitative analysis of waterline failure modes and effects.</p> <p>CIRNAC generally concurs with the summary provided by AEM and considers it to be sufficient for the purpose of the current Environmental Assessment. Nonetheless, CIRNAC maintains that a quantitative assessment of failure modes</p>



	should be performed prior to the finalization of detailed designs for the proposed amendment. This will help to ensure the designs are capable of avoiding and/or mitigating the impacts associated with the release of treated effluent from the waterline.
Recommendation / Request	CIRNAC requests that AEM: <ul style="list-style-type: none"> a) identify and quantify relevant scenarios involving accidental releases of saline effluent to the terrestrial, freshwater and marine environments. The scenarios should quantify the maximum volume of effluent that could credibly be released to the environment. The evaluation should be provided prior to the finalization of detailed designs for the waterline.

Review Comment Number	CIRNAC-TRC #7
Subject / Topic	Potential Impacts of Saline Water to Ice-Rich Soils
References	<p>FEIS Addendum - Section 4 (Project Changes Interactions and Management)</p> <p>FEIS Addendum - Section 8 (Effects Assessment)</p> <p>FEIS Addendum - Appendix C (Spills Contingency Plan)</p> <p>FEIS Addendum - Appendix D (Roads Management Plan, Sections 4.3 and 5)</p> <p>FEIS Addendum - Appendix E (Erosion and Sediment Control Plan for the Treated Groundwater Effluent Discharge Project)</p> <p>FEIS Addendum – Appendix C (Spill Contingency Plan (Appendix H (General Response Procedures for Spilled Saline Water))</p> <p>CIRNAC Information Requests (September 25, 2020) AEM Responses to Information Requests (October 13, 2020)</p>
Summary	The FEIS Addendum did not consider potential impacts to ice-rich soils if saline water is released to the tundra in the vicinity of the waterline.
Importance of Issue to Impact Assessment	Ice-rich tundra soils can potentially be negatively impacted when exposed to saline water released from the waterline.



Detailed Review Comment	<p>The proposed waterlines will be constructed on or in the vicinity of ice-rich soils. Such soils experience adverse impacts when exposed to fluids with elevated salinity. Impacts can include rapid and extensive degradation of the structural integrity of soils which can, in turn, result in slumping, soil erosion, impacts to surface waters (as Total Suspended Solids (TSS) or sedimentation) and structural damage to infrastructure. Even small spills of saline liquids (e.g., drilling fluids) have resulted in rapid and significant impacts on local ice-rich soils.</p> <p>The FEIS Addendum does not analyze/assess the potential environmental impacts that could occur if such soils are exposed to saline water that is released from the waterline (e.g., in the event of a planned release or spill). Further information is required to evaluate the potential impacts associated with the scenarios. To address this information gap, CIRNAC-IR #10 requested that AEM assess the potential adverse impacts of a release or spill of saline water to the terrestrial environment at locations where ice-rich soils are present.</p> <p>In its response, AEM agreed that the information requested by CIRNAC should be provided, and committed to doing so as part of the responses to technical review comments.</p>
Recommendation / Request	<p>CIRNAC requests that AEM:</p> <ul style="list-style-type: none"> a) assess the impacts associated with the release of saline water to the terrestrial environment at locations where ice-rich soils are present. The impacts should be based on a reasonable worst case release scenario (e.g., x minutes of uncontrolled release from the waterline) as identified in the Failure Modes Assessment recommended under CIRNAC-TRC #6.

Review Comment Number	CIRNAC-TRC #8
Subject / Topic	Monitoring and Prevention of Waterline Spills Using Fiber Optic Leak Detection System
References	<p>FEIS Addendum - Section 5.1 and Table 14</p> <p>FEIS Addendum - Appendix C (Spill Contingency Plan)</p> <p>FEIS Addendum – Appendix C (Spill Contingency Plan (Appendix H (General Response Procedures for Spilled Saline Water))</p>



	<p>Waterline Consultations Report (August 28, 2020)</p> <p>CIRNAC Information Requests (September 25, 2020)</p> <p>AEM Responses to Information Requests (October 13, 2020)</p>
Summary	<p>The FEIS Addendum indicates that spills from the proposed waterline will be prevented through the use of a fiber optic leak detection system. There is insufficient information available regarding the design and function of this system to confirm it will be effective in efforts to proactively detect and mitigate potential spills.</p>
Importance of Issue to Impact Assessment	<p>AEM indicates that spills will have a minimal environmental impact because they will be identified and mitigated rapidly by the leak detection system. Given the importance of the system in mitigating impacts that might otherwise occur, additional evidence is required to verify that it will function as intended.</p>
Detailed Review Comment	<p>The FEIS Addendum indicates that a “fiber optic leak detection system” will be installed to monitor the waterlines for potential leaks. No information was provided indicating how this system would work, or how effective it will likely be in mitigating potential leaks from the waterlines. To address this information gap, CIRNAC-IR #11 requested that AEM provide details regarding the design and function of the fiber optic leak detection system and how emergency response would be actioned. In addition, CIRNAC requested that AEM provide examples of a similar system operating in northern climates. AEM’s response was limited to the following:</p> <p>“The leak detection system uses multimode leak detector to identify the physical characteristics of a leak, such as changes in temperature, pressure, ground strain and acoustics. The fiber-optic cable acts as a fully distributed sensor that offers thousands of detection points along the entire pipeline, capable of pinpointing the location of a leak within 10 m, in real time.</p> <p>Similar systems are in use in many northern regions, such as Russia and Alberta.”</p> <p>Based on this response, there continues to be insufficient information to confirm that the proposed waterline monitoring system will be capable of anticipating, identifying and responding to unplanned releases from the waterline. For example, it is unclear: a) how leaks will be detected (i.e., pressure or flow drops); b) the sensitivity of the leak</p>



	detection system to small, long-term leaks; and c) what actions will be taken when leaks are detected. In addition, no evidence has been provided to confirm that the leak detection system will function effectively in a northern context. In the absence of this information, CIRNAC is unable to verify AEM's statement that waterline spills will not have a significant impact on the environment.
Recommendation / Request	CIRNAC requests that AEM: <ul style="list-style-type: none"> a) consistent with CIRNAC-IR #11, provide additional details regarding the design and function of the fiber optic leak detection system and how emergency response would be actioned; and, b) provide specific examples of projects where similar systems have been used effectively in northern climates.

Review Comment Number	CIRNAC-TRC #9
Subject / Topic	Annual Waterline Shutdown and Restart Plan
References	FEIS Addendum CIRNAC Information Requests (September 25, 2020) AEM Responses to Information Requests (October 13, 2020)
Summary	The proposed waterlines will be winterized at the end of each operating season and re-commissioned prior to the subsequent season. Additional details are required to confirm the steps AEM will take each year to confirm the integrity of the waterline.
Importance of Issue to Impact Assessment	The waterlines will remain empty and idle for approximately nine (9) months between operating seasons. There is a potential that the waterlines may be damaged or otherwise compromised during this period and that this could result in subsequent unplanned release of treated effluent to the environment when operations resume during the subsequent season.
Detailed Review Comment	The majority of technical descriptions presented in the FEIS Addendum relate to the marine environment portion of the proposed amendment (i.e., the saline effluent outfall and diffuser in Melvin Bay). In contrast, the FEIS Addendum



	<p>presents very limited information regarding the design and operation of the ~34 km terrestrial portion of the conveyance system. To address this information gap CIRNAC-IR #12 requested that AEM provide further details on the terrestrial portion of the system. AEM's response generally provided sufficient information regarding the construction and operation of the proposed waterline. Following a review of that information, CIRNAC would request additional details on the activities that will be undertaken by AEM prior to each subsequent open water season before the start of waterline use to ensure waterline integrity before treated saline water is pumped into the waterlines.</p>
Recommendation / Request	<p>CIRNAC requests that AEM:</p> <ul style="list-style-type: none"> a) describe what steps will be taken each open water season to ensure waterline integrity before saline water is pumped into the waterlines.

Review Comment Number	CIRNAC-TRC #10
Subject / Topic	Closure and Reclamation Plan Related to Burial of the Waterline
References	<p>FEIS Addendum</p> <p>FEIS Addendum - Appendix I (Waterline Security Estimate, as of June 25, 2020)</p> <p>Interim Closure and Reclamation Plan (July 30, 2020)</p> <p>CIRNAC Information Requests (September 25, 2020)</p> <p>AEM Responses to Information Requests (October 13, 2020)</p> <p>Waterline Consultations Report (August 28, 2020)</p>
Summary	<p>Subsequent to the issuance of the FEIS Addendum, AEM committed to burying 80-90% of the waterline. This change is not yet reflected in the Interim Closure and Reclamation Plan (ICRP) for the Project, nor the waterline security estimate.</p>
Importance of Issue to Impact Assessment	<p>The reclamation strategy for the waterline has the potential to result in environmental impacts that may need to be mitigated.</p>
Detailed Review Comment	<p>On August 28, 2020, AEM issued a revised Waterline Consultations Report which stated: "<i>Agnico Eagle will bury/cover between 80-90% of the waterline and will</i></p>



	<p><i>continue to work with the HTO, KIA, Elders, and the community on site specific locations. This will replace commitment 1 to build crossings if this is the preferred mitigation method.”</i></p> <p>Subsequently, CIRNAC-IR #13 requested a number of clarifications regarding the burial of the waterlines. In general, AEM’s responses to CIRNAC’s requests were adequate. However, no descriptions were provided regarding how the buried waterlines will be managed during the closure and reclamation process for the Meliadine Mine Site.</p>
<p>Recommendation / Request</p>	<p>CIRNAC requests that AEM:</p> <ul style="list-style-type: none"> a) describe how the burial of the waterlines will affect the reclamation and closure strategy (plans and liabilities) for the Meliadine Gold Mine Project Certificate 006, Amendment 001.

Fisheries and Oceans Canada

Executive Summary

On behalf of DFO the Fisheries Protection Program has reviewed the updated FEIS Addendum and associated management plans related to the Project, as they relate to the departmental mandate under the *Fisheries Act (FA)*, to maintain the sustainability and ongoing productivity of commercial, recreational and Aboriginal fisheries. DFO’s primary focus of this review was to ensure that works, undertakings and activities are conducted in compliance with the applicable provisions of the *FA*.

On June 21, 2019 the new *FA* received Royal Assent and became law. The new provisions and stronger protections aim at better supporting the sustainability of Canada’s marine resources for future generations. Sub-section 35 (1) of the *FA* states that “No person shall carry on any work, undertaking or activity that results in the harmful alteration, disruption or destruction of fish habitat” (also known as a HADD). However, under Paragraph 35 (2) (b) of the *FA*, the Minister of Fisheries, Oceans and the Canadian Coast Guard may issue an authorization with terms and conditions in relation to a proposed work, undertaking or activity that may result in death of fish and/or HADD of fish habitat. The above are subject to the consideration of the factors in Section 34.1 (1) of the *FA*.

DFO’s TRCs are provided in detail in this submission and are also summarized below:

- AEM is requested to clarify the method of installation of the proposed waterline with a recommendation for fish friendly waterlines crossings; and,
- It is recommended that AEM submit a Request For Review (RFR) for the waterline installation to work with DFO to assess impact to fish and fish habitat.



Introduction

AEM submitted the FEIS Addendum for The Project on October 13, 2020. DFO is submitting TRCs on Project to the NIRB to address information gaps within the IRs. The requested information will allow DFO to provide a review and comments on the information provided.

As directed by the NIRB in their letter dated October 14, 2020, the FEIS Addendum focuses on analysis of information presented by AEM as part of the Project. The objective is to seek clarification and obtain additional required information for the assessment of the Project in relation to DFO's mandate.

Fisheries and Oceans' Mandate, Roles, and Responsibilities

DFO's mandate is to lead the Government of Canada's work to protect and promote our three oceans and our waterways, sustain and rebuild the fisheries, and ensure that they remain healthy for future generations, while providing important economic opportunities to Canadians and coastal communities. On behalf of DFO, the Fish and Fish Habitat Protection Program (FFHPP) is responsible for leading the review of project proposals that are in and/or around fisheries waters, and for ensuring that such proposed works, activities and undertakings are conducted in such a way that the proponents are in compliance with the applicable provisions of the *FA*. Sub-section 35 (1) of the *FA* states that "No person shall carry on any work, undertaking or activity that results in the harmful alteration, disruption or destruction of fish habitat."

However, under Paragraph 35 (2) (b) of the *FA*, the Minister of Fisheries, Oceans and the Canadian Coast Guard may issue an authorization with terms and conditions in relation to a proposed work, undertaking or activity that may result in death of fish and/or harmful alteration, disruption or destruction of fish habitat. The above are subject to the consideration of the factors in Section 34.1 (1) of the *FA*:

1. the contribution to the productivity of relevant fisheries by the fish or fish habitat that is likely to be affected;
2. fisheries management objectives;
3. whether there are measures and standards
 - a. to avoid the death of fish or to mitigate the extent of their death or offset their death, or,
 - b. to avoid, mitigate or offset the harmful alteration, disruption or destruction of fish habitat;
4. the cumulative effects of the carrying on of the work, undertaking or activity referred to in a recommendation or an exercise of power, in combination with other works, undertakings or activities that have been or are being carried on, on fish and fish habitat;
5. any fish habitat banks, as defined in section 42.01, that may be affected;
6. whether any measures and standards to offset the harmful alteration, disruption or destruction of fish habitat give priority to the restoration of degraded fish habitat; and,
7. Indigenous knowledge of the Indigenous peoples of Canada that has been provided to the Minister; and any other factor that the Minister considers relevant.



Technical Review Comments

Review Comment Number	DFO-TRC #1
Subject/ Topic	Waterline Pipe Installation
Reference to the FEIS Addendum	<p>AEM Responses to Information Requests - Page 30 (October 13, 2020)</p> <p>DFO response to the NIRB - Meliadine Gold Mine 2020 Saline Discharge Strategy and Saline Effluent Discharge to Marine Environment Amendment (April 2020)</p>
Summary	<p>DFO requested clarification on the method of installation for the proposed waterlines from mine site to the Itivia Facility along the AWAR and by-pass road.</p> <p>AEM has indicated that crossings that are currently supported by bridges along the AWAR will have the waterline run directly under and be secured to the bridge, avoiding disturbance to fish and fish habitat below the high water mark.</p> <p>Crossings where streams are currently not supported by bridges, AEM proposed to position the waterline carefully within the stream to allow for unobstructed flow while maintaining bed and bank integrity. AEM has indicated that heavy machinery will not be used within the high watermark during installation and ensure that proper sediment control measures will be in effect.</p> <p>AEM has indicated that they will continue to engage with DFO.</p>
Importance of issue to impact assessment	It is important for DFO to have a complete understanding of the proposed activities and the associated watercourses in order to accurately account for the amount, location and type of alternation(s) to fish habitat.
Detailed Review Comment	DFO has indicated in their letter to the NIRB on April 24, 2020 that AEM will be required to submit a RFR for the proposed waterline installation. Given the additional information provided by AEM in their IR response package, DFO confirms that a RFR will be required and an assessment of impacts to fish and fish habitat will be required.
Recommendation/Request	<p>DFO requests that AEM:</p> <ul style="list-style-type: none"> a) install fish friendly waterline crossings such as: clear-span crossings and Horizontal Directional Drilling



	<p>(HDD); and,</p> <p>b) engage with DFO to ensure that all fish frequented watercourses adequately enable fish passage and to determine if a RFR for impacts under the <i>FA</i> is required. AEM has already identified streams to have minimal potential to support fish based on the descriptions of flow and bank morphology. If these streams are found to support fish please engage with DFO.</p>
--	---

Review Comment Number	DFO-TRC #2
Subject/ Topic	Construction/Installation of discharge waterline and diffuser
Reference to the FEIS Addendum	<p>AEM Responses to Information Requests - Page 30 (October 13, 2020)</p> <p>DFO response to the NIRB - Meliadine Gold Mine 2020 Saline Discharge Strategy and Saline Effluent Discharge to Marine Environment Amendment (April 2020)</p> <p>Microsoft Teams Meeting- 11-HCAA-CAS7-00014 update-waterline to Melvin between AEM and DFO (October 28, 2020)</p>
Summary	<p>DFO requested for clarification on the methodology of installation for the proposed waterline below the high-water mark for the proposed discharge waterline, including detailed designs and impacted habitat area calculations.</p> <p>AEM indicated in their FEIS that construction activities and placement of the waterline are intended to occur above the high-water mark for crossings that are fish-bearing/potentially fish bearing. For crossings over streams where flows are visible but are not fish-bearing the waterline will be carefully positioned to allow for unobstructed flows. AEM indicated that they will engage with DFO through the RFR process.</p> <p>On October 28, 2020 AEM set up a conference call with DFO to discuss the new waterline proposed for Melvin Bay. AEM confirmed that HDD will be used to install the new waterline. The proposed work will occur below the High Water Mark with a footprint of approximately 500-750m2 . DFO requested that AEM submit a RFR for the proposed work.</p>



Importance of issue to impact assessment	It is important for DFO to have a complete understanding of the proposed activities and the associated watercourses in order to accurately account for the amount, location and type of alternation(s) to fish habitat.
Detailed Review Comment	DFO has indicated in their letter to the NIRB on April 24, 2020 that AEM will be required to submit an RFR for the proposed waterline installation. Given the additional information provided by AEM in their IR response package and conference call, DFO confirms that a RFR will be required and an assessment of impacts to fish and fish habitat will be required.
Recommendation/Request	DFO requests that AEM: <ul style="list-style-type: none">a) provide a RFR for the proposed waterline installation into Melvin Bay; and,b) continue to work with DFO to avoid causing death of fish and HADD of fish habitat.



Environment and Climate Change Canada

Executive Summary

ECCC is submitting TRCs for the Project to fulfill legislated requirements to provide specialist expert information or knowledge within ECCC's possession to the NIRB and licensing authorities for consideration under Article 12 of the *Nunavut Agreement* and Section 197 of the *Nunavut Planning and Project Assessment Act (NuPPAA)*.

ECCC's TRCs summarize issues identified by ECCC during the review of the Project and the FEIS Addendum.

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

ECCC's TRCs are provided in detail in this submission and are also summarized below:

- AEM is requested to include invertebrate sampling as a monitoring objective of the Ocean Discharge Monitoring Plan (ODMP), and
- AEM is requested to specify the volumes of freshwater that will be discharged to the marine environment so that the relevance of the conclusions made by Golder Associates Ltd. regarding impacts of the diversion of site runoff to Melvin Bay on the flow and water level regimes of Meliadine Lake can be determined.

Introduction

ECCC is submitting TRCs for the Project to fulfill legislated requirements to provide specialist expert information or knowledge within ECCC's possession to the NIRB and licensing authorities for consideration as required under Article 12 of the *Nunavut Agreement* and Section 197 of *NuPPAA*.

ECCC carries out its responsibilities by providing recommendations, advice, and information within its mandate. This is provided to both the proponent and decision-makers and it may be used in the development of potential conditions or measures that may accompany a final decision for the Project.

Environment and Climate Change Canada's Mandate, Roles, and Responsibilities

The mandate of ECCC is determined by the statutes and regulations under the responsibility of the Minister of Environment and Climate Change. In delivering this mandate, ECCC is responsible for the development and implementation of policies, guidelines, codes of practice, inter-jurisdictional and international agreements, and related programs. ECCC's specialist advice is provided based on our mandate in the context of the *CEPA* including the Disposal at Sea (DAS) regulation, the pollution provisions of the *FA*, the *MBCA*, and the *SARA*.

ECCC administers the pollution prevention provisions of the *FA*, which prohibits the deposit of a deleterious substance into water frequented by fish. ECCC also participates in the regulation of toxic chemicals and the development and implementation of environmental



quality guidelines pursuant to CEPA. ECCC regulates DAS under CEPA with the objective of protecting the marine environment. Regulated aspects of DAS include the loading of material for disposal, the transport of that material to a disposal site and the disposal itself.

ECCC is responsible for protecting and conserving migratory bird populations and individuals under the MBCA. ECCC also administers SARA in cooperation with DFO and the Parks Canada Agency (PCA) to prevent wildlife species from being extirpated or extinct, to provide for the recovery of wildlife species that are extirpated, endangered or threatened as a result of human activity, and to manage species of special concern to prevent them from becoming threatened, endangered or extirpated.

Technical Review Comments

Review Comment Number	ECCC-TRC #1
Subject/ Topic	Monitoring in the Marine environment
Reference to the FEIS Addendum	FEIS Addendum - Appendix F (Ocean Discharge Monitoring Plan, Document # 331124) KWB-IR-17 - Kivalliq Wildlife Board Information Request (directed to ECCC, Document # 331601) FEIS Addendum - Tables 13 and 14 (Document # 331124)
Summary	AEM proposes the ODMP to monitor and validate potential Project impacts in the marine environment. The ODMP relies solely on water quality sampling. ECCC recommends that invertebrate sampling be added as a monitoring objective of the ODMP to minimize uncertainty related to habitat changes and address concern about impacts to marine birds (i.e. eiders) raised by Kivalliq Wildlife Board (KWB) during the review.
Importance of issue to impact assessment	The ECCC recommendation is a cost-effective addition to a proposed monitoring measure that will minimize uncertainty related to habitat changes and address concern about impacts to marine birds (i.e. eiders) raised during the review.
Detailed Review Comment	There is some uncertainty related to habitat changes in marine environment from the discharge of treated groundwater effluent on the abundance and distribution of marine wildlife. In particular, concerns were raised by KWB about the impacts of the discharge on eiders and the ability of local Inuit to continue their traditional harvest in the vicinity of the Project (KWB-IR-17). Adherence to the proposed ODMP is planned as the primary tool for the monitoring and mitigation of marine valued components and traditional land use (Tables 13 and 14,



	<p>FEIS Addendum). The ODMP currently only proposes to monitor water quality to validate all Project related effects in the marine environment (Appendix F, FEIS Addendum).</p> <p>Monitoring Project effects on local marine bird populations presents many challenges due to the natural variation in abundance and distribution of marine birds from factors outside the influence of the Project. Sampling invertebrates instead, as a proxy, would overcome these monitoring challenges with marine birds and address concerns raised during this review. Invertebrates are the primary food source of eiders (and many other marine birds) and have less natural variation in their populations due to their restricted motility.</p> <p>ECCC views this as a relatively simple and cost-effective means to address uncertainty and community concerns related to the Project. Section 2.2.2 of the ODMP states that baseline data on benthic communities also exists allowing appropriate comparisons.</p>
Recommendation/Request	<p>ECCC requests that AEM:</p> <ul style="list-style-type: none"> a) add invertebrate sampling as a monitoring objective of the ODMP.

Review Comment Number	ECCC-TRC #2
Subject/ Topic	Drainage reductions
Reference to the FEIS Addendum	AEM Responses to Information Requests - Appendix 2 (Technical Memorandum: Impact Assessment of the Diversion of Site Runoff to Melvin Bay on the Flow and Water Level Regimes of Meliadine Lake. Golder, Oct. 8, 2020, Document # 331707)
Summary	The Technical Memorandum quantifies the reduction in land area drainage with the assumption that the diverted area includes the entire A and B sub-watershed areas. The report concludes that the diversion will result in a small reduction in overall flows and negligible effects on the levels of Meliadine Lake.
Importance of issue to impact assessment	Effects of diverting freshwater volumes from the watershed for discharge to the marine environment.
Detailed Review Comment	The Technical Memorandum does not indicate what diverted freshwater volume will actually be discharged, nor has the diversion of contact water from other sources (e.g. make-up water and potable water withdrawals from Meliadine Lake)



	been considered. As such, the relevance of the freshwater diversion volumes assessed to actual freshwater volumes that will be diverted from the watershed is unclear, thereby making the relevance of the conclusions contained in the Technical Memorandum unclear.
Recommendation/Request	ECCC requests that AEM: a) specify the volumes of freshwater that will be discharged to the marine environment (i.e. removed from the Meliadine watershed), including diverted freshwater and contact water from other sources (e.g. make-up water and potable water withdrawals from Meliadine Lake). If the total results removed from the watershed are greater than the volumes identified in the Technical Memorandum, the effects should be re-assessed.



Health Canada

Executive Summary

AEM is proposing the development of a waterline to convey treated saline effluent from the Meliadine Gold Mine Site in Nunavut to the existing facility at Itvia Harbour, which would replace the currently approved trucking method. HC has undertaken a technical review of the Project, as part of the NIRB's reconsideration of the Meliadine Gold Mine Project Certificate 006, Amendment 001.

HC is a federal department responsible for helping Canadians maintain and improve their health. One of the ways it accomplishes this is through participation in the environmental impact review of major resource and infrastructure projects. HC is providing specialist or expert information or knowledge within the Department's possession to the NIRB on potential risks to human health associated with the Project modifications.

This TRC submission summarizes HC's mandate, as well as its roles and responsibilities applicable to this Project. HC has identified the need for more information from AEM in order to complete its technical review and to provide meaningful comments on the FEIS Addendum 2020 conclusions.

HC's TRC is provided in detail in this submission and is also summarized below:

- HC recommends that AEM provide a Human Health Risk Assessment (HHRA) in accordance with the requirements set out in the NIRB's guidance for the Project's FEIS Addendum. An HHRA would consider multiple environmental media (e.g., air, soil, water, and foods) in order to evaluate potential exposure pathways (e.g., ingestion, inhalation, and dermal contact) for all phases of the Project. Moreover, the completion of an HHRA would provide critical analysis of the potential health risks associated with the Project, as well as offer vital details that could be used for the consideration of mitigation and monitoring activities.

HC will continue to collaborate with the NIRB, AEM, Inuit communities and organizations, and other interested parties throughout the environmental assessment review. This will include providing guidance and advice concerning potential human health impacts related to the Project within the Department's mandate.

Introduction

AEM submitted the FEIS Addendum IRs for the Project on October 13, 2020. As directed by the NIRB in their letter dated October 14, 2020, federal departments, including HC, were requested to review AEM's responses and, if necessary, seek clarification and obtain additional required information for the assessment of the Project in relation to their respective mandates. HC is submitting TRCs to the NIRB to address technical deficiencies within the aforementioned IR Responses.

Health Canada's Mandate, Roles, and Responsibilities

HC is the federal department responsible for helping Canadians maintain and improve their health. One of the key objectives of HC’s environmental assessment program is to help prevent, reduce, and mitigate the potential effects of any change to the environment on the health of Indigenous peoples. At the request of a Responsible Authority, Review Panel, or other jurisdiction conducting an environmental assessment, HC makes available specialist or expert information and knowledge in its possession on human health issues related to the potential environmental impacts of a proposed project. These areas include contamination of country foods (also known as traditional food), HHRAs, and health effects related to air quality, noise, and drinking water quality. In this context, Health Canada provides expert information at the request of the NIRB for the Project.

As part of its review, HC examines the assessment of health impacts of current and potential future environmental conditions resulting from the Project. The Department provides comments on potential risks to human health and assesses the results of any relevant modelling, but does not validate the predicted future contaminant levels in the air, water, or country foods.

HC considers the following aspects of environmental assessment reviews:

- The appropriateness of methodologies used;
- The predicted health risks and any comparisons to health-based guidelines and standards;
- The measures proposed to mitigate human health impacts;
- The conclusions made concerning human health effects, and the accompanying rationales and justifications; and,
- The evidence provided to justify the conclusions, and the scientific defensibility of the rationales for the conclusions regarding the potential effects on human health.

HC focuses on the accuracy, scientific validity, and completeness of assessments concerning human health effects. HC does not issue any approvals or make any regulatory decisions concerning this Project.

Through its participation in the environmental assessment process, HC has reviewed the following Project documentation as it relates to the Department’s mandate:

- FEIS Addendum 2020 (August 2020);
- FEIS Addendum 2020 Guidelines (June 2020);
- FEIS Addendum 2018 (June 2018);
- FEIS 2014 (April 2014);
- Information requests;
- Information request responses; and,
- Other supporting documents which were submitted up to October 13, 2020.

Technical Review Comments

Review Comment Number	HC-TRC #1
------------------------------	-----------



Subject/ Topic	Human Health Risk Assessment (HHRA)
<p>Reference to the Final Environmental Impact Statement (FEIS) Addendum</p>	<p>FEIS Addendum 2020 - Section 7.2, Table 12, page 70</p> <p>NIRB’s Guidelines for the Completion of the FEIS Addendum 2020 for Agnico Eagle’s Saline Effluent Discharge to Marine Environment Proposal</p> <p>FEIS 2014</p> <p>FEIS Addendum 2018</p> <p>KWB-IR-17 - Kivalliq Wildlife Board Information Request (directed to ECCC, Document # 331601)</p> <p>NIRB’s Community Information Sessions (Meliadine) - October 2020 (contact Scott Hitchcox at NPMO for session notes)</p> <p>AEM Responses to Information Requests (October 13, 2020)</p> <p>FEIS 2014 HHRA</p>
<p>Summary</p>	<p>Because an HHRA was not completed, HC has insufficient information to complete its technical review (i.e., to assess the potential human health risks related to the Project) and to provide meaningful comments on the FEIS Addendum 2020 conclusions.</p> <p>The FEIS Addendum has not adequately described the Project’s interactions with human receptors and potential human health risks, and provides limited information to support the AEM’s following conclusions: “no link between the Project and human health” and “no effects are expected with the small-scale proposed Project activities than what was assessed in the final EIS (Agnico Eagle 2014)”. The lack of Project-specific details and supporting evidence consequently limits a constructive evaluation of these conclusions.</p> <p>As requested by the NIRB in their June 15th, 2020 guidance to AEM regarding the specific IRs expected to be addressed in the FEIS Addendum, the completion of an HHRA would provide critical analysis of the potential health risks associated with the Project and add meaningful details about mitigation and monitoring to be appropriately considered.</p> <p>The merits of an HHRA warrant the NIRB’s continued</p>



	consideration. Additionally, the completion of an HHRA would promote a better understanding of the Project's impacts among concerned community members.
Importance of issue to impact assessment	The Project's interactions with human receptors and potential health risks were not appropriately described in the FEIS Addendum and potential risks to human health may have been overlooked or underestimated.
Detailed Review Comment	<p>The FEIS Addendum 2020 does not include an HHRA, an IR listed in the NIRB's Guidelines for the completion of the FEIS Addendum for the Project (NIRB's FEIS Addendum 2020 Guidelines).</p> <p>On September 25, 2020, HC identified the absence of an HHRA in HC-IR-03 and is of the opinion that AEM's October 13, 2020 IR response is incomplete. This is due to a lack of information about operable exposure pathways (e.g., ingestion, inhalation, and dermal contact) that would usually be provided if an HHRA had been undertaken. It should be noted that the inhalation exposure pathway through contaminants to air was explored in the response.</p> <p>An HHRA that considers the activities associated with the proposed modifications of the Project would provide the necessary clarification, information, and evidence required to assess the potential risks to human health, and evaluate the need for any additional mitigation or monitoring to minimize or prevent potential health risks.</p> <p>An assessment of human health risks considers links between project-related changes to environmental components and human health, in order to determine the significance of project-related effects. The level of detail required (i.e., qualitative vs. quantitative) to evaluate potential health effects in an HHRA may vary depending on the potential pathways humans may be exposed to contaminants. This type of analysis provides relevant information on potential health risks associated with various phases of a project.</p> <p>The limited nature of information on the treated saline effluent (e.g., characterization), potential pathways humans may be exposed to contaminants in specific environmental media (e.g., air, water, soil and foods), and potential health risks have also been expressed by other parties. Specifically, comments have been raised by the KWA and community members:</p> <ul style="list-style-type: none"> a. the KWB's September 2020 IR related to the need to monitor for potential impacts of the treated saline effluent on eider ducks, eider duck eggs, and



	<p>traditional harvesting; and,</p> <p>b. community members expressed interest in the chemical composition of the treated saline effluent and its potential impacts on food security, marine life, terrestrial wildlife, and traditional land and resource use during the NIRB's October 2020 Community Information Sessions in Rankin Inlet, Chesterfield, and Arviat.</p> <p>The FEIS Addendum (Section 7.2, Table 12, page 70) stated that there was "no link between the Project and human health" and "no effects are expected with the small-scale proposed Project activities than what was assessed in the FEIS (Agnico Eagle 2014)", without clear considerations of the proposed changes to the treated effluent discharge to the marine environment that is currently under assessment with this Project.</p> <p>These conclusions appear to be based on:</p> <ol style="list-style-type: none">1. An HHRA from the FEIS 2014, that did not evaluate:<ol style="list-style-type: none">a) the short or long-term potential human health risks associated with direct or indirect exposure to the treated saline effluent as a result of discharging it into the marine environment (Melvin Bay);b) the long-term implications of discharging the treated saline effluent into the marine environment; and,c) the potential effects of other exposure pathways, such as harvesting of traditional/country foods (e.g., eider duck eggs).2. The FEIS Addendum 2018 did not include an HHRA for the discharge of treated saline effluent to Melvin Bay (i.e., the marine environment), but did reference the previous assessment from the FEIS 2014. While the FEIS Addendum 2018 considers potential contaminants of concern (e.g., characterization of treated saline effluent) and describes a number of relevant environmental components (e.g., marine birds), it did not provide a fulsome description of all possible exposure pathways related to human health for the discharge of treated saline effluent (up to 800m³/day), which are usually illustrated in a conceptual site model (CSM). <p>These previous Environmental Impact Statements (FEIS 2014 & FEIS Addendum 2018) provide valuable information, but it is unclear if they are still relevant given the potential human health risks associated with the changes proposed under the Project's scope (e.g., marine vs. freshwater discharge, differences in the treated saline effluent discharge), and the number of years since those</p>
--	---



	<p>assessments were originally undertaken.</p> <p>Since an HHRA was not completed as part of the FEIS Addendum 2020, the opportunity to illustrate the relationships between Project activities and human health has been limited for Nunavummiut, and may reduce the ability of interested parties to meaningfully comment on the FEIS Addendum 2020's conclusions concerning potential human health risks.</p>
Recommendation/Request	<p>HC requests that AEM:</p> <ul style="list-style-type: none">a) Provide an HHRA in accordance with the requirements set out in the NIRB's FEIS Addendum Guidelines. This HHRA should consider multiple environmental media (e.g., air, soil, water, food) in order to evaluate all potential exposure pathways (e.g., ingestion, inhalation, and dermal contact) for all phases of the Project. A CSM, which provides a complete description of the contaminants, their sources, and exposure routes to identified human receptors, should be included. <p>HC has published Guidance for Evaluating Human Health Impacts in Environmental Assessment: Human Health Risk Assessment (2019)¹, which describes appropriate methods and approaches for completing an HHRA. This guidance should support AEM in completing an assessment of potential health risks and improve accessibility to relevant information in the FEIS Addendum 2020.</p>



Transport Canada

Executive Summary

TC has undertaken a technical review of the Project as part of the NIRB's reconsideration of the Meliadine Gold Mine Project Certificate 006, Amendment 001. TC is providing the NIRB with TRCs to offer expert advice on potential impacts to navigation associated with the Project.

TC's submission summarizes our mandate, and roles and responsibilities applicable to the Project. TC provides specific details with respect to the *Canadian Navigable Waters Act (CNWA)* and offers important context for consideration as it relates to the Project. AEM will be required to obtain an approval for all works occurring in Melvin Bay as it is part of the Arctic Ocean, which is listed on the schedule of navigable waters under the *CNWA*. Works occurring at other waterways in the Project area may also require approval from TC depending on the type of work proposed and the navigability of the waterway.

TC's TRC are provided in detail in this submission and are also summarized below:

- AEM must submit an application to TC for approval under the *CNWA* for all works within Melvin Bay.
- AEM must complete an assessment under the *CNWA* of the navigability of the other waterways in the Project area before starting construction of the waterlines.
- Prior to construction, AEM is to review the *CNWA* Minor Works Order and determine if the proposed method of crossing the Meliadine River for the pipelines meets all the criteria established by the Order.

TC will continue to work with the NIRB, AEM, Inuit communities and organizations, and other interested parties throughout the environmental assessment review to provide guidance and advice related to our departmental mandate.

Introduction

TC has undertaken a technical review of the FEIS Addendum, as part of the Project review. If approved by the NIRB, the Project would increase the amount of treated saline groundwater being discharged from the Meliadine Gold Mine into the marine environment through the construction of supporting infrastructure. TC is providing this submission of our analysis of the FEIS Addendum based on TC's mandate and roles and responsibilities.

TC is a Responsible Minister for the Meliadine Gold Mine operating pursuant to the Meliadine Gold Mine Project Certificate 006, Amendment 001 and has issued approvals for components of the mine in accordance with the now repealed *Navigation Protection Act (NPA)*. Such TC approved mine components include the Meliadine River Bridge and discharge pipeline and diffuser located in Itivia Harbour.

TC will also have jurisdictional responsibility over activities that are part of the Project. These include the construction, operation, and decommissioning of a new 100 m submarine pipeline and diffuser in Melvin Bay which is to be developed in accordance with the



legislation and regulations within TC’s mandate. Proposed twinned waterlines running from the Meliadine Gold Mine to Itiviia Harbour may also be subject to regulation by TC.

Transport Canada’s Mandate, Roles, and Responsibilities

TC is responsible for the Government of Canada’s transportation policies and programs. TC develops legislative and regulatory frameworks, such as the legislation listed below, and conducts oversight through legislative, regulatory, surveillance and enforcement activities. While not directly responsible for all aspects or modes of transportation, TC plays a leadership role to ensure that all parts of the transportation system across Canada work together effectively.

Canadian Navigable Waters Act (CNWA)

The *CNWA* is an Act of Parliament that authorizes and regulates interferences with the public right of navigation. It came into force on August 28, 2019 and replaced the *NPA*.

A primary purpose of the *CNWA* is to regulate works and obstructions that risk interfering with navigation in Canada’s navigable waters. A *CNWA* approval for the Project may only be issued if the Project is approved to proceed at the conclusion of the environmental review process set out in the *NuPPAA*.

The specific requirements of the *CNWA* are discussed in TC’s TRCs.

Technical Review Comments

Review Comment Number	TC-TRC #1
Subject/ Topic	Engineered diffuser located in Melvin Bay
Reference to the FEIS Addendum	<p>FEIS Addendum - Section 2 (Regulatory Regime; p. 4)</p> <p>FEIS Addendum - Section 3.3 (Treated Groundwater Effluent Discharge into Marine Environment Project Description; pp. 12, 17)</p> <p>FEIS Addendum - Section 3.3.1 (Waterline and Diffuser Construction Equipment and Workforce; p. 20)</p> <p>FEIS Addendum - 3.4.3 (Discharge Location; p. 23)</p> <p>FEIS Addendum - Appendix A (Meliadine Mine Bay Diffuser Conceptual Design – Effluent Near Field Modelling)</p>
Summary	In 2019, Meliadine Gold Mine Project Certificate 006, Amendment 001 was amended to allow AEM to truck treated saline groundwater from the mine and discharge it into Melvin Bay via a submarine pipeline and diffuser. AEM is seeking approval to construct a new submarine pipeline and diffuser and to increase the amount of saline groundwater being discharged into the Bay. The discharge would occur



	<p>during the open water season.</p> <p>As proposed, the groundwater would be pumped from the Meliadine Mine through two newly constructed twinned waterlines (16-inch diameter) to the discharge facility at the Itivia Fuel Storage Facility. At the discharge facility, the waterlines will be connected to a manifold, which in turn would be attached to the new submarine discharge pipeline leading to the new diffuser. The new submarine discharge pipeline and diffuser would be located in the vicinity of the existing pipeline and diffuser. The existing pipeline and diffuser will be removed from the seabed once the new diffuser starts operating.</p> <p>Through HDD, the new submarine pipe would enter onto the seabed at a depth of approximately 7 m. The exposed portion of the submarine pipeline would be approximately 75 m in length and end at the new diffuser. The diffuser would be 25 m in length and placed on the seabed at a depth of approximately 20 m. As designed, the new discharge pipeline and diffuser would be constructed of 12" High Density Poly Ethylene (HDPE). The diffuser would have five ports located 5 m apart. The diffuser ports would extend 1 m upwards from the diffuser. Placement of the diffuser would occur during the summer of 2021.</p>
Importance of issue to impact assessment	Compliance with regulatory requirements of the <i>CNWA</i> .
Detailed Review Comment	<p>In the FEIS Addendum, AEM identified that an approval from TC for the Project may be required under the <i>NPA</i>. The <i>CNWA</i>, which came into force on August 28, 2019, replaced the former <i>NPA</i> and AEM must ensure they are compliant with the current legislation.</p> <p>The proposed new submarine pipeline and diffuser are considered a "work" under the <i>CNWA</i> that is not a minor work. In addition, Melvin Bay, as part of the Arctic Ocean, is a Scheduled water under the <i>CNWA</i>. Non-minor works in <i>CNWA</i> Scheduled waters cannot proceed without authorization from TC. Therefore AEM must obtain an approval prior to commencing work on the proposed Project, if the Project is approved to proceed.</p>
Recommendation/Request	<p>TC requests that AEM:</p> <ul style="list-style-type: none">a) submit an application to TC for approval under the <i>CNWA</i> for all works within Melvin Bay including any



	<p>temporary works and not commence construction of these works until an approval is issued. TC recommends that AEM contact TC's Navigation Protection Program to seek further guidance on obtaining an approval. AEM can find further details at: https://tc.canada.ca/en/marine/apply-npp#item_5</p> <p>AEM should have the following information to support its application:</p> <ul style="list-style-type: none"> • a map showing the work's exact Project location; • the legal site description and position of the work in latitude and longitude; • the plan view drawings (top down) with all related dimensions; • the profile view drawings (side view) with all related dimensions; • the general arrangement drawing (depicting new and entire existing work); • a detailed Project description; • the construction methodology explaining how the work will be done; and • the expected start and end dates.
--	---

Review Comment Number	TC-TRC #2
Subject/ Topic	Construction of waterlines above, across and through waterways
Reference to the FEIS Addendum	<p>FEIS Addendum - Section 2 (Regulatory Regime; p. 4)</p> <p>FEIS Addendum - Section 3.3 (Treated Groundwater Effluent Discharge into Marine Environment Project Description; p. 12)</p> <p>FEIS Addendum - Figure 4a (Typical Section – Waterline above a Water Stream; p. 15)</p> <p>FEIS Addendum - Appendix D (Roads Management Plan; p. 16)</p>
Summary	<p>The waterlines would be connected to a proposed new submarine pipeline and diffuser. Saline groundwater will be pumped from the mine and discharged into Melvin Bay.</p> <p>The waterlines will consist of two pipes of 16-inch diameter that will be built within the easement of the existing AWAR and bypass road. The waterlines would cross various waterways throughout the Project area, including small</p>



	streams and the Meliadine River.
Importance of issue to impact assessment	Compliance with regulatory requirements of the <i>CNWA</i> .
Detailed Review Comment	<p>In the FEIS Addendum, AEM identified that an approval for the Project from TC may be required under the <i>NPA</i>. However, AEM must comply with the <i>CNWA</i>, which came into force on August 28, 2019 and replaced the <i>NPA</i>.</p> <p>Although the waterways throughout the Project area, other than Melvin Bay, are Non-scheduled waterways under the <i>CNWA</i>, one or more of them may be deemed navigable. AEM will be required to make the determination of navigability of each waterway by using TC's online Project Review tool. If a waterway(s) is not navigable as per the definition, then the work proposed is not subject to the <i>CNWA</i>.</p> <p>AEM has stated that it conducted an assessment of the navigability of the waterways in the Project area prior to the construction of the AWAR. TC notes that this assessment was conducted pursuant to the now-repealed <i>NPA</i>. Given this, a reassessment of navigability under the <i>CNWA</i> is required prior to AEM beginning work on the twinned waterlines.</p> <p>The proposed waterlines are considered a "work" under the <i>CNWA</i> and as such AEM, as an owner who proposes to construct, place, alter, remove or decommission a work that is not a major or minor work that could interfere with navigation in a non-Scheduled navigable water, may elect to use the public resolution process instead of the application and approval process. The public resolution involves depositing of information on the online registry through a Notification of Work and publishing a notice inviting public comments. The notice gives the public 30 days to comment on the proposed work. Any comments made during the timeframe are a part of the public resolution process.</p> <p>If there are concerns identified within the public comment period, a proponent and the commenter have 45 days to resolve any navigation-related concerns. If concerns are resolved within that timeframe, the proponent may proceed with the work. Where the resolution process is unsuccessful, or with a voluntary application for approval from the owner, TC will review the work for approval.</p>



	Finally, when the construction, placement, alteration, rebuilding, removal or decommissioning of a work that is not a major or a minor work in any Non-scheduled navigable water will not interfere with navigation, the owner may proceed after depositing information on the public registry as well as publishing a notice. This process is not subject to a comment period.
Recommendation/Request	TC requests that AEM: <ul style="list-style-type: none"> a) Complete an assessment of the navigability of the waterways in the Project area, under the CNWA, before starting construction of the waterlines. For non-minor works that could interfere with navigation in waterways deemed navigable, AEM must submit an application to TC’s Navigation Protection Program or complete the public resolution process outlined above prior to starting construction of the waterlines.

Review Comment Number	TC-TRC #3
Subject/ Topic	Construction of waterlines across the Meliadine River
Reference to the FEIS Addendum	Section 2 – Regulatory Regime; p. 4 Section 3.3 – Treated Groundwater Effluent Discharge into Marine Environment Project Description; pp. 12 Figure 4a – Typical Section – Waterline above a Water Stream; p. 15 Figure 4b – Support of the Waterline along a Bridge; p.16
Summary	The waterlines will be connected to a proposed new submarine pipeline and diffuser. Saline groundwater will then be pumped from the mine and discharged into Melvin Bay. The waterlines will consist of two pipes of 16-inch diameter that will be built within the easement of the existing AWAR and bypass road. The waterlines would cross various waterways throughout the Project area including the Meliadine River at the site of the Meliadine River Bridge. The Meliadine River Bridge was approved by TC prior to its construction (Transport Canada Navigation Protection Program File # 2010-600573).



Importance of issue to impact assessment	Compliance with regulatory requirements of the <i>CNWA</i> .
Detailed Review Comment	<p>In the FEIS Addendum, AEM identified that an approval for the Project from TC may be required under the <i>NPA</i>. However, AEM must comply with the <i>CNWA</i>, which came into force on August 28, 2019 and replaced the <i>NPA</i>.</p> <p>For the crossing of Meliadine River, if the works (twinning waterlines) will be attached to the bridge structure, this may be considered a minor work under the <i>CNWA</i>'s Minor Works Order.</p> <p>Minor works in any navigable waterway are allowed to proceed without review from TC, so long as the work and/or waterway meet the criteria and the owner follows the requirements established in the Minor Works Order.</p>
Recommendation/Request	<p>TC requests that AEM:</p> <ul style="list-style-type: none">a) review the Minor Works Order prior to construction and determine if this proposed work meets all the criteria established by the Order. For more information on the types of structures that fall within the Minor Works Order, AEM can refer to https://laws-lois.justice.gc.ca/eng/regulations/SOR-2019-320/index.html. If the waterlines' crossing of the Meliadine River is not a minor work then, as detailed in TC-TRC #2, AEM must submit an application to TC's Navigation Protection Program or complete the public resolution process prior to starting construction of the waterlines.