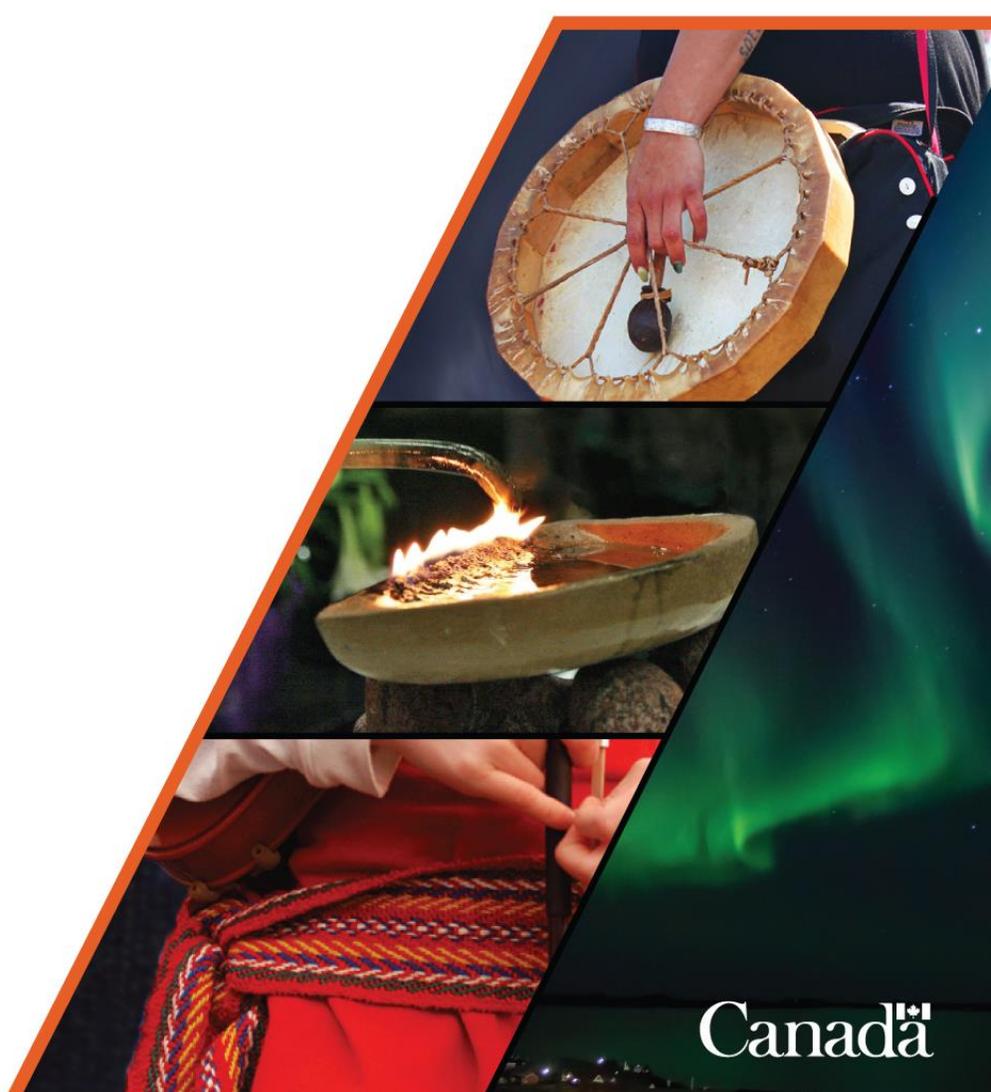




# CIRNAC Comments to NIRB Re: Agnico Eagle Mines Limited's Meliadine Gold Mine Project 2022 Annual Report



GCDOCS # 113920442



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P.O. Box 100  
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Your file - Votre référence  
11MN034  
Our file - Notre référence  
GCDOC # 113920442

June 8, 2023

Emily Koide  
Technical Advisor III  
Nunavut Impact Review Board  
P.O. Box 1360  
Cambridge Bay, NU, X0B 0C0  
Via electronic mail to: [info@nirb.ca](mailto:info@nirb.ca)

Dear Emily Koide,

**Re: Comment Request for Agnico Eagle Mines Limited's Meliadine Gold Mine Project 2022 Annual Report**

On April 26, 2023, as per Section 12.7 of the *Agreement between the Inuit of the Nunavut Settlement Area and Her Majesty The Queen in Right of Canada* (Nunavut Agreement) and the amended Meliadine Gold Mine Project Certificate [No. 006], the Nunavut Impact Review Board (NIRB) requested parties to review Agnico Eagle Mines Limited (AEM)'s 2022 Annual Report with respect to effects and compliance monitoring.

Crown-Indigenous Relations and Northern Affairs Canada (CIRNAC) has conducted a review of the 2022 Annual Report and related documents in areas under its mandate and jurisdiction pertaining to effects and compliance monitoring. On this basis, CIRNAC would like to provide the comments below for NIRB's consideration.

CIRNAC appreciates the opportunity to review AEM's Meliadine Gold Mine Project 2022 Annual Report and looks forward to working with NIRB and AEM throughout any future reviews for this project. Should you have any questions, please do not hesitate to contact Amal Roy by email at [amal.roy@rcaanc-cirnac.gc.ca](mailto:amal.roy@rcaanc-cirnac.gc.ca)

Sincerely,



Amal Roy  
A/Manager, Impact Assessment



**1. Effects Monitoring**

The Meliadine Gold Mine Project 2022 Annual Report has been evaluated to assess the measurable changes to the valued components, under CIRNAC areas of interest, compared to the potential effects that were predicted to result from development of the Meliadine Gold Mine Project, taking into account the Final Environmental Impact Statement (FEIS), previous years' Monitoring Reports and the requirements included in the Project Certificate (as amended). The assessment considered the following:

- a. Whether the conclusions reached by Agnico Eagle Mines Limited (AEM) in the Meliadine Gold Mine Project 2022 Annual Monitoring Report are valid; and,**
- b. Any areas of significance requiring further supporting information or any changes to the monitoring program which may be required**

<b>Comment Number:</b>	<b>CIRNAC #1</b>
<b>Subject:</b>	<b>Permafrost Monitoring</b>
<b>Reference:</b>	<ul style="list-style-type: none"> <li>Meliadine Gold Mine Project 2022 Annual Report</li> <li>Appendix 6 - 2022 Geotechnical Inspection Report</li> <li>NIRB Project Certificate No. 006, Amendment 002: Terms &amp; Conditions (T&amp;C) 17 and 21</li> <li>CIRNAC Comments to NIRB Re: Agnico Eagle Mines Limited's <i>Meliadine Gold Mine Project 2021 Annual Report</i>, June 20, 2022</li> </ul>
<b>Issue/Rationale:</b>	<p>As per T&amp;C 17 and 21 of the NIRB Project Certificate for this project, CIRNAC previously recommended (CIRNAC #1.4 on 2021 Annual Report) that AEM provide a discussion on the status of permafrost degradation that may be occurring because of AEM's construction and operation activities. To address this request, AEM included Section 4.1.9 in the 2022 Annual Report, which provided the following discussion:</p> <p><i>"In general, permafrost aggrades into the fills placed on the natural ground and Agnico Eagle has not observed permafrost degradation across the industrial pad. Some localized permafrost degradation has been observed within/adjacent to some of the water management structures (downstream collection channel of D-CP1, CP3, CP4, channel 1, channel 3 and access, channel 5, channel 9, and channel 10) as well as the saline water treatment plant. These areas correspond to areas where ice rich materials are present within the natural ground and where the natural vegetation has been removed and/or where water is allowed to accumulate. Agnico Eagle monitors these areas and repairs them when required. Additionally, the lessons learned from the performance of older infrastructure is being implemented into new infrastructure to minimize future permafrost degradation.</i></p> <p><i>Further information on the observed localized permafrost degradation (areas of settlement) can be found in the 2022 Annual Geotechnical Inspection Report (Appendix 6)."</i></p> <p>From CIRNAC's review of the 2022 Annual Report and the 2022 Geotechnical Report, CIRNAC concurs with the observations and</p>



Comment Number:	CIRNAC #1
	<p>information provided by AEM.</p> <p>CIRNAC notes that while Section 4.1.9 of the 2022 Annual Report provides general comments on permafrost degradation across the site, there is no detailed discussion of permafrost condition of areas of interest across the site including areas between critical infrastructure such as dikes, channels, and tailings and waste rock facilities and adjacent to water conveyance features at which permafrost degradation has been noted. Similarly, there is no discussion of permafrost conditions adjacent to the roads (site roads, All Weather Access Road, bypass roads) and borrow areas. This information is important for the understanding of potential long-term impacts on presently stable infrastructure due to long-term permafrost degradation around, and in the vicinity, of these features (for example permafrost degradation within water diversion channels as noted in the 2022 Geotechnical Inspection Report).</p>
<b>Recommendation to Address Issues:</b>	<p>CIRNAC recommends that AEM:</p> <ol style="list-style-type: none"> <li>1. Monitor thermal conditions at the portions of the site in the vicinity of areas where permafrost degradation has been observed including areas adjacent to channels and ditches close to existing berms and material storage facilities to ensure that any permafrost degradation does not impact the long-term stability of these infrastructure elements. This should include the installation of horizontal and/or vertical thermistors in critical areas where degradation has already begun,</li> <li>2. Comment on the monitoring of thermal conditions at ancillary facilities (e.g., roads, borrow areas) where standing water continues to be observed, and</li> <li>3. Expand the discussion in Section 4.1.9 of the Annual Report to include additional permafrost thermal monitoring and discussions as per items 1 and 2 above.</li> </ol>

Comment Number:	CIRNAC #2
<b>Subject:</b>	<b>Improvements to Annual Report</b>
<b>Reference:</b>	<ul style="list-style-type: none"> <li>• Meliadine Gold Mine Project 2022 Annual Report</li> <li>• Appendix 6 - 2022 Geotechnical Inspection Report</li> </ul>
<b>Issue/Rationale:</b>	<p>The Annual Report is a comprehensive document responding to both NIRB and NWB terms and conditions. Review of this document and its numerous appendices requires extensive time and effort and CIRNAC thinks that additional improvements could be made to ease the review and understanding of a) items referenced, and b) information on site conditions.</p>



Comment Number:	CIRNAC #2
	<p>Although AEM included references to supporting documents in discussions within the main body of the Annual Report (e.g., Golder 2014; OKC 2022a; 2022b), the report does not provide a reference section where the full citation of each document is included so the reader can verify the document being referred to. Furthermore, maybe providing hyperlinks in the pdf to the table of contents and lists of tables and figures as well as to table and figure references within the text, would lend functionality to the document making it easier to navigate and scroll through it and would ultimately facilitate the review of the report. This in turn would help track information that responds to specific NIRB terms and conditions.</p> <p>AEM's geotechnical report provided photographs of site conditions during annual inspections. While all photographs are labelled, it is often challenging for interested parties to specifically identify the location of the item/area being photographed (e.g., regarding the site photograph of the north side toe of the tailings storage facility and associated channel, it is unclear where this specific location occurs along the north side (east, west or center?)). This makes it particularly challenging to assess AEM comments regarding a location condition and potential impacts/statements as the reviewer may not be sure what area they are actually looking at in a photograph.</p>
<p><b>Recommendation to Address Issues:</b></p>	<p>CIRNAC recommends that AEM include:</p> <ol style="list-style-type: none"> <li>1. A reference section in future Annual Reports providing full citations to documents referenced in the main body of the report,</li> <li>2. Better links such as Hyperlinks in the pdf to the table of contents, list of tables and figures and references to tables and figures in the text, and</li> <li>3. A site plan that clearly indicates the location and view direction of each photograph in future reporting that provides site specific photographs, especially the Geotechnical Report.</li> </ol>

Comment Number:	CIRNAC #3
<p><b>Subject:</b></p>	<p><b>Tailings Salinity and Reclaim Water</b></p>
<p><b>Reference:</b></p>	<ul style="list-style-type: none"> <li>• Meliadine Gold Mine Project 2022 Annual Report, Section 3.1.9</li> <li>• NIRB Project Certificate No. 006, Amendment 002: T&amp;C 15 and 29</li> <li>• CIRNAC Comments to NIRB Re: Agnico Eagle Mines Limited's <i>Meliadine Gold Mine Project 2021 Annual Report</i>, 20 June 2022</li> </ul>



Comment Number:	CIRNAC #3
<p><b>Issue/Rationale:</b></p>	<p>In response to a past recommendation (CIRNAC #1.3 on 2021 Annual Report), CIRNAC appreciates the addition of Section 3.1.9 to the 2022 Annual Report discussing the use of Reclaim Water from Contact Water management facilities for use in the mill, drilling and for dust suppression (as per Water Licence 2AM-1631 Part E, Item 1). CIRNAC seeks further clarity on the information provided in Section 3.1.9.</p> <p>In Section 3.1.9, AEM noted that in 2022, <i>“the use of water collected by the Contact Water management facilities was not practical and the decision was made to continue monitoring the pore water salinity and see if the downward trend in the porewater salinity continued throughout 2022 to protect the performance parameters of the TSF [tailings storage facility].”</i></p> <p>AEM did not elaborate on why or how the use of Contact Water as Reclaim Water was not “practical” in 2022. Was it not practical due to the porewater salinity of the tailings still being above the TSF design assumptions or does a further problem exist that prevents the use of Contact Water?</p> <p>AEM also stated that <i>“the porewater salinity of the filtered tailings has been above the design assumptions for the TSF since initial deposition, with an oscillating downward trend from late 2020. The pore water salinity of the filtered tailings has been elevated due to the saline moisture entrained in the ore being hauled from underground and processed. Previously, when Contact water was used as reclaim water for milling purposes, the pore water salinity of the tailings increased significantly. The pore water of the filtered tailings is a critical control parameter for the performance of the dry stack tailings storage facility (TSF).”</i></p> <p>In order to verify that a potential environmental impact is not occurring, it would be helpful if AEM clarifies what the design assumptions are for the TSF with respect to tailings porewater salinity, and further describe, with some figures, the noted downward oscillating porewater concentration trend observed since initial tailings deposition.</p>
<p><b>Recommendation to Address Issues:</b></p>	<p>CIRNAC recommends that AEM:</p> <ol style="list-style-type: none"> <li>1. Clarify why was it not practical in 2022 to use water from the Contact Water management facilities as Reclaim Water for milling purposes,</li> <li>2. Clarify what the TSF design assumptions are with respect to tailings porewater salinity, which is a critical control parameter for the performance of the dry stack TSF, and</li> <li>3. Provide further information to clearly illustrate and describe the observed oscillating decreasing trend in the tailings porewater salinity over time and the reason for the decreasing trend.</li> </ol>



<b>Comment Number:</b>	<b>CIRNAC #4</b>
<b>Subject:</b>	<b>Underpredicted Ammonia and Phosphorous Concentrations in CP1</b>
<b>Reference:</b>	<ul style="list-style-type: none"> <li>• Meliadine Gold Mine Project 2022 Annual Report, Section 3.2.4.2</li> <li>• Appendix 5 – Water Balance and Water Quality Modeling Tabular Data and Figures</li> <li>• NIRB Project Certificate No. 006, Amendment 002: T&amp;C 29</li> </ul>
<b>Issue/Rationale:</b>	<p>Accurate predictions of water quality in the collection ponds over time is an important aspect of water management at the Meliadine site. In section 3.2.4.2 of the 2022 Annual Report, AEM noted that in 2021 water quality predictions in CP1 for ammonia and phosphorous concentrations was overpredicted. As shown in Figures 10 and 11 of Appendix 5 of the 2022 Annual Report, these parameters were also overpredicted in 2022. AEM attributed this overprediction to nutrient attenuation by algal growth, which has been periodically observed in CP1, but is not considered in the water quality model. AEM also noted that further investigation is required to validate this hypothesis, but no commitment was made to conduct such a study.</p>
<b>Recommendation to Address Issues:</b>	<p>CIRNAC recommends that AEM commit to conducting a study to verify the attenuation of nutrients (specifically ammonia and phosphorous) by algae in CP1 and provide a timeline for completing the study in the Meliadine 2023 Annual Report.</p>

<b>Comment Number:</b>	<b>CIRNAC #5</b>
<b>Subject:</b>	<b>Marine Discharges to Melvin Bay</b>
<b>Reference:</b>	<ul style="list-style-type: none"> <li>• Meliadine Gold Mine Project 2022 Annual Report, Sections 3.1.6, 3.2.2.2 and 7.3.1.24</li> <li>• Meliadine Gold Mine Project 2022 Annual Report, Appendix 31-10 Water Management Plan</li> <li>• Meliadine Gold Mine Project 2021 Annual Report, 3.2.3 Saline Water Balance Model Results</li> <li>• NIRB Project Certificate No. 006, Amendment 002: T&amp;C 24, 25,26, 133</li> </ul>
<b>Issue/Rationale:</b>	<p>Sections 3.1.6 and 7.3.1.24 of the Annual Report noted that in 2022, there was no saline effluent discharge to sea at Melvin Bay through MEL-26.</p> <p>In the 2022 Annual Report, Section 3.2.2.2 describing the water balance model setup stated that <i>“currently, saline water from the underground mine is stored in Tiriganiaq Open Pit 2 (Tiri 02) and as such no actual discharge quantities were applied in the 2022 model</i></p>



Comment Number:	CIRNAC #5
	<p><i>year update. Previous discharges applied to the WBWQM [Water Balance Water Quality Model] include the discharge of saline water from SP4 to Itivia Harbour using trucks. The proposed Waterline (i.e., the installation of an effluent waterline discharging to Itivia Harbour) will deliver treated effluent to Itivia Harbour via a diffuser. This model assumes the waterline will be operational beginning in 2025 with a seasonal discharge from June 20<sup>th</sup> to September 29<sup>th</sup> at 20,000 m<sup>3</sup>/day.”</i></p> <p>Section 3.11 of Appendix 31-10 Water Management Plan of the 2022 Annual Report stated that “Currently due to sufficient forecasted storage capacity until 2026, saline water on site is managed through storage and treatment of marginally saline water. Punctual operations of hauling of saline water treated by the SETP to Melvin Bay are only conducted if necessary. The suspension of continuous hauling operation followed the approval of the waterline to discharge to sea (section 3.3.3) under the Amendment 002 of the NIRB Project Certificate No. 006 issued on March 2nd. The waterline is currently under construction and is expected to be commissioned in 2025, once in operation, the waterline will be used in combination with the SETP-WTC to discharge treated saline water to Melvin Bay.”</p> <p>When describing the water balance model setup in the 2021 Annual Report, Section 3.2.3 stated that “Discharge of saline water to Melvin Bay is assumed to continue by trucks for the operation years 2022 and 2023 and to change to waterline discharge in 2024” and that “Based on the discharge to sea schedule in the model and considering TIRI02 as a major saline water surface storage with a capacity of 1,616,554 m<sup>3</sup>, a maximum of 46% of TIRI02 storage capacity will be utilized in future years (2022 - 2027). In 2022, a maximum of 500,000 m<sup>3</sup> saline water is expected to be stored in TIRI02, which accounts for 30% of the TIRI02 capacity.”</p> <p>While there is capacity for temporary storage of saline water in TIRI02 to manage saline water in the short-term, it is not clear from the 2022 Annual Report why the approved discharge of 1,600 m<sup>3</sup>/day to the marine environment, as planned in the 2021 Annual Report, was stopped completely in 2022.</p>
<p><b>Recommendation to Address Issues:</b></p>	<p>CIRNAC requests that AEM provide:</p> <ol style="list-style-type: none"> <li>1) Additional discussion on why no saline water was discharged in 2022 and why no saline water discharge is planned to occur until 2025;</li> <li>2) Discussion of why completion of the waterline construction has been rescheduled to 2025; and</li> <li>3) Discussion on potential consequences of any schedule delays in saline water discharge via the waterline.</li> </ol>



## **2. Compliance Monitoring**

### **a. Provide a summary of any compliance monitoring and/or site inspections undertaken in association with the project, including specifically:**

#### **i. Identify the terms and conditions from the Project Certificate which have been incorporated into any permits, certificates, licences or other approvals issued for the Project, where applicable;**

CIRNAC has a broad mandate for the co-management of water resources and the management of Crown Land in Nunavut 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 *Arctic Waters Pollution Prevention Act and Regulations*;
- The *Nunavut Waters and Nunavut Surface Rights Tribunal Act and Regulations*; and
- The *Territorial Lands Act and Regulations*.

In terms of water management in Nunavut, CIRNAC has a number of different responsibilities. The Minister of Northern Affairs has a decision-making role with regards to the Nunavut Water Board (NWB)'s issuance of Water Licences associated with a project. Furthermore, CIRNAC participates as an intervenor in the water licensing process, providing advice and expertise.

When a proposed project is approved to proceed, CIRNAC is responsible for inspecting and enforcing any terms and conditions (T&Cs) contained within any Water Licence associated with the project.

Although, CIRNAC is not responsible for implementing water related T&Cs, the Department has reviewed the Type 'A' Water Licence associated with the Meliadine Gold Mine Project with respect to amended Project Certificate [No. 006] and has included a concordance table (Appendix A) that outlines how these T&Cs have been incorporated in the Water Licence by the NWB.

In 2022, AEM's Meliadine Gold Mine Project activities and monitoring were conducted under the following Water Licences:

- Type B Water Licence 2BB-MEL1424, and
- Type A Water Licence 2AM-MEL1631

With respect to land authorizations, CIRNAC issued the surface lease (#055K16042) for the marine discharge pipe for the Meliadine Gold Mine Project in 2019.

#### **ii. A summary of any inspections conducted during the 2022 reporting period, and the results of these inspections; and,**

CIRNAC's Water Resource Officer (WRO) conducted five inspections during the 2022 reporting period. The last inspection was conducted over three separate days due to the closure of the All Weather Access Road during the caribou migration.

A summary of the inspection reports is presented below for NIRB's consideration.



### **March 11, 2022**

An inspection of the four reportable spills of processing water from the proceeding plant thicker tanks was completed and a report was produced. No instances of non-compliance was noted during the inspection. However, the CIRNAC Inspector noted a number of concerns on their inspections: the appropriate monitoring of the spill locations until the issue is resolved; the quality of the processing water; the potential difficulty of a thorough cleaning up of frozen processing water around the construction/storage area on the industrial pad. Also, AEM was asked to confirm if the construction of the observed processing plant thickened tank is complete or any further construction is required.

### **April 19, 2022**

An inspection of the eight reportable spills on Lake A8 was conducted and a report was produced. CIRNAC Water Resource Officer noted the failure of AEM to comply with the condition of water licence 2BB-MEL1424; 1. Part B, item 8 – failure to install flow meters or other such devices acceptable to the Inspector and 2. Part F, item 2 – failure to contain all drill waste and salt in any quantity from on-ice drilling in a properly constructed sump or appropriate natural depression. However, on April 28, AEM confirmed of installing a new meter at each of the drills, and provided information to the Inspector regarding the storage of salt, the rig wash prior to use on-ice as well as the location of the new natural depression that will be used for disposal of drill waste. The Inspector asked AEM to maintain a physical copy of the water licence at the site; improve functionality of the drill environmental inspection form; to inspect mobile fuel tanks regularly when located on ice as required by part H, item 2, and upon completion of fuel transfer along the All Weather Road that the Environment Division inspect the area for spills..

### **May 13, 2022**

This inspection was conducted as a follow up to the April 19 inspection to ensure compliance with applicable terms and conditions of water licence 2BB-MEL1424. Although some actions by AEM were taken, additional failures to comply were identified. Inspectors required AEM to take action to rectify the issues. These actions included – all equipment is clean, well maintained and free from leaking fluids prior to use on-ice and complete the process in advance of any on-ice drilling. In that regard, AEM needs to submit a plan to Nunavut Water Board and the Inspector with details as how the failure to comply will be mitigated and resolved prior to the next on-ice drilling campaign. The plan will include, but not be limited to, information about rutting and erosion, drill site reclamation, rig wash, conditions of an acceptable location to deposit cuttings, drill inspection forms, spills and clean up, and other relevant water licence conditions. Also, AEM was required to immediately take corrective actions to resolve the failure to compliance as noted in the report and a summary of actions taken to be provided to the Inspector by May 27, 2022.

### **May 18, 2022**

This inspection was conducted as a follow up to May 13 inspection, to ensure compliance with the applicable terms and conditions of water licence 2BB-MEL1424. In cooperation with Environment Climate Change Canada's Environmental Enforcement Officer, CIRNAC Inspectors collected samples at four locations identified during the May 13 inspection at locations of concern related to the containment of drilling waste and hazardous materials from entering water. As a result of the sample laboratory analysis report, CIRNAC Inspectors issued a written warning under the Nunavut Waters and Nunavut Surface Rights Tribunal Act to AEM and the drill operator Orbit Garnet Drilling.



### **July 12, 13 and 19, 2022**

This inspection was conducted over three separate dates due to the closure of the All Weather Access Road during the caribou migration and included inspecting four spills at the Itivia Marshalling Facility. It also included an inspection of Tailing Storage Facility (CP-3, CP-3 Thermal Berm, Diversion Berm 2 and Channel 3). During the course of inspection 20 spill files were successfully closed. The Inspector asked AEM to provide a brief summary of the plan to address the spills at the Itivia Marshalling Facility, related to total suspended solids exceedances as well as an investigation into the fine grey material found along the CP-3 access road adjacent to the Tailing Storage Facility and a bi-weekly inspection records of Tailings Storage Facility and associated structures before September 5, 2022.

#### **iii. A summary of AEM's compliance status with regard to authorizations that have been issued for the Project.**

Some non-compliances related to Water Licence conditions and Nunavut Waters and Nunavut Surface Rights Tribunal Act S.C 2002, c. 10 were noted during 2022 inspections. On December 21, 2022, CIRNAC issued two warning letters – one to Agnico Eagle Mines Limited and another to Orbit Garant Drilling Inc – alleging contravention of sec 12(1)(b) of the Nunavut Waters and Nunavut Surface Rights Tribunal Act. These letters were intended to bring this matter to their attention to prevent further incidents and ensure compliance with Nunavut Waters and Nunavut Surface Rights Tribunal Act. These letters were not a finding of guilt or civil liability, nor an administrative adjudication.

CIRNAC will continue to work with AEM to ensure continued compliance with all water licence requirements associated with this project.



**Appendix A: Project Certificate Terms and Conditions (T&C) incorporated into any permits, certificates, licences or other approvals issued for the Project**

<b>NIRB Project Certificate No. 006 Term &amp; Condition</b>		<b>Implemented in NWB Water Licence NO: 2AM-MEL1631</b>
3	<p>Prior to commencing construction activities the Proponent shall update its dust management and monitoring plan to address and/or include the following additional items:</p> <ol style="list-style-type: none"> <li>a. Align plan requirements with commitments made in the FEIS and during the Final Hearing to monitor dust along the all-weather access road and associated roads and trails.</li> <li>b. Verify commitments to the utilization of dust suppressants along the all-weather access road including and associated roads and trails, including a description of the type of suppressant to be utilized, the frequency and timing of applications to be made throughout the various seasons of road use.</li> <li>c. Outline the specific adaptive management measures to be considered should monitoring indicate that dust deposition is higher than predicted, specifically where traffic along the all-weather access road is greater than initially predicted.</li> </ol>	<ul style="list-style-type: none"> <li>▪ Part B: Item 12f</li> <li>▪ Part E: Item 17</li> <li>▪ Part I: Item 9c</li> <li>▪ Schedule B: Item 4</li> <li>▪ Schedule D: Item 1j</li> </ul>
4	The Proponent shall develop and implement an Incineration Management Plan that takes into consideration the recommendations provided in Environment Canada’s Technical Document for Batch Waste Incineration (2010).	<ul style="list-style-type: none"> <li>▪ Part B: Item 12f</li> </ul>
6	The Proponent shall employ appropriate dust suppression measures when conducting activities in the landfill such as topping or capping.	<ul style="list-style-type: none"> <li>▪ Part B: Item 12o</li> </ul>
13	The Proponent shall undertake additional geotechnical investigations as required to identify sensitive landforms, modify engineering design for Project infrastructure (i.e., dikes, tailings storage facility, waste rock pile and landfill), and develop and implement preventative and/or mitigation and monitoring measures to minimize the impacts of the Project’s activities and infrastructure on sensitive landforms. Plans for the investigations, mitigative and monitoring measures are to be included within an updated Environmental Protection Plan.	<ul style="list-style-type: none"> <li>▪ Part B: Item 12c</li> <li>▪ Part I: Item 14</li> <li>▪ Part I: Item 15</li> </ul>



<b>NIRB Project Certificate No. 006 Term &amp; Condition</b>		<b>Implemented in NWB Water Licence NO: 2AM-MEL1631</b>
14	The Proponent is encouraged to conduct more detailed thermal analysis to support detailed design of the dikes and the tailings storage facility, including seepage and stability analysis, and shall incorporate the results of the analysis into Project design. Details of the thermal analyses undertaken are to be provided to the NIRB.	<ul style="list-style-type: none"> <li>▪ Part D: Items 1b and 2</li> <li>▪ Part I: Item 13</li> </ul>
15	<p>The Proponent shall assess the potential environmental effects of a post-closure failure of the geomembrane of the Tailings Storage Facility while tailings are in a thawed state. This assessment shall include, at a minimum:</p> <ol style="list-style-type: none"> <li>a. A description of the potential environmental effects of such a failure;</li> <li>b. Identification of the monitoring measures employed to detect environmental changes that could result;</li> <li>c. Identification of proposed mitigation measures to address any changes identified during monitoring; and</li> <li>d. Updated Risk Management Plan and Closure and Reclamation Plan reflecting changes which result from the post-closure failure assessment.</li> </ol> <p>A summary of the results from this assessment and implications to project infrastructure and operational plans shall be provided to the NIRB.</p>	<ul style="list-style-type: none"> <li>▪ Part B: Item 12L</li> <li>▪ Part J: Item 5</li> </ul>
16	The Proponent shall finalize and implement a comprehensive erosion management plan to prevent or minimize the effects of destabilization and erosion resulting from Project activities.	<ul style="list-style-type: none"> <li>▪ Part B: Item 12o</li> <li>▪ Part D: Items 2e, 8 and 21</li> <li>▪ Part E: Item 9</li> </ul>
17	The Proponent shall monitor the effects of the Project on permafrost conditions relative to Project infrastructure, including along the all-weather access road and associated roads, waste rock stockpile, trails and quarries. Through its monitoring the Proponent must demonstrate that permafrost integrity is maintained with implementation of appropriate preventative measures should permafrost degradation be observed.	<ul style="list-style-type: none"> <li>▪ Part J: Item 5</li> </ul>



<b>NIRB Project Certificate No. 006 Term &amp; Condition</b>		<b>Implemented in NWB Water Licence NO: 2AM-MEL1631</b>
19	<p>The Proponent shall develop and implement a monitoring program for its Tailings Storage Facility and Waste Rock Storage Facility (including dikes). The monitoring program is to include, but shall not be limited to:</p> <ol style="list-style-type: none"> <li>Plans for monitoring the thermal condition and stability of storage facilities (including deformation of the cover) and dikes, including the use of thermistor cables, temperature loggers, and core sampling technology as required to monitor dike stability and tailings freezeback efficiency, including for example, factors such as ice content and stability; and,</li> <li>Measures proposed to ensure the safe containment and structural integrity of Project infrastructure, and to prevent contamination of waterbodies.</li> </ol> <p>Details of the monitoring program shall be provided to the NIRB.</p>	<ul style="list-style-type: none"> <li>▪ Part B: Item 12j</li> <li>▪ Part F: Item 20</li> </ul>
20	<p>The Proponent shall explore the feasibility and practicality of topsoil/organic matter salvage as part of phased approach to Project development, with updates to its Closure and Reclamation Plan to reflect any changes based on this investigation. The Closure and Reclamation Plan should be updated on an on-going basis as more information becomes available from similar reclamation projects, including experience with implementing closure and reclamation plans at the Meadowbank mine site, as applicable.</p>	<ul style="list-style-type: none"> <li>▪ Part B: Item 12l</li> </ul>
21	<p>The Proponent shall update its Waste Management Plan to include details which explain how the design employed for Project landfills is expected to protect the integrity of the local environment, including permafrost integrity, and water quality for adjacent waterbodies. The Proponent shall demonstrate its consideration for the use of liners at waste management facilities, where feasible.</p>	<ul style="list-style-type: none"> <li>▪ Part B: Item 12h</li> </ul>
22	<p>The Proponent shall report annually to the NIRB on the adaptations it has had made to the Mine Waste Management Plan and practices based on results obtained through monitoring.</p>	<ul style="list-style-type: none"> <li>▪ Part B: Item 12j</li> </ul>
23	<p>Prior to the commencement of excavation at the Discovery deposit, the Proponent, in consultation with Natural Resources Canada, shall update its Mine Waste Management Plan to assess the potential for acid rock drainage and to identify any monitoring and mitigation measures that may be required in this development area.</p>	<ul style="list-style-type: none"> <li>▪ Part B: Item 12j</li> </ul>



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24	The Proponent shall, reflecting any direction from the Nunavut Water Board during water licensing, collect new hydraulic data (e.g., from new monitoring wells) in key areas during the pre-development, construction and operation phases to better define vertical and horizontal ground flow in the project development area.	<ul style="list-style-type: none"> <li>▪ Part B: Item 12q</li> <li>▪ Part E: Item 14</li> </ul>
25	The Proponent shall provide to the NIRB, a saline water management plan which includes, but is not limited to, mitigation measures designed to address the potential for higher-than-predicted volumes of saline water inflows into the underground mine, treatment and disposal methods, and details of its plan to monitor saline water at site.	<ul style="list-style-type: none"> <li>▪ Part B: Item 12q</li> <li>▪ Part B: Item 13d</li> </ul>
26	The Proponent shall carry out continued analyses over time to confirm and update, accordingly, the approximate fill time for the mine pits as identified in the FEIS.	<ul style="list-style-type: none"> <li>▪ Part J: Item 1 and 5</li> </ul>
27	<p>The Proponent shall update its Aquatic Effects Monitoring Plan (AEMP) to include, at a minimum:</p> <ol style="list-style-type: none"> <li>a. Details regarding the monitoring of non-point sources of discharge, selection of appropriate reference sites, measures to ensure the collection of adequate baseline data at Meliadine Lake prior to and during construction activities, including information on chemical loading in the snowpack, and the mechanisms proposed to monitor for and treat runoff and sediment;</li> <li>b. A description of measures to be undertaken as relate to dustfall monitoring, designed in accordance with the following: <ol style="list-style-type: none"> <li>i. To establish Phase 1 all-weather access road baseline data and a description of plans for data collection during Project operations for comparison;</li> <li>ii. To facilitate comparison with existing guidelines;</li> <li>iii. To assess the seasonal deposition (rates, quantities) and chemical composition of dust entering aquatic systems along representative distance transects of the all-weather access road and Rankin Inlet by-pass road;</li> </ol> </li> <li>c. A description of water quality monitoring to be conducted at Little Meliadine Lake; and</li> <li>d. Details regarding comparisons of results to be run against predicted values and the analysis of data to be undertaken on an annual basis, or as may be required.</li> </ol>	<ul style="list-style-type: none"> <li>▪ Part B: Item 12a</li> <li>▪ Part B: Item 13</li> <li>▪ Part I: Item 3</li> </ul>



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28	The Proponent shall develop and implement a sediment and erosion management plan to prevent or minimize the effects of destabilization and erosion that may occur due to Project activities. The plan should also detail sediment control plans to prevent and/or mitigate sediment loading into surface water within the Project area.	<ul style="list-style-type: none"> <li>▪ Part B: Item 12q</li> </ul>
29	The Proponent shall develop and implement adequate monitoring and maintenance procedures to ensure that the culverts and other conduits that may be prone to blockage do not significantly hinder or alter the natural flow of water from areas associated with the proposed mine. In addition, the Proponent shall monitor, document and report the withdrawal rates for water removed and utilized for all domestic and industrial purposes.	<ul style="list-style-type: none"> <li>▪ Part D: Item 1a and 24</li> <li>▪ Part E: Item 15</li> </ul>
30	The Proponent shall update its Aquatic Effects Monitoring Plan (AEMP) to include, at a minimum: <ul style="list-style-type: none"> <li>a. Provide details for additional reference lakes to be included within its sampling and monitoring programs;</li> <li>b. Updates to include sedimentation within relevant monitoring programs; and</li> <li>c. Results from additional testing for mercury in fish tissue, and include test results in updated baseline data.</li> </ul>	<ul style="list-style-type: none"> <li>▪ Part B: Item 12a</li> <li>▪ Part B: Item 13</li> <li>▪ Part I: Item 3</li> </ul>
31	The Proponent shall maintain an appropriate setback distance between project quarries and fish-bearing or permanent water bodies as required to prevent acid rock drainage or metal leaching into such water bodies.	<ul style="list-style-type: none"> <li>▪ Part B: Item 12q</li> </ul>
32	Prior to the commencement of construction, the Proponent shall submit to the NIRB, a Site Drainage and Silt Control Plan.	<ul style="list-style-type: none"> <li>▪ Part B: Item 12q</li> </ul>
33	The Proponent shall meet or exceed the guidelines set by Fisheries and Oceans Canada for blasting thresholds and implement practical and effective measures to ensure that residue and by-products of blasting do not negatively affect fish and fish habitat.	<ul style="list-style-type: none"> <li>▪ Part B: Item 12d and 12q</li> </ul>
34	Unless otherwise approved by regulatory authorities, the Proponent shall ensure that all Project infrastructure in watercourses is designed and constructed in such a manner that it does not obstruct unduly prevent or limit the natural movement of water in fish bearing streams and rivers.	<ul style="list-style-type: none"> <li>▪ Part B: Item 12q</li> </ul>



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41	Prior to the commencement of operations, the Proponent shall develop a progressive re-vegetation program for disturbed areas that are no longer required for operations, such program to incorporate measures for the use of test plots, reseeded and replanting of native plants as necessary. It is further recommended that this program be directly associated with the management plans for erosion control established for the Project and incorporate lessons learned at Meadowbank.	<ul style="list-style-type: none"> <li>▪ Part B: Item 12l</li> <li>▪ Part J: Item 8</li> </ul>
42	The Proponent shall include re-vegetation strategies in its Closure and Reclamation Plan that support progressive reclamation and that promote natural revegetation and recovery of disturbed areas compatible with the surrounding natural environment and incorporate lessons learned at Meadowbank.	<ul style="list-style-type: none"> <li>▪ Part B: Item 12l</li> <li>▪ Part J: Item 8</li> </ul>
67	The Proponent shall submit an updated Oil Pollution Prevention Plan including measures to avoid adverse effects to species at risk and migratory birds from spills, as well as details regarding monitoring of effects of a spill on species at risk and migratory birds.	<ul style="list-style-type: none"> <li>▪ Part B: Item 12p</li> </ul>
77	The Proponent shall ensure that it maintains the necessary equipment and trained personnel to respond to all sizes of potential spills associated with the Project in a self-sufficient manner.	<ul style="list-style-type: none"> <li>▪ Part B: Item 12p</li> </ul>
78	<p>Prior to the shipping of Project supplies, the Proponent shall conduct fuel spill dispersion modeling that will, at a minimum, consider:</p> <ol style="list-style-type: none"> <li>a. Modeling of oil spills in the following areas: <ol style="list-style-type: none"> <li>i. Pinch points, including: Hudson Strait, Melvin Bay area including Itivia Harbour and Panorama Island;</li> <li>ii. Shallow water and shorelines; and,</li> <li>iii. Areas that have been identified as having high flows and/or high concentrations of marine mammals, marine fish or seabirds;</li> </ol> </li> <li>b. Open water and ice-covered conditions;</li> <li>c. Spill volumes up to and including loss of a full tanker cargo; and,</li> <li>d. Differences in the quantity and properties of each type of bulk fuel transported by vessels when they are at, or in transit to, the port of Rankin Inlet.</li> </ol>	<ul style="list-style-type: none"> <li>▪ Part B: Item 12p</li> </ul>



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117	Prior to construction Phase 2 of the all-weather access road and the Rankin Inlet bypass road, the Proponent shall consult applicable laws in Canada and Nunavut as well as meet with all regulatory agencies and the public as it finalizes its road operations plans.	▪ Part B: Item 12o
120	The Proponent shall contract only Transport Canada certified shippers to carry cargo for the Project, and will ensure shippers are aware of the requirements of the Shipping Management Plan, the Risk Management and Emergency Response Plan and the Oil Pollution Emergency Plan (OPEP).	▪ Part B: Item 12n
121	The Proponent shall monitor the ingress/egress of Project related ships at Rankin Inlet and report any accidents or spills immediately to the regulatory agencies as required by law and to NIRB's Monitoring Officer.	▪ Part B: Item 12n
122	The Proponent shall ensure that best practices are used at all times during ship to shore and other marine-based fuel transfer events, including implementing measures specifically designed to prevent leaks and spills resulting from ice forming on the hoses during fuel transfers.	▪ Part B: Item 12n
124	Prior to construction, the Proponent shall update its Spill Contingency Plan specific to a major spill event occurring on the bypass road and within proximity to (and including potential spills into) Nipissar Lake.	▪ Part B: Item 12n

