Crown-Indigenous Relations and Northern Affairs Canada / Agnico Eagle Mines Limited Meeting Minutes
Meliadine Gold Mine Project's "Saline Effluent Discharge to Marine Environment" Project Proposal

December 4th, 2020 – 10:00 am to 1:00 pm EST
Conference call

Agnico Eagle Mines Limited (Agnico Eagle) attended a teleconference with the Crown-Indigenous Relations and Northern Affairs Canada (CIRNAC) with its subject matter experts.

Attendees:

Name	Organization
Elena Petre	CIRNAC
Amal Roy	CIRNAC
David Zhong	CIRNAC
Godwin Okonkwo	CIRNAC
Felexce Ngwa	CIRNAC
Tony Brown	ARCADIS
Gerd Wiatzka	ARCADIS
Michel Groleau (MG)	Agnico Eagle
Colleen Prather (CP)	Agnico Eagle
Aurelian Hospital (AH)	Tetra Tech
John Faithful (JF)	Golder
Lasha Young (LY)	Golder

This meeting was organized to discuss CIRNAC's technical review comments submission, dated November 12, 2020 and the Agnico Eagle's subsequent technical comment responses, dated November 20, 2020, with the view to find resolution for outstanding technical issues prior to the technical meeting, as recommended by NIRB in its letter issued to Parties on November 17, 2020.

CIRNAC-TRC-01: Clarification of Underground Mine Groundwater Inflows

- Additional conversation occurred around the volumes of water presented in Table CIRNAC-TRC-01a. CIRNAC noted that the predicted groundwater volumes were consistent with what was predicted originally in the 2014 FEIS and requested clarification in regards to why Agnico Eagle was requesting approval for higher discharge volumes to Melvin Bay when groundwater flows appear to be similar to what was projected.
- Agnico Eagle responded that the FEIS numbers were intended to be conservative. The system is more complex, so a direct comparison between the inflows in the 2020 FEIS addendum and the 2014 FEIS is not applicable for the following reasons:
    - Mine sequencing between the 2014 FEIS and the 2020 FEIS addendum is different - there is more groundwater to manage sooner than expected in the mine life. This is the key driver.
    - Due to higher groundwater volume to manage sooner, groundwater management in general has been more challenging than expected.
    - Updated water balance modelling has reduced the conservatism (i.e., 3x cf. 10x); however, despite inflow predictions remaining similar, there remains the risk that inflows could go beyond what is currently predicted (i.e., due to less conservatism).

Status of CIRNAC-TRC-01:
CIRNAC considers that TRC - 01 be classified as resolved with the commitment that Agnico Eagle updates the Groundwater Management Plan to include the additional information Agnico Eagle provided to CIRNAC during this meeting.

CIRNAC-TRC-02: Surface Contact Water Discharge via Waterline to Melvin Bay

- Additional discussion occurred around the projected proportion of the Waterline discharge that would comprise site surface contact water.
- The hydrodynamic modelling that assessed the discharge to Melvin Bay included a sensitivity analysis for a range of varying salinity values (or TDS) (as low as 14,900 to 39,600 mg/L at a discharge rate of 20,000m^3/day). Under this range of salinity, it resulted in a maximum salinity change from background of 0.3%.
- A third model scenario of very low level of TDS (i.e., 2,200 mg/L), not previously included in the modelling report submitted with the CIRNAC-TRC-02 responses, resulted in a maximum salinity change of 0.6%. Even at this low level of TDS, the maximum salinity change at the edge of mixing zone remained below 1%.
- Agnico Eagle provided a technical memo including the sensitivity analysis third scenario on January 7, 2021.
- Based on the information Agnico Eagle provided to CIRNAC-IR-4 (paragraph 3) and the Nunavut Water Board's letter of September 9, 2020 (paragraphs 8 and 9), regarding Design Report for the Saline Effluent Treatment Plant Upgrade: Type A Water Licence No: 2AM-MEL-1631, Meliadine Gold Project, Agnico Eagle Mines Limited, CIRNAC proposes the following recommendation in response to the CIRNAC-TRC- 2d and 2e:
    - CIRNAC recommends that Agnico Eagle's Meliadine Gold Mine project activity of mixing and treating various contact water sources at site, including underground and surface contact water before being discharged into Melvin Bay, be further described into an updated Groundwater Management Plan in accordance with the Term and Condition 25 of the Project Certificate 006, Amendment 001, "The Proponent shall submit a detailed Groundwater Management Plan to the NIRB which includes 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. The plan must identify uncertainties pertaining to predictions for groundwater quality and quantity and inform adaptive management strategies for the site. CIRNAC should be consulted with respect to the contents of the Plan and any required mitigation measures. "

Status of CIRNAC-TRC-02:

CIRNAC considers TRC - 02 be classified as resolved, as Agnico Eagle commits to updating the Groundwater Management Plan to provide further details on the Meliadine Gold Mine project activity of mixing and treating various contact water sources at site 30 days after approval of the issuance of the amended Project Certificate 006, Amendment 001.

CIRNAC-TRC-03: SETP Increased Treatment Capacity and Relevant Contingency Plan

- Clarifying discussion on the SETP occurred including the process for approval of the SETP that would be required if the "Saline Effluent Discharge to Marine Environment" Project Proposal was approved.
- CIRNAC pointed out some inconsistencies in the conceptual flow diagrams between SETP Design Report (May 2020), Water Management Plan (version 10) and the Agnico Eagle responses provided to CIRNAC-IR-1 and CIRNAC-IR-04.
- Agnico Eagle acknowledged the inconsistencies and acknowledged that conceptual flow diagrams between various documents need to be aligned and that this was being worked on.
- CIRNAC asked for additional clarification on SETP-generated sludge management.
- Agnico Eagle provided clarification but also acknowledged this activity is not part of waterline environmental impact assessment as it is under the jurisdiction of the Nunavut Water Board.
- Agnico Eagle noted that all SETP design documents will be available for review and comment as part of current Water Licence conditions, but would not be available until after the waterline project was approved.

- CIRNAC asked if the SETP design would trigger additional regulatory processes.
- Agnico Eagle noted that SETP design will go to the Nunavut Water Board for approval and there is a process in place for this review. Agnico Eagle also noted that conformance was met on the waterline environmental impact assessment and therefore the SETP is not subject to an environmental impact assessment.
- CIRNAC asked for clarification on water storage capacity at site. Agnico Eagle has assessed and conducted sensitivity analyses for storage and management of saline groundwater prior to the waterline be permitted and operational (table is posted below).

Projected saline water storage requirements vs. saline water storage available through time

Year	Lower-bound Base Case Saline Storage Requirement[1] (m^3)	Upper-Bound Saline Storage Requirement[2] (m^3)	Saline Pond / Open Pit Storage Capacity (m^3)			
			SP1	SP4[3,4]	Tiri2	Total[5]
2021	355,026	494,769	32,000	*272,122*	1,152,852	1,184,852
2022	490,044	792,423	32,000	*272,122*	1,152,852	1,184,852
2023	589,676	975,080	32,000	*272,122*	1,152,852	1,184,852
2024	287,033	836,437	32,000	*272,122*	1,152,852	1,184,852
2025	148,590	673,616	32,000		1,152,852	1,184,852
2026	154,590	535,794	32,000		1,152,852	1,184,852
2027	145,590	392,793	32,000		1,152,852	1,184,852

Notes:

1. Saline water storage requirement for given year applying Base Case predictive groundwater inflow model
2. Saline water storage requirement for given year applying 3x k-value bulk bedrock sensitivity analysis predictive groundwater inflow model
3. The capacity of SP4 has been updated based on the as-built capacity (previous design value presented in the 2020 Water Management Plan (Version 10) was 233,122 m^3)
4. *Italicized, gray* values are contingency storage only
5. Excludes contingency storage
6. Storage requirements assume discharge through the proposed waterline begins July 1st 2023

Status of CIRNAC-TRC-3a and 3b:

Agnico Eagle stated that it plans to expand the treatment capacity of the SETP to a total of up to 20,000 m^3/day to be aligned with the proposed alternative discharge scenario of 20,000 m^3/day. If less flow is required to be treated, the approach would consist of operating the treatment plant by batch or at lower flow during the discharge season.

In response to CIRNAC's request for additional clarification on SETP-generated sludge management, Agnico Eagle stated that it is investigating multiple options, including discharge into CP1, waste rock storage pile, tailings storage facility and mine underground pits. Agnico Eagle will submit an updated SETP Design Report (20,000 m^3/day) to NWB which will be available for review and comment as part of Water Licence requirements after the NIRB's approval of the waterline project proposal.

CIRNAC considers that TRC -03 be resolved provided that Agnico Eagle commits to updating the Water Management Plan to include the multiple options for the management of the increased volume of sludge.

CIRNAC-TRC-04: Process Modifications to Avoid Non-Compliance Issues

- Additional clarifying questions were asked around the turnaround time on analytical results, as well as the frequency of testing. CIRNAC would like to understand the volume of non-compliant

water that could potentially be discharged to the ocean from the time a sample is collected and a result is reported by the laboratory and a response is initiated/actioned.
- Agnico Eagle provided detailed information on January 7, 2021, on management steps, monitoring overview and the potential volume of non-compliant discharge water resulting from process upset.

Status of CIRNAC-TRC-04:
CIRNAC considers TRC - 04 is resolved.

CIRNAC-TRC-05: Water Quality and Load Balance Conceptual Model

- CIRNAC stated the tables in the response helped them understand the changes to the site water balance if the Waterline was approved. Additional clarifying questions around on-site storage capacity and clarification as to why the tables list a mine life through to 2027.
- Discussion was held on the mine life proposed in the 2014 FEIS.
- Agnico Eagle acknowledged that without approval of the Waterline, Agnico Eagle would run out of storage capacity in 2024 and would have limited options: either emergency storage or cessation of mining.
- CIRNAC asked follow-up questions around whether the freshwater consumption was included in the numbers.
- Agnico Eagle noted that the freshwater consumption volumes do not make a difference to the outcome.

Status of CIRNAC-TRC 05:
The additional water balance information that Agnico Eagle provided is helpful and CIRNAC considers this TRC is resolved.

CIRNAC-TRC-06: Waterline Failure Modes and Potential Effects

- CIRNAC stated that the Failure Modes and Potential Effects was well done and has the proper level of detail for and Environmental Assessment.
- The outstanding item to be discussed is related to the potential impacts of saline water to ice-rich soils which is cover by CIRNAC-TRC-07.

Status of CIRNAC-TRC-06:
Upon reviewing the Failure Modes and Effects Analysis (FMEA) for the Meliadine Mine Waterline, CIRNAC considers TRC - 06 is resolved. Outstanding technical concerns are addressed under TRC - 07.

CIRNAC-TRC-07: Potential Impacts of Saline Water to Ice-Rich Soils

- CIRNAC does not agree with the conclusion that a worst case scenario spill to the tundra conclusions would result in a low environmental effect.
- Agnico Eagle discussed how an FMEA is not the same as an environmental impact assessment (the project is the transfer of water from the mine to Melvin Bay, and not the spill or a leak to the environment from a damaged pipe – this analysis and consequence is accounted for in the spill management and contingency aspect of the application) and that the conclusion of a “low” environmental effect is a combination of probability and consequence (see insert).
- Agnico Eagle discussed the scale of a spill versus the scale of the Project, in relation to the conclusion reached. Agnico Eagle also noted that a spill in freshwater would have higher consequence to the impact on fish. While a spill on tundra can be managed such that wildlife interactions could be limited. Agnico Eagle also noted that the conclusions to an assessment of spill were that spills on the tundra could have irreversible consequences to the particular location, dependent on the location of the spill.
- It was acknowledged that Agnico Eagle would not change the approach to the FMEA, but would like to hear from CIRNAC on potential mitigations.

- It is noted that the Project is construction and operation of a waterline and an assessment needs to focus on the components of a Project.
- Spills or accidents can happen and thus it is important to have effective mitigations overall for the Project but also it is necessary to have a comprehensive spill and emergency response plan to respond in the event of a spill.

Probability	Combined Consequence						
	None	Negligible	Very Low	Low	Moderate	High	Very High
None	None	None	None	None	None	None	None
Very Low	None	Negligible	Negligible	Negligible	Negligible	Very Low	Low
Low	None	Negligible	Negligible	Negligible	Very Low	Low	Moderate
Moderate	None	Negligible	Negligible	Very Low	Low	Moderate	High
High	None	Negligible	Very Low	Low	Moderate	High	Very High
Very High	None	Very Low	Low	Moderate	High	Very High	Extreme
Given	None	Very Low	Low	Moderate	High	Very High	Extreme

- CIRNAC is going to review the assessment of *release of saline water to the terrestrial environment as part of the FMEA* and provide to Agnico Eagle potential mitigations they would like to see in place.

Status of CIRNAC-TRC-07:
CIRNAC recommends that Agnico Eagle presents more information on potential impacts of an accidental spill on terrestrial environment (per TRC - 06) and its associated mitigation measures before it decides if this TRC is resolved. Agnico Eagle commits to providing a technical memorandum on the rationale for a low environmental impact classification for a worst-case environmental impact scenario.

CIRNAC-TRC-08: Monitoring and Prevention of Waterline Spills Using Fiber Optic Leak Detection System

- CIRNAC requested more detail regarding the design and function of the fiber optic leak detection system and for Agnico Eagle to provide specific examples of experience from its northern operation where this system has been implemented.
- Agnico Eagle will produce some follow up information, and when submitted, Agnico Eagle believes this issue to be resolved.
- Agnico Eagle mentioned that the information about this system is tied up with Spill Contingency Plan and Agnico Eagle has trained personnel (operators) to inspect the waterline system and detect problems that will be fixed.
- To get assurance about the fiber optic leak detection system, Agnico Eagle has committed to providing a specific example from Agnico Eagle's experience gained from its northern operations.

Status of CIRNAC-TRC-08:
Agnico Eagle indicated that the fiber optic leak detection system will play a critical role in preventing and mitigating potential waterline releases. In response to CIRNAC previous request, Agnico Eagle has provided helpful information on how this fiber optic leak detection system operates. CIRNAC further requests Agnico Eagle to provide follow up information on this system with a specific example where it is in operation. Therefore, the resolution of this TRC is to be deferred until the requested information is provided and assessed.

CIRNAC-TRC-09: Annual Waterline Shutdown and Restart Plan

- CIRNAC proposed to capture the operation and maintenance component of the Waterline into a stand-alone management plan, as the Waterline is a substantial piece of mine infrastructure and

critical to the mine's water management strategy/plan and other projects' ecosystemic and socio-economic aspects

- Agnico Eagle responded that they have looked for efficiency with respect to the number of management plans for the mine and to 'centralize' management details into fewer plans to make the inspector's job and the operation of the mine easier. In this regard, Agnico Eagle suggested, as a possibility it may be appropriate to incorporate the operations and maintenance of the Waterline into the Water Management Plan. CIRNAC recommended that all details regarding the management of the waterline be integrated into a stand-alone Waterline Management plan or as an appendix to a pre-existing management plan.
- Agnico Eagle agreed that it would be best to have all waterline related information in one location for ease of use reference and inspection.

Status of CIRNAC-TRC-09:

CIRNAC considers this TRC to be resolved with the commitment that Agnico Eagle integrates the operation and maintenance component of the Waterline system into an existing management plan. This plan will be submitted 60 days prior to the commissioning of the Waterline.

CIRNAC-TRC-10: Closure and Reclamation Plan Related to Burial of the Waterline

- Cost related to the reclamation to the waterline will be added to the Security Agreement currently under review by KIA and CIRNAC as part of the Meliadine Gold Mine Project Water Licence Amendment process.

Status of CIRNAC-TRC-10:

Agnico Eagle provided a summary of how the burial of the twinned waterlines will affect the reclamation and closure strategy for the Meliadine Mine Site. Agnico Eagle committed to incorporating the details about the potential effects of the burial of waterlines on reclamation and closure strategy into the next iteration of the Interim Closure and Reclamation Plan. CIRNAC considers TRC -10 is resolved for the purposes of environmental impact assessment.