

Environmental Protection Operations Directorate
Prairie & Northern Region
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ECCC File: 6100 000 008/019
NWB File: 2AM-MEA1526



July 29, 2019

via email at: licensing@nwb-oen.ca

Richard Dwyer
Manager of Licensing
Nunavut Water Board
P.O. Box 119
Gjoa Haven, NU X0B 1J0

Dear Richard Dwyer:

RE: 2AM-MEA1526 – Agnico Eagle Mines Limited – Meadowbank and Whale Tail Gold Project – 2018 Annual Report

Environment and Climate Change Canada (ECCC) has reviewed the information submitted to the Nunavut Water Board (NWB) regarding the above-mentioned annual report and is submitting comments via email. ECCC's specialist advice is provided based on our mandate, in the context of the *Canadian Environmental Protection Act*, and the pollution prevention provisions of the *Fisheries Act*.

The following comments are provided:

1. Monitoring at Lake NP-2

Reference(s)

- Agnico Eagle Mines Limited. 2019. Meadowbank Gold Project – 2018 Annual Report, Section 8.5.3.1.7.

Comment

The Proponent has been monitoring ST-16 and Lakes NP-2, NP-1 and Dogleg since migration of water from the North Cell was detected in 2013. Results are showing reductions in the concentrations of the parameters of concern, and it appears mitigation measures are effective.

As noted in the Annual Report,

“The KIA [Kivalliq Inuit Association] requested that Agnico [the Proponent] continue monitoring until there is a 5 year period of non-detect cyanide results. To date (5 previous year), the monitoring indicated that yearly average for CN levels does not exceed the CCME [Canadian Council of Ministers of the Environment] guideline, the MDMER [Metal and Diamond Mining Effluent Regulations] or Water License limit for effluent discharge



into the environment for NP2, NP1 and downstream lakes, Dogleg and Second Portage. Thus, based on the analysis of the previous result, Agnico Eagle will suspend the current program in 2019” (Page 160).

ECCC notes that there have not been 5 years of non-detect Cyanide (CN) results; the annual average for total CN at ST-16 in 2017 was 0.0743 mg/L, which increased from 2015 and 2016. Winter concentrations in Lake NP-2 in 2017 were 0.008 mg/L total CN. While these levels are below guidelines and discharge criteria, they indicate that there is still measurable cyanide in Lake NP-2. Suspending the current program of monitoring is reasonable for the downstream lakes; however, periodic checks of water quality in Lake NP-2 would provide assurance that mitigation is effective.

ECCC Recommendation(s)

ECCC recommends that the Proponent continue to monitor Lake NP-2 on a yearly basis for the same suite of parameters as have been measured since 2014.

2. Tailings Deposition

Reference(s)

- Agnico Eagle Mines Limited. 2019. Meadowbank Gold Project – 2018 Annual Report, Appendix 8: Meadowbank 2018 Water Management Report and Plan, Appendix C: Technical Note - Meadowbank Water Quality Forecasting Update for the 2018 Water Management Plan Section 3.0.
- Agnico Eagle Mines Limited. 2019. Meadowbank Gold Project - 2018 Annual Report, Appendix 17: Meadowbank Gold Mine Waste Rock and Tailings Management Report & Plan, Section 6.3.

Comment

Section 3.1 of the Water Quality Forecasting Update states that, *“deposition of Whale Tail pit tailings is forecast to start in July 2019 until December 2021. The tailings will be deposited in the North and South Cells TSF”* (pdf Page 133).

Section 6.3 of the Mine Waste Rock and Tailings Management Report & Plan states:

“An updated version of the tailings deposition from 2019 until the end of mine life is presented in Appendix B. This updated tailings deposition plan considers modification to the LOM and tailings deposition parameters. The water management strategy related to this deposition plan is presented in the water management plan. This plan does not consider the in-pit amendment process, which would require an update to the tailings deposition strategy and plan” (Page 31).

At the time that the 2018 Annual Report was prepared, approval to deposit tailings into the mined-out Goose and Portage pits had not been received. The addition of tailings to the pits will represent a significant change to the water balance and water quality modeling predictions, and may have a bearing on the treatment strategy that will be required to reduce the identified parameters of concern (aluminum, arsenic, cadmium, chromium, copper, iron, mercury, nickel, lead, selenium, fluoride, and total ammonia may require treatment to reach CCME criteria). The Proponent has identified the need for treatment, and has outlined potential candidate treatment approaches, noting in the Annual Report (Page 59) that

treatment could be undertaken at the South Cell Reclaim Pond prior to its transfer to Portage Pit.

Once the tailings management strategy changes to in-pit disposal, it will be necessary to re-visit the modeling and water balance/water quality predictions. It is not clear if there would be the opportunity to treat contaminants in waste streams prior to discharge into the pits, which would achieve the most efficient reductions, or if a post-flooding approach would be taken.

ECCC acknowledges that the 2018 Annual Report information is based on conditions at the time of preparation and submission of the report; however, the anticipated change in tailings disposal and associated effects on water management raises questions on the plans for treatment.

ECCC Recommendation(s)

ECCC recommends that the Proponent clarify the approach to updating plans and identifying treatment options.

3. Errata

Reference(s)

- Agnico Eagle Mines Limited. 2019. Meadowbank Gold Project – 2018 Annual Report, Figure 15.
- Agnico Eagle Mines Limited. 2019. Meadowbank Gold Project – 2018 Annual Report, Appendix 8: Meadowbank 2018 Water Management Report and Plan, Section ## and Appendix C: Technical Note - Meadowbank Water Quality Forecasting Update for the 2018 Water Management Plan Section 3.0.

Comment

ECCC notes the following:

- Figure 15 (Page 86) in the Meadowbank Gold Project – 2018 Annual Report is very dark and provides no legible landmarks for orientation.
- Page 10 of the 2018 Water Management Report and Plan states that, “*the long-term mean annual air temperature for Meadowbank is estimated to be approximately 11.1°C.*” ECCC notes that the long-term mean annual air temperature for Baker Lake, which is within 0.6 °C of the mine site, is 11.3°C
(http://climate.weather.gc.ca/climate_normals/results_1981_2010_e.html?searchType=stnName&txtStationName=Baker+Lake&searchMethod=contains&txtCentralLatMin=0&txtCentralLatSec=0&txtCentralLongMin=0&txtCentralLongSec=0&stnID=1709&dispBack=1).
- ECCC notes that the MDMER numbers for CN and As in Table 2-2 (Page 8) of the Water Management Report and Plan, Appendix C: Technical Note - Meadowbank Water Quality Forecasting Update for the 2018 Water Management Plan, will be changing and the criteria shown for Ni of 0.025 mg/L should be corrected to 0.5 mg/L.

Recommendation(s)

ECCC recommends that the Proponent correct the items mentioned above.

4. Rock Garden

Reference(s)

- Agnico Eagle Mines Limited. 2019. Meadowbank Gold Project – 2018 Annual Report, Appendix 17: Meadowbank Gold Mine Waste Rock and Tailings Management Report & Plan, Table 5-1.

Comment

Table 5.1 show that, 100% of waste rock type in the “Rock Garden” is 100% potentially acid generating (PAG) (“Rock Garden Waste Rock (about 100% of PAG) 0.3 Mt” [Page 24]).

Details regarding the “Rock Garden,” including the location, are unclear. If the “Rock Garden” is on the surface and contains 100% PAG rocks, there may be a potential for acid rock drainage (ARD).

ECCC Recommendation(s)

ECCC recommends that the Proponent clarify what is meant by “Rock Garden” including where it is located, and if located on the surface, provide mitigation to manage any potential ARD.

5. Control Strategies for Acid Rock Drainage – Cover Design

Reference(s)

- Agnico Eagle Mines Limited. 2019. Meadowbank Gold Project - 2018 Annual Report, Appendix 17: Meadowbank Gold Mine Waste Rock and Tailings Management Report & Plan, Section 7.

Comment

The Proponent stated that the ARD control strategies retained at the Meadowbank Gold Mine are freeze control and climate control strategies. These strategies involve placing a sufficiently thick cover of non-potential acid generating (NAG) waste rock over the PAG material to provide an insulation protection so that the PAG material stays frozen while the active layer is maintained within the NAG material.

ECCC agrees that the placing of NAG rock cover over PAG rock will provide an insulating protection. However, the Proponent did not indicate the thickness of cover or the depth of the active layer and states that:

“In areas where the active layer extends into the tailings material, the thawed layer should be limited to the upper 30 cm of the tailings mass and saturation of the tailings should remain above 85% to limit oxidation of the tailings” (Page 39).

ECCC is of the view that if the NAG cover is thicker than the depth of active layer, then this would reduce or eliminate the chance of the thawed layer intruding into the tailings mass. With the uncertainty of climate change, saturation of the top layers of the tailings mass should not be relied on as a mitigation option.

Recommendation(s)

ECCC recommends that the Proponent design the cover thickness such that it is thicker than the depth of active layer.

Please contact Emily Nichol at (867) 669-4732 or Emily.Nichol@Canada.ca should you require more information.

Sincerely,

[original signed by]

Emily Nichol
Environmental Assessment Coordinator

cc: Georgina Williston, Head, Environmental Assessment North (NT and NU)