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NUNAVUT WATER BOARD
NUNAVUT IMALIRIYIN KATIMAYINGI
OFFICE DES EAUX DU NUNAVUT

File No.: **2AM-MEL1631/TR/D1, D2**

February 3, 2020

Sara Savoie
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RE: NWB Technical Review of the Agnico Eagle Mines Limited Waste Rock Storage Facility 1 Design Report and Drawings for the Meliadine Project; Water Licence No. 2AM-MEL1631

Dear Ms. Savoie:

The Nunavut Water Board (NWB or Board) has completed a technical review of the construction design report entitled "*Waste Rock Storage Facility 1 (WRSF1) Design Report and Drawings"*dated November 2019 (Report) provided to the Board by Agnico Eagle Mines Limited (Agnico Eagle or AEM) on November 27, 2019 to fulfill the requirements of Part D, Item 1 of the Water Licence No. 2AM-MEL1631 (Licence).

The Report summarizes the site conditions, design basis and key parameters adopted for design, and for-construction design drawings for the Waste Rock Storage Facility #1, as specified under Part D Item 1 of the Licence.

Upon receipt, the submission was distributed for a two (2) week public review with a deadline set at December 11, 2019. On December 11, 2019 and December 13, 2019, the comments were received from Kivalliq Inuit Association (KivIA) and Crown-Indigenous Relations and Northern Affairs (CIRNA or formerly known as CIRNAC), respectively. In its submission, KivIA indicated that they have no issues with the information reviewed, but recommended to move towards an Adaptive Management approach for the WRSF1. Comments received from CIRNA are listed in the table below.

On December 16, 2019, Agnico Eagle was asked to address the comments provided by the parties, along with the comments provided by the NWB.

All correspondence relevant to this submission is available from the NWB's ftp site using the following link:

ftp://ftp.nwb-oen.ca/registry/2%20MINING%20MILLING/2A/2AM%20-%20Mining/2AM-MEL1631%20Agnico/3%20TECH/D%20CONSTRUCTION/Waste%20Rock%20Storage%20Facility/

On January 3, 2020, AEM submitted their responses to the comments confirming the following:

Comment #	Proponents' comments /AEM's responses
NWB-1	**Accommodation of waste rock balance resulting from the WRSF1 footprint reduction from 9.4Mm^3 to 5.56 Mm^3**
	Optimization process [of WRSF2 and WRSF3 configurations] will account for the balance of waste rock material from the diminished capacity of WRSF1.
NWB-2	**Overburden and waste rock side slopes**
	Table 4 provides the overall multiple-bench side slopes for the overburden and waste rock within the WRSF (crest of top bench to toe of bottom bench). Section 5.2 however, provides the assumed side slopes for the different material types for each individual "bench" or "lift" indicated on the design drawings as "angle of repose". The angle of repose values quoted in Section 5.2 reflect the angle of repose or friction angle values used in the stability analysis.
NWB-3	**Thickness vs. lift height of the 77.0m and 82.0m overburden benches**
	Overburden benches 77.0 m and 82.0 will each be placed in two lifts of 2.5 m height, placed one on top of each other (no set-back).
NWB-4	**Construction design and drawings for Channel 6**
	Currently run-off from WRSF1 is directed to the CP5 catchment area via Channel5 only, with no design or construction having been completed for Channel6. […] Detailed design reports and drawings for any additional water management structures, including the potential Channel6, will be submitted for approval 30-days prior to construction activities as per regulatory requirements.
CIRNA-1	**Waste material freeze back not considered in slope stability analysis**
	The stability analysis conducted by Tetra Tech shows that the calculated deterministic Factor of Safety (FoS) for all loading scenarios considered exceed industry standards given the assumption of unfrozen overburden and waste rock materials. This is considered a conservative approach, as freeze-back within these materials will increase the strength parameters, particularly cohesion, and increase the stability of the facility. As the waste rock facilities are categorized by AEM as "high risk" infrastructure, due to the proximity of operational facilities during the life of mine and the permanent nature of the structures, this more conservative design is believed appropriate.
CIRNA-2	**Frequency of thermal model verification and refinement**

	AEM will assume an adaptive management approach to thermal conditions and update the model if and when required by observed behavior and measurements. […] Verification of the thermal model, by monitoring and analysis of the ground temperatures, will occur monthly during the first year after installation of a thermistor, then on a quarterly basis. It is expected that any considerable deviation of the expected temperatures within the waste materials and underlying ground, particularly in the layer of ice-rich silt within the foundation materials, will trigger an evaluation of the actual thermal performance and re-calibration of the model.
CIRNA-3	**QA/QC template indicating the design parameters to be verified**
	As discussed in Section 5.3, the quality control plan will be developed and included as part of the Operation, Maintenance and Surveillance (OMS) manual for the WRSF, and will include regular monitoring of ground/waste temperatures and ARD/ML testing. Other parameters that are expected to be assessed as part of the QA/QC plan include pore water salinity of the waste materials, in addition to assessments of specific design criteria such as adequate snow removal prior to placement, bench set-back distances and overall slope angles. The OMS manual is anticipated to be completed in early 2020, after a risk assessment for the facility has been conducted.
KivIA-1	**No concerns, Adaptive Management Plan for the WRSF1 recommended**
	As discussed above, AEM is currently developing the OMS for the waste rock facilities, with this manual expected to be completed in early 2020. The OMS is a risk-based management document based on and will incorporate specific thresholds and associated mitigations. Adaptative management strategies will be included in the OMS.

The above responses were provided to the parties for confirmation of satisfaction. In correspondence dated January 29, 2020, CIRNA indicated that they reviewed AEM's responses and found them adequate.

By copy of this letter the Board acknowledges that the Report addresses the requirements of Part D, Item 2 of Licence 2AM-MEL1631, and has approved the Report through the Board Motion No. 2019-A1-013, dated January 31, 2020, as required by Part D, Item 1 of the Licence. The Licensee is advised that the Board's "approval" of this document is a verification that the proposed activities are consistent with the existing terms and conditions of the Licence, and more specifically with Part D, Item 2, and may proceed in accordance with the Report and drawings provided. It should be noted that the Board's "approval" is NOT intended or offered as any representation regarding the suitability of the plans nor third party verification of the design, construction, planning or engineering discussed in the documents.

Should you have any questions, please feel free to contact the undersigned at (867) 360-6338 (extension 29) or sergey.kuflevskiy@nwb-oen.ca, at your earliest convenience.

Sincerely,

Sergey Kuflevskiy
Nunavut Water Board,
Technical Advisor

Cc: Distribution List – Meliadine