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NUNAVUT WATER BOARD
NUNAVUT IMALIRIYIN KATIMAYINGI
OFFICE DES EAUX DU NUNAVUT

File Nos: **2AM-MEL1631**
2BB-MEL1424

August 13, 2021

Sara Savoie
Compliance Counselor
Agnico Eagle Mines Limited
Nunavut Office 11600 rue Louis-Bisson, Suite 540
Mirabel, Quebec, Canada J7N 1G9

Email: sara.savoie@agnicoeagle.com

RE: NWB Technical Review of the 2020 Annual Report for the Meliadine Project; Water Licences Nos: 2AM-MEL1631 and 2BB-MEL1424

Dear Ms. Savoie:

The Nunavut Water Board (NWB or Board) has completed its technical review of the 2020 Annual Report submission provided to the Board by Agnico Eagle Mines Limited (Agnico Eagle or Licensee) to fulfill the requirements of Part B of Water Licences Nos: 2AM-MEL1631 and 2BB-MEL1424. This submission was provided to the Board on March 31, 2021 and was subsequently distributed for public review and comments.

Copies of all documents received during public review can be accessed through the NWB's Public Registry and FTP site using the following link:

ftp://ftp.nwb-oen.ca/registry/2%20MINING%20MILLING/2A/2AM%20-%20Mining/2AM-MEL1631%20Agnico/3%20TECH/B%20GENERAL/2%20ANNUAL%20RPT/2020/

The submission included the following updated management plans associated with Water Licence 2AM-MEL1631:

- Mine Waste Management Plan – Version 7, March 2021
- Ore Storage Management Plan – Version 3, March 2021
- Explosives Management Plan – Version 7, March 2021
- Blast Monitoring Plan – Version 3, March 2021
- Ammonia Management Plan – Version 3, March 2021
- Sediment and Erosion Management Plan – Version 3, April 2021

On April 9, 2021, the NWB distributed the 2020 Annual Report and additional associated information for public review with a deadline for comments set at July 12, 2021. On or before the deadline, the comments were received from the Kivalliq Inuit Association (KivIA), Crown-Indigenous Relations and Northern Affairs (CIRNA) and the Environment and Climate Change Canada (ECCC). The table below summarises the issues and recommendations provided by the interveners and the NWB as part of the review process. Please note that the KivIA and ECCC provided a combined list of comments for both the NIRB and the NWB. Therefore, only the comments pertaining to the Water Licence requirements were included into the table below. For a full list of issues raised by the interveners, please refer to the NWB public registry at the link referenced above, as well as the documents attached to this correspondence.

No.	Concerns/ Recommendations	Response Deadline
	Kivalliq Inuit Association (KivIA)	
1.	*Dust Suppression - Dustfall monitoring*	September 10, 2021
	• Explain how dustfall monitoring is designed to test the effectiveness of best management practices in use on site. The description of experimental design should include information on location and timing of monitoring in relation to the application of mitigation measures, and information on what comparisons are made to assess effectiveness. • Clarify why dustfall values are consistently higher on the upwind side of the AWAR.	
2.	*Saline Water Treatment Plant (SWTP) Spill, February 19, 2020 (Spill Report #20-052)*	September 10, 2021
	• Discuss reasons for the crack that allowed saline water to seep under the floor at the SWTP, and provide an estimate how long it was present prior to being noticed; Also, see comment #1 from the NWB.	
3.	*Spills Caused by Forklifts Puncturing or Tipping the Containers Over*	September 10, 2021
	• Provide additional information on how the spotter requirement for the handling of containers has been updated to improve compliance and how this procedure will be enforced across all departments.	
4.	*Extraction of the fuel tank found in Meliadine Lake, August 18, 2020*	September 10, 2021
	• Provide a copy of the Golder report on water quality monitoring conducted during the fuel tank extraction in August 2020.	
5.	*Sewage Spill, September 11, 2020 (Spill Report #20-329)*	September 10, 2021
	• Clarify the distance to the nearest water body of the sewage spill.	
6.	*MEL-26 TSS Exceedances*	September 10, 2021
	• Elaborate on the standard operating procedure for inspection and pre-rinsing of trucks prior to filling with discharge;	

	• Explain how the existing procedures have been improved following the TSS exceedance to avoid sediment in truck tanks contributing to elevated discharge concentrations at MEL-26. Also, see comment #2 from the NWB.	
7.	*Field duplicates or blanks for all water sampling campaigns*	September 10, 2021
	• Clarify whether field duplicates and blanks are required in all water quality monitoring for the project, and if not, why this recommendation has not been implemented.	
8.	*Meliadine Main Camp Fuel - September 22, 2020*	September 10, 2021
	• Explain why the fuel supply system was operating in manual mode without supervision, and what safeguards have been implemented since the spill to ensure that automatic shutdowns can function if a similar situation occurs in future.	
9.	*Ammonium Nitrate Spill - October 3, 2020 (Spill Report #20-379)*	September 10, 2021
	• Indicated how the *Snow Management Plan* and Standard Operating Procedures safeguard against accidental puncturing of sea cans (and other containers) and explain how these protocols are enforced; • Comment on the fate of the contaminated snow in the snow storage area (Is this in the landfarm? Is there additional treatment once the snow melts?)	
10.	*Surface Diamond Drill Fire - November 17, 2020 (Spill Report #20-440)*	September 10, 2021
	• Discuss how it was confirmed that all contaminated substrates were removed following the fire, including what monitoring occurred to determine potential impacts to the lake water quality; • Explain what caused the fire and what steps will be implemented to reduce fire risk at pump shacks.	
12.	*Water Quality Management and Optimization Plan Tabular Results*	September 10, 2021
	• Discuss how the listed exceedances of 20% and 50% Relative Percent Difference (RPD) thresholds affect the interpretation of the water quality data; • Provide location information for all data listed in the tables. Note that the RPD between samples and duplicates are above the 20% and 50% thresholds for the following parameters: ▪ DOC 25.35% at MEL 13-01 July 29; ▪ TDS 45.16%, Cadmium 199.60%, Lead 199.60% no location given, July 19; ▪ Total ammonia 48.28%, no location given, August 23; ▪ TDS 62.07%, thallium 199.60%, no location given, September 5; ▪ Aluminum 42.14%, arsenic 21.49%, cadmium 174.36%, no location given, July 12; ▪ Turbidity 22.22%, no location given, August 9; and ▪ Aluminum 191.67%, no location given, October 4.	

14.	*2020 Aquatic Ecosystem Monitoring Program (AEMP) Report – Reduction in Survival and Growth (Section 4.3.2)*	September 10, 2021
	• Provide additional discussion on why the effluent was not deemed a potential cause of survival and growth issues observed during toxicity sampling	
15.	*2020 AEMP Report – Spatial and Temporal Trends (Section 5.3.6)*	September 10, 2021
	• Revise this section to include a list of all parameters with observed increases and provide discussion on these increases for consideration by reviewers.	
16.	*2020 AEMP Report – Increase in Total and Dissolved Arsenic at MEL-02 (Section 5.3.6)*	September 10, 2021
	• Revise this section to include a discussion of mechanism that may have led to marked increases in Arsenic.	
17.	*2020 AEMP Report – Total Phosphorus trends (Section 6.5)*	September 10, 2021
	• Describe how the difference in temporal trends in Total Phosphorus data was assessed.	
	Crown-Indigenous Relations and Northern Affairs (CIRNA)	
1.	*Higher than Expected TDS in CP1 (Follow-up on 2019 report comment)*	March 31, 2022
	• Provide information with the 2021 Annual Report on the nature and make-up of "rest of site" (as per the SNC upper bound model report) areas/facilities that contributed so significantly to the TDS loadings to CP1.	
2.	*Higher than Predicted Acid Rock Drainage (ARD) Potential of Filtered Tailings (Follow-up on 2019 report comment)*	March 31, 2022
	• Provide the report on the laboratory findings regarding the determination of Neutralizing Potential Ratio (NPR), whenever it is completed.	
3.	*Surface Disposition of Waste Rock*	September 10, 2021 and all future Annual Reports
	• Provide additional discussion/information in the Annual Report with respect to the distribution by location and quantity of waste rock used for construction and placed in the waste rock storage facilities; • Provide information confirming that waste rock used for construction was Non-PAG; • Provide summary tables of annual and cumulative waste rock volumes in the Annual Report that use the same formats as Tables 3.3 and 4.3 of the *Mine Waste Management Plan*; and • Provide plans and sections illustrating the status of the WRSFs as at the end of 2020.	
4.	*Tailings Storage Facility (TSF) Capacity*	September 10, 2021
	• Provide a discussion of 2020 placement that includes reference to how and where materials were placed along with "as built" plans or sections as at the end of 2020;	

	• Provide additional information in the Annual Report verifying placement was in accordance with the *Mine Waste Management Plan*; and • Provide plan(s) and section(s) illustrating the physical status of the TSF as at the end of 2020.	
5.	*Reporting on Milling Operations*	September 10, 2021 and all future Annual Reports
	• Add a section to future annual reports describing mill operations at the Meliadine site (e.g., days of milling, tons of ore processed, tailings generated, water used, and related activities on cyanide management and consumption and tailings detoxification, etc.); and • Provide information regarding 2020 milling operations and activities at the Meliadine Mine for review by interested parties.	
6.	*Tracking Acid Rock Drainage (ARD) Classified Waste Rock Volumes*	All future Annual Reports
	In all future Annual Reports, track volumes of waste rock classified as PAG and uncertain ARD from the underground mine and open pits.	
7.	*Geotechnical Concerns / Issues*	All future Annual Reports
	• Add a section to the Geotechnical Inspection Report that provides clear and concise information on the status of any permafrost degradation that may be occurring on site; and • Include reporting of piezometric and inclinometer measurements in the Annual Report.	
8.	*Cyanide Management and Use Handling*	All future Annual Reports
	Provide a discussion of cyanide management practices and use in all future Annual Reports complete with appropriate appendix details as needed with respect to cyanide source, transportation to site, on site handling and storage, and emergency procedures.	
9.	*Reporting on flow volumes of any watercourse diverted during construction activities*	September 10, 2021
	• Provide information with respect to "Schedule B, Item #1(e) of the Water Licence 2AM-MEL1631 that includes expected or projected consequences of the newly constructed access road to water balance and water quality of all freshwater bodies located south of Dike D-CP5 for 2020 Annual Report; and • Provide information with respect to "Schedule B, Item #1(h)" of the Water Licence 2AM-MEL1631 on whether or not, any water course(s) was diverted during the construction of the new access road downstream of Dike D-CP5 for 2020 Annual Report. If no watercourses were diverted during construction, this should be specified.	
10.	*Tracking Volume of Freshwater obtained from other permitted locations for Road Dust suppression activities*	September 10, 2021
	• Provide information with respect to "Schedule C, Item #1 (Amend)" of the Water Licence 2BB-MEL1424 for 2020 Annual Report that includes breakdown of the monthly and annual volumes of freshwater obtained	

	from other permitted freshwater bodies (locations) other than the Meliadine Lake; used for the purpose of road dust suppression activities.	
	Environment and Climate Change Canada (ECCC)	
1.	*Monitored vs. Predicted Concentrations at CP1*	September 10, 2021
	• Clarify the predicted concentrations for TDS, total ammonia, and total aluminum presented in Figures 3, 4, and 5; and, • Display all graphs on appropriate axis such that data is easily interpreted.	
2.	*Exceedances of Guidelines*	September 10, 2021
	• Clearly describe all action level exceedances and exceedances of guidelines in the annual report with supporting rationale for potential causes of exceedances, and whether additional actions are required.	
3.	*Low Action Level for Water Quality*	September 10, 2021
	• Provide acknowledgement and preliminary discussion for all exceedances of the *AEMP* action levels for water quality (i.e. Total Phosphorus, Total Copper, and Dissolved Zink).	
4.	*Identification of Guideline and Action Level Exceedances*	All future Annual Reports
	• Provide clear comparison to action levels and the *AEMP* guidelines to increase clarity and aid in analysis of data	
5.	*Non-PAG Classification Criteria*	September 10, 2021
	• Provide a discussion about the Reconsider non-PAG classification criteria reconsideration for samples with NPR<2, as expressed in the ECCC's comment: *"ECCC is of the view that Neutralization Potential Ratio (NPR) indicates the relative magnitude of the neutralization potential (NP) and acid potential (AP) expressed by the ratio of NP/AP (or NPR). The values of NP and AP are based on the acid base accounting (ABA) process, therefore, the rock unit that contains 0.1 wt. % of sulphur but not enough neutralization potential such that its NPR is equal to or less than 2, that unit or rock type should be classified as PAG. With this in mind, the statement by the proponent that "any samples with 0.1%, or less, sulphur would be non-PAG regardless of the NPR ratio" does not appear to align with that classification principle."*	
6.	*Acid Rock Drainage*	September 10, 2021
	• Explain the rationale for the following statement when the majority of the tailings have been classified as uncertain in the PAG and non-PAG classification scheme: *"if ARD could develop, permafrost will develop at least one hundred years before the onset of ARD due to the amount of carbonate in the tailings and arctic climate slowing reaction rates*".	

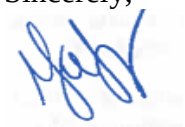
7.	*Arsenic Leaching*	September 10, 2021
	• Indicate how much Arsenic is likely to leach out of the filtered tailings facility given the high values of Arsenic content in the tailings; and • Demonstrate that the amount of Arsenic that leaches out will not cause adverse effect on the environment.	
	Nunavut Water Board (NWB)	
1.	*SWTP Saline Water Spill vs. High TDS in Containment Pond 1 (CP1)*	September 10, 2021
	Summary: The Follow-Up Spill Report #20-052 states the following: *"It is estimated that a cumulative volume of approximately 300 m^3 of saline water may have seeped through the building's secondary containment over a period of approximately 6 months."* Was this ongoing incident considered as a contributing factor to the high TDS concentrations in CP1. Is it possible that untreated runoff from around the SWTP or any snow/ice melt, which formed from the spill water over the winter months, could have reached CP1? Recommendations: Provide a discussion with respect to potential connection of the SWTP spill and the high TDS concentrations in CP1.	
2.	*TSS Exceedance at MEL-26 – August 23, 2020*	September 10, 2021
	Summary: Similar incident occurred in August 2019. Agnico Eagle provided the following response to the NWB-5 comment for the 2019 Annual Report: *"With respect to the SETP, the GAC filters within the SETP are in place to remove chlorine in water remaining from the breakpoint chlorination (ammonia removal) process. Residual chlorine within effluent observed in 2019 was due to saturation of the granular activated carbon (GAC) filters, rather than overdosing of chlorine. To mitigate this risk moving forward, double-the-required number of GAC filters required for the upgraded SETP (Q3 2020) were installed. These were installed as back up under the scenario that a filter(s) becomes saturated. Furthermore, more rigorous chlorine monitoring and logging are now implemented."* The report indicated that the TSS exceedance was not realized until August 31, 2020, and Agnico Eagle continued to discharge until then. Was the turnaround time for the toxicity sampling improved in 2020? Was more rigorous monitoring and logging implemented in 2020 with respect to TSS? Recommendations: • Provide further clarification regarding the steps taken to avoid future TSS (and Chlorine) exceedances in the water to be discharged at MEL-26.	

The technical review of the 2020 Annual Report Submission for Water Licence No: 2AM-MEL1631, as well as the *2020 Aquatic Ecosystem Monitoring Program (AEMP) Report*, dated March 2020, determined that the information provided generally addresses the requirements of current Water Licence. However, some information still needs to be provided to the Board in order for the 2020 Annual Report to be deemed acceptable. Please ensure the comments provided in the table above are addressed by the deadlines specified. Please also note that the management plans submitted with the 2020 Annual Report were approved with the issuance of Amendment No. 2 to Water Licence No: 2AM-MEL1631.

The NWB notes that the 2BB-MEL1424 2020 Annual Report was incorporated into the 2AM-MEL1631 2020 Annual Report. After completing a technical review of the Type B portion of the above-mentioned report, the Board found that the information provided addresses the requirements of Water Licence No: 2BB-MEL1424 (subject to recommendations provided in the table above and specifically CIRNA's recommendation #10). The Board understands that all effluent from the exploration camp Sewage Treatment Plant (STP) is still being hauled to CP1.

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
Technical Advisor
NUNAVUT WATER BOARD

Enclosure: Comments – KivIA, CIRNA, ECCC

Cc: Distribution List – Meliadine