KIA Lands Department
Technical Review

LICENCE:	**Water Licence 2AM-MEL1631**
DATE:	**June 17, 2020**
SUBJECT:	**Review of updated Water Quality Management and Optimization Plan Revision 2**

INTRODUCTION

Agnico Eagle Mines Ltd. (Agnico Eagle) has submitted a revised Water Quality Management and Optimization Plan (WQMOP) dated June 2, 2020 to address the recommendations and requirements outlined in the Nunavut Water Board's (NWB) Reason for Decision for File No: 2AM-MEL1631 Emergency Amendment No. 1[1]. The NWB extended an invitation to parties and community members to submit comments on the updated WQMOP by June 17, 2020.

The revised WQMOP also addresses many of the comments and concerns raised by the Kivalliq Inuit Association (KivIA) and other intervenors during the review of Agnico Eagle's emergency amendment application to the Meliadine Water Licence 2AM-MEL1631. The application sought to permit the release of waters from Control Pond 1 (CP1) during the 2020 open water season in excess of the 1,400 mg/L discharge criterion for Total Dissolved solids (TDS) set out in Part F, Item 3 of the existing licence.

While the KivIA remains concerned with the potential impacts discharge of surface contact water from CP1 to Meliadine Lake will have on aquatic life at and beyond the edge of the mixing zone, and on Inuit perception and use of Meliadine Lake, the majority of those concerns can be addressed through our ongoing participation in the Water Management Working Group whose creation was specifically recommended by the NWB in their Reasons for Decision[1]. The Water Management Working Group had its first meeting on June 3rd, 2020.

We provide our comments on the revised WQMOP in the following section.

[1] Nunavut Water Board. April 29, 2020. NWB Water Licence Type "A" No: 2AM-MEL1631 – Request for the Minister's Consent to Process Amendment No. 1 on an Emergency Basis and Attached Reasons for Decision and Amendment No. 1 for the Minister's Consideration.

TECHNICAL REVIEW COMMENTS

Review Comment Number	KivIA-TC#1.
Subject/Topic	Maximum Allowable Effluent Concentration
References	WQMOP Section 2.3 Assimilation Capacity Evaluation; Section 3.5 Adaptive Management
Detailed Review Comment	As per the emergency amendment, discharges from CP1 to Meliadine Lake must not exceed a maximum average concentration of 3,500 mg/L TDS. A maximum grab sample concentration has not been set. A maximum allowable effluent concentration (MAEC) is necessary to provide confidence that discharges will not result in acute lethality as assessed at the point of discharge (measured at MEL-14), nor chronic toxicity as assessed at the edge of the mixing zone. We acknowledge that the data provided in Appendix B of the WQMOP provides reasonable certainty that discharges above 3,500 mg/L TDS and up to 5,420 mg/L TDS are unlikely to result in acute lethality. However, there is less certainty that TDS concentrations approaching 1,000 mg/L (the proposed target for the edge of the mixing zone) will avoid sublethal effects. Agnico Eagle quotes a *"Maximum Allowable Concentration…of TDS in the discharge of 4,685 mg/L"* from the Final Environmental Impact Statement that was used to evaluate potential effects of discharges from the Meliadine Mine. As outlined in Table 2 of the WQMOP, discharges at 4,685 mg/L TDS diluted with a mixing factor of 10:1 in Meliadine Lake will result in concentrations at the edge of the mixing zone that are unlikely to result in sub chronic toxicity.
Recommendation	The Emergency Amendment and WQMOP should include a MAEC of 4,500 mg/L (i.e. 4,685 mg/L rounded down) and apply this concentration as an adaptive management trigger, in line with Agnico Eagle's Final Environmental Impact Statement (FEIS) conclusions. We specifically request the following trigger and response to Section 3.5, Adaptive Management, of the WQMOP, and as a final trigger for the Emergency Amendment: > If one end-of-pipe sample event identifies a TDS concentration equivalent to, or greater than, 4,500 mg/L, Agnico Eagle will temporarily decrease the rate of effluent discharges to 50% of the maximum discharge capacity to increase dilution and decrease the overall size of the plume until such time as concentrations are reduced to< 4500 mg/L. The 4,500 mg/L TDS MAEC is proposed as it allows for both a protective buffer below the currently evaluated maximum TDS concentration that did not result in acute lethality to *Daphnia magna* or rainbow trout (Table A-4, results from acute toxicity test using CP1 water collected on March 15, 2020), and prevents sublethal toxic effects at the edge of the mixing zone assuming a conservative 10:1 mixing factor.

Review Comment Number	KivIA-TC#2.
Subject/Topic	Toxicity sampling at depth of maximum specific conductivity
References	WQMOP Table 3. Conceptual Design for Proposed Validation of Interim TDS Limits for Effluent and Receiving Environment Section 3.2 Sampling for Toxicity Testing
Detailed Review Comment	Agnico Eagle summarizes the conceptual design for validation toxicity testing, providing details for both the mixing zone and receiving environment toxicity sampling. Sample collection details are summarized in Table 3 of the WQMOP as *"1 composite sample per station"*. Agnico Eagle clarifies in Section 3.2 Sampling for Toxicity Testing, that the edge of mixing zone samples will be collected from the depth of the water with the highest specific conductivity. However, this clarification is not provided for toxicity samples that will be collected for the mid field and reference sites. Sample collection at the depth with the highest conductivity is necessary to ensure toxicity testing assesses the maximum possible impact within the receiving environment at each location without the confounding effect of dilution inherent in a composite sample.
Recommendation	Table 3 should be revised to indicate that water collected for toxicity testing will come from the depth of maximum specific conductivity rather than a composite sample. Section 3.2 should be updated to clarify that samples for toxicity testing in the mid field and reference sites will also be collected from the depth with the highest specific conductivity. A composite sample starting at 1 metre off the bottom or a grab sample are both acceptable alternatives if the water column profile indicates complete mixing at the mid field and reference sites.