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Prairie & Northern Region  
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ECCC File: 6100 000 011/001  
NIRB File: 08MN053



April 16, 2020

via email at: [licensing@nwb-oen.ca](mailto:licensing@nwb-oen.ca)

Assol Kubeisinova  
Technical Advisor  
Nunavut Water Board  
P.O. Box 119  
Gjoa Haven, NU X0B 1J0

Dear Assol Kubeisinova:

**RE: 2AM-MRY1325 – Baffinland Iron Mines Corporation – Mary River Project – Water Licence Amendment Application – Phase 1 Waste Rock Management Plan – Responses to Baffinland’s Responses**

Baffinland Iron Mines Corporation (‘the proponent’) submitted their Phase 1 Waste Rock Management Plan on January 6, 2020 to the Nunavut Water Board (NWB) in support of its Amendment Application for water licence 2AM-MRY1325. On March 2020, the proponent submitted its responses to ECCC’s comments. ECCC has reviewed these responses, and is providing these subsequent comments, as requested by the NWB, by way of this letter.

ECCC’s specialist advice is based on our mandate pursuant to the *Canadian Environmental Protection Act*, the pollution prevention provisions of the *Fisheries Act*, the *Migratory Bird Convention Act* and the *Species at Risk Act*.

**ECCC-1: Potentially Acid Generating Rock Definition**

**References**

- Baffinland Iron Mines Corporation. 2020. Response to Intervener Comments, Phase 1 Waste Rock Management Plan Revision 2, Mary River Project Type A Water Licence, p. 14

## **Proponent's Response**

The proponent has agreed to modify the definition of test in order to reflect the use of Sulphur (S)%>0.2 as an analog for NPR <2.

## **ECCC's Conclusion(s)**

ECCC is satisfied with the proponent's response

## **ECCC's Recommendation(s)**

N/A

## **ECCC-2 Waste Rock Characterization**

### **References:**

- Baffinland Iron Mines Corporation. 2019. Phase 1 Waste Rock Management Plan Rev 2, Section 6 Waste Rock Characterization, 6.1 and 6.2 Deposit Geology and Geochemical Sampling Program.
- Golder Associates. 2019. Phase 1 Waste Rock Management Plan Rev 2, Appendix A : Waste Rock Management Plan Report for 2020 to 2021, Section 4.0 Waste Rock Characterization and Geochemistry Review.
- Baffinland Iron Mines Corporation. 2020. Response to Intervenor's Comments, Phase 1 Waste Rock Management Plan Revision 2, Mary River Project Type A Water Licence, p. 14

## **Proponent's Response**

ECCC acknowledges the correction made by the proponent in regards to the Golder recommendation. The intent from Golder was to have a confirmatory program implemented to confirm that the Acid Rock Drainage (ARD) criteria. ECCC also acknowledges the commitment from the proponent to implement this confirmatory sampling and Acid Base Accounting (ABA)/Shake Flask Extraction (SFE) testing.

ECCC also notes that the response provided by the proponent did not address ECCC's concerns of using 0.2 wt. % S as a segregation criterion or as a cutoff to segregate Potentially Acid Generating (PAG) and non-Acid Generating (non-AG) materials. ECCC also notes that the subsequent paste pH test identified some waste rocks that were classified as non-AG using 0.2 wt. % S cut as PAG.

## **ECCC's Conclusion(s)**

ECCC has expressed numerous times, in written comments and in calls held with the proponent, that the 0.2 wt. % S cutoff may not be appropriate to segregate the waste rock into

PAG and non-AG materials from the mining activity. Also, there seems to be a lack of neutralization potential within the rock that will mitigate ARD.

ECCC reiterates that using 0.2 wt. % of S content to segregate PAG and non-AG material is inadequate.

### **ECCC's Recommendation(s)**

ECCC recommends that ABA analysis and SFE tests be conducted on all representative samples in order to properly characterize the waste rock.

## **ECCC-3: Thermal Assessment of the Waste Rock Pile**

### **References**

- Baffinland Iron Mines Corporation. 2019. Phase 1 Waste Rock Management Plan Rev 2, Section 7 Thermal Assessment
- Golder Associates. 2019. Phase 1 Waste Rock Management Plan Rev 2, Appendix A : Waste Rock Management Plan Report for 2020 to 2021, Section 5.0 Thermal Assessment
- Baffinland Iron Mines Corporation. 2020. Response to Intervenor Comments, Phase 1 Waste Rock Management Plan Revision 2, Mary River Project Type A Water Licence, p. 15

### **Proponent's Response(s)**

ECCC's original review comment on the thermal assessment of the waste rock pile stated that modelling and thermistor readings would indicate that some portions of the Waste Rock Facility (WRF) are not frozen due to possible hot spots. These hot spots would have been created by the misclassification of PAG as non-AG rock.

In its response, the proponent stated that ECCC misinterpreted their statements and that their models did not imply that there would be thawed areas within the waste rock facility. The proponent also stated that it would require a substantial amount of thermistors measurements to state with certainty that there would be no hot spots within the WRF.

### **ECCC's Conclusion(s)**

ECCC appreciates that it would take a substantial amount of measurements to state with certainty that there will not be any hot spots within the waste rock pile. However, the proponent's response did not disprove the presence of any hot spots. Furthermore, the proponent did not indicate the potential effects of these hot spots on the internal conditions of the waste rock facility if present.

Adaptive management measures and a description of potential effects of these hotspots within the waste rock facility should be evaluated.

#### **ECCC's Recommendation(s)**

ECCC recommends that the proponent provide adaptive management measures and evaluate potential effects of hot spots within the waste rock pile.

#### **ECCC-4 Waste Rock Facility Closure**

##### **Reference:**

- Golder Associates. 2019. Phase 1 Waste Rock Management Plan Rev 2, Appendix A : Waste Rock Management Plan Report for 2020 to 2021, Section 10.3 WRF Closure

##### **Proponent's Response**

The proponent confirmed that the proposed cover thickness at closure would be of 50 m.

##### **ECCC's Conclusion(s)**

ECCC is satisfied with the proponent's response

##### **ECCC's Recommendation(s)**

N/A

#### **ECCC-5 Sulphate Concentrations in Discharge**

##### **References**

- Baffinland Iron Mines Corporation. 2019. Phase 1 Waste Rock Management Plan Rev 2, Appendix A4 Water Quality Memorandum & Appendices A-E – Water Quality Data
- WRMP Revision 2 Response to Intervener Comments p. 19

##### **Proponent's Response**

The proponent has acknowledged elevated sulphate concentrations in the WRF, and is investigating process changes that would reduce sulphate in the WRF effluent.

##### **ECCC's Conclusion(s)**

Further details on potential treatment and the proposed mitigation options for sulphate are requested. These details should include an estimate of what reductions in sulphate concentrations can reasonably be expected. ECCC supports the approach of reduction at source for sulphate.

Clarification is still requested for the question of whether the predictions are pre- or post-treatment. (The predictions are presented in Appendix E of the WRMP, but the table does not have a title which indicates what the predictions represent. Based on the text on page 11 of Appendix A4 Water Quality Memorandum, it appears that these numbers represent runoff quality from the WRF with precipitation of metals taken into account. It is unclear if they are post-treatment, given that they are compared to the Metal and Diamond Mining Effluent Regulations (MDMER).)

#### **ECCC's Recommendation(s)**

ECCC recommends that the proponent provide further details on potential treatment and mitigation options for sulphate, and provide clarification on whether Appendix E predictions are pre- or post- treatment.

If you would like more information, please contact Senior Environmental Coordinator Gabriel Bernard-Lacaille at (867) 669-4746 or [Gabriel.Bernard-Lacaille@Canada.ca](mailto:Gabriel.Bernard-Lacaille@Canada.ca).

Sincerely,

[original signed by]

John Olyslager  
Head, Environmental Assessment North