

Environmental Protection Operations Directorate
Prairie & Northern Region
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ECCC File: 6100 000 011/004
NWB File: 2AM-MRY1325



July 11, 2025

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-MRY1325 – Baffinland Iron Mines Corporation – Mary River Project – 2024 Annual Report

Environment and Climate Change Canada (ECCC) has reviewed the information submitted to the Nunavut Water Board (NWB) by Baffinland Iron Mines Corporation (“the Proponent”) regarding the above-mentioned annual report.

ECCC provides expert information and knowledge to project assessments on subjects within the department’s mandate, including climate change, air quality, water quality, biodiversity, environmental emergencies preparedness and responses. This work includes reviewing proponent characterization of environmental effects and proposed mitigation measures. We provide advice to decision-makers regarding a proponent’s characterization of environmental effects, the efficacy of their proposed mitigation activities, and may suggest additional mitigation measures. Any comments received from ECCC in this context does not relieve the proponent of its obligations to respect all applicable federal legislation

The following comments are provided:

1. Total Suspended Solids Freshet Exceedances at Camp Lake Settling Ponds Outfall

Reference(s)

- Main Document: 2024 QIA-NWB Annual Report (Baffinland Iron Mines Corporation, March 31, 2025)
 - Section 7.3.1.0 Freshet Monitoring
 - Table 7.6.3: Water Quality Results for Water Licence Monitoring Location - CLSP-OUT



- Table 7.6.4: Water Quality Results for Water Licence Monitoring Location - CLT-OUT
- Table 7.6.5: Water Quality Results for Water Licence Monitoring Location - LDFG-OUT
- Table 7.6.6: Water Quality Results for Water Licence Monitoring Location - SDLT-OUT **incorrectly labelled as LDFG-OUT**

Comment

Freshet sampling allows for the evaluation of the effectiveness of sediment and erosion control measures in place to reduce total suspended sediment (TSS) loads contributed by snowmelt from the Project's infrastructure. Results are presented for four sites: "*The Camp Lake Settling Ponds Outfall (CLSP-OUT), the Camp Lake Tributary 1 Outfall (CLT-OUT), Sheardown Lake Landfill Gate Tributary Outfall (LDFG-OUT), and Sheardown Lake Tributary 1 Outfall (SDLT-OUT).*" Measured TSS concentrations at CLSP-OUT range from 206 to 433 mg/L, above the water licence criteria of 30 mg/L for grab samples and 15 mg/L for average concentrations. Concentrations are consistently higher at CLSP-OUT than at the other three sites. The Annual Report states "*pro-active measures were taken prior to freshet to ensure unimpeded flow through water conveyance structures*" and reports on remedial works to the drainage feeding into culvert CV-187 and SDLT-OUT.

Measures employed at CLSP-OUT were not sufficient to prevent high TSS loads, which can negatively impact the aquatic environment. Further measures should be considered.

ECCC Recommendation(s)

ECCC recommends the Proponent discuss what further measures at CLSP-OUT could help reduce TSS loads at freshet.

2. Recommendations in Core Receiving Environment Monitoring Plan Report

Reference(s)

- NWB Appendix E.9.1/NIRB Appendix G.4.1: 2024 Core Receiving Environment Monitoring Program Report (Minnow Environmental Inc., March 2025)

Comment

The Core Receiving Environment Monitoring Program (CREMP) Report contains recommendations at the end of each sub-section discussing a creek, river or lake. Further monitoring, temporal trend analysis and the development of an Aquatic Effects Monitoring Program (AEMP) benchmark for uranium are recurring recommendations. It is not clear if the Proponent intends to action some or all of the consultant's recommendations.

ECCC Recommendation(s)

ECCC recommends the Proponent confirm which recommendations they plan to implement and provide a timeline for implementation. A discussion and justification should be provided for those recommendations which they do not plan to action.

3. Biological Effects of Elevated Iron and Aluminium Concentrations

Reference(s)

- NWB Appendix E.9.1/NIRB Appendix G.4.1: 2024 Core Receiving Environment Monitoring Program Report (Minnow Environmental Inc., March 2025)
 - Section 3.1.5.2: CLT1 Main Stem
- Federal Environmental Quality Guidelines, Aluminium (Environment and Climate Change Canada, August 2022)
- Federal Environmental Quality Guidelines, Iron (Environment and Climate Change Canada, May 2024)

Comment

The CREMP found elevated concentrations of iron, aluminium and uranium and the CREMP Report recommends “*an analysis of total compared to dissolved aqueous concentrations of aluminum, iron, and uranium will be completed to investigate biological availability and further determine potential for effects on aquatic biota.*” Toxicity studies have indicated that “*because of chemical speciation and solubility characteristics at different pH values*”, colloidal and precipitated forms of aluminium can cause toxic effects on aquatic biota. Particulate iron can also “*cause ecological effects via physical effects, such as smothering.*”

ECCC Recommendation(s)

ECCC recommends the Proponent consider effects from particulate metals in addition to biological uptake activity when determining potential for effects from elevated iron and aluminium concentrations on aquatic biota.

4. Charr Health and Condition in the Mary River

Reference(s)

- NWB Appendix E.9.1/NIRB Appendix G.4.1: 2024 Core Receiving Environment Monitoring Program Report (Minnow Environmental Inc., March 2025)
 - Section 5.1 Mary River

Comment

Data collected at stations along the Mary River are presented in Section 5.1 of the CREMP Report and cover water quality, phytoplankton and benthic invertebrate community. The effects assessment at the end of the section includes the conclusion: “*arctic charr health and condition at Mary River in 2024 conformed with predictions made in the Baffinland FEIS*”. It is not clear how this conclusion was reached since no data on fish health or condition was presented for stations on the Mary River.

ECCC Recommendation(s)

ECCC recommends the Proponent clarify what studies were conducted on arctic charr in the Mary River and how the conclusion on their health and condition was reached.

5. Waste Rock Facility Thermal Model

Reference(s)

- NWB Appendix E.10: Assessment of Active Zone Depth Considering SSP1-2.6 Climate Change Projections at Mary River Mine (WSP, October 4, 2024)
- RE: 2AM-MRY1325 – Baffinland – Mary River Water Licence – ICRP Ver 6 and Thermal Model Reviewed (ECCC to NWB, February 27, 2025)

Comment

Appendix E.10 (Reclamation and Research) – is the WSP Technical Memorandum “*Assessment of Active Zone Depth Considering SSP1-2.6 Climate Change Projections At Mary River Mine*” (October 4, 2024). ECCC reviewed and provided comments to the NWB on this Technical Memorandum on February 27, 2024. ECCC notes that the comments and recommendations by ECCC on the technical memorandum, now presented as Appendix E.10 (Reclamation and Research) of the 2024 Annual Report, have not been addressed.

ECCC Recommendation(s)

ECCC recommends the Proponent update Appendix E10 (Reclamation and Research) to include ECCC’s comments and recommendations as outlined in the February 27, 2024 letter to the NWB “*RE: 2AM-MRY1325 – Baffinland – Mary River Water Licence – ICRP Ver 6 and Thermal Model Reviewed*”.

If you need more information, please contact Melissa Pinto at (867) 445-5384 or Melissa.Pinto@ec.gc.ca.

Sincerely,

Melissa Pinto
Senior Environmental Assessment Officer

cc: Eva Walker, Head, Environmental Assessment North (NT and NU)