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



July 27, 2020

via email at: info@nirb.ca

Karen Costello
Executive Director
Nunavut Impact Review Board
P.O. Box 1360
Cambridge Bay, NU X0B 0C0

Dear Karen Costello:

RE: 08MN053 – Baffinland Iron Mine Corporation – Mary River – 2019 Annual Report

Environment and Climate Change Canada (ECCC) has reviewed the information submitted to the Nunavut Impact Review Board (NIRB) regarding the above-noted Annual Report. You will find our comments below.

ECCC's specialist advice is based on our mandate pursuant to the *Canadian Environmental Protection Act* and the pollution prevention provisions of the *Fisheries Act*

ECCC provides the following comments:

1. Trigger Action Response Plan

Reference(s)

- NWB Appendix E.5.3 – Surface Water and Aquatic Ecosystems Management Plan
 - Table 9-2
 - Appendix G

Comment

The Surface Water and Aquatic Ecosystems Management Plan was updated in April 2020 and now includes a Trigger Action Response Plan (TARP) for erosion and sediment. Table 9-2 identifies four “triggers” related to erosion and sedimentation and subsequent response actions, including:

- Observations identifying potential causes of erosion and sedimentation.
- Severe weather periods in the forecast, per on-site weather stations and weather alerts



- Exceedance of Water Licence Criteria for Total Suspended Solids
- Regulatory Feedback

Upon reading these triggers, it is not immediately clear what event needs to occur to instigate implementation of the TARP. For example, the trigger of, "TSS exceedance of Water Licence Criteria" insinuates that a sample has already been taken and an exceedance identified, but the response action discusses suspected exceedances and that water samples should be taken for testing. The Triggers should be simply worded and extremely clear such that actions can be taken quickly when a trigger event occurs.

ECCC Recommendation(s)

ECCC recommends the Proponent review the TARP and ensure that "triggers" are clear, descriptive, and related directly to an observation or event that would trigger action.

2. Removal of SNP Station MP-C-G

Reference(s)

- NWB Appendix E-13 – SNP Modification Application

Comment

The application for modification of SNP stations proposes to remove monitoring of MP-C-G at Milne Port, which is intended to capture surface discharge downstream of the construction area at Milne Site. The rationale provided is that this station, "no longer captures surface discharge downstream of construction due to the expansion of the Ore Pad at Milne Port. Thus removal of the station is proposed." The rationale provided does not acknowledge whether surface runoff is still an issue at this location (implying that monitoring is no longer required), or whether the station simply no longer captures runoff due to mine site changes.

ECCC Recommendation(s)

ECCC recommends the Proponent provide a discussion on whether monitoring in the vicinity of MP-C-G is still warranted, and whether the SNP Station should be relocated, rather than discontinued.

3. Groundwater Monitoring

Reference(s)

- NWB Appendix E-12; NIRB Appendix G5 – 2019 Groundwater Monitoring Report

Comment

The groundwater monitoring report found elevated concentrations in the down-gradient wells relative to the up-gradient wells, and noted that further years of monitoring data is required to evaluate potential trends. However, although concentrations have been provided, there

are no figures displaying the data for 2019 or any potential temporal trends in groundwater quality. Given that, by 2021 there will be four years of groundwater monitoring data available, figures would aid in interpretation of the data.

Section 4 Conclusions and Recommendations states that: “*Consideration will be given to the development of site-specific groundwater quality screening criteria based on background (reference) conditions (if available) and potentially utilizing groundwater quality guidelines from other jurisdictions...*”

ECCC supports developing site-specific groundwater quality objectives for the purpose of screening groundwater quality.

ECCC Recommendation(s)

ECCC recommends that the Proponent present the groundwater data collected graphically in figures to depict differences in up-gradient and down-gradient concentrations in future reporting years, and to identify any temporal trends.

ECCC recommends that appropriate screening groundwater quality objectives be identified for use in comparisons of groundwater quality data from the monitoring program.

4. Updates to Water Quality Guidelines

Reference(s)

- NWB Appendix E.9.1; NIRB Appendix G1 – 2019 CREMP Monitoring Report
 - Table 2.2

Comment

Table 2.2 lists the water quality guidelines used for the Mary River project, the majority of which are based on the CCME Water Quality Guidelines for the Protection of Aquatic Life. Where no CCME guidelines exist for certain parameters, the Proponent has implemented the lowest of either the Ontario or BC Provincial Water Quality Guidelines. ECCC notes that neither the dissolved zinc nor manganese guidelines have been updated by the Proponent in accordance with the revised CCME criteria (released in 2018 and 2019, respectively). The equation for guideline derivation released by CCME is based on hardness and pH, and appears to result in a potentially lower water quality guideline than the 0.935 mg/L BC Water Quality Guideline and may be a more appropriate metric for use at Mary River.

ECCC Recommendation(s)

ECCC recommends the Proponent:

- Use the updated zinc CCME Water Quality Guideline for analysis in future monitoring years.
- Discuss whether the newly released CCME Manganese Water Quality Guideline is more appropriate for use at the mine site than the BC Water Quality Guideline.

5. Nitrate Guidance and the AEMP Benchmark

Reference(s)

- NWB Appendix E.9.1; NIRB Appendix G1 – 2019 CREMP Monitoring Report

Comment

The nitrate guideline listed in Table 2.2 is 3 mg/L and stated to be reflective of the CCME Water Quality Guideline for Nitrate. Table 3.1 also identified the guideline as 3 mg/L as well as the AEMP Benchmark as 3 mg/L and identifies an exceedance at sampling station L2-3. However, in figure 3.2 the nitrate WQG depicted on the figure is 13 mg/L and therefore does not acknowledge the exceedance. ECCC notes that the Proponent appears to be using the nitrate guideline and nitrate-N guideline interchangeably, and that the appropriate comparison is to the 3 mg-N/L nitrate.

ECCC Recommendation(s)

ECCC recommends that the Proponent consistently applies the 3 mg-N/L nitrate guidelines.

6. Water Quality near QMR2 Quarry

Reference(s)

- NWB Appendix E.9.1; NIRB Appendix G1 – 2019 CREMP Monitoring Report
 - Section 3.1.1 – Camp Lake System – CLT1 – Water Quality

Comment

Water quality guidelines for nitrate have been exceeded for the last two years at station L2-03 (CLT1 upper main stem) and concentrations of several metals have increased over time. This sampling location is in close proximity to QMR2 quarry and the proponent acknowledges that these increases are consistent with the deposition of explosive residues from the quarry. However, they go on to state that despite the elevated parameters at the upper CLT1 main stem, none were elevated above WQG or AEMP benchmarks at the lower stem prior to discharge into Camp Lake. This rationale minimizes the potential localized effects that could be occurring in the vicinity of station L2-03 and the QMR2 quarry, and no potential mitigations have been presented to minimize impacts from nitrogen compound use and dust creation from the quarry.

ECCC Recommendation(s)

ECCC recommends the Proponent provide potential mitigation measures to reduce impacts from dust and nitrogen deposits into CLT1 from the QMR2 quarry.

7. Sulfate and Nitrate – Mary River System

Reference(s)

- NWB Appendix E.9.1; NIRB Appendix G1 – 2019 CREMP Monitoring Report

- Section 5.1.1 – Mary River System – Water Quality

Comment

Water chemistry within the Mary River showed no distinct and/or consistent spatial gradients with progression downstream, with the exception of sulfate and nitrate, which were elevated at Mary River Tributary F. Based on the temporal analysis provided in Figure 5.2, elevated levels of nitrate and sulfate have not been observed in previous years and represent a large increase compared to previous sampling data. Although the concentrations presented do not exceed water quality guidelines, the sudden jump in concentration may be due to mine influences. The report does not provide any discussion or analysis of the sudden increases in nitrate and sulfate or examine any potential causes.

ECCC Recommendation(s)

ECCC recommends the proponent provide a discussion of potential causes of the sudden increases in nitrate and sulfate at the confluence of Mary River Tributary F.

8. Lake Sedimentation

Reference(s)

- NWB Appendix E.9.2; NIRB Appendix G2 – Lake Sedimentation Monitoring Report
 - Section 2.2 – Station Locations
 - Section 3.1 – Sedimentation Rates

Comment

Section 2.2 describes the station SHAL1 as a silt-loam substrate, and notes that it is the closest of the stations to Sheardown Lake Tributary inflow. Section 3.1.1 describes the sedimentation rates and refers to SHAL1 as being the hard-bottomed substrate near the tributary, and SHAL2 as being the silt substrate.

ECCC Recommendation(s)

ECCC requests clarification on the stations' substrates.

9. Birds – Species at Risk ARU Monitoring

Reference(s)

- 2019 NIRB Annual Report – Section 4

Comment

Project Certificate Condition Numbers 67, 73 and 74 reference the proponent's use of 9 passive Autonomous Recording Units (ARUs) in May 2019 to detect Red Knot vocalizations. This work was done in collaboration with ECCC.

The results of the 2019 ARU monitoring survey did not detect the presence of Red Knots in the northern RSA. As indicated in PC No. 67, ECCC concluded that further ARU monitoring in 2020 in the northern RSA was not necessary.

However, ECCC would like to provide clarification on remarks made under Project Certificate Condition No. 74, where the proponent states that, “based on available data, ECCC does not recommend additional years of collection”. Although further monitoring in the northern RSA may not be necessary, similar Red Knot monitoring surveys should be conducted in the southern portion of the RSA prior to activities ramping up in those areas.

Furthermore, if Red Knot activity is detected in future years within the northern RSA, the proponent should contact ECCC to determine if additional ARU monitoring will be required.

ECCC Recommendation(s)

ECCC recommends similar ARU monitoring surveys for Red Knots be conducted in the southern RSA prior to the ramping up of activities in those regions.

ECCC recommends that the proponent contact ECCC to determine if additional ARU monitoring will be required if Red Knot activity is detected in future years within the northern RSA.

10. Birds – Flight Altitude Requirements

Reference(s)

- 2019 NIRB Annual Report – Section 4

Comment

Project Certificate Condition Numbers 59, 71, and 72 reference the proponent’s flight height analysis results.

In regards to the proponent’s use of flight logs to validate compliance, ECCC requires a more thorough understanding of the justification provided by the pilots before we can determine if there are concerns with this approach.

As noted by the proponent, additional analysis has been requested by the Terrestrial Environment Working Group during our February, and more recently at a June, 2020 meeting.

ECCC Recommendation(s)

ECCC looks forward to reviewing the flight log data along with the additional analysis the proponent has committed to providing during the TEWG meetings and within the 2019 Annual Report.

11. Birds – Horizontal Flight Distance Requirement from Snow Goose Area

Reference(s)

- 2019 NIRB Annual Report – Section 4

Comment

Project Certificate Condition Numbers 59, 71, and 72 references BIM's flight height analysis results.

In their analysis, the proponent indicates compliance for transects flown within the Snow Goose area during the moulting season was 93%. However, only 31% of these flights were conducted above the required 1100m altitude set in the Project Certificate Conditions.

ECCC understands that safety and operational restrictions may prevent helicopters from reaching the required altitudes, and that this may have been used as justification to validate lower altitude flights as compliant. However, the majority of these flights occur on the eastern edge of the Snow Goose area and pilots are not maintaining the minimum 1500m horizontal distance required during the moulting season.

ECCC Recommendation(s)

ECCC recommends that if an altitude of 1100m through the Snow Goose area during moulting season cannot be maintained, pilots take a route around the Snow Goose area and maintain the required 1500m horizontal distance.

12. Marine Wildlife – Shipboard Observers Program

Reference(s)

- 2019 NIRB Annual Report – Section 4

Comment

Project Certificate Condition Numbers 103, 105, 106, 107 108, 121, and 123 reference the 2019 Ship Based Observer (SBO) Program Report (Golder, 2020f).

The proponent indicates that detailed methodology on data collection and analytical procedures as well as detailed results on the SBO program are presented in the Golder 2020F report.

ECCC has been unable to locate this document in the referenced document portal or on the NIRB registry to review summarized seabird observations during the 2019 shipping season.

ECCC Recommendation(s)

ECCC requests a copy of the *Golder Associates LTD. (Golder), 2020f. Draft 2019 Ship-based Observer Program. Report submitted to Baffinland Iron mines Corporation. Report No. 1663724-185-R-RevB-31000. 26 March 2020.*

If you need more information, please contact Anna Graham at Anna.Graham2@Canada.ca.

Sincerely,

[original signed by]

Anna Graham
Environmental Assessment Coordinator

cc: John Olyslager, Acting Head, Environmental Assessment North (NT and NU)