



ᓄᓇᑭᑦ ᐃᓕᓂᓱᑦ ᑲᓂᓕᓱᑦ  
NUNAVUT WATER BOARD  
NUNAVUT IMALIRIYIN KATIMAYINGI  
OFFICE DES EAUX DU NUNAVUT

**File: 2AM-MRY1325**

August 28, 2020

Christopher Murray  
Environmental & Regulatory Compliance Manager  
Baffinland Iron Mines Corporation  
Suite 300 – 2275 Upper Middle Road East  
Oakville, Ontario, Canada L6H 0C3

Email: [christopher.murray@baffinland.com](mailto:christopher.murray@baffinland.com)

**RE: Licence No: 2AM-MRY1325 Type “A”; Mary River Project, Baffinland Iron Mines Corporation; 2019 Annual Report Review**

Dear Mr. Murray:

The Nunavut Water Board (NWB or Board) has completed the technical review of the 2019 Annual Report (Report) for Type “A” Water Licence 2AM-MRY1325 (Licence). The Report was received on April 30, 2020 from Baffinland Iron Mines Corporation (Baffinland or Licensee), submitted as a requirement under Part B of the Licence.

Copies of all documents received during Report review can be accessed through the NWB’s Public Registry and FTP site using the following links:

[ftp://ftp.nwb-oen.ca/registry/2\\_MINING\\_MILLING/2A/2AM\\_-\\_Mining/2AM-MRY1325\\_BIMC/3\\_TECH/1\\_GENERAL\\_\(B\)/2\\_ANNUAL\\_RPT/2019/](ftp://ftp.nwb-oen.ca/registry/2_MINING_MILLING/2A/2AM_-_Mining/2AM-MRY1325_BIMC/3_TECH/1_GENERAL_(B)/2_ANNUAL_RPT/2019/)

On May 19, 2020, the NWB distributed the Report for public review with the deadline set for July 19, 2020. On July 16, 2020, Crown-Indigenous Relations and Northern Affairs (CIRNA) requested that the deadline be extended to July 24, 2020, which the NWB granted. On July 24, 2020, CIRNA submitted its comments. On August 20, 2020, Environment and Climate Change Canada (ECCC) provided its feedback regarding the Report. Recognizing the expertise of ECCC in many aspects of the reported activities, the NWB decided to accept the late submission. The table below provides a brief summary of issues found outstanding during the Report review period. The table provides deadlines for the Licensee to respond to respective recommendations and concerns. For the intervenors’ discussion of these items, please refer to the comment submissions referenced above.

No.	Intervener Recommendation / Concern	Deadline to Respond by and Notes
Crown-Indigenous Relations and Northern Affairs (CIRNA)		
R-01	Indicate where Non-PAG waste rock has been used as	November 13, 2020

	construction material in 2019 and earlier.	
R-02	Update the amount of actual vs. planned waste rock placement in the Waste Rock Facility (WRF) in 2019.	November 13, 2020
R-03	Investigate potentially acid generating material (PAG) presence in Q1 Quarry and evaluate 2020 sampling to see if additional sampling is needed to delineate the presence of PAG, and provide an update outlining the investigation approach, findings, and conclusions of the investigation.	March 31, 2021 (2020 Annual Report submission)
R-04	Update the Quarry Management Plan(s), as appropriate, based on investigation findings and conclusion.	March 31, 2021 (2020 Annual Report submission)
R-05	Update the performance of the short-term Mine Operation 2020 Freshet and Mine Haul Road Water Management Improvements Plan in regard to mitigation of freshet exceedances, including any lessons learned to be implemented in the development of the Long Term Water Management Plan	March 31, 2021 (2020 Annual Report submission)
R-06	Provide the expected timeline for the development of the Long Term Improvements Plan.	November 13, 2020
R-07	Provide the bi-annual inspection of the Mine Haul Road, or clarify the rationale for excluding the Mine Haul Road from the recent bi-annual inspection.	November 13, 2020
R-08	Include the Mine Haul Road in future bi-annual inspections.	March 31, 2021 (2020 Annual Report submission) and subsequent annual reports
R-09	Continue to conduct root cause analyses for all sewage system related spills, and provide this analysis and a plan of action for mitigation.	March 31, 2021 (2020 Annual Report submission)
R-10	Conduct root cause analyses for spills to allow for performance and trend evaluation.	March 31, 2021 (2020 Annual Report submission) and subsequent annual reports
R-11	Provide a copy of the Action Plan that was implemented to address historic borrow sources along the Tote Road, indicating which items have been implemented to date.	March 31, 2021 (2020 Annual Report submission)
R-12	Provide an overall action plan for all disturbed areas identified at the existing and historic borrow areas along Tote Road and for the Mine Haul Road.	March 31, 2021 (2020 Annual Report submission)
R-13	Provide their strategy to address mitigation of permafrost degradation during all aspects of the project and across the project life cycle.	March 31, 2021 (2020 Annual Report submission)
R-14	Carry out an assessment of mitigation measures that could be implemented either before or at bridge crossings to prevent material deposition into the watercourses and initiate preventative measures.	March 31, 2021 (2020 Annual Report submission)
R-15	Provide training regarding water withdrawal procedures and tracking be provided to Baffinland operators and develop a plan to improve documentation and categorization of water volumes withdrawn from all approved sources to reduce exceedances of daily withdrawal limits for freshwater.	March 31, 2021 (2020 Annual Report submission)
R-16	Provide information on all locations where poor ore has been used in the past.	November 13, 2020
R-17	Provide a rationale for its past use of poor ore as construction materials and where such materials could be	November 13, 2020

	used in future	
R-18	Carry out a review of its protocols for approval and communication of construction changes to avoid future issues related to field changes to approved designs and plans of water management features.	November 13, 2020
R-19	Consider making the following changes to the Annual Report structure and content to help improve the utility of the document: <ul style="list-style-type: none"> <li>a) Include a description of the approved project to provide context to the activities described in the report;</li> <li>b) Include more detailed descriptions in the report;</li> <li>c) Either embed the tables within the report for easy access or refer to specific tables numbers in the report as opposed to generic numbers.</li> </ul>	March 31, 2021 (2020 Annual Report submission)
R-20	Clarify what revisions were made to the <i>Aquatic Effects Monitoring Plan</i> and 2019 <i>Core Receiving Environment Monitoring Program</i> (CREMP) Report, and if the CREMP now includes monitoring at the Milne Port.	November 13, 2020 (optional)  The NWB notes that it does not have a mandate over regulation of activities in the marine environment; however, the Licensee may provide its response if it wishes to provide more clarity.
R-21	Track inspection findings and recommendations, and report on actions taken on a category and site feature basis to allow for easier tracking of issues, concerns and resolution actions.	March 31, 2021 (2020 Annual Report submission)
R-22	Include a summary of issues in the 2020 Annual report to indicate any patterns or particular areas of concern/interest.	March 31, 2021 (2020 Annual Report submission)
R-23	Begin to use the modified waste rock classification criteria incorporating paste pH, if this has not already been implemented.	November 13, 2020
R-24	Reflect this change in methodology and that the results of paste pH be included in Appendix E.6 and E.7 summarizing geochemical analytical sampling results.	March 31, 2021 (2020 Annual Report submission)
R-25	Review the adequacy of the 0.2% total sulphur cut-off and conduct a sensitivity analysis to determine the potential effect of the uncertainty on the projected volumes of PAG and non-acid generating (NAG or non-PAG) waste rock and implications in the design and operation of the WRF and potential closure of the WRF.	November 13, 2020
R-26	Account for a lack of Ca/Mg carbonate minerals by either adjusting the neutralization potential ratio (NPR) to a value greater than 2, or undertake suitable supplementary test work to validate that there is effective neutralization capacity above pH 6.	November 13, 2020
R-27	Document and apply the lessons learned from the WRF pond liner leakage study to the assessment of the status of all current and planned lined pond facilities at the Mary River Project.	March 31, 2021 (2020 Annual Report submission)

R-28	Continue to address design and layout challenges at the crusher drainage pad to expand the 3m buffer zone and submit a Construction Summary Report once all remedial earthworks are completed.	As per Licence Part D, Item 17
R-29	Adjust the flow-monitoring program to capture additional flow measurements to further refine/verify the rating curves.	March 31, 2021 (2020 Annual Report submission)
R-30	Incorporate the findings and data from the Hydrometric Monitoring Program into other monitoring and mitigation programs to develop a holistic view of on-going environmental conditions, trends, and impact predictions	March 31, 2021 (2020 Annual Report submission)
R-31	Develop a holistic view of on-going environmental conditions and trends that can tie back into the monitoring and mitigation programs by incorporating findings and data from other monitoring programs.	March 31, 2021 (2020 Annual Report submission)
R-32	Provide a summary description of the activities performed to address the permafrost degradation in the borrow areas in subsequent Annual Reports.	March 31, 2021 (2020 Annual Report submission) and subsequent annual reports
R-33	Demonstrate compliance to the regulatory criteria in subsequent Annual Reports by providing a table that compares results to the allowable limits.	March 31, 2021 (2020 Annual Report submission) and subsequent annual reports
R-34	Include surface water monitoring stations occurring downstream of quarries in Table 9-3 (Milne Port) and Table 9-4 (Mine Site) of the Surface Water and Aquatic Ecosystem Management Plan updated in 2019.	March 31, 2021 (2020 Annual Report submission) and subsequent annual reports
Environment and Climate Change Canada (ECCC)		
1	Review the Trigger Action Response Plan (TARP) in the <i>Surface Water and Aquatic Ecosystems Management Plan</i> and ensure that “triggers” are clear, descriptive, and related directly to an observation or event that would trigger action.	March 31, 2021 (2020 Annual Report submission)
2	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.	September 4, 2020
3	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. Identify the appropriate screening groundwater quality objectives for use in comparisons of groundwater quality data from the monitoring program.	March 31, 2021 (2020 Annual Report submission)
4	Use the updated zinc Canadian Council of Ministers of the Environment (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.	March 31, 2021 (2020 Annual Report submission)
5	The Licensee 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. Apply the 3 mg-N/L nitrate guidelines consistently.	March 31, 2021 (2020 Annual Report submission)
6	Provide potential mitigation measures to reduce impacts	March 31, 2021 (2020 Annual

	from dust and nitrogen deposits into CLT1 from the QMR2 quarry.	Report submission)
7	Provide a discussion of potential causes of the sudden increases in nitrate and sulfate at the confluence of Mary River Tributary F.	November 13, 2020
8	Section 2.2 of the <i>Lake Sedimentation Monitoring Report</i> 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. Clarify the stations' substrates.	March 31, 2021 (2020 Annual Report submission)
9	Clarify whether further expansion of the WRF will assume or manage an internal heat source and potential thawed zone.	November 13, 2020
10	Clarify whether adaptive management options would include avoidance or elimination of segregation practices that may have caused the misclassification of PAG and non-PAG rock that would have created the hot spots in the first place.	November 13, 2020
11	ECCC would like to re-emphasize that as long as the Mary River Iron Ore mine is subject to the <i>Metal and Diamond Mining Effluent</i> Regulations, all discharges from the mine would have to go through a final discharge point (FDP), and effluent sampling and reporting through Mine Effluent Reporting System (MERS) will continue until the mine achieves recognized closed mine (RCM) status.	General statement

The NWB notes that Baffinland submitted the following updated management plans with the 2019 Annual Report:

- Spill Contingency Plan dated April 29, 2020;
- Air Quality and Noise Abatement Management Plan dated March 31, 2020;
- Phase 1 Waste Rock Management dated December 31, 2019;
- Fresh Water Supply, Sewage and Wastewater Management Plan dated March 31, 2020;
- Surface Water and Aquatic Ecosystems Management Plan dated April 29, 2020;
- Waste Management Plan dated March 31, 2020;
- Roads Management Plan dated February 14, 2020;
- Sampling Program - Quality Assurance and Quality Control Plan dated March 31, 2020, and
- Q1 Quarry Management Plan dated May 6, 2019.

The Licensee is advised that the updated plans address the requirements of Part B, Item 17 of the Licence. The NWB notes that the *Phase 1 Waste Rock Management Plan Rev 3* dated June 16, 2020 was previously approved by the Board on August 17, 2020.

The Board also notes that Baffinland requested changes to the Monitoring Program. The Board advises the Licensee that a separate correspondence on the subject will follow.

If you have any questions, please contact the undersigned at [assol.kubeisnova@nwb-oen.ca](mailto:assol.kubeisnova@nwb-oen.ca) or (867) 360 6338 (ext. 31).

Best regards,

Assol Kubeisnova  
Nunavut Water Board  
Technical Advisor

Enclosure:      Comments – CIRNA, ECCC

Cc:              Distribution List – Mary River