

July 30, 2020

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**Re: Response to Intervenor Comments, Phase 1 Waste Rock Management Plan Revision 3
Mary River Project, Type 'A' Water Licence - 2AM-MRY1325 - Amend. No. 1**

Baffinland Iron Mines Corporation (Baffinland) provides the attached responses to comments received from the Crown-Indigenous Relations and Northern Affairs Canada (CIRNAC)¹ regarding the Phase 1 Waste Rock Management Plan, Revision 3, submitted to the Nunavut Water Board on June 16th, 2020. Baffinland has addressed the comments provided as detailed in Attachment 1. Baffinland notes that the submission from the Qikiqtani Inuit Association² (QIA) indicated satisfaction with the responses provided to date, therefore no additional responses are provided herein.

We trust that the attached responses provide additional clarification on the Waste Rock Management Plan, and resolves any outstanding issues.

Regards,

A handwritten signature in black ink, appearing to read "Chris Murray", with a large, stylized loop at the end.

Christopher Murray
Environmental & Regulatory Compliance Manager

Cc: Karén Kharatyan (NWB)
Chris Spencer, Jared Ottenhof (QIA)
Bridget Campbell, Godwin Okonkwo, Felexce Ngwa, Alexandre Chaikine (CIRNAC)
Megan Lord-Hoyle, Lou Kamermans, Tim Sewell, Shawn Stevens, Connor Devereaux, Aaron MacDonell,
Simon Fleury, Daniel Janusauskas (Baffinland)

Attachments

Attachment 1: Baffinland Response to Comments

¹ CIRNAC (2020) Re: Crown-Indigenous Relations and Northern Affairs Canada Review of Revision 3 of the Phase I Waste Rock Management Plan for the Mary River Project, Water Licence No. 2AM-MRY1325 – Amendment No. 1, submitted by Baffinland Iron Mines Corporation. Letter dated July 16, 2020.

² QIA (2020) Re: NWB Request for Updated Comments on Baffinland's Phase 1 Waste Rock Management Plan (Rev. 3). Letter dated July 16, 2020

ATTACHMENT 1

Baffinland Response to Comments

Table 1 – Baffinland Responses Phase 1 Waste Rock Management Plan Revision 3 Comments

#	Description of Concern or Finding	Response
Comment ID: CIRNAC-1 Lake (sic) Sediment Management at the WRF		
1	<p>Based on the text provided in Revision 3 of the Phase 1 WRMP, there is no evidence support BIMC’s statement that “in-pond water treatment is not expected to be utilized going forward.” This statement should be added to the WRMP under Section 9. The majority of the information currently provided in Section 9.2 discusses aspects that are for the most part, unrelated to the present approach, and even state where in-pond treatment is expected to occur.</p> <p>Section 9.2 of the plan should clearly state that water treatment will be through the use of the High Density Sludge (HDS) plant. It should also provide information on the design, operation, control and monitoring of the pumping systems to the water treatment plant, and provide a meaningful discussion and relevant information with respect to water treatment plant design, operations (normal operating ranges, peak operating range, alarms, emergency response, monitoring, etc.) as appropriate.</p> <p>CIRNAC was unable to locate a reference to the commitment to “...complete the evaluation and record keeping required to ensure there is no long-term impact on pond capacity and will ensure that sediment is managed according to the sludge management process outlined in the WRMP” should in-pond treatment be required in the future, in Revision 3 of the WRMP. Further, Section 9.2.6 regarding sludge management does not outline specific strategies and thus provides little in the way of guidance or commitment to how sludge will actually be managed. This section should be expanded to provide more specific information on sludge management practices to be followed.</p> <p>Recommendation:</p> <p>(R-01) CIRNAC recommends that BIMC revise Section 9.2 to reflect the actual site water management issues with regard to the WRF and how BIMC now plans to address and management them, as outlined below:</p> <ul style="list-style-type: none">I. clearly state that water treatment as needed will be through the use of the HDS plant;II. provide information on the design, operation, control and monitoring of the pumping systems to the water treatment plant;III. provide a detailed discussion with specific, relevant information with respect water treatment plant design, operations and monitoring, as appropriate;IV. expand the discussion of sludge management to provide more specific information on practices to be followed; andV. add the commitment that in the event of in-pond water treatment, BIMC will complete the evaluation and record keeping required to ensure there is no long-term impact on pond capacity, as outlined in CIRNAC comment 1<ul style="list-style-type: none">i. an estimate of volume of sediment to be produced;ii. an assessment of the need for standby pond capacity;iii. details regarding the procedures for sediment handling, transport, and disposal; andiv. monitoring and sediment disposal record keeping practices.	<p>Baffinland notes that the CIRNAC comment heading references “Lake Sediment” at the WRF. It is assumed that the WRF Pond was referred to as a ‘lake’ in error.</p> <p>The option for in-pond treatment was retained in the WRMP to allow for the potential implementation, should the need arise. At this time, there is no identified need to implement in-pond treatment due to the use of the WRF Water Treatment Plant (WTP), as described in Section 9.2.1 of the WRMP.</p> <p>Baffinland clarifies that a High Density Sludge (HDS) plant is not in use at the Project, and has never indicated this to be the case. CIRNAC should be fully aware of the treatment process being implemented at the project, as CIRNAC both reviewed the modification to the Type A Water Licence for the WTP, and most recently the Construction Summary Report for the WTP. In addition, CIRNAC staff have visited and inspected the WTP. Baffinland clearly states in Section 9.2.1 that a WTP was constructed and in use at the WRF, and the Standard Operating Procedure (SOP) is included in Appendix B of the WRMP.</p> <p>The following addresses CIRNAC the recommendations;</p> <ul style="list-style-type: none">i. Baffinland has clearly stated in Section 9.2.1 that the WTP has been implemented, and is currently used to treat effluent, as needed, from the WRF pond.ii. Details of the pumping system can be found in the Waste Pond Water Treatment Plant Operations (BAF-PH1-340-PRO-048) SOP provided in Appendix B (PDF pages 246 through 283). Specifically, the SOP includes the <i>Operations and Maintenance Manual for Mary River Mine Waste Rock Pile Water Treatment Plant</i> (PDF pages 257 through 283), which provides specifics on design, equipment, instrumentation, process diagrams and layout. The system employs dual Prime Aire PA4A6—404ST diesel driven pumps with a max capacity of 140 m³/hr. The process and instrumentation diagram for the pumping system is provided on PDF page 278.iii. Details of the water treatment plant can be found in the Waste Pond Water Treatment Plant Operations (BAF-PH1-340-PRO-048) standard operating procedure (SOP) provided in Appendix B (PDF pages 246 through 283). Specifically, the SOP includes the <i>Operations and Maintenance Manual for Mary River Mine Waste Rock Pile Water Treatment Plant</i> (PDF pages 257 through 283), which provides specifics on design, equipment, instrumentation, process diagrams and layout.iv. It is unclear what additional specifics CIRNAC believes are required at this time. Baffinland has indicated in Section 9.2.6 how sludge generated through in-pond treatment would be managed, including the commitment to estimate volumes and confirm pond capacities, methods including pump dredge systems or similar, and disposal options. Current solids collection at the WTP is through the use of geotubes, which will be disposed of in the WRF and assumed to be PAG material, with locations surveyed and documented consistent with PAG placement procedures.

#	Description of Concern or Finding	Response
		<p>v. Baffinland has directly addressed this commitment in Section 9.2.6, as demonstrated in the following excerpts from this section;</p> <p><i>“Sludge levels in the pond should be inventoried on a yearly basis as the sludge may require removal and disposal in order to ensure that there is no negative impact on pond capacity. This can be done by taking sludge depth measurements at different points throughout the pond, then calculating a total volume of sludge based on pond geometry.”</i></p> <p><i>“In ponds where in-pond treatment is expected to occur, sludge levels will be evaluated on an annual basis and before starting in-pond treatment.”</i></p> <p><i>“Depending on the quantity of sludge expected to be produced and the pond capacity, Baffinland will evaluate the need for standby pond capacity or alternative treatment options.”</i></p> <p><i>“When sludge needs to be removed, care should be taken to ensure it can be removed and stored without damaging the pond or the causing harm to the environment. Sludge is typically removed by first draining the pond, and a pump dredge system or other method removes the solids. A dewatering process may then be employed to reduce sludge volume and make storage and disposal easier. This can be passive, using a gravity drain system, or active, using a centrifuge or other similar piece of technology. Dewatered sludge could be stored in a landfill, encapsulated in the Waste Rock Stockpile or backhauled, depending on its composition.”</i></p>
Comment ID: CIRNAC-2		
2	<p>A Technical Memorandum was prepared by Golder Associates (Appendix A3) on the WRF Water Balance for the period January 2020 to September 2021. This was included as Appendix A of both Revision 2 (31 December, 2019) and Revision 3 (16 June, 2020) of BIMC’s Phase 1 WRMP. As such, there were no updates made to the WRF Water Balance, to incorporate recommendations made by Golder in December 2019, presented in the Phase 1 WRMP Revision 3. It is not clear to CIRNAC when the WRF Water Balance Model will be updated with reliable measurements of pond water elevation, surface water flows, and site climate data.</p> <p>Recommendation:</p> <p>(R-02) CIRNAC recommends that BIMC update and calibrate the water balance for the Waste Rock Facility, as per the recommendations provided by Golder (2019), with reliable measurements of pond water elevation, surface water flows, and site climate data. Predictions of pond water quality should also be updated using the improved surface water flows.</p> <p>(R-03) CIRNAC recommends that BIMC provide CIRNAC with an update of progress made to date and a specific timeline for when the earliest update to the model could be expected.</p>	<p>In the Golder (2019) Water Balance Memorandum, Golder was provided with Site data up to September 2019 to calibrate the model. Due to the issues identified in the Memorandum, additional data will be required to support future calibration of the model.</p> <p>CIRNAC is correct that no update to the model has been provided to date. This is attributed to the frozen condition of the pond and ditches of the WRF following the last available measures provided to Golder (September 2019). As of the issuance of the Revision 3 of the WRMP, spring melt of the pond had only just begun and no additional data collection was possible prior to this point. At the time of writing this response, Baffinland has not collected a sufficient data set during the open water season to implement a meaningful update to the Water Balance Model. Data from the 2020 season will be collected and utilized in the update to the Water Balance Model in spring 2021, concurrent with the next revision to the WRMP currently scheduled for submission in June 2021.</p> <p>As of June 2020, Baffinland has begun implementing the recommendations of the Golder report, including the procurement of a pressure transducer for the WRF pond to monitor elevation, and a totalizer to be installed on the discharge line from the Deposit 1 sump prior to use this season.</p>