



Water Resources Division  
Nunavut Regional Office  
Iqaluit, NU X0A 0H0

Your file - Votre référence  
2AM-MRY1325

November 10, 2017

Our file - Notre référence  
CIDM#1185168

Richard Dwyer  
Licence Administrator  
Nunavut Water Board  
Gjoa Haven, NU X0B 1J0

**Re: Indigenous and Northern Affairs Canada's (INAC) comments on Baffinland Iron Mines Corporation's modification request for the Mine Site Crusher Pad Sedimentation Pond Expansion under water licence #2AM-MRY1325 Amendment #1 – Mary River Project**

Dear Mr. Dwyer,

Thank-you for the email notices received on October 6 and November 2, 2017 regarding the above mentioned modification request.

INAC Water Resources Division reviewed Baffinland's modification request and the results of our review are presented in the enclosed memorandum for the Board's consideration. Comments have been provided pursuant to the Department's mandated responsibilities under the *Nunavut Waters and Nunavut Surface Rights Tribunal Act* and the *Department of Indian Affairs and Northern Development Act*.

Please do not hesitate to contact me at 867-975-3876 or [sarah.forte@aandc-aadnc.gc.ca](mailto:sarah.forte@aandc-aadnc.gc.ca) for any additional information.

Regards,

Sarah Forté  
Water Management Specialist

## **Technical Review Memorandum**

To: Richard Dwyer, Licence Administrator, Nunavut Water Board

CC: Andrew Vermeer, Regulatory Reporting Specialist, Baffinland Iron Mines Corporation

From: Sarah Forté, Water Management Specialist, Indigenous and Northern Affairs Canada

Date: November 10, 2017

Re: Modification Request for Water Licence #2AM-MRY1325 Amendment #1 – Mine Site Crusher Pad Sedimentation Pond Expansion Upgrade

Licensee: Baffinland Iron Mines Corporation  
Project: Mary River Project  
Region: Qikiqtani

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### **A. BACKGROUND**

Baffinland Iron Mines Corporation's (Baffinland) Type A water licence 2M-MRY1325 amendment #1 covers mining activities associated with the Mary River iron mine, which has two principal sites: the Mine Site, approximately 100 km inland, and the Milne Port, at the southern tip of Milne Inlet.

On April 25, 2017, the Nunavut Water Board (NWB) distributed for review the 2017 Mine Site Crusher Pad Expansion (Modification Request) submitted by Baffinland. The modification is described as increasing the pad size by approximately 10%. Indigenous and Northern Affairs Canada (INAC) submitted comments on May 9, 2017 and our principle concern was that the capacity of the sedimentation pond collecting run-off from the crusher pad was not modified to meet the requirements of an expanded crusher pad.

The NWB issued an authorization for the modification request on May 26, 2017 that outlined a two part solution for the pond capacity issue; a temporary solution with sandbags wrapped in geotextile in the spillway, and a permanent solution to raise the berm of the pond. The modification request distributed for review by the NWB on October 6, 2017 pertains to the permanent solution; increasing the crusher pad sedimentation pond capacity.

The present modification request is to increase the sedimentation pond capacity to 3950 m<sup>3</sup> by raising the existing berm approximately 0.5 m.

## **B. RESULTS OF REVIEW**

On behalf of the Water Resources Division of INAC, the following comments and recommendation are provided for the Board's consideration:

### **1. Sedimentation pond capacity**

#### References:

- RE: Mary River Project – Mine Site Crusher Pad Sedimentation Pond Expansion (Modification Request), Water Licence 2AM-MRY1325 – Amend. No. 1, Baffinland Iron Mines Corporation, September 27, 2017
- Crusher Pond Sedimentation Pond Expansion Detailed Design Brief, Mary River Project, Nunavut, Golder Associates Ltd., August 29, 2017
- Crusher Pad Expansion Detailed Design Brief, Mary River Project, Nunavut, Golder Associates Ltd., April 17, 2017

#### Comment:

The capacity used for the crusher pad sedimentation pond and the size of the crusher pad are inconsistent between the April 17 and August 29 Design Briefs.

	<b>April 17, 2017 Design Brief</b>	<b>August 29, 2017 Design Brief</b>
<b>Initial crusher pad size</b>	-	89 000 m <sup>2</sup>
<b>Size of 10% pad expansion</b>	8 350 m <sup>2</sup>	12 500 m <sup>2</sup>
<b>Current pond capacity</b>	3 490 m <sup>3</sup>	2 750 m <sup>3</sup>
<b>Pond capacity necessary for 10% pad expansion</b>	3 972 m <sup>3</sup>	3 947 m <sup>3</sup>

These are important differences. According to the information presented in April, the August proposal to increase pond capacity to 3 950 m<sup>3</sup> would not be sufficient to contain the 1:10 year storm 24 hour event, as calculated in April. It would be even less adequate if the surface area of the pad expansion is larger than was used for the April calculations.

Recommendation:

INAC recommends that prior to modifying the pond, the licensee provide clarity on the initial size of the crusher pad, the size of the pad following the 10% increase and the current pond capacity. These are critical to being able to evaluate if the proposed pond capacity increase is adequate.

**2. Design criteria**

References:

- Crusher Pond Sedimentation Pond Expansion Detailed Design Brief, Mary River Project, Nunavut, Golder Associates Ltd., August 29, 2017
- Baffinland Iron Mines Corporation: Mary River Project, Design Criteria, Civil, Hatch/Baffinland, August 28, 2013, Section 7.3

Comment:

The calculation of necessary pond capacity relies on an estimate of rainfall intensity. The values used are from the Design Criteria created in 2013. As raised in our May 2017 submission, Baffinland now has more experience on site, including more local meteorological data.

During freshet, the pond also collects meltwater from snow accumulated in the pond as well as on the crusher pad and piles. The Design Criteria do not mention freshet, so we are uncertain as to the capacity necessary for dealing with spring melt. Since precipitation falls as snow for the majority of the year, and the pond will gather all this water during a relatively short period when it melts, consideration of the adequacy of pond capacity for this event would be appropriate.

Recommendation:

We recommend that the licensee provide a discussion on the continued use of the 2013 Design Criteria without modification, including if incorporation of meteorological data gathered since 2013 would alter the estimated rainfall intensity, and if disregarding freshet flows when designing containment ponds is appropriate.

**3. Pond water management**

References:

- Crusher Pond Sedimentation Pond Expansion Detailed Design Brief, Mary River Project, Nunavut, Golder Associates Ltd., August 29, 2017
- Surface Water and Aquatic Ecosystem Management Plan, BAF-PH1-830-P16-0026 Rev 3, Baffinland Iron Mines Corporation, March 2015, Section 7.3.1

Comment:

The design criteria used to size the pond assume that it is empty or almost empty before the design storm.

The Surface Water and Aquatic Ecosystem Management Plan does not include the necessity of keeping the ponds levels low in the management practises. It only speaks to the monitoring necessary before releasing water: *“Surface water runoff in the area will be directed to a sedimentation pond where monitoring will be completed subject to Part D, Item 16 of Baffinland’s Type A Water Licence prior to its release to the environment.”*

Recommendation:

INAC recommends that the licensee update the Surface Water and Aquatic Ecosystem Management Plan to explicitly include management practises necessary to meet the assumptions used for pond design.