April 12, 2021

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Re: 2021 Quarry Drilling Program
Type 'B' Water Licence 2BE-MRY1421
Commercial Lease No. Q13C301

Baffinland Iron Mines Corporation (Baffinland) is planning to undertake a geotechnical drilling program at two proposed quarry locations along the Milne Inlet Tote Road in April/May 2021(Figure 1). Baffinland plans to drill two (2) shallow drill holes (up to a maximum of 30 m deep) within the proposed quarry locations. The two (2) locations may encroach within 31m of the high water mark of local water bodies or seasonal drainages. The drilling program is being managed by Hatch Ltd. and performed by Cyr Drilling Ltd. The program is an extension of the drilling program outlined in the notification submitted on October 5, 2020, and is scheduled to commence on April 26, 2021 and expected to be completed by May 31, 2021.

The drilling program will be completed along the Tote Road using a Zinex A5 drill. Proposed drilling locations are outlined in Table 1 and the proximity of the proposed locations to surrounding water bodies are shown in Figure 1. Cyr Drilling Ltd. will be using a refrigerated drilling technique, requiring the use of a water and a calcium chloride solution to prevent the drill holes from freezing while coring samples. Two feet of casing will be used per drill hole to prevent return water from infiltrating holes. Casings will be removed or cut below grade at the completion of the drilling program.

The two locations will be drilled within 31m of the high water mark of local seasonal drainages, and these locations are noted in Table 1. Locations will be adjusted in the field to avoid drilling within the 31m of the high water mark wherever possible, however due to topography and field conditions this may not be achievable at all locations. There will be no on-ice drilling conducted as part of this program.

The geotechnical drill program and its associated water use will be undertaken in accordance with Baffinland's Type B Water Licence for exploration (Licence No. 2BE-MRY1421; Nunavut Water Board, 2014). A water withdrawal assessment has been prepared to meet the requirements of Part C, Item 4 of the licence (Attachment 1). KM 32 Lake, Katiktok Lake, Muriel Lake, and David Lake (Figure 1) are all large waterbodies that are expected to provide the required water volumes with negligible impact. It is anticipated that David Lake will be used to provide the required water volumes for these boreholes. The locations for the respective water bodies are outlined in Table 2.

Supporting vehicles include pickup trucks, a float trailer, an excavator, grader and dozer to provide temporary winter access roads to the drilling locations. Winter access routes will be cleaned of any debris and inspected following use for any potential impacts to tundra. Boreholes will be drilled to depths up to a maximum of 30 m deep below ground surface (mbgs).

Table 1: Proposed 2020/21 Geotechnical Drilling Locations - PQ14A/B Quarries

Borehole ID	Easting	Northing
BH21-PQ14A*	550890	7917740
BH21-PQ14B*	551080	7917410

*Locations where drilling may encroach within 31m of the high water mark.

Environmental monitoring will be performed, including pre, during and post drilling inspections. Drill cuttings will be disposed of in natural depressions or used for backfill of boreholes consistent with Part F, Item 4 of Baffinland's Type B Water Licence 2BE-MRY1421 (Type B Water Licence). An estimated total volume of 93 m^3 of sump waste will be generated and disposed in local depressions at a minimum distance of 31m away from any water body. The locations for waste disposal will be field fit once drills are mobilized and set up, and will be in the immediate vicinity of the drill. Management of drill cuttings and pre, during and post inspections to ensure appropriate measures are put in place will be completed in accordance with the Environmental Protection Plan (BAF-PH1-830-P16-0008). Drill water runoff and siltation mitigation measures consistent with Baffinland's Environmental Protection Plan (BAF-PH1-830-P16-0008) will be implemented as required based on the seasonal timing of the geotechnical program.

Table 2: Proposed Water Sources

Water Source	Easting	Northing
KM 32 Lake	521281	7953133
Katiktok Lake	526574	7933512
Muriel Lake	543719	7922807
David Lake	548625	7919712

Notes: All coordinates in UTM, NAD 83, Zone 17.

Despite best planning, it should be noted that unforeseen circumstances may necessitate some changes in planning as the program proceeds. Baffinland will endeavor to inform the Inspector and other relevant parties in such circumstances.

In accordance with the conditions of the Type B Water Licence, this letter and attachment provides Baffinland's notification for the drilling of a total of two(2) boreholes with proximity to nearby water bodies.

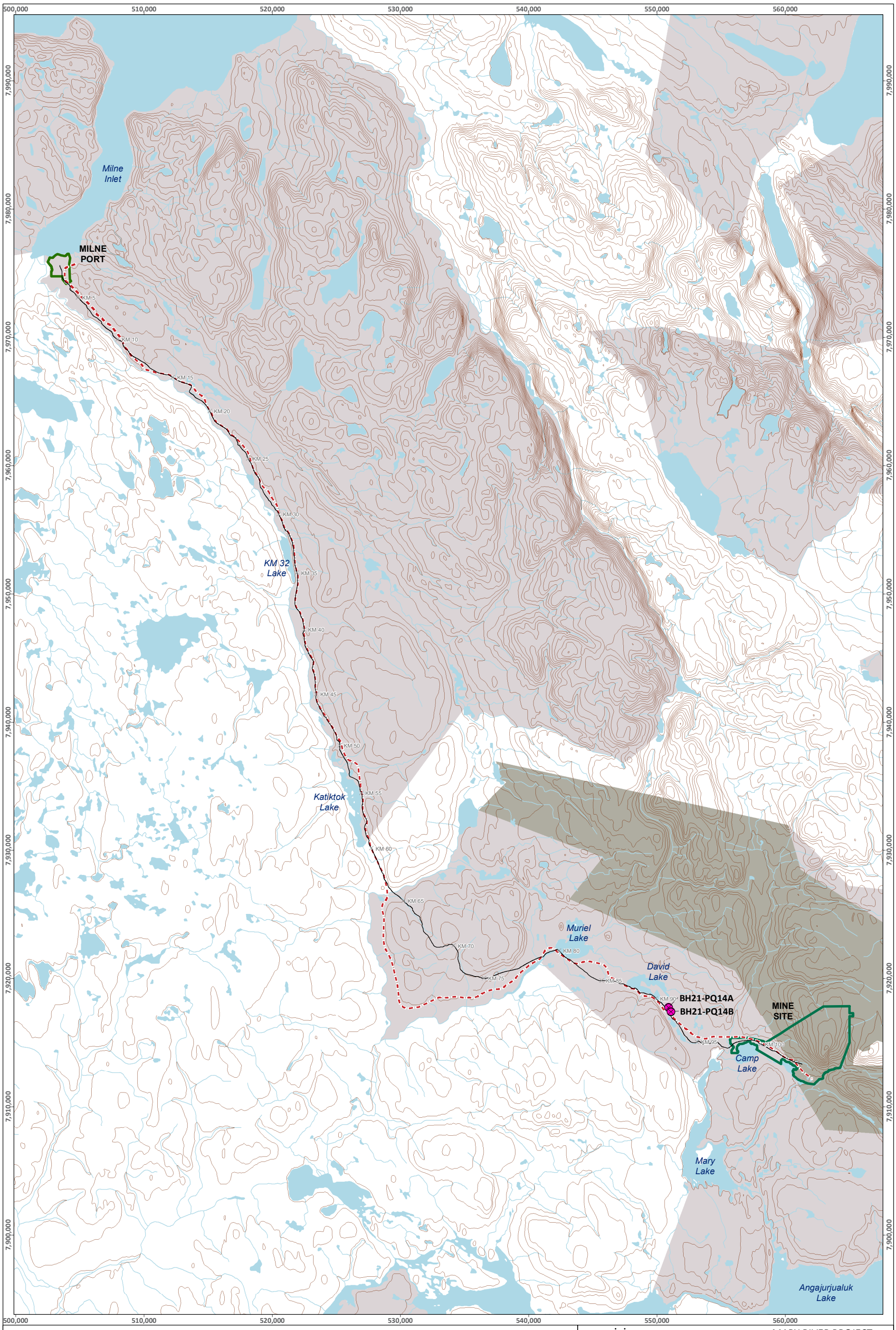
We trust that this information meets the various notification requirements for geotechnical drilling at the Project. Please do not hesitate to contact the undersigned, should you have any questions or comments.

Regards,

Christopher Murray
Environmental & Regulatory Compliance Manager

Attachments:
Figure 1: Proposed Quarry Geotechnical Drilling and Water Sources
Attachment 1: Mary River Project - Winter Water Withdrawals from KM 32, Katiktok, Muriel, and David Lakes

Cc: Timothy Ray Sewell, Lou Kamermans, Shawn Stevens, Connor Devereaux, Amanda McKenzie, Leonel Dabor, Steve Borcsok (Baffinland)
Assol Kubeisinova, Karén Kharatyan (NWB)
Bridget Campbell, Godwin Okonkwo, Justin Hack (CIRNAC)
Chris Spencer (QIA)



LEGEND

Borehole Locations

- Quarry
- Milne Inlet Tote Road Km Marking
- Milne Inlet Tote Road
- Contour (20 m Interval)
- Proposed North Railway - Route 3
- Project Development Area
- IOL Surface Only
- IOL Surface and Subsurface

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MARY RIVER PROJECT

Proposed Quarry Geotechnical Drilling and Water Sources

Projection: NAD 1983 UTM ZONE 17N.
Base Map: © Queen's Printer for Ontario, 2020.

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Scale 1:280,000

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FIGURE 1

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Attachment 1

Mary River Project - Winter Water Withdrawal Assessment from KM 32, Katiktok, Muriel, and David Lakes

2275 Upper Middle Road East, Suite 300 | Oakville, ON, Canada L6H 0C3
Main: 416.364.8820 | Fax: 416.364.0193 | www.baffinland.com

MEMORANDUM

Date:	September 24, 2020	**File No.:**	NB102-00181/60-A.01
		Cont. No.:	NB20-00807
To:	Ms. Amanda McKenzie		
Copy To:			
From:	Amber Blackwell		
Re:	**Mary River Project - Winter Water Withdrawals from KM 32, Katiktok, Muriel, and David Lakes**		

1.0 INTRODUCTION

Baffinland Iron Mines Corporation (Baffinland) is planning to undertake geotechnical drilling this winter (November-December 2020 and April-May 2021) along Route 3 of the North Railway (Figure 1). Baffinland plans to drill up to 40 shallow drill holes (up to a maximum of 15 m deep each) along the proposed North Railway.

The geotechnical drill program and its associated water use will be undertaken in accordance with Baffinland's Type B Water Licence for exploration (Licence No. 2BE-MRY1421; Nunavut Water Board, 2014). This water withdrawal assessment has been prepared to meet the requirements of Part C, Item 4 of the licence, which states:

> *4. The Licensee shall submit to the Board for approval in writing, at least thirty (30) days prior to the use of Water, in cases where the Licensee requires Water in sufficient volume that the source Water body may be drawn down, the following information: volume required, hydrological overview of the Water body, details of impacts, and proposed mitigation measures.*

2.0 WATER VOLUME REQUIRED

The total estimated water that will be required for this activity totals 108 m^3 (108,000 L). However, because this is a very small volume and to allow for changes to the drilling program, the assessed water withdrawal volume is 1,000 m^3 (1,000,000 L) over a single winter period. The 1,000 m^3 volume has been used to assess each potential water source, though it is unlikely that only one of the water sources will provide all the required drill water.

3.0 POTENTIAL WATER SOURCES

The drilling program will be executed in the winter months, when approved stream water sources are typically frozen to the bottom. For this reason, lakes and ponds are the only potentially viable water sources to support the program.

Several ponds that are connected to this segment of the Ravn River were identified nearby. If these do not freeze to the bottom, they could provide overwintering habitat for fish. In the absence of both fish habitat information as well as bathymetry to calculate potential under-ice water volumes, it cannot be demonstrated that winter water withdrawals would not affect potential overwintering fish habitat.

LEGEND

Borehole Locations
- Geophysics
- Route 3
- Culvert

- Milne Inlet Tote Road Km Marking
- Milne Inlet Tote Road
- Contour (20 m Interval)
- Proposed North Railway - Route 3

- Project Development Area
- IOL Surface Only
- IOL Surface and Subsurface

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Proposed Route 3 Geotechnical Drilling and Water Sources

Projection: NAD 1983 UTM ZONE 17N.
Base Map: © Queen's Printer for Ontario, 2020.

0 1 2 4 6 8 km
Scale 1:280,000

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Baffinland

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KM 32 Lake, Katiktok Lake, Muriel Lake, and David Lake (Figure 1) are all large waterbodies that are expected to provide the required water volumes with negligible impact. Hence, this assessment focuses on these four water bodies, with the assumption that any one (or a combination of) could provide the water required for drilling.

4.0 EVALUATION

Winter water withdrawals in Nunavut are typically evaluated in accordance with Fisheries and Oceans Canada's (DFO's) *Protocol for Winter Water Withdrawal from Ice-covered Waterbodies in the Northwest Territories and Nunavut* (DFO, 2010). This protocol identifies a threshold that the total water withdrawal from a single waterbody over one ice-covered season should not exceed 10% of the available water volume calculated using the appropriate maximum expected ice thickness. Bathymetric surveys have not been conducted of these two lakes, and thus an evaluation of the water withdrawal against this threshold is not possible.

In the absence of bathymetry data, KP has previously evaluated winter water withdrawals using two different metrics (Baffinland, 2018):

- Calculate the lake drawdown by relating the water withdrawal volume to the lake surface area, to determine if effects to fish habitat are possible.
- Compare the water withdrawal volume to the annual recharge to the lake to determine if there will be a noticeable delay in lake outflows in the spring. The annual lake recharge is calculated using the lake's catchment area and an appropriate mean annual unit runoff value.

In this instance, the water withdrawal is so small that it is sufficient to use the first metric above to establish that the water withdrawal will be immaterial to the under-ice water volume and fish habitat within the lakes.

As noted in Section 2, we have assumed that up to 1,000 m^3 of water could be withdrawn from each lake (an order of magnitude greater than the expected water use). The results are presented in Table 1.

Table 1 Estimated Lake Drawdowns from Water Withdrawal

Waterbody	Surface Area (m^2)	Estimated Drawdown (mm)
KM 32 Lake	1,545,000	0.65
Katiktok Lake	4,517,040	0.22
Muriel Lake	4,939,244	0.20
David Lake	2,797,200	0.36

The estimated drawdown in each lake is less than 1 millimetre (mm), and therefore will not be discernible from annual variations in winter water levels.

Based on the negligible drawdown, it is reasonable to assume without any calculations that the water withdrawals will not affect lake outflows during the spring.

5.0 PROPOSED MITIGATION MEASURES

Applicable mitigation measures are identified in Baffinland's Environmental Protection Plan relating to geotechnical and exploration drilling. This includes adherence to DFO's fish screen guideline (DFO, 1995).

6.0 REFERENCES

Baffinland Iron Mines Corporation (Baffinland), 2018. *Eqe Bay Exploration Program - Project Proposal*. April.

Fisheries and Oceans Canada (DFO), 1995. *Freshwater Intake End-of-Pipe Fish Screen Guideline*. ISBN 0-668-23168-6. Retrieved from: www.dfo-mpo.gc.ca/Library/223669.pdf

Fisheries and Oceans Canada (DFO), 2010. *DFO Protocol for Winter Water Withdrawal from Ice-covered Waterbodies in the Northwest Territories and Nunavut*.

Nunavut Water Board, 2014. *Type B Water Licence No. 2BE-MRY1421*. April 14.

7.0 CLOSING

We trust this meets your present requirements. Please do not hesitate to contact the undersigned with any questions.

Yours truly,
Knight Piésold Ltd.

Prepared:	Reviewed:
Amber Blackwell, P.Geo.	Steven R. Aiken, P.Eng.
Project Geoscientist	Manager, Environmental Services

Approval that this document adheres to the Knight Piésold Quality System: ☐

/ab