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October 23, 2015

Oliver Curran
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Sent via email: oliver.curran@baffinland.com

Re: The Nunavut Impact Review Board's 2014-2015 Annual Monitoring Report for the Mary River Project and Board's Recommendations

Dear Oliver Curran:

The Nunavut Impact Review Board (NIRB or Board) is hereby releasing its *2014-2015 Annual Monitoring Report for Baffinland Iron Mines Corp.'s Mary River Project* (Monitoring Report) along with the 2015 Site Visit Report for the NIRB's monitoring of the Mary River Project¹, as well as Pond Inlet Consultation Report.² The enclosed Monitoring Report is based on the NIRB's monitoring activities as set out within the Mary River Project Certificate [005] and pursuant to Sections 12.7.1 and 12.7.2 of the Nunavut Land Claims Agreement. This report provides findings that resulted from monitoring of this Project that took place from September 2014 to September 2015.

By way of a motion carried during its regular meeting held in October 2015, the Board has issued the following recommendations to assist Baffinland Iron Mines Corp. (Baffinland or Proponent) in achieving compliance with the Mary River Project Certificate and to ensure the NIRB has all information necessary to adequately discharge its mandate with respect to provisions within section 12.7 of the Nunavut Land Claims Agreement as such pertain to the Mary River Project.

¹ Appendix I of 2014-2015 Annual Monitoring Report

² Appendix II of 2014-2015 Annual Monitoring Report

1. Recommendations based on the NIRB's Review of the 2014 Annual Report

Public Consultation Report

Pursuant to Condition 27, Baffinland is required to include within its public consultation report information related to the sentiments expressed by affected communities about the impacts that changes to the topography and landscape have had on the aesthetic value of the Project area. While Baffinland reported that no specific comments regarding this condition were noted during meetings or engagements with the Pond Inlet Community Advisory Group (CAG); the Board notes that the Proponent has yet to provide a clear rationale for not submitting a public consultation report, including records of its meeting with the CAG in May, July, October and December 2014. The required information may result in the Proponent's implementation of mitigation measures to ensure that impacts of the Project on topography or landscape are minimized.

Recommendation 1: The Board requests that Baffinland provide a rationale for not submitting a public consultation report, including records of issues discussed with the Pond Inlet Community Advisory Group in May, July, October and December 2014. It is recommended that this condition be addressed by way of Baffinland soliciting comments directly from affected communities or through an established community advisory group, which will take into consideration concerns with respect to the changes to topography or landscape due to project development. It is requested that a public consultation report, including summary of items discussed by Baffinland with the Community Advisory Group and issues expressed by other community members, be provided and incorporated in Baffinland's next annual reporting to the NIRB.

Adaptive Strategies for Dust Deposition Exceeding Predicted Thresholds

Baffinland reported that dustfall at the Milne Port stations within the zone predicted to receive a moderate threshold range of deposition have received a high threshold level of deposition, exceeding levels predicted in the final environmental impacts statement (FEIS) or FEIS Addendum. While Baffinland had committed to using dust suppressants across Project sites, Project Certificate Condition 10d specifically requires that Baffinland identify the specific adaptive management measures to be considered should monitoring indicates that dust deposition from Project-related activities is greater than initially predicted. The NIRB notes during its review of the 2014 Annual Report that Baffinland has not provided any information on how and where specific adaptive management measures are to be used and incorporated to address dust exceedances for the affected Milne Port stations.

Recommendation 2: The Board request that Baffinland specify which mitigation measures within its existing Air Quality and Noise Abatement Management Plan will be implemented to address the high threshold level of deposition, exceeding levels predicted in the FEIS or FEIS Addendum; as well as a description of how and where specific adaptive management measures is to be used to ensure that dust deposition levels return to normal range threshold. It is requested that this information be provided within an updated Air Quality and Noise Abatement Management Plan and incorporated in Baffinland's next annual reporting to the NIRB.

Short-term Noise Level Exceedances at Mine Site and Milne Port

Baffinland noted that occasional short-term noise level exceedances of up to 52.2 decibels (dBA) were reported at the Mine site and 64.7 dBA at the Milne Port respectively for 2014. The NIRB notes that Baffinland has yet to indicate any information on how and where specific adaptive management measures will be implemented to address noise exceedances for the affected Project areas.

Recommendation 3: The Board request that Baffinland specify which mitigation measures within its existing Air Quality and Noise Abatement Management Plan will be implemented to address Project related noise exceedances; as well as a description of what specific measures will be undertaken by the Proponent to ensure that noise levels return to normal range threshold in the event that site construction activities persist for an extended period than anticipated. It is requested that this information be provided within an updated Air Quality and Noise Abatement Management Plan and incorporated in Baffinland's next annual reporting to the NIRB.

Survey of Nunavummiut Employees

Pursuant to Condition 140, the Proponent is encouraged to survey Nunavummiut employees as they are hired and specifically note the level of education obtained and whether the incoming employee resigned from a previous job placement or educational institution in order to take up employment with the Project. The NIRB notes that details regarding where and how these surveys have been undertaken have not been stated or included in the referenced labour market report and socio-economic report.

Recommendation 4: The Board requests that Baffinland provide details of its survey of Nunavummiut employees, and include additional information on the level of education obtained as well as further clarify whether or not incoming employees resigned from a previous job placement or educational institution in order to take up employment with the Project. It is requested that this survey be conducted for all Nunavummiut employees with the results provided and incorporated in the Proponent's next annual reporting to the NIRB.

Terrestrial Environmental Monitoring Report: Appendix L2

○ *Trace Metal Analyses without Mercury*

The NIRB notes that the 2014 Annual Terrestrial Monitoring Report only provided discussions of lichen and soil accumulation of selected metals such as aluminum, arsenic, cadmium, copper, lead selenium, and zinc, and has not included detailed discussion for mercury (Hg) even though soil and lichen Hg data were available and included within Appendix D of the 2014 Annual Terrestrial Monitoring Report. The NIRB also notes that mercury levels in lichens from the Project Development Area were significantly higher relative to mercury concentration in surrounding soils, with no specific information given within the 2014 Annual Terrestrial Monitoring Report regarding its source(s) or factors controlling its spatial distribution, including potential effects on wildlife, particularly caribou which utilize the lichens as forage.

Recommendation 5: The Board requests that Baffinland provide its rationale for not including detailed discussion of mercury deposition in lichens relative to surrounding soils. It is suggested that this condition be addressed through the Proponent's discussion

of any natural factors or site specific activities influencing the spatial distribution and elevation of mercury in lichens relative to surrounding soils, as well as noting the implication for terrestrial wildlife. It is requested that this information be provided and incorporated in the Proponent's next Terrestrial Environmental Monitoring Report.

○ Reporting Lead Deposition on Lichens

On Page 56 of the 2014 Annual Terrestrial Monitoring Report, Baffinland reported that "one lichen sample exceeded the Project threshold for lead (5mg/kg dry weight), and with median concentration among all samples below the threshold level". However, the NIRB notes that several locations, particularly from L-56 to L-67 had lichen lead levels significantly higher than the Project threshold, and was not fully discussed within the 2014 Annual Terrestrial Monitoring Report. In addition, the NIRB also notes that Baffinland has yet to provide detailed analyses of the source(s) of lead on the lichen, or why the current levels of lead accumulation in lichens for 2014 differ from previous observations in 2012 and 2013, and the implication for terrestrial wildlife foraging on the vegetation.

Recommendation 6: The Board requests that Baffinland provide a discussion on the lead deposition on lichens, as well as an explanation for lead exceedances in lichens samples in several sampling locations. Further, the Board requests a discussion of why the current levels of lead accumulation in lichens for the 2014 monitoring period differ from the 2012 and 2013 monitoring periods, and the implication for terrestrial wildlife foraging on the vegetation. It is requested that this information be provided and incorporated in the Proponent's next Terrestrial Environmental Monitoring Report.

○ Source Apportionment of Trace Metals

In Page 57 of the 2014 Annual Terrestrial Monitoring Report, Baffinland reported that trends in cadmium and copper concentrations to distance from the Project Development Area may not be biologically important and could be the result of natural mineralization of the Mary River area. The NIRB notes that the assumption of "natural mineralization" of cadmium and copper including other metals was not fully substantiated in the report, and that the existing trace metal monitoring program has not been successful in distinguishing local from regional or from point source contamination in soils and lichens, nor has it critically examined the potential for relative contribution of atmospheric sources of elements. One way to potentially overcome this challenge is for Baffinland to consider calculating an enrichment factor based on the ratio of aluminum to the target element in the local soils compared to the aluminum of the target element ratio in local lichens to support assumption or conclusion of source apportionment of metal enrichment. While an enrichment factor could also be calculated for soils in order to differentiate natural background of elements from anthropogenic sources, a lead isotope "fingerprint" for both soils and lichens could also be assayed to identify the origin and specific source of lead in the environment for the purpose of long-term monitoring.

Recommendation 7: The Board requests that Baffinland consider improvements to its trace metal monitoring program for soils and vegetation (lichens) and strengthen the conclusion of source apportionment of trace metals in the Project area. This could be done by differentiating natural background of elements from anthropogenic sources, and critically examine the potential for relative contribution of atmospheric sources of elements in its discussion of trace element distribution in soils and uptake by vegetation, particularly lichens. It is requested that this information be provided in the Proponent's next Terrestrial Monitoring Report, especially in support of any assumptions or

conclusions regarding source apportionment of metal enrichment in the Project Development Area.

○ Sample Size for Lichens and Soils

Baffinland reported in Table 18 of the 2014 Annual Terrestrial Monitoring Report that it intends to only collect 22 soil samples and 23 lichen samples for its 2015 terrestrial monitoring program. The NIRB notes that the Government of Nunavut (GN) had specifically commented on vegetation abundance monitoring, noting that the current study design will be unable to detect meaningful changes to the terrestrial vegetation and lichen due to small sample size, limited study area extent and site variability. The GN had specifically recommended that the vegetation monitoring program be redesigned to increase sampling efforts, and incorporate where possible other field techniques such as use of high resolution remotely sensed images.

Recommendation 8: The Board request that Baffinland consider, in consultation with the GN, improvements to its sample size for trace metal monitoring in soils and vegetation (lichens) taking into account increased sample size representative of the Project Development Area, and where possible incorporate other field techniques such as use of high resolution remotely sensed images to improve overall vegetation abundance monitoring. Additionally, the Proponent must consider whether the sample size is of sufficient size for monitoring baseline levels of metals in soil and vegetation using the power of detection of change methodology. It is requested that this information be provided and incorporated in Baffinland's next annual reporting to the NIRB.

○ Caribou Fecal Pellet Collection

Baffinland noted within the 2014 Annual Terrestrial Monitoring Report that caribou fecal pellets have been collected within the Mary River regional study area since 2011 and that to date, no analysis of the collected fecal pellets has been conducted. Further, Baffinland noted that no additional samples will be collected in the future recognizing the GN's moratorium on North Baffin caribou. The NIRB notes that Baffinland's 2014 Annual Terrestrial Monitoring Report did not provide any concrete timelines for providing results of the pellets that were collected to date and analyses of these samples would be useful for monitoring health of caribou due to project activities.

Recommendation 9: The Board request that Baffinland provide results and analyses of the ash contents of caribou pellets collected from the regional study area since 2011. It is requested that this reporting gap be addressed and incorporated in the Proponent's Terrestrial Monitoring Report and presented in next annual reporting to the NIRB.

Disturbance Effects from Ships Noise

Baffinland has yet to provide information regarding disturbance effects of ship noise on marine wildlife, including details of its underwater sound monitoring program pursuant to Condition 109 of the Project Certificate. Baffinland had specifically referenced the submission of Appendix N9, a report regarding underwater sound monitoring within its 2014 Annual Report to the NIRB; however, the Board notes that the referenced appendix or report was not included within the 2014 Annual Report to the Board.

Recommendation 10: The Board request that Baffinland provide information regarding disturbance effects of ship noise on marine wildlife, and submit its report regarding

underwater sound monitoring program. It is requested that this information be provided within 45 days' receipt of these recommendations.

Editorial Issues and Missing References in Baffinland's 2014 Annual Report

It was noted by the NIRB that Baffinland's 2014 concordance table to the Project Certificate Conditions contained at least 13 inconsistent references and omissions as related to items under Conditions 1, 5, 6, 7, 8, 9, 14b, 25, 26, 42, 71, 109, 113, 124, 125, and 128. These will need to be addressed.

Recommendation 11: The Board requests that Baffinland address the inconsistent references and related omissions as pertaining to items under Project Certificate Conditions 1, 5, 6, 7, 8, 9, 14b, 25, 26, 42, 71, 109, 113, 124, 125, and 128. Further, the Board requests that Baffinland provide the NIRB, where applicable, with the relevant missing appended documentations which were indicated to be provided, but not submitted within the 2014 Annual Report to the NIRB, and further clarify whether any missing appended documentation or inconsistent references as noted in the concordance table to Project Certificate is to render a condition incomplete with respect to compliance. It is requested that this information be provided within 45 days' receipt of these recommendations.

2. Recommendation from Authorizing Agencies' Comments on 2014 Annual Report

Apprenticeship Programs and Contractor Employment

The Qikiqtani Inuit Association (QIA) noted that the 2014 Annual Report did not include information regarding a 2014 Apprenticeship Program, and additional details regarding number of Inuit participants, selection criteria, hours of training and successful completion. Furthermore, the QIA noted that the information in the 2014 Annual Report pertaining to Inuit employment has not included contractors' employment, and further indicated that collection of this information is a requirement under Article 20 of the Inuit Impact Benefit Agreement, and should be included in Baffinland's annual reporting to provide greater clarity regarding Inuit employment overall.

Recommendation 12: The Board requires Baffinland, in consultation with the QIA, to consider improvement to the apprenticeship program, noting number of Inuit participant, selection criteria, hours of training and successful completion rate, as well as to include contractors' employment data within its annual reporting to the NIRB. It is requested that this information be provided and incorporated in Baffinland's next annual reporting to the NIRB.

Submission of AANDC Inspection Report for November 2014

Aboriginal Affairs and Northern Development Canada (AANDC) indicated within its comments to the NIRB that it conducted four inspections at the Mary River Project site between April and November 2014, but noted that only three of the inspection reports were included within the 2014 Annual Report. AANDC specifically noted that the inspection report for November 18 to 20, 2014 was not submitted within the 2014 Annual Report to the NIRB.

Recommendation 13: The Board request that Baffinland address this information gap by submitting AANDC's Inspection Report for November 2014, and that this request be provided within 45 days' receipt of the Board's recommendations.

Monitoring of Flight Altitude in Key Sites for Moulting Snow Geese

Environment Canada (EC) noted its concerns with respect to monitoring flight altitude in key sites for moulting snow geese. EC specifically commented that helicopters on site were flying below recommended altitudes most of the time, and recommended that Baffinland needed to create increased pilot and staff awareness of the area of concern by displaying maps in appropriate locations or upload digital information in navigation GPSs. Further EC suggested that Baffinland analyze helicopter track log information in the Annual Terrestrial Monitoring Report.

Recommendation 14: The Board request that Baffinland comply with authorized flight altitude during use of onsite helicopters, particularly in areas considered as key sites for moulting snow geese. Further, Board requests that Baffinland provide helicopter track log data, including compiling and analyzing data in relation to the Snow Goose Management Area. It is requested that this information be provided and incorporated in the Proponent's next Annual Monitoring Report to the NIRB.

Reporting of Project-related Mortalities, including Migratory Birds

EC commented on project-related mortality with specific notes on migratory birds' collision with project infrastructures. EC also observed discrepancies between the earlier draft and final versions of the 2014 Annual Terrestrial Monitoring Report, noting that the final version of the report was missing a table of all project-related mortalities, as well as details regarding two long-tailed ducks that flew into an operational sheet piling crane.

Recommendation 15: The Board requests that Baffinland improve its reporting of Project-related mortalities, particularly for migratory birds, and address all the discrepancies noted by Environment Canada as pertaining to missing a table of all project-related mortalities, as well as details regarding two long-tailed ducks that flew into an operational sheet piling crane. It is requested that this information be provided and incorporated in the Proponent's next Annual Monitoring Report to the NIRB.

3. Recommendations Based on NIRB's 2015 Site Visit

The Mary River Project is at the early stages of construction and operations, and as such there are a number of Terms and Conditions contained within the Project Certificate that are not applicable or have not been completely adopted by Baffinland at this time. Below is a summary of the issues noted during the June 2015 site visit, and suggested recommendations to address them:

Dust Suppression Measures

Condition 10 requires the implementation of a dust management and monitoring plan at the Mary River site to prevent impacts to air quality from dust dispersion. At the time of the site visit, there was open storage of dust suppression chemicals located near the airstrip; however no trucks were observed applying water to road surfaces, nor were any other dust suppression methods observed being implemented. The Monitoring Officer noted that dust was being generated

across the Project Development Area as evident by accumulation on snow and ice surfaces throughout the site, as well as direct observation of dust plumes generated by vehicular operation. Further it was noted that in some instances the plumes limited local visibility and creating a safety concern for others using the roads. Dust fall stations were present along the Milne Inlet Tote Road, which can be noted as being in compliance to part c of Condition 10; however, the dust suppression measures committed to in the Final Environmental Impact Statement and Early Revenue Phase Addendum on which the acceptable limits were based for deposition rates and which were expected to trigger adaptive management strategies in Baffinland's Air Quality and Noise Abatement Management Plan, are not in place and therefore the NIRB cannot assess compliance to part d of Condition 10.

Recommendation 16: The Board requests that Baffinland provide an explanation as to why dust suppression measures committed to in the Final Environmental Impact Statement and Early Revenue Phase Addendum on which the acceptable limits were based for deposition rates, and which were expected to trigger adaptive management strategies in Baffinland's Air Quality and Noise Abatement Management Plan, are not in place onsite. In addition, the Board requests that Baffinland discuss how it plans to implement the recommendation of Workers' Safety and Compensation Commission inspectors with respect to appropriate use of dust control measures at the crusher and screening plant to prevent health hazards to workers. It is requested that this information be provided within 45 days' receipt of these recommendations.

Waste Landfill

At the time of the site visit, most the protective mesh around the landfill area was completely removed from the supporting poles, and that the current condition of the fencing around the landfill was deemed not to be acceptable or consistent with best practices given that waste materials from the landfill were being blown away to the surrounding environment. It was also noted that some waste materials, including scrap materials and metals were disposed of outside the current waste landfill footprint. AANDC had previously recommended that Baffinland replace snow fencing with new fencing that is less sensitive to winters by June 2015, as well as monitor any windblown debris leaving the landfill. On September 17, 2015, Baffinland provided new photo to the NIRB regarding the re-installation of landfill litter fences, noting that the fences are currently erect and effectively keeping windblown material within the confines of the landfill.

Recommendation 17: The Board requests that Baffinland provide an explanation for the disposal of waste materials, including scrap metals outside the landfill footprint, and describe how it has incorporated the recommendation of AANDC to replace the landfill litter fences with new fencing that has greater long-term durability. Additionally, the Proponent is to provide a discussion of how it will ensure that wastes disposed of at the landfill are properly contained, and does not become dispersed off-site due to wind action or runoff. It is requested that this information be provided within 45 days' receipt of these recommendations.

Communication Towers for Bird Deterrence

Condition 68 requires that Baffinland ensure flashing red, red strobe or white strobe lights and guy-wire deterrents are used on communications towers established for the Project. Based on observations from the site visit, no bird deterrent strobe or flashing lights was observed on the

communicator tower. Baffinland staff mentioned during the site visit that bird reflectors were planned to be installed on the tower in the weeks after the site visit. However, to date Baffinland has yet to provide updates or information to the Board on how it plans to comply with this condition.

Recommendation 18: The Board requests that Baffinland provide updates on its bird deterrence efforts, as required pursuant to Condition 68 and include details of the progress of installation of bird reflectors on the tower. It is requested that this information be provided within 45 days' receipt of the Board's recommendations.

Landfarm - Contaminated Snow, Soil and Synthetic Liners

There are no specific terms and conditions regarding the regular operation of the landfarm within the current Project Certificate, however at the time of the visit, additional contaminated soil and snow were noted to still be entrenched in the synthetic liners, and new bags were presently used for storage of contaminated soil. Small pieces of synthetic liners were observed to be dispersed from the landfarm to the adjacent tundra. On September 17, 2015, Baffinland provided new updates to the NIRB regarding the condition of the landfill, noting that over the course of the summer most of this material from the soils have been largely segregated and now stockpiled in several piles within the landfarm footprint.

Recommendation 19: The Board requests that Baffinland continue to adhere to industry best practices for landfarm operations, including for management of contaminated snow and waste synthetic liners. It is further requested that Baffinland address the offsite dispersal of small pieces of synthetic liners from the landfarm footprint to the adjacent tundra. It is requested that an update regarding this recommendation be provided within the next Annual Report to the NIRB.

Aesthetic Quality

The Monitoring Officer observed the poor aesthetic quality of the project area during the site visit, and noted the need for general cleanup of some areas with unused materials, corrugated steel pipes, salt bags, wooden materials, synthetic materials, drums particularly around contractor laydown areas and other locations. On September 17, 2015, Baffinland provided new updates to the NIRB regarding improved general site condition and noted that a major clean-up of broken salt bags and pallets was undertaken over the summer.

Recommendation 20: The Board requests that Baffinland continue to address the general clean-up of the site, and in addition to broken salt bags and pallets, remove the other unused scrap materials and unused items, such as corrugated steel pipes, synthetic materials, and drums stored at various Project locations to improve the visual quality of the site. It is requested that this information, including a plan for removal of other scrap materials be provided within 45 days' receipt of these recommendations.

Silt and Sediment Monitoring

As noted during the Monitoring Officer's site visit, several silt fences in proximity to Kilometres 66, 90, 91 and 97 and other locations around the site were observed to be not well maintained and non-functional. Due to the non-functional condition of numerous silt fences throughout the site, the expectations of Conditions 22, 26, and 43 of the Project Certificate were not being met and the mitigation measures in the applicable plans should be re-considered.

Recommendation 21: The Board recommends that Baffinland provide an explanation for the washouts and silt fence failures noted at the various locations along the Milne Inlet Tote Road, and describe what plans are in place to ensure their long-term functionality, durability and efficiency for the protection of adjacent streams, lakes and rivers from the contamination by silt, sediment and construction debris. It is requested that this information be provided within 45 days' receipt of these recommendations.

Safety Measures and Language

During the September 2014 NIRB site visit, the Monitoring Officer noted that signs around the Project site did not incorporate Inuktitut to delineate potentially dangerous or hazardous areas (e.g. blasting zones). The Board had made a recommendation to Baffinland in 2014 requesting that the Proponent provide a plan of action as to the incorporation of Inuktitut for use of all signage and other site-specific and safety documentation and postings.

Recommendation 22: The Board recommends that Baffinland provide a plan of action as to its incorporation of Inuktitut for use of all signage, particularly around the vicinity of blasting areas. It is requested that Baffinland provide the Board with its plan of action to include Inuktitut within 45 days' receipt of the Board's recommendations.

Road Stability and Maintenance

Baffinland indicated within the Road Management Plan that several operating procedures will be implemented to mitigate the potential impacts caused by freshet events or spring thaw on Project site roads; however, the Monitoring Officer observed during the site visit terrain stability issues on the roads leading to the effluent discharge area and to Deposit No. 1. Due to the poor condition of these roads at the time of the site visit, the expectations and efficiency of the operating procedures as outlined within the Road Management Plan should be re-considered.

Recommendation 23: The Board recommends that Baffinland provide information regarding how it plans to address the terrain stability issues for Project roads, particularly roads leading to the effluent discharge area and to Deposit No. 1 in relation to impacts caused by freshet events or spring thaw. It is requested that this information be provided within 45 days' receipt of these recommendations.

The Board respectfully requests that for items requiring follow-up action by Baffinland that a response be provided within the timeline as requested for each of the recommendations. Should you have any questions or require further clarification regarding the Board's 2015 recommendations, or related to the NIRB's monitoring program for the Mary River project, please contact the undersigned directly at (867) 983-4603 or samuno@nirb.ca

Sincerely,



Solomon Amuno, PhD
Mary River Project Monitoring Officer
Nunavut Impact Review Board

cc: Erik Madsen, Baffinland Iron Mines Corp.
Mary River Distribution List

Enclosure: The Nunavut Impact Review Board's *2014 – 2015 Annual Monitoring Report for Baffinland Iron Mines Corp.'s Mary River Project (October 2015)*