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Qikiqtani Inuit Association

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Serving the communities of

ᐃᑲᓗᐊᕋᖅ Arctic Bay | ᑲᖏᕐᕋᑐᒍᒃ Clyde River | ᐊᐅᓚᐃᑦᑐᖅ Grise Fiord | ᐃᓚᒍᓕ Igloolik | ᐃᖃᓗᐃᑦ Iqaluit | ᑭᒥᒥᓗᑦ Kimmirut | ᑭᙵᓚᐃᑦ Kinngait | ᐱᖓᓱᖅᑐᖅ Pangnirtung | ᑎᑎᒪᒫᓕᒃ Pond Inlet | ᖁᓕᖅᑕᕐᔪᐊᖅ Qikiqtarjuaq | ᕆᐅᓗᒃᑕᖅ Resolute Bay | ᓴᓂᓕᐅᖅ Sanikiluaq | ᓴᓂᕆᔨᒃ Sanirajak

May 16, 2025

Robert Hunter, Licensing Administrator
Nunavut Water Board
PO Box 119
Gjoa Haven, Nunavut
X0B 1J0

RE: Qikiqtani Inuit Association Review of Baffinland's 2024 Qikiqtani Inuit Association and Nunavut Water Board Annual Report for Operations

Mr. Hunter,

The Qikiqtani Inuit Association (QIA) has completed its review of Baffinland's 2024 Qikiqtani Inuit Association and Nunavut Water Board Annual Report for Operations for the Mary River Project (the Annual Report) submitted to the Nunavut Water Board (NWB) and dated March 31, 2025. This submission primarily focuses on Baffinland's obligations related to the Type "A" Water Licence 2AM-MRY1325- Amendment No. 1. A list of technical comments and requested actions is provided in an Appendix to this letter. The review included the main body of the Annual Report as well as the figures, tables, and all appendices.

Positive Developments

- Upgrading of 7 culvert stream crossings, with 13 more to come.
- Better water withdrawal compliance (p. 20 (39 of 94) "There were no exceedances of the daily withdrawal limits for domestic and industrial water uses in 2024." (Main report, s.4.1, p. 20 (pdf p. 39 of 94) Main, s.4.2, p. 21 (pdf. p. 40 of 94) "As identified in Table 4.3, daily water volume withdrawal limits for dust suppression purposes were exceeded one (1) time, at the approved Project water source Muriel Lake, in 2024." This is a continued improvement from 2023 (2) and 2022 (30)
- "In 2024, there were no exceedances of the effluent discharge criteria for treated sewage effluent generated by Project operations." (Main Doc., s.7.1, p. 37 (pdf p. 56 of 94)

Key Issues

Climate Change

In September 2024, unusually heavy rainfall caused heavy runoff, with erosion that elevated sediment concentrations in the water, and overland flooding that caused extensive damaged to the Tote Road and six stream crossings. This extreme weather was described variously as an "*unprecedented 1:1000 rainfall event*". The frequency of extreme weather events in northern Canada is expected to increase in response to ongoing climate change. Given the impact of this rainfall event, it is important to understand the level of certainty attached to this prediction, and to prepare infrastructure and response capabilities for future occurrences.

Optimizing Fish Sampling

The timing flexibility of field sampling programs for Arctic char at fish bearing Tote Road stream crossings and remote Reference sites (e.g., Reference Lake 3) should be increased to facilitate sampling when conditions are optimal for assessing Arctic char access to upstream summering habitat and for characterizing Reference populations.

Sediment Core Sampling

With growing evidence in the CREMP of mine-related influences on Project lakes (App. E.9.1, p. i to vi) and the planned increase in ore production from 4.2 Mtpa to 18 Mtpa, improving monitoring and the understanding of temporal changes in sediment deposition and quality is becoming increasingly important. Benthic sediment cores collected from Project-exposed and Reference lakes could be used to establish clearer temporal records of pre-Project sediment deposition quantity and quality and provide context for ongoing deposition of iron and other metals.

Temporal Trend Analysis

In 2023, QIA supported the recommendation of Minnow Environmental Ltd that temporal trend analyses be conducted to evaluate changes (i.e., since 2017) in the sediment quality and metals of Camp Lake Tributary 1 (North Branch), Sheardown Lake tributaries 1 and 9, and Sheardown Lake (Northwest and Southeast) and assess mine-related influence. In response, Baffinland offered to provide QIA the data. QIA looks forward to Baffinland sharing these data but notes that it did not, and does not, volunteer to conduct these trend analyses for Baffinland, and looks forward to the results of these analyses.

Elevated Nitrates

In 2023 and 2024 the CREMP found elevated nitrogen-related compounds in Sheardown Lake tributary 9 (SDLT9) and in 2024 elevated nitrate in both Sheardown Lakes (NW and SE). A special investigation completed in the fall of 2024 identified activities at the Dyno Nobel Emulsion Plant (Dyno facility), which stores ammonium nitrate for explosives production and is adjacent to SLDT9, as the primary source of these compounds. Baffinland plans to implement an activity audit of the transportation, storage, and handling of ammonium nitrate at the Dyno facility, with potential additional water sampling during the open water season in 2025, to help identify point source(s) of aqueous nitrogen compounds. Nitrates can harm fish. The amount of ammonium nitrate required for explosives preparation will triple with the planned increase in ore production to 18 Mtpa. The careful control of and monitoring for fugitive nitrogen compounds should be ongoing for the life of the Project.

Pilot Studies

Pilot studies conducted by Baffinland to assess risk of harm to Arctic char from compounds released by rubber tire particulates (2022), and impacts of Project-generated dustfall and sediment on the ecology of Tote Road streams (2023, 2024), have met with limited success. Both are important gaps in knowledge of Project-related effects. The results to date should be shared by Baffinland, along with any plans for alternative approaches for related future work.

AEMP Hydrometric Monitoring

Monitoring of stream flow through the open water season is important for understanding Arctic char access to and from juvenile summering habitats upstream of the Tote Road crossings, and to inform the design of culvert stream crossings. QIA supports the recommendations for additional hydrometric site visits throughout future seasons to verify the operation of data loggers and perform flow measurements and continued targeting of low flow and/or high flow period--particularly extreme peak flow, to maintain and further validate the rating relationships.

Lake Sediment Monitoring (LSM)

In 2024 the open water sedimentation rates for all three habitat sampling groups in Sheardown Lake NW were at or near the highest found since sampling began in 2014. There is a clear increasing trend since 2019. The sediment deposition thresholds for Arctic char egg survival currently used in the TARP (Low 0.15, Moderate 0.54, and High 1 mm) have not been validated for the species or for Project-

generated sediment. Studies to validate sediment thresholds for Arctic char egg survival should be completed prior to the planned production increase.

Presentation of Results

Some figures in the review package do not provide a complete picture of the study results. Where there are very large changes, as with aqueous sediment load during the extreme rainfall event (e.g., App. E.8.2 Part 1 of 2, Fig. 3 + 4, p. 55 + 57), all data should be shown in scale to put the peaks in proper perspective. This could then be followed by additional figures that illustrate aspects of the data (e.g., using logarithmic scale or truncating peaks). Otherwise, the magnitude of the event is lost. Where sample sizes vary, as in the bar graphs of length frequency (%) for Arctic char (e.g., CREMP App. G Fish Data, Fig. G.1, pdf. P. 173), the sample size should be noted in the panel to facilitate comparisons among graphs, not as a small note below.

Effects on benthic invertebrates

In Sheardown Lake NW "*the relative proportion of Chironomidae at the littoral BIC stations (DL0-01-4 and DL0-01-9) was significantly and strongly negatively correlated with both sedimentation rate and accumulation thickness estimates*..." (App. E.9.2, p. 30). These ecological shifts are a concern. Chironomid larvae are particularly important prey in the diet of small and large Arctic char in Baffin Island freshwater systems in July and August, so a shift in the benthic invertebrate composition (BIC) that reduces chironomid availability could negatively affect juvenile growth, reproduction, and overall survival of Arctic char. The Lake Sediment Monitoring Program is an important tool for gaining understanding of factors that influence the BIC and Arctic char in Sheardown Lake NW. It should be continued over the long term to provide early warning of Project-related impacts as the mine increases production. Further monitoring is needed to enable direct comparisons of the chemical components of sediment trap and dustfall trap samples and better understand how they are related. Total organic carbon (TOC) should be added to the suite of analyses to better understand its relationship to relative abundance of chironomids.

Fish and Fish Habitat (FFH)

In February 2024, DFO issued a Correction Measure order requiring Baffinland to remediate 20 culverts and support each one with a new sediment and erosion control and environmental monitoring plan. Of these culverts, 7 were removed and rebuilt prior to the spring freshet, 3 of these required further work post-freshet related to settlement or subsurface seepage, and one these culvert (CV-216) was identified as a priority for re-construction in 2025, to improve fish passage and re-establish road integrity at the

crossing. Between 21 and 24 September, overland flooding from an extreme rainfall damaged six (6) culvert crossings, one (1) of which was completely washed out. These were repaired in the following weeks. Baffinland is working with DFO to re-evaluate geotechnical work and engineering for the remaining culvert crossings based on lessons learned from the 2024 construction program. Information on fish passage in 2024 was not available for this review. Despite ongoing concern regarding fish passage and delays in culvert crossing remediation, QIA recognizes Baffinland's 2024 culvert replacement and remediation work as a positive development, as is the cooperation between DFO and Baffinland to improve culvert designs.

Reporting Sequence

Release of the 2024 Terrestrial Environment Annual Monitoring Report (TEAMR) after the 2024 QIA NWB Annual Report on Operations (2024 QIA NWB ARO) review is completed, limited the depth of review comments on the latter report. Under this sequencing, data from the TEAMR on the Project's broader dustfall monitoring program, and on applications of water containing calcium chloride on the Tote Road for dust suppression, were not available to support interpretation of water and sediment quality data in the 2024 QIA NWB ARO. The Tote Road Fish Habitat Monitoring Annual Report, which has been appended to Baffinland's NIRB Annual Report, also was not available. This limited comments on whether the culvert stream crossings rebuilt in 2024 are functioning as they should, providing juvenile Arctic char unobstructed passage to and from summering habitats upstream of the Tote Road. The NWB should be aware of these gaps in the review, which may be addressed in comments on the 2024 NIRB AMR.

Waste Rock Management Gaps

From a geotechnical perspective, the review of the annual report identified that the WRF Geotechnical Inspection Report was not included within the 2024 submission. The annual inspection report provides the best indication of current performance of the WRF. At this stage in the WRF, site specific characterization is important to verify design assumptions. In the absence of site-specific characterization, a sensitivity analysis should be completed to ensure that even with variabilities in the waste rock materials, the minimum required Factors of Safety are maintained. Details related to the scope and timing of the repairs are not included in the annual report and detail for planned and performed monitoring and maintenance was also noted. Lastly, climate change modelling of the thermal regime within the WRF that took place in 2024 was based on a single climate change scenario. Evaluating other climate change scenarios would provide insight regarding potential environmental risks to the site associated with a range of possible climate change scenarios.

Summary of Comments

QIA has developed 48 comments that fall into five categories. These categories and the main issues identified are as follows.

General & Geotechnical Comments (GGC)

Eight (8) comments, which include requests for more information regarding geotechnical inspection reports.

Terrestrial Environment (TE)

Five (7) comments regarding reclamation trials, information requests regarding the impact to permafrost along the Tote Road and responses to QIA Environmental Audits and Inspections.

Metal and Diamond Mining Effluent Regulations. (MDMER)

One (1) comment regarding Metal and Diamond Mining Effluent Regulations. (MDMER)

Aquatic Environment (AE)

Eighteen (18) comments related to improving understanding of how Project activities are contributing to changes in water and sediment quality, to controlling exposure of aquatic systems to contaminants and sediments, to ensuring that studies and their conclusions are defensible, and that action thresholds and responses are precautionary.

Fish and Fish Habitat (F&FH)

Fourteen (14) comments related to monitoring the health of Arctic char populations in lakes and streams exposed to mine-related activities, to understanding shifts in benthic invertebrate communities that char rely on for food, and to maintaining unobstructed passage for juvenile char via Tote Road culvert stream crossings upstream in the spring to their summering habitats and downstream in the fall.

Conclusion

We very much appreciate this opportunity to provide our comments on the 2024 Qikiqtani Inuit Association and Nunavut Water Board Annual Report for Operations. We trust that the concerns we have raised and our requests for information will be addressed in a timely manner.

Please do not hesitate to contact the undersigned should you require any further information.

Nakurmiik,

Conor Goddard
Manager of Project Compliance and Monitoring
Qikiqtani Inuit Association

Attachment: Appendix A: QIA Comments on Baffinland 2024 Qikiqtani Inuit Association and Nunavut Water Board Annual Report for Operations

cc. William Bowden, Baffinland

Appendix A: QIA Comments on Baffinland 2024 QIA-NWB Annual Report

General & Geotechnical (GGC)

Comment #	QIA 2024 NWB GGC #1
References	**Document Name:** Appendix C.2 – Mary River Project Geotechnical Inspection Report **Section:** 2024 Geotechnical Inspection Recommendations and Implementation Plan **Page:** 2-8
QIA Comment	There are several recommendations made within the Appendix. While BIM has addressed each of the recommendations, very little detail has been included in terms of dates of previous or planned repairs and maintenance.
QIA Request	Please provide available documentation, photographs of proposed and applicable repairs discussed within Appendix C.2, as well as estimated timing of referenced routine maintenance.

Comment #	QIA 2024 NWB GGC #2
References	**Document Name:** Baffinland Iron Ore Mines 2023 QIA and NWB Annual Report for Operations, Appendix E.8.2 QIA Inspection Reports and Baffinland Responses 2 of 2 Page 25/114, QIA September 2023 General Site Inspection Findings and Recommendations. March 5, 2024, Attachment 1
QIA Comment	The annual WRF geotechnical inspection report is not included within the Annual report.
QIA Request	Please provide the 2024 WRF Geotechnical Inspection Report.

Comment #	QIA 2024 NWB GGC #3
References	**Document Name:** Appendix E.8.2 Baffinland Response to QIA 2024 Environmental Audit **Section:** Attachment 1, Table 1. **Pages: 1**

QIA Comment	The most recent slope stability modelling of the WRF indicates an internal friction angle of 40 degrees was assumed for the waste rock which is stated to be 'conservative'. It is unclear if this strength is based on literature review or on site specific lab testing.
QIA Request	Provide documentation of the lab testing data or literature which supports the material characteristics used in the stability assessment. To better understand risks associated with potential variations in materials, it is recommended sensitivity analyses be completed at lower strengths to verify that minimum recommended Factors of Safety are met.

Comment #	QIA 2024 NWB GGC #4
References	**Document Name:** Appendix C3 Tote Road Report **Section:** Table C.3.1 **Pages:** 1-2
QIA Comment	Several repairs to the Tote Road are planned for the 2025 season, however, repair plans and schedule are not provided.
QIA Request	Please provide an outline of the recommended repairs outlined in (Tetra Tech, 2024) which are to be completed for each planned repair and a high-level schedule of when they will occur.

Comment #	QIA 2024 NWB GGC #5
References	**Document Name:** Appendix E10 – Reclamation and Research Program. Climate Change Modelling **Section:** 2.0 Climate Change Projections **Pages:** 1-2
QIA Comment	Climate change modelling of the thermal regime of the WRF was completed for the least conservative climate change scenario (SSP1-2.6).
QIA Request	Please provide commentary to support the basis for the selected climate change scenario. To better understand risks and potential outcomes, it is recommended that sensitivity analyses be performed for other climate change scenarios.

Comment #	QIA-HESL-NWB-1. GGC #6
References	**Document Name:** Appendix E-15 – Waste Rock Facility Annual Report **Section: WRF Instrumentation Status**

	Page: 5
QIA Comment	Baffinland reported in March 2025 that several thermistor beads at the T2 thermistor were functioning inconsistently, and it was unclear if Baffinland had planned to repair/replace T2. Additionally, thermistors T4 and T5 were permanently not functioning after April 2022, and BH2 was permanently down after August 2019 (oxygen sensor) and November 2021 (vibrating wire piezometer). It was unclear if Baffinland had committed to repairing/replacing T4, T5, and/or BH2.
QIA Request	Baffinland should clarify whether the T2 thermistor will be repaired/replaced, as well as permanently down thermistors and sensors (T4, T5, BH2). Baffinland should provide a timeline for addressing damaged/down thermistors and sensors, or alternatively, rationale for why these thermistors will not be repaired/replaced.

Comment #	QIA 2024 NWB GGC #7
References	**Document Name:** Type 'A' Annual Report for Operations Main Body; **Section:** 7.8 Quality Assurance and Quality Control (QA/QC) **Page:** 76 of 94
QIA Comment	Baffinland notes improvements in their QA/QC program, with a reduction in the number of parameters exceeding their respective analyte Lowest Detection Limit (LDLs) in field and trip blanks from 2023 (46 parameters) to 2024 (32 parameters). They further state that 6.8% of trip blank results (16 out of 236) and 14.3% of field blank results (16 out of 112) exceeded the Data Quality Objectives of less than the LDL, and conclude that this indicates negligible contamination and acceptable field precision and accuracy. The basis for considering 6.8% and 14.3% of results exceeding the LDL as negligible and acceptable needs to be clarified. Is there a reference or guideline that supports these thresholds? To determine the main source of contamination in BIM's QA/QC program, an assessment of their distilled water was conducted in 2024. Baffinland concluded that analyte detections above the LDL in blanks were likely due to contamination from equipment, workspace, or sampling procedures during blank preparation or fieldwork. In response, Baffinland has implemented increased training and awareness sessions, improved cleaning and storage of sampling containers, and enhanced workspace cleanliness when preparing blanks.

	It is important to note that the QA/QC program is intended to identify potential sources of contamination in field-collected samples. When contamination is detected, it may call into question the validity of field sample results.
QIA Request	1. Provide a basis for considering 6.8% and 14.3% of results exceeding the LDL as negligible contamination and it is acceptable. 2. Provide a reference of guideline that supports these thresholds. 3. Confirm that corrective actions implemented for the QA/QC program are also being applied consistently across all aspects of the field sampling program

Comment #	QIA 2024 NWB GGC #8
References	**Document Name:** Baffinland Iron Mines 2024 Annual Report to QIA and NWB on Operations, Main Doc. [NWB Registry: 250331 2024 QIA-NWB 2024 Type 'A' Annual Report for Operations_Main Body- As Sent.pdf] **Section**: 7.3 **Pages:** 45 and 48 (pdf p. 64 and 67 of 307) **Section**: 7.5.1 **Pages:** 54 (pdf p. 73 of 307) **Document Name:** Baffinland Iron Mines 2024 Annual Report to QIA and NWB on Operations, Tables [NWB Registry: 250331 - 2024 QIA-NWB- Annual Report for Ops - TABLES - As sent.pdf] **Section**: Table 6.2, 22 September 2024 **Pages:** pdf p. 37 and 38 of 274 **Document name:** Baffinland Iron Mines 2024 Annual Report to QIA and NWB on Operations, Appendix C.1.2 Construction Summary Report Tote Road Emergency Remediation [NWB Registry: 250331 - 2024 QIA-NWB Annual Report for Ops - Appendix C.1.2 (Tote Road Emerg.pdf] **Section**: 4 **Pages:** 5 (pdf p. 6 of 43) **Document Name:** Baffinland Iron Mines 2024 Annual Report to QIA and NWB on Operations, Appendix E.8.2 QIA Inspection Reports and Baffinland Responses (QIA Part 1 of 2) [NWB Registry: 250331 - 2024 QIA-NWB Annual Report for Ops - Appendix E.8.2 (QIA) - 1 of 2 -.pdf] **Page:** pdf p. 57 of 125 **Document Name:** Baffinland Iron Mines 2024 Annual Report to QIA and NWB on Operations, Appendix E.8.2 (QIA Part 2 of 2) [NWB Registry: 250331 - 2024 QIA-NWB Annual Report for Ops - Appendix E.8.2 (QIA) - 2 of 2 -.pdf] **Page:** pdf p. 92 of 127

	Document Name: Baffinland Iron Mines 2024 Annual Report to QIA and NWB on Operations, Appendix E.8.3 (Spill Reports, Part 2 of 3) [NWB Registry: 250331 - 2024 QIA-NWB Annual Report for Ops - Appendix E.8.3 (Spill Repor (1).pdf] **Section:** Follow-up to Spill #2024-366 Mary River Project - Water Licence No. 2AM-MRY1325 **Page:** pdf p. 47 to 74 of 74 **Section:** Attachment 4: Baffinland NT-NU Spill Report #2024-478 **Page:** pdf p. 5 to 31 of 40 **Document Name:** Zhang, X., Flato, G., Kirchmeier-Young, M., Vincent, L., Wan, H., Wang, X., Rong, R., Fyfe, J., Li, G., Kharin, V.V. 2019. Changes in Temperature and Precipitation Across Canada; Chapter 4 in Bush, E. and Lemmen, D.S. (Eds.) Canada's Changing Climate Report. Government of Canada, Ottawa, Ontario, pp 112-193. https://changingclimate.ca/site/assets/uploads/sites/2/2018/12/CCCR_Chapter4-Temperature-and-Precipitation-Across-Canada.pdf]
QIA Comment	In September 2024, unusually heavy rainfall caused heavy runoff, with erosion that elevated sediment concentrations in the water, and overland flooding that caused extensive damaged to the Tote Road and six (6) stream crossings, including a complete culvert washout at the km 63.5 stream crossing (Main Doc., s.7.3, p. 48; App. C.1.2, p. 5). Spill reports filed on the sediment-laden water detailed the damage, and the erosion and sediment controls implemented to protect water quality (Table 6.2, p. 37 and 38; App. E.8.3 Parts 2 and 3 of 3). The road was closed to all traffic for nine days and required significant emergency repairs. This extreme weather was described variously as an "*unprecedented 1:1000 rainfall event*" (Main Doc. s.7.3, p. 45) and "*greater than a 1000-year return period 24-hour rainfall event*" (p. 54), based on the Mary River Mine site rainfall records between 2013 and 2023 (App. E.8.2, Part 1, p. 57 and Part 2, p. 92). The frequency of extreme weather events in northern Canada is expected to increase in response to ongoing climate change (e.g., Zhang et al. 2019). Given the impact of this rainfall event, it is important to understand the level of certainty attached to its predicted 1,000-year return period, which suggests a 0.1% probability of recurrence in any given year. Was the prediction based simply on a decade of local rainfall records, or were longer term regional rainfall records and patterns such as the Arctic Oscillation also considered?
QIA Request	QIA requests Baffinland clarify: 1) how the 1,000-year return period this rainfall event was estimated, 2) the level of uncertainty associated with this estimate, and 3) how the potential for climate change to cause such events on a greater frequency is being

	factored into stream crossing remediation and design, and erosion and sediment control preparedness?

Terrestrial Environment (TE)

Comment #	QIA 2024 NWB TE #1
References	**Document Name:** Appendix E.8.2 – QIA Inspection Reports and Baffinland Responses **Section:** QIA 2024 Environmental Audit Report for the Mary River Project, Table 1; Response to Recommendations – 2024 Environmental Audit Report, Attachment 1 **Page:** 3, 42
QIA Comment	Table 1 recommendations from QIA's Environmental Audit Report (2024) prepared by Okane included addressing uncontrolled seepage to the surrounding environment observed near the ore crusher pad/landfill, identified on August 21, 2024. The source of the seepage was reported to be inconclusive, but was determined to not be coming from the ore crusher pad as it was consistent with runoff (due to its temperature, conductivity, and general field parameters). Baffinland has asserted that the landfill is not designed to hold or contain any infiltration water (P. 42), holds non-hazardous waste, and that comprehensive groundwater quality monitoring surrounding the landfill will continue, to characterize potential impacts from the facility. However, it was unclear whether Baffinland had a plan for responding to the uncontrolled seepage near the landfill. It is also unclear whether seepage from the crusher pad contributed to that which was observed. As Baffinland has asserted that the uncontrolled seepage is likely surface runoff (i.e., from active layer mobilization or seasonal permafrost melting), what mitigative measures (such as erosion and sediment control measures) are being taken to control runoff in this area?
QIA Request	Please clarify how Baffinland has responded to (and mitigated) uncontrolled seepage near the ore crusher pad/landfill (i.e., what ESC measures have been implemented in the short-term and long-term to control runoff). What specific protocols does Baffinland follow to respond to observations of uncontrolled seepage to the surrounding environment? Please provide reference to a specific section of the Spill Response Plan (or other relevant reports) which includes a proactive response plan. We note it is unclear whether the Spill Response Plan was triggered by this incident.

Comment #	QIA 2024 NWB TE #2

References	**Document Name:** Appendix E.8.2 – QIA Inspection Reports and Baffinland Responses **Section:** QIA 2024 Environmental Audit Report for the Mary River Project; Response to Recommendations – 2024 Environmental Audit Report, Attachment 1 **Page:** 7, 31
QIA Comment	The geochemical stability of exposed pit walls is uncertain, and may present a future water quality concern. Okane states in the Environmental Audit Report that "*while the risk of water quality issues associated with the pit walls is low compared to the WRF due to the substantial decrease in contact surface area, the same constituents of concern that lead to low observed pH values in WRF seepage in 2017 are likely present in exposed pit walls.*" (P. 7). Further, it is stated that "*To meet water quality objectives of the closure plan, exposed pit walls may require a cover system to inhibit oxygen ingress and the production of ARD products. BIM has not proposed updating pit wall water quality modelling until 2029*." (P. 31) Additionally, Okane stated that assumptions made in previous geotechnical analysis did not appear to be consistent with the conditions that were observed during the Audit site visit in 2024. Baffinland stated in their response that an update to the water quality predictions for the pit had been proposed in the updated Phase I Waste Rock Management Plan (2023), and that pit source terms would be developed, for use in developing a predictive water quality model for operational water quality and "early closure" scenario water quality to support closure planning development. Baffinland stated that Appendix D-7 of the ICRP Revision 6 included the timeline for this work, however this document was not included within the 2024 Annual Report for Operations package.
QIA Request	As previously stressed by Okane and QIA in the 2024 Environmental Audit Report, Baffinland should further investigate the geochemical stability of the exposed pit walls, to ensure that low-pH seepage will not occur. A timeline for the completion of updated pit wall water quality modelling should be provided. Updated water quality predictions and modelling should be reviewed by QIA and other interested third parties, when available, to determine that updated water quality modelling and long-term monitoring of exposed pit runoff is sufficient, in advance of the scheduled 2029 pit wall water quality modelling update. Baffinland should also provide a copy of Appendix D-7, for third-party review of timelines for developing pit source terms and updating water quality predictions.

Comment #	QIA 2024 NWB TE #3
References	**Document Name:** Appendix E.8.2 – QIA Inspection Reports and Baffinland Responses **Section:** LGL Limited June 10-12, 2024 Environmental Inspection **Page:** 89, 93
QIA Comment	Dust suppression continues to be a concern for Baffinland. The effectiveness of dust suppression methods was called into question by LGL Limited in their 2024 inspection, as excessive amounts of dust from heavy equipment and haul trucks was observed throughout project areas, and particularly along the Tote Road (P. 93). LGL Limited noted in their July 2024 site visit that fugitive dust from haul truck activities continued to be observed (and that the number of water trucks and volume of water being sprayed for dust suppression on the roads was far below what was needed), and therefore recommended that Baffinland increase the number of water trucks available, and implement an effective early notification system to alert managers when dust levels are increasing (P. 89, 93). It was unclear whether Baffinland had committed to implementing these recommendations.
QIA Request	Baffinland should commit to implementing the recommendations for increasing the number of water trucks and implementing an early notification system for responding to increased dust levels.

Comment #	QIA 2024 NWB TE #4
References	**Document Name:** Appendix E.8.2 – QIA Inspection Reports and Baffinland Responses **Section:** LGL Limited June 10-12, 2024 Environmental Inspection **Page:** 95
QIA Comment	In their 2024 Environmental Inspection Report, LGL Limited noted that snow with high sediment load was observed in the Sheardown Lake Tributary, and recommended that snow clearing operations should avoid pushing snow into the stream channel, which could be accomplished by clearly marking the area (visible during the winter).
QIA Request	Baffinland should explicitly commit to taking steps (i.e., clearly marking the snow clearing/storage area) to prevent sediment-laden snow from being pushed into the Sheardown Lake tributary, as recommended by LGL Limited.

Comment #	QIA 2024 NWB TE #5
References	**Document Name:** Appendix E.8.2 QIA Inspection Reports and Baffinland Responses **Section:** Attachment 1 - Baffinland Responses to QIA's September Environmental Inspection Report **Page:** 116 of 127
QIA Comment	As an outcome of QIA's 2024 inspections, QIA requested Baffinland complete the leak detection investigation of the waste rock facility water treatment plant at the top of mine site scheduled for the snow-free period of 2024, or provide an alternate plan to ensure the Sediment Containment Pond contents are not released to the environment. In response, Baffinland stated that for the 2025 operational year, they will continue monitoring and implement suitable controls, including containment via ditching and pumping seepage back to the lined facility. However, Baffinland's response does not explain why the 2024 leak detection investigation was not completed, nor does it provide a revised schedule or justification for abandoning the investigation.
QIA Request	Baffinland is requested to clearly confirm whether the leak detection investigation will be rescheduled. If it is no longer considered necessary, Baffinland to provide a detailed rationale and present an alternate plan that ensures no release of SCP contents to the environment. A specific timeline and commitment are expected in the response.

Comment #	QIA 2024 NWB TE #6
References	**Document Name:** 2024 Annual Report to the Qikiqtani Inuit Association and Nunavut Water Board Annual Report for Operations; Appendix E.13 2023 Responses to 2023 Annual Report Comments **Section:** Section 9.7 Reclamation Research **Page:** 65
QIA Comment	In section 9.7, Baffinland has indicated that reclamation studies will be provided in the NIRB annual report. As QIA has not had a chance to review these reports at this time, we are unable to confirm whether there are any technical concerns present as they relate to the NWB process.
QIA Request	QIA may provide further comments on the reclamation research work completed by Baffinland pending review of the forthcoming 2024 Terrestrial Environment Annual Monitoring Report (TEAMR).

Comment #	QIA 2024 NWB TE #7
References	**Document Name:** 2024 Annual Report to the Qikiqtani Inuit Association and Nunavut Water Board Annual Report for Operations; Appendix E.13 2023 Responses to 2023 Annual Report Comments **Section:** Table A.1: Responses to QIA Comments on Baffinland's 2023 QIA-NWB Annual Report for Operations **Page:** 38
QIA Comment	QIA's comment on the 2023 annual report noted a concern with the proximity of reclamation study control sites to potential disturbances like the Tote Road at sites KM52, KM16, KM18 (i.e. sites other than KM58). BMC's response appears to have misunderstood this concern and subsequent request. QIA reiterates their concern that for reclamation study sites KM52, KM16, and KM18 there appears to be a lack of information on initial site conditions/baseline at survey locations pre-disturbance (e.g. road construction, borrow site use), and the adjacent control may be influenced by indirect effects of Tote Road use (e.g. dustfall), which could influence vegetation amounts and composition, thereby influencing recommendations based on revegetation observations. QIA recognizes that the current adjacent control provides useful inferences on adjacent conditions where initial disturbance activities did not take place, however potential indirect effects from Tote Road may influence the vegetation levels at control sites. Exploring additional reference locations for documenting baseline conditions is warranted.
QIA Request	QIA requests that before deriving recommendations on revegetation based on observations at revegetation study sites KM52, KM16, and KM18, BIMC determine baseline site conditions pre-project disturbance (e.g. before the borrow site use) or use a similar site reference site for comparisons that is beyond the zone of influence of any adjacent activities which could impact the accuracy of results (e.g. dustfall from the Tote Road).

Metal and Diamond Mining Effluent Regulations. (MDMER)

Comment #	QIA 2024 NWB MDMER #1
References	**Document Name:** Appendix E.14 2024 Metal and Diamond Mining Effluent Regulations (MDMER) Annual Report **Section:** **Page:** 46 of 99
QIA Comment	MDMER data submission for sublethal toxicity with *Lemma minor* with effluent from MS-08 collected on October 1, 2024, are missing IC25 or EC25 lower and upper 95% confidence limit (see snippet below).

	Sublethal toxicity test IC_{25}/EC_{25} — 2024 — Version 1 **Facility name**: Mary River Mine Site * **Final discharge point (required)**: MS-08 * **Collection date (required)**: 2024/10/01 * **Collection method (required)**: Grab * **Aquatic environment (required)**: Fresh water * **Species tested (required)**: Lemna minor - Growth (Frond Number) **Test start date**: 2024/10/03 **Consultant laboratory**: Nautilus Environmental Company Inc. * **IC_{25} or EC_{25} flag (required)**: > * **IC_{25} or EC_{25} concentration (required)**: 97 % * **IC_{25} or EC_{25} lower 95% confidence limit (conditionally required)**: % * **IC_{25} or EC_{25} upper 95% confidence limit (conditionally required)**: % * **Was there statistical stimulation of any concentration? (required)**: No **Percent stimulation** / **Effluent concentration with stimulation**: No data available
QIA Request	Provide the following information; IC25 or EC25 lower and upper 95% confidence limit and an explanation as to why the data were not included in the original submission.

Aquatic Environment (AE)

Comment #	QIA 2024 NWB AE #1
References	**Document Name:** Appendix E.8.2 – QIA Inspection Reports and Baffinland Responses **Section:** Attachment 1, Table 1 (P. 41); LGL Limited June 10-12, 2024 Environmental Inspection **Page:** 42, 91, 92.
QIA Comment	QIA-7 from the inspection reports recommended that turbidity controls be installed along uncontrolled areas of the Tote Road, to minimize sediment load in the surrounding water bodies (P. 42). Baffinland's response indicated that sediment and erosion controls were implemented per the SWAEMP, and that water quality monitoring (for suspended solids) continued to be conducted at select crossings along the Tote

	Road, as per the Roads Management Plan, which was reported to meet guidelines in 2024. Further, QIA had requested in 2023 that ditches along the Mine Haul Road be reconstructed and rock check dams be installed to accommodate higher flows and reduce velocities (thereby reducing erosion) (P. 91). It was reported by LGL Limited in 2024 that no action had occurred to address the 2023 recommendation. Additionally, LGL Limited highlighted that high amounts of road sediments were entering stream channels and lakes throughout the project area, exacerbated by rain and snowmelt, and recommended that an effective (and high-resolution) ESC plan be implemented, including increased use of coir logs and sediment curtains (for example) along roadside margins and adjacent to water bodies.
QIA Request	Baffinland should commit to reconstructing the ditches along the Mine Haul Road to accommodate higher flow volumes, and rock check dams as recommended by QIA in 2023. Once implemented, Baffinland should commit to conducting higher-resolution monitoring in the downstream environment, to ensure that ditch reconstruction and rock check dams have been successfully installed and are performing as intended. Additionally, Baffinland should prepare/implement more robust ESC measures along roadside margins and adjacent to water bodies, as recommended by LGL Limited. A higher resolution ESC monitoring program should be implemented to ensure that routine monitoring occurs at a sufficient temporal scale, and includes measures to respond to sediment and erosion issues in a timely, proactive manner. Baffinland should provide a timeline for developing and implementing a monitoring program (i.e., Special Effects Study) for assessing effectiveness of any newly-implemented ESC measures along roadside margins, Mine Haul Road ditches, and adjacent to downgradient water bodies.

Comment #	QIA 2024 NWB AE #2
References	**Document Name:** Appendix E.8.2 – QIA Inspection Reports and Baffinland Responses **Section:** LGL Limited June 10-12, 2024 Environmental Inspection **Page:** 58, 89
QIA Comment	Several areas of seepage were identified at the KM 105 pond over the years: Upstream of the northwest embankment geomembrane tie-in trench (July 2022), and further upgradient and caused by a bypass of the dam structure retention features (May 2023), and concerns are ongoing. A bentonite plug program that was initiated for remediation

	was unsuccessful in preventing seepage, so ESC measures were implemented (sediment curtains, check dams, floating silt curtain in the nearest downgradient water body), as well as a pre-dosing treatment system of inflows at the water treatment plant. Additionally, during the commissioning of the water treatment system, thawing of the temporary retention berms occurred, resulting in water flowing through the berms. LGL Limited's 2024 Inspection Report stated that "*the failure of the grouting indicates that the leaking dam is more complex than originally thought, and as such, it is our opinion that proactive measures should be taken to ensure that effective sediment capture is provided downstream of the northwest embankment*." (P. 89). LGL Limited also recommended that more robust ESC measures (and other mitigation measures) be implemented downstream; It was unclear whether the ESC measures planned by Baffinland for 2025 (including filtration and settling enhanced with chemical addition at the inflow), were sufficient in the long-term, although Baffinland has asserted that these measures have resulted in significant improvements in water quality. Has Baffinland developed a longer-term plan to address KM 105 pond seepage concerns (i.e., addressing dam leakage, given that grouting is not feasible)? LGL Limited had stressed in their inspection report that the areas downstream of the KM 105 pond support fish and fish habitat, and should be prioritized for prevention of runoff from entering these waters (P. 89).
QIA Request	Baffinland has stated that they are currently reviewing potential remedial options for permanent repair of the KM 105 pond – Baffinland should provide their timeline for preparing a long-term remediation plan for the pond, and indicate when the plan will be implemented, how its success will be monitored (i.e., more targeted monitoring of the downstream environment/fish-bearing waters, with appropriate triggers), and when monitoring results will be available.

Comment #	QIA 2024 NWB AE #3
References	**Document Name:** Type 'A' Annual Report for Operations Main Body; Tables **Section:** 7.3.10 Freshet Monitoring; Table 7.6.3 to 7.6.6 **Page:** 69 of 94 and 191 to 197 of 274
QIA Comment	Under the freshet monitoring programs several non-compliant releases were documented by BIM. These non-compliant releases occurred at Sheardown Lake Tributary 1 outfall (SDLT-OUT), Camp Lake Tributary 1 outfall (CLT-OUT), Sheardown

	Lake Landfill Gate Tributary outfall (LDFG-OUT) and Camp Lake Settling Pond outlet (CLSP-OUT). The Camp Lake Settling Pond outfall was measured on four dates between June 3 and June 12, 2024 and concentrations of TSS ranged between 206 mg/L and 433 mg/L. Concentrations at the other four outfall locations ranged between 1.3 mg/L (LDFG-OUT) and 62.1 mg/L (CLT-OUT) on the same dates. It is understood that water was discharged from the Camp Lake Settling Pond outfall for a shorter period of time compared to the other four sites. The elevated concentrations measured, however are of concern as it appears current management plans are not sufficient to maintain TSS concentrations below water license criteria at this location.
QIA Request	Describe the unique characteristics of site CLSP-OUT that lead to TSS concentrations greatly above the water licence criteria and indicate management techniques that can be applied to address the characteristics of this site and maintain TSS concentrations below water license criteria during spring freshet. Provide a timeline when these management techniques will be implemented to curtail noncompliant discharges.

Comment #	QIA 2024 NWB AE #4
References	**Document Name:** Appendix E.9.3 Aquatic Effects Monitoring Program Hydrometric Report **Section:** 5.5 SDLT-1 Catchments (H11) **Page:** 12 of 32
QIA Comment	The Final Environmental Impact Statement (FEIS) for the Mary River Project indicated a reduction in flow of up to 26% due to diversions, and an increase of up to 31% from effluent discharge—resulting in a net increase of approximately 5%, not a net reduction for SDLT-1 (Catchment H11). Baffinland has since noted that the diversion of the Mine Haul Road increased the catchment size of H11, yet this change is not reflected in the description of altered flows due to diversions or effluent discharge.
QIA Request	Baffinland is requested to provide a clear and complete assessment of the implications of the change to the catchment size of H11, including: 1. A description of the change in the size of the SDLT-1 catchment due to the Mine Haul Road diversion; 2. The predicted increase in flow associated with the enlarged catchment; 3. An assessment of the potential impacts of the change in flow on SDLT-1; 4. Confirmation of whether current observed flows remain within the range of the predicted increase; and 5. If current flows exceed predictions, a description of any potential or observed impacts resulting from this change.

Comment #	QIA 2024 NWB AE #5
References	**Document Name:** Appendix E.9.1 2024 Core Receiving Environment Monitoring Program Report **Section:** 3.1.1.3.1 CLT1 Upper Main Stem **Page:** 75 of 332
QIA Comment	The report states the “Based on spring concentrations that were elevated relative to both reference and baseline conditions and exceedance of both the AEMP benchmark and WQGs, a potential mine-related influence was identified for total aluminum concentrations in the CLT1 Upper Main Stem in 2024.However, given that total but not dissolved aluminum concentrations in the spring were elevated compared to reference and baseline concentrations, the higher total concentrations are associated with suspended solids in the water column during freshet as indicated by turbidity that was also elevated compared to both reference and baseline conditions in spring (Appendix Table C.15). Baffinland concludes suggests that contributions of total aluminum to the CLT1 Upper Main Stem may be related to the background minerology of the system mobilized by both natural (e.g., weathering and erosion) as well as mine-related (e.g., dust) processes.” The report also states that concentrations were elevated in 2023 (although not sufficient to trigger a response). The same rationale was used for iron concentrations. The suggestion that the contributions of total aluminum may be related to the background minerology of the system is subjective and not based on any evidence.
QIA Request	Baffinland is requested to provide a basis for the statement that contributions of total aluminum (and iron) may be based on background minerology of the system. While this is a reasonable hypothesis, there is no supporting evidence except that the high total concentrations are associated with suspended solids in the water column during freshet. We note that concentrations were also highly elevated in the fall compared to baseline.

Comment #	QIA 2024 NWB AE #6
References	**Document Name:** Appendix E.9.1 2024 Core Receiving Environment Monitoring Program Report **Section:** 3.1.1.3.1 CLT1 Upper Main Stem **Page:** 77 of 332
QIA Comment	The report states that “Although an AEMP benchmark has not been established for uranium, consistent exceedance of the WQG, the notable elevation relative to

	reference and baseline concentrations across all seasons in 2024 and increasing trends in uranium concentrations both since the baseline period and over the mine operation period, suggest a mine-related influence on uranium concentrations at the CLT1 Upper Main Stem. A combination of climate-driven and mine-related factors may be contributing." We note that elevated uranium was also identified in Sheardown Lake Northwest and Southeast as well as Sheardown Lake Tributaries 1 and 2 in 2023 and in 2024. There is discussion of development of a benchmark and that "it may be appropriate to establish one in order to better assess and manage potential mine-related influence moving forward" but to date, one has not been developed. Considering the time required to develop and implement a benchmark as well as determining action responses and potential mitigation measures, we are concerned this work has not been completed as the elevated concentrations have persisted..
QIA Request	Undertake and complete establishment of a uranium benchmark.

Comment #	QIA 2024 NWB AE #7
References	**Document Name:** Appendix E.9.1 2024 Core Receiving Environment Monitoring Program Report **Section:** 4.1.1.2 Water Chemistry **Page:** 151 of 332
QIA Comment	Cadmium concentrations were identified as a potentially mine-influenced in 2022, 2023 and 2024, which triggered a Moderate Action Response (i.e. completing temporal trend analyses). The temporal trend analyses revealed significant increasing trends in cadmium concentrations at both SDLT1 sampling stations and at the downstream station over the years of mine operation. Temporal trend analyses also revealed a significant increasing trend to total and dissolved cadmium concentrations in all seasons combined. Reference stream did not indicate similar trends in cadmium concentrations. Moderate Action Responses have been undertaken each year and the trends have indicated a likely association with mining activities.
QIA Request	Given that these results indicate a likely association with mining activities, additional action should be taken to mitigate these concentrations. Action should also be taken to determine if these effects can be correlated with other parameters.

Comment #	QIA 2024 NWB AE #8

References	**Document Name:** Appendix E.9.1 2024 Core Receiving Environment Monitoring Program Report **Section:** 4.3.2 Phytoplankton **Page:** 177 of 332
QIA Comment	Only a single chlorophyll-a sample was collected in SDLT12 in the spring of 2024. Yet the text goes on to compare differences between reference streams and all other Sheardown Lake Tributaries and to AEMP benchmarks. Differences were observed but these cannot be statistically tested as a single data point is not robust enough to conduct a test.
QIA Request	In future, results from a single sample should not be used in a statistical analysis for differences between reference streams and certainly not to conclude no adverse mine-related effects on phytoplankton productivity.

Comment #	QIA 2024 NWB AE #9
References	**Document Name:** Appendix E.9.1 2024 Core Receiving Environment Monitoring Program Report **Section:** 4.4.3 Phytoplankton **Page:** 200/332
QIA Comment	Chlorophyll-a concentrations at Sheardown Lake NW in 2024 results are reported from winter, summer and fall sampling events. No results are reported from spring sampling.
QIA Request	QIA requests the absence of spring sampling results be explained.

Comment #	QIA 2024 NWB AE #10
References	**Document Name:** Appendix E.9.1 2024 Core Receiving Environment Monitoring Program Report **Section:** 4.4.6 Effects Assessment and Recommendations **Page:** 212/332
QIA Comment	A “focus on remediation efforts for the KM 105 Pond that will shift toward sediment control measures, incorporation of chemical treatment, filtration and improved settling structures rather than additional structural modifications” is provided as a recommendation. The KM 105 pond is discussed as a “likely influence” on water quality at Sheardown Lake NW. Water quality information collected during the 2025 CREMP will be used to monitor water quality of SDLT1 and Sheardown Lake NW as a basis for informing the potential

	need for further investigations and mitigation. A point source in the vicinity of the pond would confirm whether it is the influence or not.
QIA Request	The KM 105 Pond is identified only as a “likely influence”. In order to confirm its impact on SDLT1 and Sheardown Lake NW, consider installing a sampling site at the discharge point of the pond. A site at this location could be compared to downstream sampling points and any impact could be identified.

Comment #	QIA 2024 NWB AE #11
References	**Document Name:** Appendix E.9.1 2024 Core Receiving Environment Monitoring Program Report **Section:** 4.5.6 Effects Assessment and Recommendations **Page:** 257/332
QIA Comment	In the Effects Assessment and Recommendations section of the report, the text summarizes the sediment quality AEMP benchmarks that were exceeded at Sheardown Lake SE. These include arsenic, mean chromium, iron and manganese concentrations in littoral and profundal sediment samples, nickel concentrations at two littoral and two profundal sites and phosphorus concentrations in two profundal samples. Also, influences were identified at SDLT9, which is a tributary to Sheardown Lake SE and at Sheardown Lake NW. Yet the report states that none of the samples were elevated compared to both reference and baseline and suggested that no or minimal mine-related impacts on littoral or profundal sediment quality were indicated in 2024. While the numbers suggest no or minimal mine-related impacts, the cumulative effect of these exceedance may indicate some mine-related impacts may be occurring that require further investigation.
QIA Request	A Moderate Action Response is required if the AEMP benchmark is exceeded. Investigation into potential cumulative effects of these metals on aquatic biota should be considered.

Comment #	QIA 2024 NWB AE #12
References	**Document Name:** Baffinland Iron Mines 2024 Annual Report to QIA and NWB for Operations, Appendix 8.2 (QIA Part 1 of 2) NWB Registry: 250331 - 2024 QIA-NWB Annual Report for Ops - Appendix E.8.2 (QIA) - 1 of 2 -.pdf] **Section:** June 2024 site visit Page: pdf p. 112 of 125.

	Document Name: Baffinland Iron Mines 2024 Annual Report to QIA and NWB for Operations, Appendix E.9.1 (CREMP) (NWB Registry: 250331 - 2024 QIA-NWB Annual Report for Ops - Appendix E.9.1 Mary River Proje.pdf) **Section:** Executive Summary. **Pages:** i to vi (pdf p.4 to 9 of 332) **Document Name:** Baffinland Iron Mines 2024 Annual Report to QIA and NWB for Operations, Appendix E.13 (2023 Responses) [NWB Registry: 250331 - 2024 QIA-NWB Annual Report for Ops - Appendix E.13 (2023 Responses)-pdf] **Section:** BIMC 32, QIA CREMP#25 **Page:** 22-23 (pdf p. 23-24 of 76)
QIA Comment	In comments on Baffinland's 2023 QIA NWB Annual Report on Operations (App. E.13, p. 22-23), QIA recommended Baffinland assess whether there are sites in Camp Lake Tributary 1 (North Branch), Sheardown Lake tributaries 1 and 9, and Sheardown Lake (Northwest and Southeast) with sediment traps that could be core-sampled to extend the temporal records of sediment quality. In its response Baffinland describe the difficulty of locating tributary stream habitats that trap fine sediments deep enough for coring and argued there is no need for a sediment deposition record that predates the 2005 baseline. The response did not address core sampling in the Sheardown Lakes. It also did not discuss the comparative value of current sediment samples, which uses a grab sampler and then scrapes off the surface layer for analysis, relative to a tubular core sample that can sectioned into discrete layers. In its June 2024 Mary River site inspection report (App. E.8.2, pdf p.112) LGL Limited also recommended the value of sediment cores for temporal sampling. "*Sedimentation accumulation and sedimentation rates have been reported previously by Baffinland Iron Mines. Rough estimates suggest the 2cm sediment cores collected by Baffinland Iron Mines at lakes located close to Mary River Mine – Sailiivik Camp span a period of ~10 to 15 years. This period extends barely past the start of mining operations. We recommend the collection of full-length lake sediment cores (>50 cm) from lakes located close to the mining operations at Mary River Mine – Sailiivik Camp and reference lakes sites. This Routine analysis of metal concentrations can be reported downcore to provide context to metals concentrations observed in surficial sediment. For example, sediment metal concentrations at the top of the core may still be below sediment quality guidelines but have increased potentially 5-fold above sediment that predates industrial activities in the region. This will provide a more rigorous analysis to develop site-specific baselines for contaminants of concern. Combined with systematic water and surficial sediment sampling, these methods provide a powerful approach to tracking water quality changes at a range of temporal and spatial scales relevant to inform environmental stewardship decisions.*" (App. E.8.2, pdf p. 112)

	With growing evidence in the CREMP of mine-related influences on Project lakes (App. E.9.1, p. i to vi) and the planned increase in ore production from 4.2 Mtpa to 18 Mtpa, improving the current and future pre- and post-operational sediment deposition and quality is becoming increasingly important.
QIA Request	QIA recommends Baffinland collect sediment cores during the winter or summer 2026 field seasons from Project exposed and Reference lakes to establish clearer temporal records of pre-Project deposition quantity and quality and provide context for ongoing deposition of iron and other metals. Sediment cores should be extruded at 0.5cm intervals and dated using radio isotopes of lead to establish a chronology and put changes in sediment chemistry into temporal context. Each discrete sediment layer should be examined for sediment chemistry of key variables.

Comment #	QIA 2024 NWB AE #13
References	**Document Name:** Baffinland Iron Mines 2024 Annual Report to QIA and NWB on Operations, Appendix E.13 CREMP [NWB Registry: 250331 - 2024 QIA-NWB Annual Report for Ops - Appendix E.13 (2023 Responses)-.pdf] **Section:** BIMC 32, QIA CREMP#25 **Pages:** 22-23 (pdf p. 23-24 of 76)
QIA Comment	In its review comments on Baffinland's 2023 QIA NWB Annual Report on Operations (App. E.13, p. 22-23), QIA supported the Minnow Environmental Ltd. recommendation that Baffinland conduct temporal trend analyses to evaluate changes in the aqueous concentrations of sulphate (CLT1, SDLT1, SDLT12); molybdenum, sodium, and uranium (SLDT1, SLDT12); aluminum, nitrate, chloride, lithium, magnesium, manganese, potassium, and strontium (SLDT1) in Camp Lake Tributary 1 (i.e., CLT 1 Mainstem), and Sheardown Lake tributaries 1 and 12 (i.e., SLDT 1 and, SLDT 12). QIA also supported their recommendation to conduct temporal trend analyses to evaluate changes (i.e., since 2017) in the sediment quality and metals of Camp Lake Tributary 1 (North Branch), Sheardown Lake tributaries 1 and 9, and Sheardown Lake (Northwest and Southeast) and assess mine-related influence. In response, "*Baffinland commits to a one-time submission of usable, sorted data and metadata for statistical analyses by July 31, 2025. The submission will include all the sediment and water quality data collected from Sheardown and Camp catchment (e.g., lake and tributary). QIA's analysis of this data will be completed at their expense. The outcomes of QIA's analysis will be shared with Baffinland in draft for*

	review and to discuss in relation to any further action to be undertaken as part of the adaptive management framework." (App. E.13, p. 22-23). QIA looks forward to Baffinland sharing these data but notes that it has not volunteered to conduct these trend analyses for Baffinland.
QIA Request	QIA recommends Baffinland conduct these temporal trend analyses and provide temporal plots of all sediment metals for each Project Lake, regardless of whether Baffinland has determined a project related effect has been observed at this point. Note this request is intended to support QIA and other stakeholders evaluate how the project has influenced sediment chemistry within the local study area

Comment #	QIA 2024 NWB AE #14
References	**Document Name:** Baffinland Iron Mines 2024 Annual Report to QIA and NWB on Operations, Appendix E.9.1 (CREMP) [NWB Registry: 250331 - 2024 QIA-NWB Annual Report for Ops - Appendix E.9.1 Mary River Proje).pdf] **Section:** Executive Summary **Page:** iii (pdf p. 6 of 332) **Document Name:** Baffinland Iron Mines 2024 Annual Report to QIA and NWB on Operations, Appendix E.9.1 2024 Core Receiving Environment Monitoring Program Report (CREMP) [NWB Registry: 250331 - 2024 QIA-NWB Annual Report for Ops - Appendix E.9.1 Mary River P (1).pdf] **Section:** CREMP Appendix C, Figure 11 **Page:** 4 and 5 of 14 (pdf p. 139 and 140 of 358) **Document Name:** Baffinland Iron Mines 2024 Annual Report to QIA and NWB on Operations, Appendix E.9.1 (CREMP) [NWB Registry: 250331 - 2024 QIA-NWB Annual Report for Ops - Appendix E.9.1 Mary River P (2).pdf] **Section:** Appendix I, Sheardown Lake tributary 9 (SDLT9) aqueous nitrogen compounds special investigation **Page:** I-3 (pdf p. 272 to 276) **Document Name:** Baffinland Iron Mines 2023 Annual Report to QIA and NWB on Operations, Appendix E.9.1 (CREMP) [NWB Registry: 240331 - 2023 QIA-NWB Annual Report for Ops - Appendix E.9.1 (CREMP) - 1 of 3 - As Sent.pdf] **Section:** 6, Table 6.1 **Pages:** 269 (291 of 307).
QIA Comment	In 2023 (CREMP 2023, p. 269) and again in 2024 (CREMP 2024, p. iii) the CREMP found elevated nitrogen-related compounds (ammonia, nitrate, nitrite, and total Kjeldahl nitrogen) in Sheardown Lake tributary 9 (SDLT9), and in 2024 elevated nitrate in both Sheardown Lakes (Northwest [NW] and Southeast [SE]). A special investigation completed in the fall of 2024 identified activities at the Dyno Nobel Emulsion Plant (Dyno facility), which stores ammonium nitrate for explosives production and is adjacent to SLDT9, as the primary source of these compounds (CREMP 2024 App. I, p. I-3 (p. 272 of 276).

	Baffinland plans to implement an activity audit of the transportation, storage, and handling of ammonium nitrate at the Dyno facility, with potential additional water sampling during the open water season in 2025, to help identify point source(s) of aqueous nitrogen compounds. Has Baffinland considered air quality monitoring for nitrogen compounds in the vicinity of the Dano facility and mine pit to better understand their magnitude and dispersal?
QIA Request	QIA recommends: 1) that the additional sampling conducted during the 2024 special investigation of nitrogen-related compounds in Sheardown Lake tributary 9 (SLDT9) be continued in 2025, along with any other new stations needed to assess the efficacy of measures taken to reduce fugitive nitrogen compounds, and 2) that Baffinland consider the value of monitoring airborne dispersal of nitrogen compounds in the vicinity of the Dyno facility and mine pit.

Comment #	QIA 2024 NWB AE #15
References	**Document Name:** Baffinland Iron Mines 2024 Annual Report to QIA and NWB on Operations, Appendix E.13 (2023 Responses) [NWB Registry: 250331 - 2024 QIA-NWB Annual Report for Ops - Appendix E.13 (2023 Responses)-.pdf]**Section:** BIMC 42, QIA WQ#10 **Page:** 27 (pdf p. 28 of 76) **Document Name:** Baffinland Iron Mines 2024 Annual Report to QIA and NWB on Operations, Tables [NWB Registry: 250331 - 2024 QIA-NWB- Annual Report for Ops - TABLES - As sent.pdf] **Section:** Table 4.3 **Page:** pdf p. 19 and 20 of 76
QIA Comment	In response to QIA's 2023 request Baffinland provided additional details on the calcium chloride applications used for dust suppression on Project roadways (App. E.13, p. 27). This response noted the application rate is conservative relative to that in the south and less than 10% the industry standard, and that no changes in the terrestrial or aquatic environments are anticipated. This information was not found in the main report, but the volume of water withdrawn for dust suppression was reported (Table 4.3, pdf p. 19 and 20). Based on the information provided it is not clear whether some aquatic and terrestrial habitats receive a greater proportion of the calcium chloride than others. Arctic terrestrial and freshwater habitats are very different from those in southern Canada, so the more dilute solution may not be as conservative as expected.
QIA Request	QIA requests Baffinland: 1) include information on the amount of calcium chloride applied to the Tote Road each year in its QIA NWB Annual Report on Operations,

	and 2) assess whether there is any evidence of frequent application of calcium chloride dust suppressant on the adjacent Tote Road crossing producing measurable changes in the calcium and chloride levels of streams monitored for water quality.

Comment #	QIA 2024 NWB AE #16
References	**Document Name:** Baffinland Iron Mines 2024 Annual Report to QIA and NWB on Operations, APPENDIX E.13 (2023 Responses) [NWB Registry: 250331 - 2024 QIA-NWB Annual Report for Ops - Appendix E.13 (2023 Responses)-.pdf] **Section:** BIMC 43, QIA WQ#11 **Page:** 27 and 28 (pdf p. 28 and 29 of 76)
QIA Comment	In its response to a QIA water quality comment on the 2023 QIA NWB Annual Report for Operations Baffinland provided an update on the 2023 and 2024 seasons of the Pilot Study of aquatic effects of dustfall in a Tote Road stream (App. E.13, pp. 27+28). In 2023, Baffinland did not find a statistically significant difference when the weight of sediment collected in sediment traps upstream of the CV-099 culvert crossing was compared with that in traps downstream. The program was not successful in 2024 due to bedload movement and trap losses and contents related to the 1:1000 yr precipitation event. Baffinland is not confident that a sediment-trap type of program is feasible. QIA notes that differences in sediment weight or other parameters need not be statistically significant to be ecological significant. It looks forward to receiving the full report from this Pilot Project and Baffinland's recommendations for alternative approaches to assessing the aquatic inputs and effects of Project-related sediment and dust inputs to Tote Road stream ecology. It considers this an important gap in knowledge of Project related effects. Baffinland's response appears to confuse this Pilot Study with another Pilot Study to assess the risk to Arctic char in Tote Road streams from contaminants released by rubber particulates worn from truck tires. In 2022, Baffinland monitored the concentration of 6PPD-Quinone in water at six crossings along the Tote Road as part of this study.
QIA Request	QIA requests Baffinland provide a copy of the reports (or more detailed updates) from the Pilot Study of aquatic effects of dustfall and sediment on Tote Road streams and the Pilot study of rubber tire contaminants along the Tote Road, along with any plans or alternative approaches for related future work.

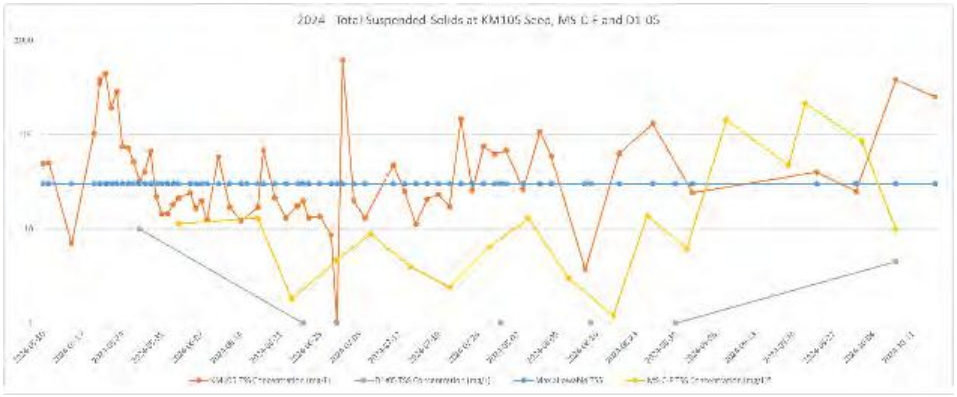
Comment #	QIA 2024 NWB AE #17

References	**Document Name:** Baffinland Iron Mines 2024 Annual Report to QIA and NWB on Operations, Appendix E.9.3 AEMP Hydrometric [250331 - 2024 QIA-NWB Annual Report for Ops - Appendix E.9.3 (AEMP Hydrometri.pdf] **Section:** 6 **Page:** 8 (pdf p. 8 of 9)
QIA Comment	"*Additional site visits are recommended throughout future seasons to verify the operation of data loggers and perform flow measurements. It is recommended that future hydrometric monitoring continue to target low flow and/or high flow periods to maintain and further validate the rating relationships. Peak flows tend to occur in the spring but not always when the channels are ice-free or when conditions permit safe access for gauging. Following the extreme rainfall observed in September 2024, peak flows that occur in summer and fall months continue to be a good to target. In future programs, if they occur, precipitation events of greater than 4 mm per day should continue to be noted as they typically result in an appreciable increase in flow, especially at the stations with smaller catchments. Precipitation events that last for more than one day, with cumulative precipitation over 10 mm, can result in much higher flow, especially earlier in the summer (mid-July to mid-August) before the active layer of permafrost fully develops*." (App. E.9.3, s.6, p. 8) Monitoring of stream flow through the open water season is important for understanding Arctic char access to and from juvenile summering habitats upstream of the Tote Road crossings, and to inform the design of culvert stream crossings.
QIA Request	QIA supports the recommendations for additional hydrometric site visits throughout future seasons to verify the operation of data loggers and perform flow measurements and continued targeting of low flow and/or high flow periods--particularly extreme peak flow, to maintain and further validate the rating relationships.

Comment #	QIA 2024 NWB AE #18
References	**Document Name:** Baffinland Iron Mines 2024 Annual Report to QIA and NWB on Operations, Appendix E.8.2 QIA (Part 1 of 2) [NWB Registry: 250331 - 2024 QIA-NWB Annual Report for Ops - Appendix E.8.2 (QIA) - 1 of 2 -.pdf] **Section:** 2024 Water Quality **Page:** pdf p. 54 to 57 of 125
QIA Comment	Baffinland reported on the September 2024 extreme rainfall event as follows: "*During this event, TSS at the seep reached 9040 mg/L but dropped significantly in the subsequent sampling on September 24, where it was 40 mg/L. Suspended solids concentrations at receiving environment assessment station D1-05 on September 20 and on October 8 when the subsequent sample was collected remained very low at 2.8 mg/L and 4.5 mg/L, respectively, assessing negligible impact to the receiving environment fish bearing habitat as a result of the seepage even during the*

unprecedented 1:1000 rainfall event." (Appendix E.8.2 (Part 1 of 2), p. 54). What biological data does Baffinland have to support this conclusion?

The following footnotes appear beneath Figure 3. "*Total Suspended Solids at the KM105-Seep and Downstream Stations MS-C-F and D1-05*" on page 55:



" [1] *Logarithmic scale used due to the wide range of TSS values, particularly the TSS value measured during the September precipitation event. And,*
[2] *Outlier data for KM105 TSS concentration on September 20 of 9040 mg/L removed from figure dataset."* These changes fundamentally alter the figure by damping the apparent variability.

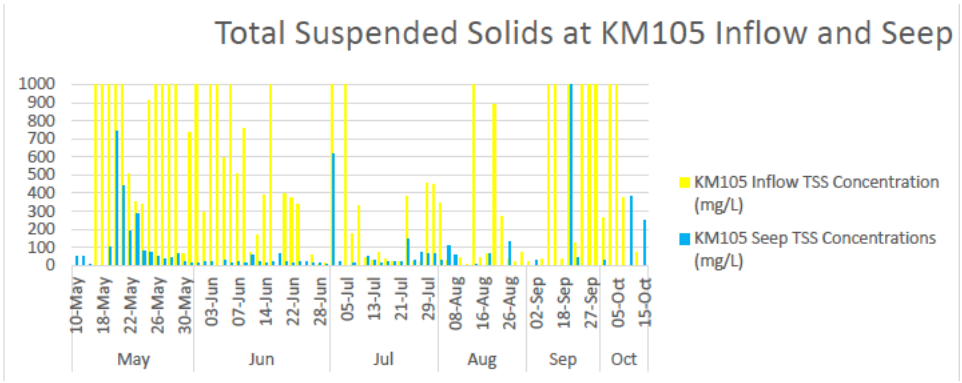


Figure 4: "Total Suspended Solids at KM 105 Pond Inflow and Seep" on page 57 has the following note underneath:
"*Note: Values that exceed the Y-axis for inflows are truncated for trend analysis*

QIA Request	QIA requests Baffinland: • identify the biological data used to support its conclusion there was no impact from the high TSS pulse, • provide figures for the KM 105 seep that depict the full linear range of TSS measurements, and • explain why TSS concentrations above 1000 mg/L were omitted from Figure 4, and how this affects trend analysis

Fish and Fish Habitat (FFH)

Comment #	QIA 2024 NWB F&FH #1
References	**Document Name:** Appendix E.8.2 – QIA Inspection Reports and Baffinland Responses **Section:** Response to Recommendations – 2024 Environmental Audit Report, Attachment 1 **Page:** full document
QIA Comment	QIA-6 indicated that concerns with culvert crossing inhibiting fish passage in low flows at KM33 needed to be addressed. Baffinland's response stated that they were working with DFO during on-site inspections, and that rip rap that could potentially impact fish passage in low flows had been removed. Baffinland committed to reporting on fish passage in the 2024 NWB QIA Annual Report for Operations. However, QIA's concern was primarily regarding fish strandings on areas placed above grade (i.e., the culverts installed at KM33). Baffinland's response did not indicate that any work had been conducted/planned to address the grade of these culverts.
QIA Request	Please provide a summary of additional plans for preventing fish strandings at above-grade culverts. Additionally, please provide a copy in the 2025 NWB QIA Annual Report for Operations, for third-party review, to ensure that rip rap removal was successful, and if additional work for improving fish passage had been committed to.

Comment #	QIA 2024 NWB F&FH #2
References	**Document Name:** Appendix E.13 Responses to 2023 Annual Report Comments **Section:** WQ#11 **Page:** 28 of 76

QIA Comment	As requested in the 2022 NIRB Annual Report, QIA asked Baffinland to assess the potential risk to fish in Tote Road streams from metals and chemicals released by rubber particulates from vehicle tires. This was to be achieved by sampling representative road dust and stream sediment upstream and downstream of the road. In response, a pilot sediment monitoring program using sediment traps was initiated at the CV-099 culvert crossing in 2023 and continued in 2024. The 2023 results indicated no statistically significant difference in sediment mass between upstream and downstream locations. However, the 2024 program encountered significant challenges, including data contamination from large bedload movement, equipment loss due to extreme weather events, and unrepresentative or missing samples. Baffinland hired an unknown and unidentified third-party reviewer to review the methodology and results of the sediment trap study and concluded that sediment traps are not a feasible approach for assessing the impact of tire-derived contaminants in these streams.
QIA Request	Given that the current sediment trap-based program cannot effectively assess the potential risk to fish from tire-derived metals and chemicals, QIA requests that Baffinland develop and implement an alternative, scientifically robust monitoring program to meet this objective. A specific timeline to proposal review and implementation is requested as a component of the response.

Comment #	QIA 2024 NWB F&FH #3
References	**Document Name:** Appendix E.8.2 QIA Inspection Reports and Baffinland Responses **Section:** Attachment 1 - Baffinland Responses to QIA's September Environmental Inspection Report **Page:** 116 of 127
QIA Comment	As recommended following the September QIA inspection, LGL advised that the accumulation of fine materials in the short channel section downstream of the culverts at CV-216 and upstream of Muriel Lake be monitored over time, and that an assessment be conducted to determine whether any impacts to fish habitat in Muriel Lake have occurred. Baffinland's response—stating that CV-216 is a priority for additional remediation in winter 2025 and is subject to ongoing performance monitoring—does not address the

	specific recommendation. No commitment has been made to assess the presence or impact of fine materials on fish habitat.
QIA Request	Baffinland is requested to explicitly commit to monitoring fine sediment accumulation at CV-216 and to conducting an assessment to determine whether current or potential impacts to fish habitat in Muriel Lake exist. A clear timeline for this assessment must also be provided.

Comment #	QIA 2024 NWB F&FH #4
References	**Document Name:** Appendix E.9.1 2024 Core Receiving Environment Monitoring Program Report **Section:** 3.3.5.1 Fish Community **Page:** 135 **&** 210 of 332
QIA Comment	Results from the CREMP suggest that a higher fish density in Camp Lake relative to the reference lake since mine operations began in 2015 may be associated with higher primary and secondary productivity. This increase in productivity is used as rationale to explain greater abundance of Arctic char. The same rationale is used to explain density in the nearshore area of Sheardown Lake NW relative to the Reference Lake. Yet gill net CPUE is lower despite higher chlorophyll-a concentrations. In spite of an IR to this effect in 2023, the same rationale is being used to explain the increased Arctic char density. This rationale is used in several sections of the report. Also, while a significant difference was observed for phytoplankton, none was observed for benthic invertebrates for either baseline or reference. To state that the observed change in char abundance is a direct correlation is simplistic and based on the literature, has not been adequately supported at the project. Other factors are likely in play and should be considered.
QIA Request	Provide hypotheses to explain increased density of Arctic char that provide a more fulsome rationale than a direct correlation between primary productivity and Arctic char abundance. Or conversely, reduce the reliance on the explanation relating primary productivity and Arctic char abundance throughout the report.

Comment #	QIA 2024 NWB F&FH #5
References	**Document Name:** Appendix E.9.1 2024 Core Receiving Environment Monitoring Program Report

	Section: 4.4.5.2 Fish Health Assessment **Page:** 212/332
QIA Comment	Arctic char YOY were distinguished from older age classes using a fork length cut-off of 5.0 cm for Sheardown Lake NW and 4.0 cm for Reference Lake 3 based on the evaluation of LFD coupled with supporting length and weight measurements and age determinations. In 2024 fewer than ten YOY were captured in Sheardown Lake NW. Numbers for Reference Lake 3 were not reported. The low numbers of Arctic char YOY reported could be cause for concern as it relates to reproductive success and further recruitment into higher age classes. Figure 4.11 shows even distribution through several age classes, but there could be an effect and subsequent cause for concern with such low numbers of Arctic char YOY.
QIA Request	Have reproductive success and recruitment into higher age classes been considered in the Arctic char health assessment and how would these compare to Reference Lake 3 and baseline? These parameters can and should be analyzed using previous reports to identify any trends. Also, can Reference Lake 3 be relied upon for comparison of results as the dominant size classes are different than in Sheardown Lake NW?

Comment #	QIA 2024 NWB F&FH #6
References	**Document Name:** Appendix E.9.1 2024 Core Receiving Environment Monitoring Program Report **Section:** 4.4.5.2 Fish Health Assessment **Page:** 215/332
QIA Comment	The report states that “Arctic char captured at Sheardown Lake NW in 2024 were significantly longer (19%) but not significantly different in weight and therefore exhibited lower condition (-16%) compared to individuals captured during the baseline period” The report also states that the observed difference in condition between the 2024 samples and baseline exceeded the CES_C of ± 10% and indicates an ecologically meaningful difference. The report emphasizes that no consistent pattern in fork length or body weight is apparent over time and that if they were different, the metrics were frequently not significant. Overall, the report states that “no consistent changes in non-YOY condition have been observed in Sheardown Lake NW relative to Reference Lake 3 since 2015 although body condition has consistently been lower than baseline at MODs near or outside of the CES_C except in 2023. Also, potentially ecologically meaningful differences have

	not been consistently observed in recent study years. In conclusion, no adverse mine-related effects were determined on the health of non-YOY Arctic char at Sheardown Lake NW." While no consistent pattern has been identified in condition factor relative to baseline, the observed difference in condition in 2024 between samples and baseline indicated an ecologically meaningful difference. Also, condition factor has consistently been lower than baseline at MODs near or outside of the CES_C. This may be cause for mine-related influence. Even if not, saying that no adverse mine-related effects are indicated when compared to Reference Lake 3 is not substantiated. Furthermore, to say that ecologically meaningful differences have not been consistently observed in recent study years when only 2023 did not show a significant difference is not substantiated. Even though the report states that the no mine-related effects conclusion will be verified through ongoing annual assessment of fish health, the report should still not provide such a conclusion on the basis of the evidence presented.
QIA Request	The report should identify the inconclusive evidence and discuss the absence of any consistent changes rather than rely on an invalid conclusion..

Comment #	QIA 2024 NWB F&FH #7
References	**Document Name:** Appendix E.9.1 2024 Core Receiving Environment Monitoring Program Report **Section:** 4.5.5.2 Fish Health Assessment **Page:** 253/332
QIA Comment	"Similarity in body size was reflected in a dominant size class of fish between 6 and 7 cm in both 2024 and the baseline period. Fork length and body weight of non-YOY nearshore Arctic char in Sheardown Lake SE have been inconsistent relative to baseline between 2015 and 2024. While body size has varied over the mine operational period, condition of fish from Sheardown Lake SE has frequently been lower than during the baseline period, though the MODs in 2023 and 2024 did not indicate a consistent directional difference from baseline over the length range of fish captured (i.e., the condition of smaller fish in 2024 was greater than during the baseline period while the condition of larger fish was lower. The study measures size classes using both fork length and body weight and identifies an inconsistency relative to baseline between 2015 and 2024. Comparing condition

	between years would be a useful measure as it would compare the same year class of fish as it aged.
QIA Request	Consider assessing condition factor of fish on a year-over-year basis e.g. where the size class of 6-7 cm fish is compared to one year class older in the next year to identify any changes to the same group of fish as they age.

Comment #	QIA 2024 NWB F&FH #8
References	**Document Name:** Appendix E.9.1 2024 Core Receiving Environment Monitoring Program Report **Section:** 5.1.4 Effects Assessment and Recommendations **Page:** 274
QIA Comment	The report states that “Water quality at Mary River in 2024 where parameter concentrations were within applicable FEIS significance rating magnitude predictions also meant that FEIS predictions for (absence of) effects on Arctic char health and condition were also met. Therefore, Arctic char health and condition at Mary River in 2024 conformed with predictions made in the Baffinland FEIS.” No data for Arctic char health could be found in the report.
QIA Request	Where are the data for Arctic char health?

Comment #	QIA 2024 NWB F&FH #9
References	**Document Name:** Appendix E.9.1 2024 Core Receiving Environment Monitoring Program Report **Section:** 5.3.5.1 Fish Community **Page:** 308/332
QIA Comment	Gill netting CPUE for Arctic char in 2024 was more than twofold higher than in 2023 but was consistent with the range of earlier mine operation years. In general, fish density in Mary Lake has often been greater than both reference and baseline results. Mary Lake is also substantially larger than the other study lakes which the report states, may influence the home range size and movement patterns of the resident fish community. The broader range of habitats and greater spatial extent which results in more extensive movements and home ranges is used as rationale to explain the increased densities. These parameters however, would result in an expectation of lower density as fish would be more dispersed over the area of the lake. While we agree that the catch rates could be more variable because of the broader range of habitats and greater spatial

	extent, they are likely to result in fewer fish, not more. There is no evidence to assume that this variability is due to factors other than mine-related impacts
QIA Request	The hypothesis of no indication of mine-related impacts should be changed and should instead reflect the uncertainty of the sampling methodology. More applicable rationale should be considered.

Comment #	QIA 2024 NWB F&FH #10
References	**Document Name:** Appendix E.9.1 2024 Core Receiving Environment Monitoring Program Report **Section:** 5.3.5.2 Fish Health Assessment **Page:** 310-313/332
QIA Comment	The report states that the LFD for nearshore Arctic char has remained consistently different between Mary Lake and Reference Lake 3 over the period of mine operations although there have been no consistencies in relative frequencies of fish lengths. The results from non-YOY indicate a meaningful difference based on MOD exceeding the CES_C of ± 10%. Also, YOY from Mary Lake were generally longer and heavier although again, no consistent directional differences in size or condition were observed compared to Reference Lake 3. The LFD for littoral/profundal Arctic char has also reflected higher relative frequencies of larger fish in Mary Lake. Although fork length, body weight and condition were greater than Reference Lake 3 between 2018 and 2024, in 2023 no significant differences were detected. In general, no ecologically relevant differences in conditions were detected compared with baseline either. While differences in LFD and condition are ongoing, the scale of difference appears to have no pattern.
QIA Request	Is it possible that calculating the range of difference over time between Mary Lake and Reference Lake 3 would reveal some pattern of difference over the years? Has the level of difference between the lakes remained the same? Has this been measured?

Comment #	QIA 2024 NWB F&FH #11
References	**Document Name:** Baffinland Iron Mines 2024 Annual Report to QIA and NWB on Operations, Appendix E.13 Core Receiving Environment Monitoring Program Report (CREMP) [NWB Registry: 250331 - 2024 QIA-NWB Annual Report for Ops - Appendix E.13 (2023 Responses)-.pdf]

	Section: BIMC 31, QIA CREMP#24 **Pages:** 20-22 (pdf p. 21-23 of 76) **Section**: BIMC 62, QIA FFH#1 **Pages**: 36 (pdf p. 37 of 76) **Document Name** Baffinland Iron Mines 2023 Annual Report to the Nunavut Impact Review Board, Appendix G.2.6 Tote Road Fish Habitat Monitoring Annual Report [NIRB Registry: 240503-08MN053-2023 Annual Report-App G-Tote Road Fish Hab-Pt 1-IA1E.pdf] **Section:** 3.3 **Pages**: 7 (12 of 135)
QIA Comment	In 2023 QIA recommended "*that Baffinland increase the timing flexibility of its field sampling programs for Arctic char in the project and reference lakes and Tote Road streams*" (App. E.13, BIMC 31, QIA CREMP#24, p. 20-22). The recommendation was in response to QIA concerns that interannual comparability of catch data was being weakened by environmental conditions that reduced catches. This was particularly evident in the 2023 Reference Lake 3 gillnetting and Tote Road electrofishing, where environmental conditions (e.g., cold, windy, high flow velocity) influenced fish movements and/or sampling efforts such that far fewer fish were caught than in past years (BIM 2023 NIRB AMR, App. G.2.6, s.3.3, p. 7). The 2023 catch data may not accurately reflect culvert use by various length classes of char or the health parameters of the Reference Lake 3 char population. Both issues may be related to the timing of sampling in relation to environmental conditions, possibly due to constraints in the field sampling schedule(s). In its 2024 response Baffinland states that it has added as much flexibility as possible to these fishing programs but prefers the approach of trying to conduct the studies at the same time each year rather than adjusting to environmental conditions (App. E.13, BIMC 31, QIA CREMP#24, p. 20-22). In response to QIA's recommendation that Baffinland consider adjusting the timing of its Tote Road surveys to improve their interannual comparability, Baffinland stated "*the annual surveys generally correspond to the period following peak flow in the streams along the tote Road*." (App. E.13, BIMC 62, QIA FFH#1, p. 36). QIA supports this approach but the low catch rates in 2023, which were attributed to high flows and low water temperatures, suggest the approach is not always followed. QIA recommends Baffinland increase the survey timing flexibility to ensure that fish passage studies are conducted under optimal conditions. Adding flexibility to these sampling programs, such that uncertain results can be revisited could help to confirm whether culverts still provide unobstructed fish passage-- as opposed to requiring further remediation, and provide a more accurate temporal record of fish health and survival in the lakes for comparisons. QIA

	understands the access limitations, particularly helicopter access to the Reference Lake 3. Are there sharing/scheduling workarounds that might enable culvert crossings to be revisited, or facilitate helicopter access during favourable weather?
QIA Request	QIA reiterates its recommendation that Baffinland increase the timing flexibility of its field sampling programs for Arctic char in the project and reference lakes and Tote Road streams.

Comment #	QIA 2024 NWB F&FH #12
References	**Document Name:** Baffinland Iron Mines 2024 Annual Report to QIA and NWB for Operations, Appendix E.9.1 CREMP) (250331 - 2024 QIA-NWB Annual Report for Ops - Appendix E.9.1 Mary River Proje.pdf) **Section:** Executive Summary **Page:** vi (pdf p. 9 of 332) **Document Name:** Baffinland Iron Mines 2024 Annual Report to QIA and NWB on Operations, Appendix E.9.2 (Lake Sedimentation) [NWB Registry: 250331 - 2024 QIA-NWB Annual Report for Ops - Appendix E.9.2 (Lake Sedimentat.pdf] **Section:** 2.4.1, Fig. 3.1 **Pages:** 21 (pdf p. 27 of 120) **Section:** 2.4.1. **Pages**: 17 and 24 (pdf p. 23 and 30 of 120) **Document Name:** Baffinland Iron Mines 2024 Annual Report to QIA and NWB on Operations, Appendix E.13 (2023 Responses) [NWB Registry: 250331 - 2024 QIA-NWB Annual Report for Ops - Appendix E.13 (2023 Responses)-.pdf] **Section:** BIMC 61, QIA LSM#1 **Page:** 36 (pdf p. 37 of 76)
QIA Comment	In its 2024 QIA NWB Annual Report for Operations Baffinland repeatedly refers to the sediment thresholds that are currently used for Arctic char egg survival (e.g., App. E.9.1, p. vi; App. E.9.2, s..2.4.1, p.17 and 24). It is correct in stating that QIA proposed the current TARP action response thresholds (Low 0.15, Moderate 0.54, and High 1 mm). The objective was to replace the 1 mm threshold from the Final Environmental Impact Statement (FEIS) with thresholds that were gradated and more precautionary. The reason is that the scientific papers cited in support of the 1 mm threshold were not based on Arctic char or Project-generated sediment (e.g., Morgan et al. 1983, Fudge and Bodaly 1984, and Berry et al. 2011). The 1 mm threshold is based on the effects of other sediments on other species of fish--some of them marine, that have different egg morphology, habitat requirements, and incubation durations. Consequently, its validity for Arctic char is very uncertain. In 2024 the open water sedimentation rates for all three habitat sampling groups in Sheardown Lake NW (SL-SHAL-1, SL-SHAL-2, and SL-DEEP-1) were at or near the highest found since sampling began in 2014 (App. E.9.2, p. 21). There is a clear

	increasing trend since 2019. While ice cover helps limit direct exposure of Arctic char eggs from sedimentation, the increase in open water sediment may cause them to sink deeper into the sediment in the fall and affect larval feeding in the spring. Activities related to Baffinland's plans to increase ore production from 4.2 Mtpa to 18 Mtpa may increase dust and sediment mobilization sufficiently to test these thresholds.
QIA Request	As in 2023, QIA recommends Baffinland take a precautionary approach to sediment deposition, given that the sediment thresholds for Arctic char have not been validated, and complete studies to validate sediment thresholds for Arctic char egg survival prior to the planned production increase.

Comment #	QIA 2024 NWB F&FH #13
References	**Document Name:** Baffinland Iron Mines 2023 Annual Report to QIA and NWB for Operations [NWB Registry: 240331 - 2023 QIA-NWB Annual Report for Ops - Main Body - As Sent.pdf] **Section**: 7.3.8 **Page:** 36 (62 of 90) **Document Name:** Baffinland Iron Mines 2024 Annual Report to QIA and NWB on Operations Main Document [NWB Registry: 250331 2024 QIA-NWB 2024 Type 'A' Annual Report for Operations, Main Body- As Sent] **Section:** 2.4 **Pages**: 17 (pdf p. 36 of 94) **Section:** 10.1.4 **Pages:** 67 (pdf p. 86 of 94) **Document Name:** Baffinland Iron Mines 2024 Annual Report to QIA and NWB on Operations, Appendix C.1.1 Construction Summary Report Round CSP Culverts [NWB Registry: 250331 - 2024 QIA-NWB Annual Report for Ops - Appendix C.1.1 (CSR Culverts -.pdf] **Section:** 5.2 **Page:** 19(pdf p. 29 of 38) **Section:** 5.3 **Page:** 20 (pdf p. 30 of 38) **Section:** 6 **Page:** 22 (pdf p. 32 of 38) **Document Name:** Baffinland Iron Mines 2024 Annual Report to QIA and NWB on Operations, Appendix E.13 (2023 Responses) [NWB Registry: 250331 - 2024 QIA-NWB Annual Report for Ops - Appendix E.13 (2023 Responses)-.pdf] **Section:** BIMC 62, QIA FFH#1 **Page:** 36 (pdf p. 37 of 76)
QIA Comment	"*On January 19, 2024, DFO issued a Letter of Advice (LOA) for Baffinland's Tote Road Culvert Remediation proposal to implement a permanent crossing solution for ten (10) corrugated steel pipe (CSP) crossings along the Tote Road (DFO, 2024)."* (BIM 2023 QIA NWB ARO, s.7.3.8, p. 36). "*In parallel with the issuance of the LOA, DFO issued a new Correction Measure order on February 5, 2024 requiring all 20*

	previously identified culverts to be remediated and to be supported by new sediment and erosion control and environmental monitoring plans." (Main Doc. 2024, s.2.4, p. 17). In February to May 2024, prior to the spring freshet, seven (7) of the ten (10) culvert crossings identified in the DFO LOA were removed and rebuilt (App. C.1.1, s.6, pdf p. 32 of 38). Following the spring freshet three (3) of these crossings (CV-102, Cv-106, CV-216) were found to have deficiencies and require further work related to settlement (CV-106 and CV-216) and sub-surface seepage (CV-102) (Main Doc. 2024, s. 10.1.4, p. 67; App. C.1.1, s.5.3, p. 20). One culvert (CV-216) was identified as a priority for re-construction in 2025, to improve fish passage and re-establish road integrity at the crossing. Between 21 and 24 September, overland flooding from an extreme rainfall event damaged six (6) culvert crossings, one (1) of which was completely washed out. These were repaired in the following weeks. Baffinland is working with DFO to re-evaluate geotechnical work and engineering for the remaining culvert crossings based on lessons learned from the 2024 construction program (App. C.1.1, s.6, p. 36). Following culvert installation Baffinland conducted environmental monitoring at each crossing to confirm fish passage during the open water season and identify issues requiring mitigation (App. C.1.1, s.5.2, p. 29). Current velocities were expected to be maintained as calculated during the design phase. Information on whether fish were able to pass upstream via the Tote Road culverts in the spring and downstream in the fall was not found in the documents provided for this review. Lack of this information limits QIA comments to the NWB on fish passage issues, which is unfortunate as they are flow related. Currently, Baffinland's annual monitoring study of culvert fish passage is only provided with the NIRB Annual Report, after the NWB annual report period has ended. QIA comments on 2024 culvert fish passage will be provided with the NIRB Annual Report review. Despite ongoing concern regarding fish passage and delays in cover crossing remediation, QIA recognizes Baffinland's 2024 culvert replacement and remediation work as a positive development, as is the cooperation between DFO and Baffinland to improve culvert designs (App. E.13, p. 36). QIA looks forward to completion the other 10 culvert installations and hopes these efforts solve the fish passage issues.
QIA Request	QIA requests Baffinland: • provide an update by the end of September 2025 on the remediation status of the ten (10) culvert crossings that are being re-designed by DFO and

	Baffinland, and another update by the end of March 2026 on progress prior to the 2026 freshet, • provide information on whether in situ water velocities in the newly installed culverts are as designed QIA recommends Baffinland: • complete Tote Road culvert remediation prior to the 2026 freshet to ensure unobstructed fish passage by juvenile Arctic char, • continue to assess whether the culvert crossings offer safe and unobstructed passage upstream in spring and downstream in fall for a range of Arctic char year classes, and • provide its annual culvert fish passage study in the documentation for reviews of both the QIA NWB Annual Report for Operations and NIRB Annual Report. QIA recommends the NWB review comments on culvert fish passage provided during the 2024 NIRB Annual Report review.

Comment #	QIA 2024 NWB F&FH #14
References	**Document Name:** Baffinland Iron Mines 2024 Annual Report to QIA and NWB on Operations, Appendix E.9.2 (Lake Sedimentation) [NWB Registry: 250331 - 2024 QIA-NWB Annual Report for Ops - Appendix E.9.2 (Lake Sedimentat.pdf] **Section:** 3.3.4 **Pages:** 30 to 33 (pdf p. 36 to 39 of 120) **Section:** 3.4.2 **Pages:** 33 to 35 (pdf p. 39 to 41 of 120) Stewart, D.B., and Bernier, L.M.J. 1988a. An aquatic resource survey of southern Baffin Island, Northwest Territories. Lands Directorate of Environment Canada and Northern Environment Branch of Indian and Northern Affairs Canada, Background Report 5: 121 p. + map. Stewart, D.B., and Bernier, L.M.J. 1988b. An aquatic resource survey of central Baffin Island, Northwest Territories. Lands Directorate of Environment Canada and Department of Fisheries and Oceans, Background Report 8: 129 p. + map.
QIA Comment	In Sheardown Lake NW "*the relative proportion of Chironomidae at the littoral BIC stations (DL0-01-4 and DL0-01-9) was significantly and strongly negatively correlated with both sedimentation rate and accumulation thickness estimates*..." (App. E.9.2, p. 30). Chironomid larvae are particularly important prey in the diet of small and large Arctic char in Baffin Island freshwater systems in July and August (Stewart and Bernier 1988a, b). So, as Baffinland noted, a shift in the benthic invertebrate

	composition (BIC) that reduces chironomid availability could negatively affect juvenile growth, reproduction, and overall survival of Arctic char. In the profundal zone of Sheardown Lake NW "...*results of the correlation analysis for DL0-01-2 (BIC) and DEEP-1 (sediment trap) stations indicated that, during the open water season and over the mine operational period (2015 to 2024), benthic invertebrate densities were significantly and strongly negatively correlated with sedimentation rate, whereas Simpson's Evenness exhibited a strong positive correlation with sedimentation rate (Table 3.2, Appendix Table C.1, Appendix Figure C.5)*" (s. 3.4.2, p.33). And, "*the relative proportions of the collector-gatherer FFG [functional feeding group] were significantly and strongly negatively correlated with the sedimentation rate, whereas the relative proportions of the filterer FFG showed a similar (i.e., strong, negative) significant correlation with sediment accumulation thickness estimates (Table 3.2, Appendix Table C.1, Appendix Figures C.5 to C.8)*." These results suggest *"that as sedimentation rate/accumulation estimates increase, the relative abundance of these FFGs (i.e., filterers and collector-gatherers) decreases." (s. 3.4.2, p. 35)* These ecological shifts are a concern given Baffinland's plans to increase ore production from 4.2 Mtpa to 18 Mtpa. Baffinland argues that the "*sedimentation rates and accumulation thicknesses were below the Low Action TARP thresholds and FEIS predictions in 2024, and do not appear to be affecting the total benthic invertebrate densities in Sheardown Lake NW*" (p. 33). However, the TARP thresholds were not developed based on Project-generated sediment or benthic freshwater invertebrates. and changes in important prey density—particularly chironomids, are likely more important than changes in total benthic invertebrate density. The benthic invertebrate program is also point-in-time, not spread throughout the open water season. These information gaps create uncertainty regarding the overall effects of increasing sediment accumulation thicknesses. Further monitoring is needed to enable direct comparisons of the chemical components of sediment trap and dustfall trap samples and better understand how they are related (App. E.9.2, s.3.3.4, p. 30). Only one year of sediment trap chemistry is currently available for comparison. Total organic carbon (TOC) should be added to the suite of analyses to better understand its relationship to relative abundance of chironomids (s. 3.4.1, p. 32 footnote 20). The Lake Sediment Monitoring Program is an important tool for gaining understanding of factors that influence the BIC and Arctic char in Sheardown Lake NW. It should be continued over the long term to provide early warning of Project-related impacts as the mine increases production.

QIA Request	QIA recommends Baffinland: • continue collecting sediment trap and dustfall trap samples for chemical analyses and direct comparisons of their constituents, adding TOC to the current suite of analyses, and • continue the sediment monitoring program over the long term to improve understanding of factors that influence the BIC and Arctic char population in Sheardown Lake NW and provide early warning of Project-related impacts as the mine increases production.