

December 18, 2019

Mr. Mosha Cote
Research Liaison
Nunavut Research Institute
Iqaluit, NU, Canada, X0A 0H0

RE: 2019 Summary Annual Report for Scientific Research Licence 02 010 19R-M; Scientific Research Licence Renewal Request for 2020 Monitoring Programs

Dear Mr. Cote,

Baffinland Iron Mines Corporation (Baffinland) was issued Scientific Research Licence 02 010 19R-M (the Licence) on January 21, 2019 by the Nunavut Research Institute (NRI). The Licence, along with other permits and approvals, allowed Baffinland to conduct select monitoring programs for the Mary River Project (the Project) in 2019 as prescribed by the Project's NIRB Certificate No. 005 – Amendment 1 and Type "A" Water Licence No. 2AM-MRY1325 – Amendment 1. Baffinland requests the renewal of this multi-year licence to continue monitoring programs in 2020.

In 2019, the following monitoring was conducted under the Licence for the Project. Baffinland plans to conduct similar monitoring programs in 2020.

Freshwater Environment Monitoring

Baffinland continued to implement a freshwater monitoring program to assess potential mine-related effects on water quality, phytoplankton, sediment quality, benthic invertebrate communities, and fish populations. A summary of the activities conducted includes:

- Water quality was monitored at several stream and lake stations including several reference areas, the Camp Lake tributaries, Camp Lake, Sheardown tributaries, Sheardown Lake, the Mary River, and the north and south basins of Mary Lake.
- Sediment quality sampling was conducted at each study lake for physical and chemical characterization, with supplementary characterization of physical sediment properties to support the benthic invertebrate community analysis.
- Sediment traps were deployed in Sheardown Lake NW to monitor annual sediment deposition rates and characterize sediment density.
- Flows and water levels were monitored in several rivers and streams near Project sites by means of instream pressure transducers and periodic discharge measurements.
- Fish surveys included the non-lethal collection of Arctic char from nearshore lake habitats and from littoral/profundal habitat at each of Camp, Sheardown NW, Sheardown SE, Mary, and Reference lakes.

Marine Environment Monitoring

In 2019, Baffinland conducted the following marine environment monitoring programs:

- Marine Mammal Aerial Survey Program

- Aerial surveys included early shoulder season and open water surveys.
- Bruce Head Shore-based Monitoring Program
 - Daily marine mammal surveying was conducted from August to September 2019. Data on narwhal group composition and behaviour was also conducted in addition to drone survey trials.
- Underwater Acoustic Monitoring Program
 - JASCO Applied Sciences deployed Autonomous Multichannel Acoustic Recorders at five locations along Baffinland's Northern Shipping Route.
- Ship-based Observer Program
 - Several marine mammal species including narwhal, bowhead whales, ringed seals, bearded seals and harp seals were sighted from the ship based observer program, which took place in July 2019. Regular seabird surveys were also conducted. The data will be submitted to the Canadian Wildlife Service and Environment and Climate Change Canada.
- Marine Monitoring Program
 - Water and Sediment Sampling
 - Vertical water quality profiling was conducted (conductivity, temperature, depth, dissolved oxygen etc.) and sediment quality were monitored in Milne Inlet to assess potential environmental effects.
 - Ballast Water Sampling
 - Ballast water from ore carrier vessels were monitored for salinity to confirm vessels had conducted a ballast water exchange in the North Atlantic Ocean prior to entering into Milne Inlet.
 - Fish Sampling
 - Collected fish were identified for species and for length/weight before being released.
 - Non-native Species Monitoring
 - Non-native species monitoring at Milne Port included vertical and horizontal oblique zooplankton tows, benthic infaunal sampling and underwater video surveys for epifauna and macroflora.
 - Marine Fish Habitat Offset Monitoring
 - ROV based underwater video surveys of coarse substrate habitat were conducted around the existing ore dock, natural and artificial collection baskets were also utilized to assess production of benthic invertebrates and fish larva.
 - Construction monitoring for the freight dock and habitat offset construction
 - Physical oceanography monitoring
 - Sea level and storm surges were monitored at Milne Port using a tidal gauge.
 - Oceanographic moorings were installed to assess water level, speed, and direction throughout the water column.

Terrestrial Environment Monitoring

- Dustfall Monitoring
 - Dustfall was measured at established stations along the Tote Road and near Project sites to monitor dust deposition rates at various distances from the Project.

- Vegetation Monitoring
 - Vegetation abundance monitoring, soil base metals and exotic invasive monitoring was conducted.
 - Re-vegetation test plots and surveys to support closure and reclamation research.
- Mammal and Wildlife Monitoring
 - Height of land caribou surveys, helicopter overflight monitoring, snow bank and snow height surveys were conducted in 2019.
- Bird Monitoring
 - Raptor occupancy, productivity and Red Knot sound recorder deployment was completed in 2019.

Noise, Air Quality and Climate Monitoring

- Several weather stations continued to be operated at Project sites. Monitored parameters included, precipitation (rain), temperature, wind speed, wind direction, solar radiation, barometric pressure and humidity.
- Air quality (SOx, NOx) and noise levels were monitored throughout the year at Project sites.

Annual reports for the 2019 monitoring programs listed above will be posted to Baffinland's Document Portal by March 31, 2020. Monitoring requirements and objectives for the various monitoring programs are discussed in Baffinland's suite of environmental management and monitoring plans available on Baffinland's Document Portal. Baffinland's Document Portal can be accessed on Baffinland's corporate website using the following URL:

<http://www.baffinland.com/news-reports/shareddocuments/?lang=en>

We trust that this 2019 monitoring summary in combination with the annual reports to be posted to Baffinland's Document Portal meet the NRI's annual reporting requirements under the Licence and request the renewal of Baffinland's existing multi-year licence in order to continue monitoring programs in 2020.

Please do not hesitate to contact the undersigned should you have any questions or comments.

Regards,

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

Christopher Murray
Environmental & Regulatory Compliance Manager

Cc: Megan Lord-Hoyle, Lou Kamermans, Tim Sewell, Shawn Stevens, Connor Devereaux, Amanda McKenzie (Baffinland)

- ROV ᐃᐱᐅᐸ ᐃᓗᐅᓂᐸ ᐅᐃᐅᐅᐸᐅᐸ ᖃᐅᐱᓗᐃᓂᖃ ᐃᓂᓯᓂᐅᐸᐸᓂᖃ ᐸᐃᐱᐅᐸᓂᐸ ᐅᓕᓯᐸᐸᐸᐸᐸᐸᐸᐸ ᐃᖃᓗᐃᓂᖃ, ᓄᐱᓯᐸ ᐱᐸᓂᖃ ᐅᐱᐱᓗ ᓗᐱᓂᐅᐱᐱᐸᐸᓂᖃ ᐅᓕᓯᐸᐸᐸᐸᐸᐸᐸ ᐃᖃᓗᐃᓂᖃ ᐅᐃᐅᐅᐸᐅᐸᐸᐸᐸ ᖃᐅᐱᓗᐃᓂᖃ ᐱᐸᐅᓂᐸᐸᐸᐸᐸᐸᐸ ᐅᐱᐸᐸᐸᐸ ᐅᐱᐱᓗ ᐃᖃᓗᐃᓂᖃ ᐱᓂᓂᐸᐸᓂᖃ.
- ᓗᐱᓂᐅᐸᐸᐸᐸᐸᐸᐸ ᖃᐅᐱᓗᐃᓂᖃ ᐅᐱᓂᐅᐸᐸᐸᐸ ᐃᖃᓗᐃᓂᖃ ᐅᐱᐱᓗ ᐃᓂᐅᐸᐸᐸᐸ ᐅᐱᐸᐸᐸᐸᐸᐸᐸ ᓗᐱᓂᐅᐸᐸᐸ
- ᐸᓂᐅᐸᐸᐸ ᐃᐱᓯᐸᐸ ᖃᐅᐱᓗᐃᓂᖃ
 - ᐸᓂᐅᐸᐸ ᐃᐱᓯᐸᐸ ᐅᐱᐸᐸᐸᐸᐸᐸ ᓄᐱᐸ ᓂᐱᐅᓂᐱᐱᓂᖃ ᐅᐱᐱᓗ ᐅᓂᓂᐅᓂᐸᐸᐸᐸ ᓂᐱᐅᐱᓗᐃᓂᖃᐸᐸ Milne Inlet ᐃᖃᓗᐃᓂᖃ ᐅᐃᐅᐅᐸᐸᐸᐸ ᖃᐅᐱᓗᐃᓂᖃᐸᐸ.
 - ᐸᓂᐅᐸᐸᐸ ᐃᐱᓯᐸᐸ ᐅᐱᐸᐸᐸᐸᐸᐸᐸ ᖃᐅᐱᓗᐃᓂᖃᐸᐸ ᐃᐱᐅᐸᐸ ᐅᐱᐸᐸᐸᐸᐸᐸ, ᓄᐱᓯᐸᐸ, ᐅᐱᐱᓗ ᓄᐱᓯᐸᐸᐸᐸ ᐃᐱᐅᐸᐸ ᐃᓗᐅᓂᐸᐸ.

ᓄᐱᓯᐸ ᖃᐅᐱᓗᐃᓂᖃ

- ᐅᐱᐸᐸᐸᐸ ᖃᐅᐱᓗᐃᓂᖃ
 - ᐅᐱᐸᐸᐸᐸ ᐅᐱᐸᐸᐸᐸᐸᐸᐸᐸᐸ ᐃᓂᐸᐸᐸᐸᐸᐸᐸᐸ ᐅᐱᐸᐸᐸᐸᐸᐸ ᐅᐱᐱᓗ ᐱᐸᓂᐸᐸᐸ ᐃᓂᓯᐸᐸ ᖃᓂᐸᓯᐸᐸ ᖃᐅᐱᓗᐃᓂᖃ ᓄᐱᓯᐸᐸᐸᐸᐸᐸ ᐅᐱᐸᐸᐸᐸ ᖃᓄᖃ ᐅᐱᐸᐸᐸᐸᐸᐸ ᐱᐸᓂᐸᐸᐸᐸ.
- ᐱᐸᓂᐸᐸᐸ ᖃᐅᐱᓗᐃᓂᖃ
 - ᐅᐱᐸᐸᐸᐸᐸᐸᐸ ᖃᐅᐱᓗᐃᓂᖃ, ᓄᐱᓯᐸ ᓗᐱᓂᐸᐸ ᐅᐱᐱᓗ ᐸᐱᓂᐸᐸᐸᐸᐸᐸᐸᐸ ᖃᐅᐱᓗᐃᓂᖃᐸᐸᐸᐸ.
 - ᐱᐸᓂᐸᐸᐸᐸᐸᐸᐸᐸᐸᐸᐸ ᐅᐱᐸᐸᐸᐸᐸ ᐅᐱᐱᓗ ᖃᐅᐱᓗᐃᓂᖃ ᐅᐱᐸᐸᐸᐸᐸᐸᐸᐸᐸᐸ ᐅᐱᐸᐸᐸᐸᐸᐸᐸᐸᐸ ᐅᐱᐱᓗ ᐅᐱᐸᐸᐸᐸᐸᐸᐸᐸᐸ ᖃᐅᐱᓗᐃᓂᖃᐸᐸ.
- ᐃᐱᓯᐸᐸᐸᐸ ᐅᐱᐱᓗ ᐅᐱᐸᐸᐸ ᖃᐅᐱᓗᐃᓂᖃ
 - ᓂᐸᐸᐸᐸᐸᐸᐸ ᓄᐱᓯᐸ ᐅᐱᐸᐸᐸ ᖃᐅᐱᓗᐃᓂᖃ, ᓂᐸᐸᐸᐸᐸᐸ ᓂᐸᐸᐸᐸ ᖃᓯᐸᐸᐸᐸ ᖃᐅᐱᓗᐃᓂᖃ, ᐅᐱᐸᐸᐸᐸᐸᐸᐸ ᐅᐱᐱᓗ ᓂᐸᐸᐸᐸᐸᐸᐸ ᐅᐱᐸᐸᐸᐸᐸᐸᐸᐸᐸ ᐅᐱᐸᐸᐸᐸᐸᐸᐸᐸᐸ 2019-ᓯᐸᐸ.
- ᓂᐸᐸᐸᐸᐸ ᖃᐅᐱᓗᐃᓂᖃ
 - ᐱᐸᐸᐸᐸᐸᐸᐸᐸ ᐃᓂᓯᐸᐸᐸᐸ, ᐱᐸᐸᐸᐸᐸᐸᐸ ᐅᐱᐱᓗ Red Knot-ᓯᐸᐸ ᓂᐱᐸᐸᐸᐸᐸᐸ ᐅᐱᐸᐸᐸᐸ ᐱᐸᐸᐸᐸᐸᐸᐸ 2019-ᓯᐸᐸ.

ᓂᐱᓂᐸᐸᐸ, ᐅᓂᐸᐸᐸᐸᐸᐸ ᖃᓄᐃᓂᖃ ᐅᐱᐱᓗ ᓯᐸᐸᐸ ᖃᐅᐱᓗᐃᓂᖃ

- ᖃᐸᐸᐸᐸᐸᐸ ᐅᐱᐸᐸᐸᐸᐸᐸ ᓯᐸ ᓯᐸᐸᐸᐸᐸᐸ ᐱᐸᓂᐸᐸᐸ ᐃᓂᓂᐸᐸᐸ. ᖃᐅᐱᓗᐃᓂᖃᐸᐸ ᐱᐸᐸᐸᐸᐸ ᐃᐅᐸᐸᐸ, ᐱᐸᐸᐸᐸᐸᐸᐸ, ᐅᐱᓂᐸᐸ, ᐅᓂᓂᐸᐸᐸ, ᓄᐱᓯᐸ ᐅᓂᓂᐸᐸᐸᐸᐸ, ᓯᐸᐸᐸ ᓗᐱᓂᐸᐸᐸᐸ ᐅᐱᐱᓗ ᐱᐸᐸᐸᐸᐸᐸᐸ.
- ᐅᓂᐸᐸᐸᐸᐸᐸ ᖃᓄᐃᓂᖃ (SO_x, NO_x) ᐅᐱᐱᓗ ᖃᓄᖃ ᓂᐱᓂᐸᐸᐸᐸᐸᐸ ᖃᐅᐱᓗᐃᓂᖃᐸᐸᐸᐸ ᐅᐱᐸᐸᐸᐸᐸ ᐱᐸᓂᐸᐸᐸ ᐃᓂᓂᐸᐸᐸ.

ᐅᐱᐸᐸᐸᐸ ᐅᓂᐸᐸᐸ 2019-ᓯᐸᐸ ᖃᐅᐱᓗᐃᓂᖃᐸᐸᐸᐸ ᐅᐱᐸᐸᐸᐸᐸ ᓂᐱᐸᐸᐸᐸᐸᐸ ᐅᐱᐸᐸᐸᐸᐸᐸ ᐅᐱᐸᐸᐸᐸᐸᐸ ᐅᐱᐸᐸᐸᐸᐸᐸ ᐱᐸᐸᐸᐸᐸᐸᐸ ᐱᐸᐸᐸᐸᐸᐸᐸ ᐅᐱᐱᓗ ᐱᐸᐸᐸᐸᐸᐸᐸᐸ

