



Nunavut Research Institute

License Holder Reporting requirements

For research undertaken in the 2024 calendar year (commencing January 01, 2024 and ending December 31, 2024)

Project Title:

Terrestrial Environment Monitoring Program

Project Leader(s): Full name, affiliation, and contact information (address, phone number, email) of each project leader (principle investigator and co-PIs)

EDI Environmental Dynamics Inc. 400-622 5 Ave SW Calgary, Alberta, T2P 0M6, contracted by Baffinland Iron Mines.

Project Team: Full name, affiliation, and address (name of city/community and province/territory/state) of each member of the project team

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Abstract: A concise summary of what was done, found, and concluded to date, and how the results/information will be used. This summary must be translated into the appropriate dialect of Inuktitut. Suggested length: 250-300 words. ***This section will be published in the NRI's annual compendium of licensed research**

The Nunavut Impact Review Board Project Certificate No. 005 includes numerous conditions that require Baffinland Iron Mines Corporation (Baffinland) to conduct effects monitoring for the terrestrial environment. The Terrestrial Environment Monitoring Program began in 2012 and continued through 2024 with adaptations to the program based on results and input from the Terrestrial Environment Monitoring Group (TEWG).

In 2024, this program monitored the following terrestrial components:

- a. Height of Land (HOL) caribou surveys
- b. Vegetation abundance composition monitoring
- c. Passive Dustfall monitoring
- d. Dustfall Extent Satellite Imagery Analysis

The results of the 2024 terrestrial monitoring program will be published in Baffinland 2024 Annual Report to the NIRB, as well as the 2024 Terrestrial Environment Annual Monitoring Report (TEAMR).

Key messages: Concise, plain language summary of key take-away messages of work to date, findings and conclusions. Preferably 3-5 points, in bullet form.

Findings and conclusions are still being analyzed. A plain language executive summary will be available in the 2024 NIRB annual report that will be published in spring 2025.

Objectives: Project objectives, preferably in bullet form.

- To evaluate potential Project related effects on the terrestrial environment as predicted in the Final Environmental Impact Statement (FEIS)

Annual activities: A description of activities and methods carried out during the current reporting period. This section should answer the questions: What? Where? When? Who? How? Include dates team members conducted research at remote field sites or collected data (including interviews) in communities; append a map with locations and/or coordinates of remote field sites, if applicable.

The Terrestrial Environment Monitoring Program was conducted at the Baffinland's Mary River project by a team of six, from May to July, 2024.

Passive Dustfall Monitoring: This was done by analyzing the dust contents of the 49 passive dust cannisters. The cannisters were analyzed for total insoluble dustfall, fixed and volatile components, and contaminants of potential concern (COPCs) (all units mg/dm²/day) were measured at established stations along the Tote Road and near Project sites to quantify the volume and extent of dustfall generated by Project activities.

Dustfall Extent Imagery Analysis was characterized by examining satellite images by a team of two. This analysis was done to verify Nunavummut land users' reports of seeing dust beyond what was predicted in baseline dust modeling and a visual representation of the extent of dustfall in areas where it is below detection in dust collectors. The study area included additional areas of interest extending beyond the Project Development Area (PDA) that were identified by the Terrestrial Environment Working Group (TEWG) see Appendix A.

Vegetation Abundance and Composition Monitoring: The 2024 vegetation monitoring program was conducted by a team of four, comprising two Nunavummut participants as wildlife survey monitor and vegetation monitoring technician from July 4 to July 17. It focused on potential changes to vegetation abundance and composition over time and at varying distances from the Project Development Area (PDA). Potential Project-related effects on total vegetation cover were evaluated in relation to distance class and compared with previously collected data. Soil and lichen samples were collected at near/far/reference locations and were assessed for contaminants of potential concern (COPCs), which included the analysis for >30 metals. Percent cover of plant functional groups was determined to verify that the Project has not resulted in significant impacts to vegetation growth within the PDA.

Height of Land (HOL) Surveys were conducted to assess caribou distribution and behaviour in the PDA during the calving season (ie. May and June). The HOL surveys were completed between May 29 and June 11, 2024 by a team of four, comprising two Nunavummut participants as wildlife survey monitor and vegetation monitoring technician. Wildlife observing stations at 24 different locations at the highest points on the landscape to monitor for caribou presence and document wildlife observations.

Results and Achievements: Findings and results to date of the above activities, highlighting any key research achievements (see guide below for formatting tips regarding tables and figures).

The results of the 2024 monitoring programs is currently being analyzed. Preliminary results will be available in the spring of 2025 and will be published in Baffinland's Annual Report to the NIRB.

Challenges/Obstacles: In this section, please comment on any challenges/obstacles (if any) that you experienced during this project year. If there were any actions to mitigate or resolve these challenges, please list them here. Were any concerns raised regarding the conduct of research team members or the impacts of the project?

No obstacles or challenges

Expected Project Completion Date: Provide month and year of expected completion date of the project.

The field component of the program was completed in July, 2024

Project website (if applicable): If your project has a presence on the internet, including a website and/or social media page, please provide the link and/or account handle.

URL: <https://www.baffinland.com/media-centre/document-portal/>

Citations: Please append a complete reference list if citations are used anywhere in the document.

POLICY RELEVANCE

Does this research support policy development or decision-making in Nunavut? If yes, please describe.

In accordance with existing Terms and conditions of the Nunavut Impact Review Board (NIRB) project Certificate (PC) 005 Baffinland is responsible for the establishment and implementation of a Terrestrial Environment Mitigation and Monitoring Plan (TEMMP), which includes detailed information on Baffinland's project effects monitoring programs that are conducted over a sufficient time to meet the following objectives:

- a. Measure the relevant effects of the Project on the Terrestrial environment
- b. Confirm that the project is being carried out within the terms and conditions relating to the protection of the terrestrial environment.
- c. Assess the accuracy of the predictions contained in the Final Environmental Impact Statement (FEIS) for the project.

RESEARCH OUTCOMES: BENEFITS

Community engagement: Briefly list and describe any community consultation, engagement, collaboration and outreach activities that you have undertaken for the project; describe the role(s) that community members and/or specific organizations have played in research co-design and activities.

Before the commencement of the Terrestrial monitoring programs, EDI on behalf of Baffinland obtained a letter of support from Mittimatalik Hunters and Trappers Organization (MHTO).

Youth engagement: Briefly list and describe any outreach, school or classroom activities that you have undertaken for the project; describe the role(s) that youth have played in your research activities.

N/A

Training and Employment:

How many Nunavummiut received training from team members? Please describe training and/or compensation provided.

Nunavummiut participants received training from team members on health and safety while on site and the expected Field Level Risk Assessment (FLRA) before the start of each activity/task.

How many team members received training from Nunavummiut? Please describe training received and/or what knowledge sharing and/or skills exchange took place.

Nunavummiut participants shared information and knowledge with team members in an informal capacity over the duration of the field program.

How many Nunavummiut received employment? Please describe employment type and length, role(s) and responsibilities, and compensation provided.

The two Nunavummiut participants were hired from QAJAQ as Wildlife Survey Monitor and Vegetation Monitoring Technician for the period of the study.

How many Nunavummiut received honoraria as research participants? Please describe method of participation (interview, observation, sample, survey, etc.), including compensation provided.

Same as above

Please explain how the project directly benefited Nunavut organizations and/or businesses (e.g., through contract services, local purchases, equipment donations, etc.)

Any Inuit firm registered with Nunavut Tunngavik incorporated (NTI) with 100% Inuit ownership operating in Qikiqtani region is designated as a preferred Inuit Firm (PIF) with Baffinland and gains advance notice on contracting opportunities at the Mary River Project.

OPTIONAL: Nunavut Team Members, hires, and/or trainees (excluding research participants e.g., interviewees)

The NRI is creating an inventory of Nunavummiut who are skilled and/or interested in research. The information provided below will not be shared publicly but will support long-term capacity sharing by connecting local and visiting researchers with research talent in each community.

Name	Expertise/skills	Training/interest areas	Contact Info	Community

Academic Mobility

If you are affiliated with an academic institution, please answer the following question: For which Level of Project(s) will the data be used? (Check all that may apply)

- ☒ Research
- ☐ Post-Doctoral Research
- ☐ PhD Thesis
- ☐ Masters (Major Research Paper)
- ☐ Masters (Thesis)
- ☐ Graduate Course Project
- ☐ Staff/Administration Research
- ☐ Undergraduate Honours Thesis

Other

BUDGET

Please complete the table below to detail your projected and actual research expenditures during the reporting period.

Category	Planned/Approved Expenditure	Actual Expenditure
Travel and Accommodation		
Equipment, Materials and Supplies		
Salaries/Wages for Nunavut residents		
Salaries/Wages for non-Nunavut resident researchers		
Professional Fees and services in Nunavut		
Professional Fees and Services outside of Nunavut		
TOTAL EXPENDITURES		

List the total \$ amount of funding from each funding source for your full research program, including in-kind support

N/A

RESEARCH OUTPUTS / REPORTING TOOLS

What research outputs were generated? Please list below and append copies of each. Specify which outputs (if any) may be made public on the NRI research licensing database.

The 2024 Baffinland Annual Report to the NIRB. This will be available in spring of 2025.

Have peer-reviewed manuscripts been published as a result of your project? If Yes,
complete the following table:

Full citation	Publicly accessible/ free to access (Y/N)	Link (if available) and DOI (if available)
	N	
	N	

If No, do you intend to submit a manuscript (or manuscripts) for peer reviewed publication?

EDI has an internal review process, and all monitoring programs are reviewed by the technical members of the Terrestrial Environment Working Group (TEWG).

Were non-peer reviewed materials produced to either communicate or synthesize results to the public? Examples of these materials include (but are not limited to): websites, reports, brochures, podcasts, webinars, presentations, non-peer reviewed publications, etc.

If Yes, complete the following table:

Title	Description of Materials	Link (if available)	DOI (if available)
Terrestrial Environment Annual Monitoring Report	Details of the Bruce head shore based program, including observ	Yes	https://www.baffinland.com/media-centre/document-portal/
NIRB Annual Report	Detail of all program conducted by Baffinland during the year in r	Yes	https://www.baffinland.com/media-centre/document-portal/
		No	No
		No	No

Did your project develop a communications plan? Please describe communications/reporting tools used, and list the target audience for each and/or who requested which.

Through the NIRB review process, Baffinland responds to all comments received on its Annual report. We send hard copies and digital copies of NIRB annual report and Terrestrial Environment Annual Monitoring Reports to the five HTAs.

How were Nunavummiut credited and/or acknowledged in all project outputs, such as co-authorship, participant biographies, article acknowledgements, etc.

Nunavummiut participants are always acknowledged in the reports. This will be listed when the 2024 Annual report to the NIRB is published in spring 2025.

DATA AND INTELLECTUAL PROPERTY

Did you enter into a research agreement, data-sharing agreement and/or intellectual property rights agreement with a community and/or designated Inuit organization (DIO)? If yes, please explain.

Do intellectual property rights apply to your research? If yes, please explain.

EDI owns all copyright including all text, data, tables, figures, drawings published in the Terrestrial Environment Monitoring Program Report.

Who owns the data? Has the raw data been shared with the appropriate community and/or DIO? If yes, how? How is data security and storage handled by community-based co-owners?

The data from Baffinland research is owned by Baffinland. Results of the research is shared to community members through the Terrestrial Environment Working Groups. In addition hard copies and soft copies of the Annual and monitoring reports are shared with the communities.

Where is the data stored and will the data be destroyed within a set timeframe?

Baffinland and its consultants store the data, and there is no schedule to destroy the data.

Is the data trackable and/or available in a public data repository? If yes, please provide the appropriate information and/or link to ensure the findability and accessibility of the data.

Results are available at <https://www.baffinland.com/media-centre/document-portal/> but raw data is not available publicly.

Please append a copy of your data management plan.

CLIMATE CHANGE

Is your research about climate change (causes, impacts, mitigation, adaptation, etc.)? If yes, explain.

Climate change is a component of the Terrestrial Environment Monitoring Program. In 2024, weather conditions such as minimum and maximum temperatures, number of rainy days and volume of precipitation, wind direction and pattern from Mary River Mine Site and Milne Port stations were summarized and compared to average conditions over the last decade. This is conducted to observe and record changes in the average weather pattern in the area.

PHOTOGRAPHS

If possible, please provide high-resolution photos of licensed research activities that NRI may use in communication materials, organizational reporting, and other promotional purposes. The photographer and all recognizable people in each photo must sign the attached Photo and Video Release form. Please also complete the table below for each photo provided and submit to NRI along with all required NRI photo release forms. The photographer/owner will be credited in all uses of the photograph(s).

File Name	Location	Description	Subjects	Photographer/Owner	Date

Would you like your project to be considered for a research profile and promotion by the NRI? **Yes**

FORMATTING TIPS

Main text:

Please supply report in a standard manuscript format (**Microsoft Word format is required**).

Tables:

Any number of tables can appear in one file (as long as they are clearly marked). Tables prepared using simple table formats as provided in word processing programs such as WordPerfect are preferred. Each table should be numbered according to its appearance in the text (e.g., Table 1, Table 2) and each should have a brief descriptive heading.

Figures:

Each figure or graphic element should be submitted as a separate file. Black & white and colour graphics are both acceptable. We can accommodate most standard graphic file formats, however, please indicate in which format the graphic was prepared.

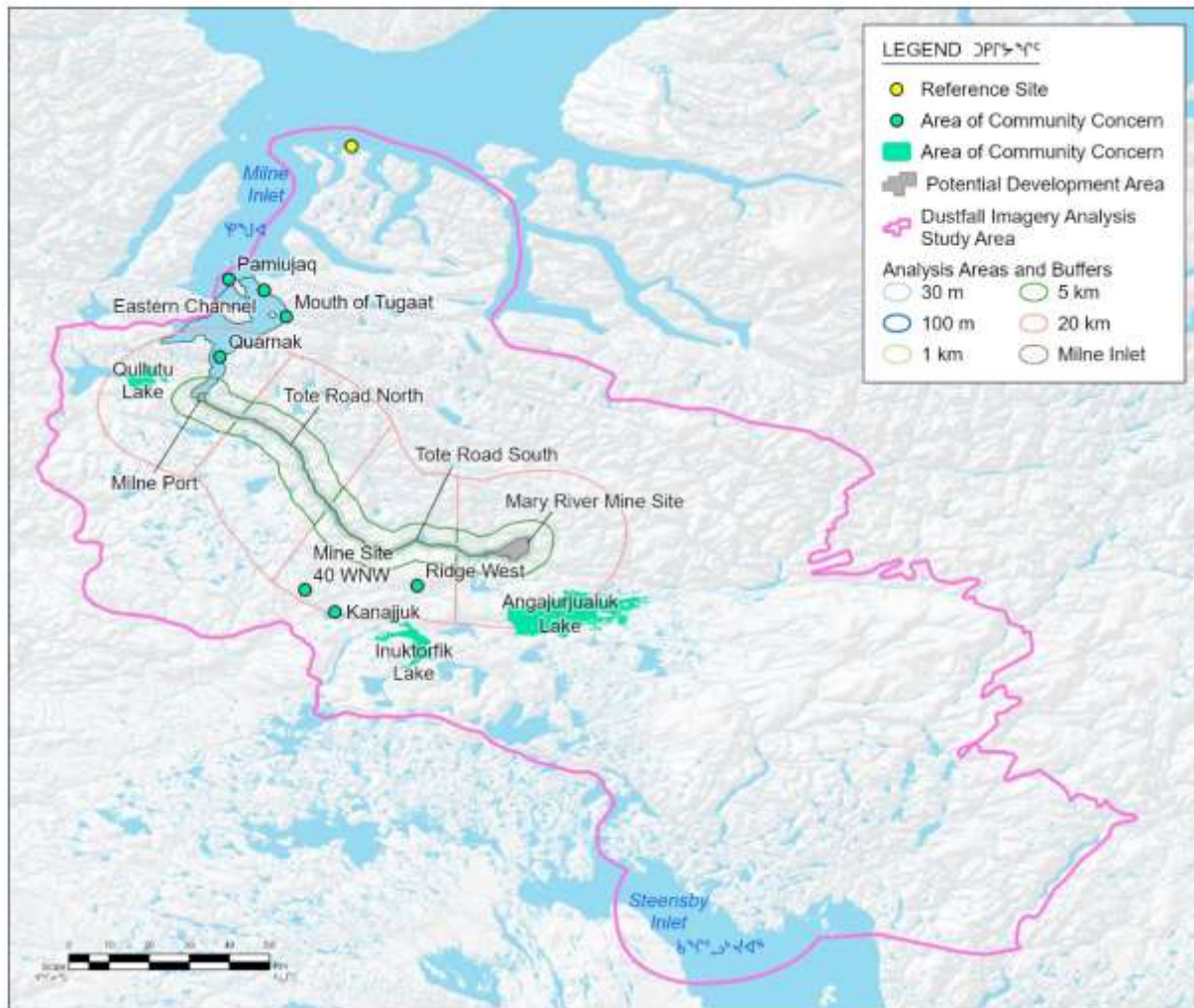
References:

Please use the APA or MLA Citation Style while referencing throughout the report.

Size:

The size of the electronic document must not exceed 4MB (if larger than 4MB, please send attachments separately and number the emails).

APPENDIX A: TERRESTRIAL ENVIRONMENT MONITORING PROGRAM



Map showing Dustfall Imagery Analysis Study Area including Areas of Community concern