



NIRB Uuktuutinga Ihivriuqhikhamut #126464

Responses of Permafrost Microbial Communities to Climate-Driven Thaw

Uuktuutinga Qanurittuq: New

Havaap Qanurittunia: Scientific Research

Uuktuutinga Ublua: Tuesday, June 16, 2026

Period of operation: from 2026-08-27 to 2026-09-28

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Hulilukaarutit

| Inigiya | Hulilukaarut Qanurittuq | Nunannga Qanurittaakhaanik | Initurlinga qanuritpa | Initurlinga utuqqarnitat unaluuniit Ingilraaqnitat Uyarannuqtut akhuurninnga | Qanitqiyauyuq qanitqiamut nunallaat kitulluuniit ahiruqtaiiyainnit nuna |
|-----------------|-------------------------|----------------------------|--|---|---|
| Port Leopold | Researching | Inuit Owned Surface Lands | Wilderness site and abandoned trading post. To the extent of our knowledge, there is no history of research within our proposed sampling area. | Archeological significance includes an abandoned Hudson Bay Company trading post. Sampling will not occur near or disturb any archaeological or paleontological sites. | Approximately 150 km southeast of Resolute. Prince Leopold Island is a Migratory Bird Sanctuary, located approximately 15 km north of Port Leopold. Sampling will not affect this area. |
| Dundas Harbour | Researching | Crown | Wilderness site and abandoned settlement. To the extent of our knowledge, there is no history of research within our proposed sampling area. | Archeological history includes long-standing Inuit land use, as well as a Hudson Bay Company trading post, an RCMP detachment and a small graveyard. Sampling will not occur near or disturb any archaeological or paleontological sites. | Approximately 200 km south of Grise Fiord and 200 km north of Arctic Bay. |
| Pasley Bay | Researching | Inuit Owned Surface Lands | Wilderness site. To the extent of our knowledge, there is no history of research within our proposed sampling area. | None to the extent of our knowledge, recognizing that people have likely crossed and utilized these lands prior to our visit. In the event that sites exist, they will remain undisturbed. | Approximately 150 km northwest of Taloyoak. |
| Prescott Island | Researching | Crown | Wilderness site. To the extent of our knowledge, there is no history of research within our proposed sampling | None to the extent of our knowledge, recognizing that people have likely crossed and utilized these lands prior to our visit. In the event that sites exist, | Approximately 200 km south of Resolute. |

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|-------------------|-------------|-------|---|--|--|
| | | | area. | they will remain undisturbed. | |
| Beechey Island | Researching | Crown | Wilderness site and National Historic Site of Canada (1993). To the extent of our knowledge, there is no history of research within our proposed sampling area. | This broader site contains the graves of three of Sir John Franklin's expedition members during the Northwest passage expedition, as well as a fourth grave of a later search party member. It also contains the Northumberland House, which was a shelter used for later search parties, among other archeological aspects (cairns, building ruins). Sampling will not occur near or disturb any archaeological or paleontological sites. | Beechey Island is a National Historic Site of Canada, and is located approximately 80 km east of Resolute. |
| Powell Inlet | Researching | Crown | Wilderness site. To the extent of our knowledge, there is no history of research within our proposed sampling area. | None to the extent of our knowledge, recognizing that people have likely crossed and utilized these lands prior to our visit. In the event that sites exist, they will remain undisturbed. | Approximately 200 km south of Grise Fiord and 200 km north of Arctic Bay. |
| Grise Fiord Inlet | Researching | Crown | Wilderness site. To the extent of our knowledge, there is no history of research within our proposed sampling area. | None to the extent of our knowledge, recognizing that people have likely crossed and utilized these lands prior to our visit. In the event that sites exist, they will remain undisturbed. | Approximately 20 km northwest of Grise Fiord. |
| Coutts Inlet | Researching | Crown | Wilderness site. To the extent of our knowledge, there is no history of | In the greater Coutts Inlet area, archaeological significance includes the presence of Inuit, | Approximately 115 km southeast of Pond Inlet. |

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|-------------|-------------|---------------------|--|---|--|
| | | | research within our proposed sampling area. | Thule and potentially Dorset peoples, including remnants of sod houses and tent rings. Sampling will not occur near or disturb any archaeological or paleontological sites. | |
| Maxwell Bay | Researching | Crown | Wilderness site. To the extent of our knowledge, there is no history of research within our proposed sampling area. | None to the extent of our knowledge, recognizing that people have likely crossed and utilized these lands prior to our visit. In the event that sites exist, they will remain undisturbed. | Approximately 180 km east of Resolute. |
| Aston Bay | Researching | Crown | Wilderness site. To the extent of our knowledge, there is no history of research within our proposed sampling area. | Archaeological significance includes evidence of Thule and Arctic Small Tool Tradition sites in the greater Aston Bay area. Sampling will not occur near or disturb any archaeological or paleontological sites. | Approximately 80 km south of Resolute. |
| Fort Ross | Researching | Crown | Wilderness site and abandoned trading post. To the extent of our knowledge, there is no history of research within our proposed sampling area. | Archaeological significance includes an abandoned Hudson Bay Company trading post established in 1937, for which four buildings were built, as well as homes of Inuit families established at that same time. Some of these buildings remain standing today. Sampling will not occur near or disturb any archaeological or paleontological sites. | Approximately 275 km north of Taloyoak and 300 km south of Resolute. |
| Wrottesley | Researching | Inuit Owned Surface | Wilderness | None to the | Approximately 230 |

| | | | | | |
|--------------------|-------------|-------|---|--|---|
| Inlet | | Lands | site. To the extent of our knowledge, there is no history of research within our proposed sampling area. | extent of our knowledge, recognizing that people have likely crossed and utilized these lands prior to our visit. In the event that sites exist, they will remain undisturbed. | km north of Taloyoak. |
| Strzelecki Harbour | Researching | Crown | Wilderness site. To the extent of our knowledge, there is no history of research within our proposed sampling area. | None to the extent of our knowledge, recognizing that people have likely crossed and utilized these lands prior to our visit. In the event that sites exist, they will remain undisturbed. | Approximately 275 km southwest of Resolute. |

Nunaliin Ilauyun, Aviktuqhimayuniitunullu Ikayuuhiarunguyun

| Nunauyuq | Atia | Timiuyuq | Upluani Uqaqatigiyaungmata |
|-----------------|---|---|-----------------------------------|
| Qausuittuq | This year only sampling at remote sites will be possible and therefore we will be unable to hire local community members at our research sites to aid in sampling, as we had hoped to do last year. | Data generated from this work will be accessible to Nunavut residents and results are to be published in open-access journals. Findings will be shared directly with nearby communities and territorial organizations, both as plain-language summaries and a technical report, should there be interest. | 2026-06-16 |

Angiuttauvaktunik

Naunaiqlugu nunanga talvani havauhikhaq ittuq:

Kitikmeot
North Baffin

Angiuttauvaktunik

| Munariniqmut Ayuittiaqtuq | Angirutinga Qanurittuq | Tadja Qanurittaakhaanik | Ublua Tuniyauyuq/Uuktuqtuq | Umikvikhaa Ublua |
|---|--|---------------------------|----------------------------|------------------|
| Nunavut Planning Commission | Conformity Determination was issued on June 8th. | Active | 2026-06-09 | |
| Nunavunmi Ihivriunqimut Timiqutigiyanga | In contact with Mosha Cote, who advises that once a decision is made by the NIRB, he will be able to renew our license from 2025 for 2026. Communication on April 30th. | Not Yet Applied | 2026-05-01 | |
| Qikiqtani Inuit Katimayiit | Applied for access to Inuit Owned Lands through the Qikiqtani Inuit Association. Submitted May 4th. | Applied, Decision Pending | 2026-05-05 | |
| Kitikmeot Inuit Katimayiingit | In contact with the Kitikmeot Inuit Association regarding renewing our Certificate of Exemption from 2025 for 2026 to access Inuit Owned Lands. Communication on May 19th advises that we will wait for the NIRB decision before we proceed. | Not Yet Applied | 2026-05-20 | |

Project transportation types

| Transportation Type | Qanuq Atuqtauniarmangaa | Length of Use |
|---------------------|--|---------------|
| Water | Travelling with Adventure Canada on their vessel (Ocean Victory) and following their expedition itinerary. Land will be accessed from the vessel by small 10-passenger inflatable zodiacs as per the Adventure Canada staff. | |
| Land | Sampling sites will be accessed from landing sites by foot. | |

Project accomodation types

Alaanut,

Ihuaqutivaluin Atuqtauyukhan

Hanalrutit atuqtaunahuat (ukuallu ikuutat, pampiutainnik, tingmitinik, akhaluutinik, hunaluuniit)

| Hanalrutit Qanurittuq | Qaffiuyut | Aktikkulaanga – Qanurittullu | Qanuq Atuqtauniarmangaa |
|--|-----------|------------------------------|---|
| Shovel | 1 | 25 x 150 cm | The shovel will be used for digging to collect soil (overlying the permafrost). |
| Forceps | 2 | 2 x 12 cm | Forceps will be used to collect small bryophyte samples from sampling sites. |
| Trowel | 1 | 10 x 35 cm | The trowel will be used for digging to collect soil (overlying the permafrost). |
| Electric-powered drill (Hilti DD 150-U-22) | 1 | 10 x 37 cm core bit size | The drill will be used to drill permafrost cores where site conditions and circumstances allow. The SPX-A speed core bit has a diameter of 10 cm and length of 37 cm. The drill's overall dimensions will be larger to accommodate the motor and frame. Permafrost depth is expected to range from 1 to 2 meters below the surface. Where necessary, additional 31 cm bit extensions will be used to access deeper permafrost layers. |

Qanurittuq Urhuqyuaq unalu Qayangnaqtut Hunavaluit Aturninnga

| Qanurittuq urhuqyuaq hunavaluit aturninnga: | Urhuqyuaq Qanurittuq | Qaffiuyut qattaryut | Qattaryuk Aktikkulaanga | Atauttimut Qaffiuyut | Ilanga | Qanuq Atuqtauniarmangaa |
|---|----------------------|---------------------|-------------------------|----------------------|--------|-----------------------------|
| NA | fuel | 0 | 0 | 0 | Liters | There will be no fuel used. |
| NA | hazardous | 0 | 0 | 0 | Liters | There will be none used. |

Imaqmik Aturninnga

| Ubluq qanuraaluk (m3) | Aturumayain imavaluin utiqittagaani qanuq | Atulirumayain imavaluin utiqittagani humi |
|-----------------------|---|---|
| 0 | | |

Iqqakuq

Ikkakunik Munakgiyauyunik

| Havauhikhaq Hulilukaarut | Qanurittuq Iqqakut | Ihumagiyauyuq Qanuraaluktut Atuqtait | Qanuq Iqqakuurniarmangaa | Halummaqtirarnirutikhan piyutin |
|--------------------------|--|--------------------------------------|--------------------------|---------------------------------|
| Researching | Other, There will be no waste created from this project. | NA | NA | NA |

Avatiliriniqmut Ayurhautingit:

At each site, a small quantity of overlying soil, a permafrost core, and a small bryophyte sample will be collected from sampling areas no larger than 3 x 3 meters. Soil and permafrost sampling may result in small-scale localized soil and vegetation disturbance; however, dug plots will be narrow to minimize environmental impact and all sensitive vegetation and wildlife habitats will be avoided. Any disturbance to the environment will be carefully restored, with soil layers and plant material kept separate during sampling using various tarps and carefully returned to their original positions post-sampling. Additionally, the collection of small bryophyte samples will be done carefully to ensure that no other vegetation is disrupted and that impacts remain localized. All equipment will be cleaned between each site to prevent the introduction of non-native species or microorganisms into new sampling areas.

Additional Information

SECTION A1: Project Info

SECTION A2: Allweather Road

SECTION A3: Winter Road

SECTION B1: Project Info

SECTION B2: Exploration Activity

SECTION B3: Geosciences

SECTION B4: Drilling

SECTION B5: Stripping

SECTION B6: Underground Activity

SECTION B7: Waste Rock

SECTION B8: Stockpiles

SECTION B9: Mine Development

SECTION B10: Geology

SECTION B11: Mine

SECTION B12: Mill

SECTION C1: Pits

SECTION D1: Facility

SECTION D2: Facility Construction

SECTION D3: Facility Operation

SECTION D4: Vessel Use

SECTION E1: Offshore Survey

SECTION E2: Nearshore Survey

SECTION E3: Vessel Use

SECTION F1: Site Cleanup

SECTION G1: Well Authorization

SECTION G2: Onland Exploration

SECTION G3: Offshore Exploration

SECTION G4: Rig

SECTION H1: Vessel Use

SECTION H2: Disposal At Sea

SECTION I1: Municipal Development

Qanurittuq Ittunik Avatinga: Avatingalluanga

The Project Activities section in this form best describes the proximity of each proposed terrestrial sampling site to protected areas and communities, as well as their linked cultural and historical significance. All proposed sampling sites are remote and uninhabited. Throughout the duration of sampling there will be no access to roads/trails, nor will the work occur in designated environmental areas, such as parks, protected areas, heritage areas, cultural areas, sensitive environmental or geological areas (e.g., eskers or unique landscapes), or in disruption with wildlife species and their habitats (including breeding/spawning areas, migration routes, etc.). Sampling will also avoid recreational areas, community use areas, as well as those used for fishing and hunting. This work will not have any contact with water or aquatic ecosystems, and if lakes, streams, etc. are encountered, sampling will not proceed near these areas. Marine use will only apply to accessing land from the ship, for which Adventure Canada has permitting approval. Noise will be very minimal, as the auger is expected to run for no longer than one minute at each site, and will have no effect on air quality. Climate impacts resulting directly from this research will also be very minimal, while this work will generate data to aid in future climate modelling in each area. The topography at each site will vary. However, sampling is aimed to occur in plains and valleys, where the ground is flat and most conducive to soil and permafrost collection. There may be eskers, wetlands, or other unique landscapes present, although sampling will not occur within these landforms. Permafrost will be accessed, although the exact stability, depth, thickness, and continuity will likely vary across the proposed sites and is to be determined and recorded during field work (depth is expected to range from one to two meters). Exposure of permafrost may have small-scale climate impacts; however, careful restoration of each site will be carried out using the original overlying soils to protect permafrost layers. The active layer (above the permafrost) will also be accessed, where solid bedrock, large sediments, and unstable rock will be avoided. Soil quality is expected to reflect that of the Arctic tundra: nutrient-poor and varied in moisture content. It is not expected that there will be thermokarsts or ice lenses, but in the case that there are, these areas will be avoided and undisturbed during sampling, as well as documented. Overall, within these proposed locations, there is flexibility in choosing a suitable and appropriate sampling site. All sensitive areas will be cautiously avoided during site selection (i.e., trails, areas of biological interest, natural features such as streams, etc.) and we are looking to take our sample from an area that is representative of the physical environment, and to not disrupt any part of the environment that is unique or fragile. No structures are to be erected in the area, and there will be no use of water or creation of waste. Transportation while on land will be by foot. Sampling conducted by Gwen will take no longer than 2 hours at each site.

Qanurittuq Ittunik Avatinga: Inuuhimayunut Avatinga

The biological environment surrounding the proposed sampling sites includes the terrestrial tundra vegetation and the wildlife. Considering that the proposed sampling sites are at different locations, each area is expected to harbour unique wildlife and vegetation. Vegetation includes mosses, lichens, shrubs and grasses. Vegetation presence may vary, with some sites harbouring sparse plant life. Soil and permafrost sampling will occur in vegetation-poor sites when present, and vegetation will be avoided to the best of our

abilities. Small bryophyte samples (≤ 5 grams) will be collected, and sampling will be sure to not disturb any vegetation beyond the material that is being collected. Terrestrial wildlife in the area includes polar bears, seals, walrus, foxes, voles, and lemmings. Wildlife, including habitat and migratory areas, will be avoided in site selection. Birds present in these areas include thick-billed murres, terns, and gulls, among others. This work will not impact birds, including their habitat (especially ground nesting) and migration patterns. Species at risk, including those of terrestrial wildlife (e.g., polar bears) and birds (e.g., species of gull) will not be impacted by this work, as their populations and habitats will be completely and carefully avoided as described above. Adventure Canada has chosen these locations with careful consideration to not inflict harm on wildlife, vegetation, or bird species. If sampling will cause harm to any of these biotic aspects of the environment, sampling in that area will not proceed.

Qanurittuq Ittunik Avatinga: Inungit-maniliurutingit Avatinga

The associated proximities of sampling sites to communities, archaeological sites, and culturally significant sites are described in the Project Activities section in this form. When present, archaeological sites will be avoided and left undisturbed. Paleontological sites are likely to be present within the areas we are visiting; however, this work will not result in the disturbance of bedrock or its excavation and therefore will aid in the avoidance of these sites. There is likely to have been land use by Inuit for centuries in the areas we are visiting, and as such, caution will be used when proceeding with site selection and sampling. In travelling with Adventure Canada, there will be a resource team of scientists and local Nunavut residents onboard, who Gwen will consult prior to sampling regarding any possible archaeological or paleontological sites, as well as culturally significant areas to be avoided. This work is expected to have no impact on the socioeconomic environment of the locations visited. Local and regional traffic patterns will not be affected, as site access is by foot and all sampling locations are remote.

Miscellaneous Project Information

The project dates are from August 26th to September 27th, 2026. Attached in Project Documents are Adventure Canada's associated NPC/NIRB file numbers for the Ocean Victory vessel and a proposed 100 km sampling radius around each of the listed coordinates.

Naunaiyainiq ukuninga Ayurhautingit unalu Piumayaat Ikiikliyuumiutinahuarutit

Impacts are identified in the Impacts tab on this application, and includes both permafrost and vegetation, both as mitigable. Permafrost and vegetation will be disturbed at a very small scale, and these effects will be mitigated through limiting sampling area and resource collection, as well as through careful restoration of each sampling site. Sensitive vegetation will also be avoided during sampling. The Impacts tab further details our proposed mitigation strategies for any negative effects. There will be no transboundary effects as this research is localized and will not cause greater harm, and there will be no adverse effects to species under the Species at Risk Act and their habitats, as these species and their habitats will be avoided during sampling. There is flexibility in sample site selection, which further allows the avoidance of sensitive areas and enables us to carefully choose the most appropriate sampling site. As stated previously, aboard the Adventure Canada vessel there will also be a resource team of scientists and local Nunavut residents. We will consult with these individuals prior to site selection and sampling regarding any possible environmental concerns in the area. If there are environmental concerns, sampling will not occur. As above, this work is expected to have no negative socioeconomic impacts on the locations visited. Longer term, we hope this data will allow better prediction of greenhouse gas emissions from permafrost, and how local environmental factors may influence carbon flux in different Arctic regions. We hope this will improve climate modelling, and in turn aid in supporting climate resilience planning for northern communities. Furthermore, we will discuss our research with the passengers travelling with Adventure Canada to raise awareness for northern communities experiencing the effects of climate change in their local environments. Our aim is to create increased global advocacy for Nunavut communities navigating the future of climate warming in the Arctic.

Tamatkiumayunik Ihuikgutivaktunik

There will be no cumulative effects resulting from this work.

Impacts

Ilitariyauniq Avatiliriniqmut Ayurhauingit

| | PHYSICAL | Designated environmental areas | Ground stability | Permafrost | Hydrology / Limnology | Water quality | Climate conditions | Eskers and other unique or fragile landscapes | Surface and bedrock geology | Sediment and soil quality | Tidal processes and bathymetry | Air quality | Noise levels | BIOLOGICAL | Vegetation | Wildlife, including habitat and migration patterns | Birds, including habitat and migration patterns | Aquatic species, incl. habitat and migration/spawning | Wildlife protected areas | SOCIO-ECONOMIC | Archaeological and cultural historic sites | Employment | Community wellness | Community infrastructure | Human health |
|-----------------------|----------|--------------------------------|------------------|------------|-----------------------|---------------|--------------------|---|-----------------------------|---------------------------|--------------------------------|-------------|--------------|------------|------------|--|---|---|--------------------------|----------------|--|------------|--------------------|--------------------------|--------------|
| Havakvinga | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - |
| Aulapkaininnga | | | | | | | | | | | | | | | | | | | | | | | | | |
| Researching | | - | - | M | - | - | - | - | - | - | - | - | - | M | - | - | - | - | - | - | - | - | - | - | - |
| Piiqtauniq | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - |

(P = Nakuuyuq, N = Nakuungittut unalu mikhilimaittuq, M = Nakuungittut unalu mikhittaaqtuq, U = Naluyayuq)

Havaariyauyukhamut Nayugaa



List of Project Geometries

| | | |
|----|-------|--------------------|
| 1 | point | Prescott Island |
| 2 | point | Pasley Bay |
| 3 | point | Grise Fiord Inlet |
| 4 | point | Coutts Inlet |
| 5 | point | Maxwell Bay |
| 6 | point | Aston Bay |
| 7 | point | Strzelecki Harbour |
| 8 | point | Fort Ross |
| 9 | point | Wrottesley Inlet |
| 10 | point | Dundas Harbour |

| | | |
|----|-------|----------------|
| 11 | point | Powell Inlet |
| 12 | point | Port Leopold |
| 13 | point | Beechey Island |