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Western Hudson Bay geoscience for infrastructure project

ᐃᓐᓂᓄᓐᐃᓐᓂᓐᓂᓐ:	New
ᐃᓐᓂᓄᓐᓂᓐᓂᓐ:	Scientific Research
ᐃᓐᓂᓐᓂᓐ	3/10/2025 1:24:43 PM
ᐃᓐᓂᓄᓐᓂᓐᓂᓐᓂᓐ:	from 2025-06-01 to 2027-12-31
Period of operation:	
ᐃᓐᓂᓄᓐᓂᓐᓂᓐᓂᓐ:	Greg Oldenborger Natural Resources Canada 183-601 Booth St. Ottawa ON K1A0E8 Canada ᐃᓐᓂᓄᓐᓂᓐᓂᓐ: 613 943 4288, ᓐᓂᓐᓂᓐ:

[illegible]

ᖃᓕᐱᑦᐸᐅᑦ: This is a request for the continuation of the Western Hudson Bay geoscience for infrastructure project (NIRB #16YN040). While keeping Rankin Inlet as one of our main study sites, we would now like to expand our work more south, in the vicinity of Arviat. All proposed methods in this new field area are the same as the methods documented in the existing project (16YN040) and described herein. This will allow us to have a South-North transect of representative and various conditions. Methods would include:1) Shallow drillings (0-3 m) with light portable drilling tools and potentially taking advantage (if any on site) of an Air Track drill (10-20 m) typically used in arctic communities for construction work (pile installation);2) Permafrost coring (0-3 m);3) Instrumentation (ground temperature sensors) in those boreholes;4) Ground-based geophysical surveys (electrical and electromagnetics surveys);5) Drone imagery;6) Site visits to validate remote sensing products. Environmental impact is estimated to be very low, and no long-term environmental impacts are expected. The proposed work will not have any important impact on wildlife or on the major habitats that support the wildlife. No temporary camp will be installed. All work will be conducted based out of Arviat with surveys, samplings and instrumented site locations accessed daily by truck or ATVs and at a walking distance from the ATV/road network. Specific sites would be revised based on field conditions and interest by the community. There will be no operations within Inuit Owned Lands. No helicopter would be used.

▷Δ&NDS: Il s'agit d'une demande de poursuite du projet de géosciences pour l'infrastructure de l'ouest de la baie d'Hudson (NIRB #16YN040). Tout en gardant Rankin Inlet comme l'un de nos principaux sites d'étude, nous aimerions maintenant étendre notre travail plus au sud, dans les environs d'Arviat. Toutes les méthodes proposées dans ce nouveau domaine sont les mêmes que celles documentées dans le projet existant (16YN040) et décrites dans le présent document. Cela nous permettra d'avoir un transect Sud-Nord de conditions représentatives et diverses. Les méthodes comprendraient :1) Forages peu profonds (0 à 3 m) avec des outils de forage légers et pouvant tirer parti (le cas échéant sur place) d'une foreuse Air Track (10 à 20 m) généralement utilisée dans les collectivités arctiques pour les travaux de construction (installation de pieux);2) carottage du pergélisol (0-3 m);3) l'instrumentation (capteurs de température du sol) dans ces trous de forage;4) Levés géophysiques au sol (levés électriques et électromagnétiques);5) Imagerie de drone;6) Visites sur place pour valider les produits de télédétectionL'impact environnemental est estimé très faible et aucun impact environnemental à long terme n'est prévu. Les travaux proposés n'auront pas d'impact important sur la faune ou sur les principaux habitats qui abritent la faune. Aucun camp temporaire ne sera installé. Tous les travaux seront effectués à partir d'Arviat avec des relevés, des échantillonnages et des emplacements de sites instrumentés accessibles quotidiennement par camion ou VTT et à distance de marche du réseau de VTT et de route. Des sites particuliers seraient révisés en fonction des conditions du terrain et de l'intérêt de la communauté. Il n'y aura pas d'exploitation sur les terres appartenant aux Inuits. Aucun hélicoptère ne serait utilisé.

[illegible]

Personnel on site: 7

Days on site: 15

Total Person days: 105

Operations Phase: from 2025-06-01 to 2027-12-31

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Zone Arviat	Researching	Municipal	The hamlet is the second largest community in Nunavut with 2864 residents, and is located on the western shores of Hudson Bay, approximately 200km north of Churchill, Manitoba. Arviat remains closely tied to its traditional Inuit roots, and in addition to having a vibrant arts industry is also becoming a centre of mining training and employment for the Kivalliq Region.	Parks Canada:Arvia'juaq (Sentry Island 61°10'N 093°51'W), an island in Hudson Bay, is located close to Arviat. It is a National Historic Site of Canada and a Caribou Inuit (Paallirmiut) summer camp site. Qikiqtaaluk, is a small peninsula, just north of Arviat, that faces Arvia'juaq. Like Arvia'juaq, Qikiqtaaluk contains many Paallirmiut artifacts, and both are considered ritual, spiritual, and sacred sites.	Sites we are interested in would fall within a 30km radius of the Arviat hamlet; mostly in the North and West of Arviat, along the existing road network.

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ᐃᑦᑕᑦᑕᑦ	Mayor Joe Savikataaq Jr	Hamlet of Arviat	2015-02-24
ᐃᑦᑕᑦᑕᑦ	Nicole Issakiark	Arviat Hunters and Trappers Organization	2025-02-14
ᐃᑦᑕᑦᑕᑦᑕᑦᑕᑦ	Luis Manzo	Kivalliq Inuit Association	2025-02-12
ᐃᑦᑕᑦᑕᑦᑕᑦᑕᑦ	Andre Aokaut	Kangiqliniq Hunters and Trappers	2025-02-12

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Project transportation types

Transportation Type	ፍጥረት ለጋደት ልማት ርዕሰ ምክር ቤት ማረጋገጫ	Length of Use
Land	truck and ATV	

Project accomodation types

ፍጥረት ለጋደት ልማት ርዕሰ ምክር ቤት ማረጋገጫ

A^cd^c A^ar^t^{ab} A^bC^bD^aH^t^{ab} ΔC^aB^aN^aR^c ΔdCA^c, Γ^cΔPⁿ^c, B^aL^cJ^{ab}, ወደD^c ላይሆኑ

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▷ ^c ↵ C ^l ↵ ^{cb} ▷ ^{cb} C▷ ^c ▷ ^{cb} ↵ ^{cb}	↵ ^{cb} ↵ ^{cb} ▷ ^{cb} C↵ ^{cb} C↵ ^c ▷ ^c ▷ ^{cb} ↵ ^c	↵ ^p C▷ ^{cb} C↵ ^{cb} C↵ ^c ▷ ^c ▷ ^{cb} ↵ ^c
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$$\Delta^b C d_{\sigma} \Delta^c \sigma^c$$

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Researching	የሥራው የሥራው አይነት	50kg	Municipal	NA
Researching	የሥራው የሥራው አይነት	100L per person per day (=10500L)	Municipal	NA
Researching	የሥራው የሥራው አይነት	50Kg	Municipal	NA
Researching	የሥራው የሥራው አይነት	100L per person per day (=10500L)	Municipal	NA

[illegible]

Environmental impact is estimated to be very low, and no long-term environmental impacts are expected. The proposed work will not have any important impact on wildlife or on the major habitats that support the wildlife. No temporary camp will be installed. All work will be conducted based out of Arviat with surveys, samplings and instrumented site locations accessed daily by truck or ATVs and at a walking distance from the ATV/road network. Specific sites would be revised based on field conditions and interest by the community. There will be no operations within Inuit Owned Lands. No helicopter would be used.

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

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Arviat lies within the Western Churchill Province of the Canadian Shield and the continuous permafrost zone. Arviat is located on an esker ridge along the southern shore of the harbour. Other surficial geology units include marine deposits, which includes raised beach ridges, thin sheets of sand representing emergent coastal reworking of marine mud and silty sand, and abandoned tidal flats with peat cover. The terrain is slightly rolling with a general increase in elevation westward away from the coast. Although the townsite on the esker ridge is about 10 m above mean sea level, the built-up area is fairly flat. An extensive shallow wetland covers a large part of the subtle depression between the two eskers. Much of the wetland has been capped with gravel pads for construction of housing and infrastructure.

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The hamlet is the second largest community in Nunavut with 2864 residents, and is located on the western shores of Hudson Bay, approximately 200km north of Churchill, Manitoba. Arviat remains closely tied to its traditional Inuit roots, and in addition to having a vibrant arts industry is also becoming a centre of mining training and employment for the Kivalliq Region. Arvia'juaq (Sentry Island 61°10'N 093°51'W), an island in Hudson Bay, is located close to Arviat. It is a National Historic Site of Canada and a Caribou Inuit (Paallirmiut) summer camp site. Qikiqtaarjuk, is a small peninsula, just north of Arviat, that faces Arvia'juaq. Like Arvia'juaq, Qikiqtaarjuk contains many Paallirmiut artifacts, and both are considered ritual, spiritual, and sacred sites.

Miscellaneous Project Information

Community engagement events (meeting and radio show) took place in Arviat in February 2025, followed by a virtual meeting with the Hamlet of Arviat. Good feedback was received with no concerns on the project.

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In addition to the Environmental impact section, below are specific impact related to the usage of machines:
-Light Drilling machine for permafrost coring: Disturbance to the surrounding vegetation would be minimized by laying plywood and/or a tarp on the ground surface. Shallow drilling sometimes requires the use of water, but all water is returned to the ground, and nothing is added to the water. Permafrost drill holes would be filled with sand and the vegetation cover kept and put back in place to avoid tripping and thawing of the ground. Monitoring stations (PVC pipes about 3' height could be installed in the holes and removed at the end of the project). - Ground geophysics: These surveys are conducted by one to three people (tools are either stationary on the ground or moved by walking along transects). The survey devices use electrical or

electromagnetic sensing technology to produce an image of the ground below the surface. Surveys are non-invasive and involve no disturbance of the land. -All drone flights would be conducted outside of aerodrome areas as required by Nav Canada for a pilot with a basic certification. A pilot with a basic certification to fly this type of drones (more than 250 grams and less than 25 kg) will be part of the field team. All flights would also be conducted to avoid any disturbance with caribou and we would make sure to stay away from any wildlife or private cabins.

Cumulative Effects

Impacts

[illegible][illegible]

($P = \langle b \rangle_{\mathcal{A} \cap \mathcal{C}}$, $N = \langle b \rangle_{\mathcal{A} \cap \mathcal{C}}$, $M = \langle b \rangle_{\mathcal{A} \cap \mathcal{C}}$, $U = \langle b \rangle_{\mathcal{A} \cap \mathcal{C}}$)

1	polygon	zone_rankin
2	polygon	Project hull
3	polygon	Zone Arviat
4	point	Arctic Haven wilderness lodge/Ennadai Lake
5	point	Henik Lake Adventure/Nueltin Lake camp
6	point	Kasba Lake Lodge/Tabane Lake outpost
7	point	Henik Lake Adventure/Henik Lake camp
8	point	Henik Lake adventure/Kuuglik Bear camp
9	point	Dubawnt camp/tukto lodge (south Dubawnt)
10	point	Dubawnt camp/tukto lodge (north Dubawnt)

