



NIRB Uuktuutinga Ihivriughikhamut #125966

Bursting the Banks: Dealing with Flooding due to Climate Change in the Arctic Hamlet of Pangnirtung

Uuktuutinga Qanurittuq:	New
Havaap Qanurittunia:	Scientific Research
Uuktuutinga Ublua:	5/6/2024 12:49:56 PM
Period of operation:	from 2024-10-01 to 2027-10-30
Havauhikhaq	Bhabesh Roy
Ikayuqtinga:	Municipality of Pangnirtung Box 253 Pangnirtung NU X0A 0R0 Canada Hivayautit Nampanga:: 6139228560, Kayumiktukkut Nampanga::

QANURITTUT

Tukihiannaqtunik havaariyaumayumik uqauhiuyun

Qablunaatitut: Name of the Project: Bursting the banks: Dealing with flooding due to climate change in the Arctic Municipality of Pangnirtung, Nunavut. Introduction: The Municipality of Pangnirtung is located in the Canadian Territory of Nunavut and lies on the South-eastern shore of the Pangnirtung Fiord, which itself is located at latitude 69.1675o N and Longitude 65.6917o W on the eastern side of Baffin Island. In total, the community covers an area of 7.5 km² with a population of about 1850 in 2024. The Duval River is the only potable water source. The Municipality of Pangnirtung has recently received funding from CIRNAC under the Climate Change preparedness in the North program to conduct Scientific Research. The proposed Research aims to better characterize the hydrology of Pangnirtung, especially the role of snow regime and its impact on flash flooding and drainage in the Duval River watershed and the community of Pangnirtung as climate changes. The proposed scientific Research involves mathematical modelling of the local hydrology in the Duval River watershed. This will be closely supported by field measurements, including snow depth at select locations, weather data, ground temperature at specific locations and possible aerial imageries of the watershed. A preliminary search of data sources reveals there is no sufficient information on snowfall. We are proposing to install a weather monitoring station including snowfall depths in the mid to upper reaches of the Duval River. In order to supplement this information, we are proposing to examine satellite data from sources, such as RADARSAT. In order to verify the RADARSAT data, we are proposing to measure the snow depths towards the end of winter season. Sensors will be deployed at select locations to record ground temperatures at different depths (permafrost conditions). The goal of this is to obtain a sense of how the active layer is changing, and, in turn, the potential for infiltration and groundwater contribution to surface flow. This entails consequences for both the amount of water available for flooding as well as drinking water supplies. The Municipality of Pangnirtung is seeking a Scientific Research Licence in order to conduct this Study from April 01, 2024 for three years.

Uiviititut: Nom du projet : Faire éclater les berges : Faire face aux inondations dues au changement climatique dans la municipalité arctique de Pangnirtung, au Nunavut. Introduction : La municipalité de Pangnirtung est située sur le territoire canadien du Nunavut et s'étend sur la rive sud-est du fjord Pangnirtung, lui-même situé à 69,1675o de latitude nord et 65,6917o de longitude ouest sur le côté est de l'île de Baffin. Au total, la communauté couvre une superficie de 7,5 km² avec une population d'environ 1 850 habitants en 2024. La rivière Duval est la seule source d'eau potable. Le fait que Pangnirtung soit une région éloignée recouverte de pergélisol présente des risques uniques en matière de réchauffement climatique et de modification de l'hydrologie. La municipalité de Pangnirtung a récemment reçu un financement de RCAANC dans le cadre du programme de préparation aux changements climatiques dans le Nord pour mener des recherches scientifiques. La recherche proposée vise à mieux caractériser l'hydrologie de Pangnirtung, en particulier le rôle du régime neigeux et son impact sur les crues soudaines et le drainage dans le bassin versant de la rivière Duval et dans la communauté de Pangnirtung en fonction des changements climatiques. La recherche scientifique proposée implique une modélisation mathématique de l'hydrologie locale dans le bassin versant de la rivière Duval. Cela sera étroitement étayé par des mesures sur le terrain, notamment l'épaisseur de la neige à certains endroits, les données météorologiques, la température du sol à des endroits spécifiques et d'éventuelles images aériennes du bassin versant. Surveillance sur Le Terrain Une recherche préliminaire des sources de données révèle qu'il n'y a pas suffisamment d'informations sur les chutes de neige. Nous proposons d'installer une station de surveillance météorologique incluant les hauteurs de chute de neige dans le cours moyen et supérieur de la rivière Duval. Afin de compléter ces informations, nous proposons d'examiner les données satellitaires provenant de sources telles que RADARSAT. Afin de vérifier les données RADARSAT, nous proposons de mesurer les épaisseurs de neige vers la fin de la saison hivernale. Des capteurs seront déployés à certains endroits pour enregistrer les températures du sol à différentes profondeurs (conditions de pergélisol). L'objectif est d'avoir une idée de la façon dont la couche active évolue et, par conséquent, du potentiel d'infiltration et de contribution des eaux souterraines à l'écoulement de surface. Cela entraîne des conséquences tant sur la quantité d'eau disponible pour les inondations que sur l'approvisionnement en eau potable. La municipalité de Pangnirtung recherche une licence de recherche scientifique afin de mener cette activité. Étude à partir du 01 avril 2024

Inuktitut:

Personnel

Days on site: 15

Total Person days: 75

Operations Phase: from 2024-09-01 to 2024-09-30

Operations Phase: from 2024-10-01 to 2027-10-30

Post-Closure Phase: from to

Hulilukaarutit

Inigiya	Hulilukaarut Qanurittuq	Nunannga Qanurittaakhaanik	Initurlinga qanuritpa	Initurlinga utuqqarnitat unaluuniit Ingilraaqnitat Uyarannguqtut akhuurninnga	Qanitqiyauyuq qanitqiamut nunallaat kitulluuniit ahiruqtailiyainnit nuna
Hamlet of Pangnirtiung	Researching	Municipal	Hilly area	Bed rock	This site is about 2km away from the Hamlet office
Hamlet of Pangnirtiung	Aerial surveys	Municipal	Aerial Surveys might be needed in future	N/A	Pangnirtung and Qikiqtarjuaq

Nunaliin Ilauyun, Aviktuqhimayuniitunullu Ikayuuhiarunguyun

Nunauyuq	Atia	Timiuyuq	Upluani Uqaqatigiyaungmata
Pangnirtuuq	Jamie Evic	Municipality of Pangnirtung	2024-05-14
Pangnirtuuq	Jamie Evic	Municipality	2024-05-14

Angiuttauvaktunik

Naunaiqlugu nunanga talvani havauhikhaq ittuq:

Angiuttauvaktunik

Munariniqmut Ayuittiaqtuq	Angirutinga Qanurittuq	Tadja Qanurittaakhaanik	Ublua Tuniyauyuq/Uuktuqtuq	Umikvikhaa Ublua
Nunavut Imaligiyyit Katimayit	Hamlet has an active water licence # 3AM- PAN1828,Type A	Active	2018-05-04	2028-05-03
Nunavunmi Ihivriuqniqmut Timiqutigiyanga	This research project is for three yrs. After, the weather station will still remain there and Hamlet will maintain it.	Not Yet Applied	2024-04-01	2027-04-01

Project transportation types

Transportation Type	Qanuq Atuqtauniarmangaa	Length of Use
Land		

Project accomodation types

Nunauyuq

Alaanut,

Ihuaqutivaluin Atuqtauyukhan

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

Hanalrutit Qanurittuq	Qaffiuyut	Aktikkulaanga – Qanurittullu	Qanuq Atuqtauniarmangaa
Excavator	1	medium size	Making trench for installing the stands of Solar panel
Excavator	1	medium size	Making trench for installing the stands of Solar panel
Weather station	1	unknown	Measuring windspeed, reinfal and snow fall
Solar Panel	1	unknown	Energy

Qanurittuq Urhuqyuaq unalu Qayangnaqtut Hunavaluit Aturninnga

Qanurittuq urhuqyuaq hunavaluit aturninnga:	Urhuqyuaq Qanurittuq	Qaffiuyut qattaryut	Qattaryuk Aktikkulaanga	Atauttimut Qaffiuyut	Ilanga	Qanuq Atuqtauniarmangaa
Diesel	fuel	1	200	200	Liters	Digging trench for installing Solar panel stands
nil	hazardous	0	0	0	Lbs	nil

Imaqmik Aturninnga

Ubluq qanuraaluk (m3)	Aturumayain imavaluin utiqittagaani qanuq	Atulirumayain imavaluin utiqittagani humi
147	Pumping	The Duval River to storage Reservoir. From there to Water treatment plant. No water is needed for this project.

Iqqakuq

Ikkakunik Munakgiyauyunik

Havauhikhaq Hulilukaarut	Qanurittuq Iqqakut	Ihumagiyauyuq Qanuraaluktut Atuqtait	Qanuq Iqqakuurniarmangaa	Halummaqtirarnirutikhan piyutin
Waste disposal	Ikulalaaqtun iqqakuuvaluin	unknown	Trucking	N/A
Landfill	Ikulalaaqtun iqqakuuvaluin	Unknown	Carry by ATV	Not applicable
Landfill	Ikulalaaqtun iqqakuuvaluin	Unknown	Carry by ATV/Trucks	Not applicable

Avatiliriniqmut Ayurhautingit:

No predicated Environmental impact is anticipated

Additional Information

SECTION A1: Project Info

Hamlet is building a new weather station in order to measure the snow thickness and rainfall intensity to know the flow in the Duval River per minute.

SECTION A2: Allweather Road

N/A

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

N/A

Qanurittuq Ittunik Avatinga: Inuuhimayunut Avatinga

N/A

Qanurittuq Ittunik Avatinga: Inungit-maniliurutingit Avatinga

N/A

Miscellaneous Project Information

The duration of this project is for three years starting from April 01,2024. The weather station will remain there and hamlet will maintain it as long as it is functioning for the betterment of the community.

Naunaiyainiq ukuninnga Ayurhautingit unalu Piumayaat Ikikliyuumiutinahuarutit

N/A

Tamatkiumayunik Ihuikgutivaktunik

N/A

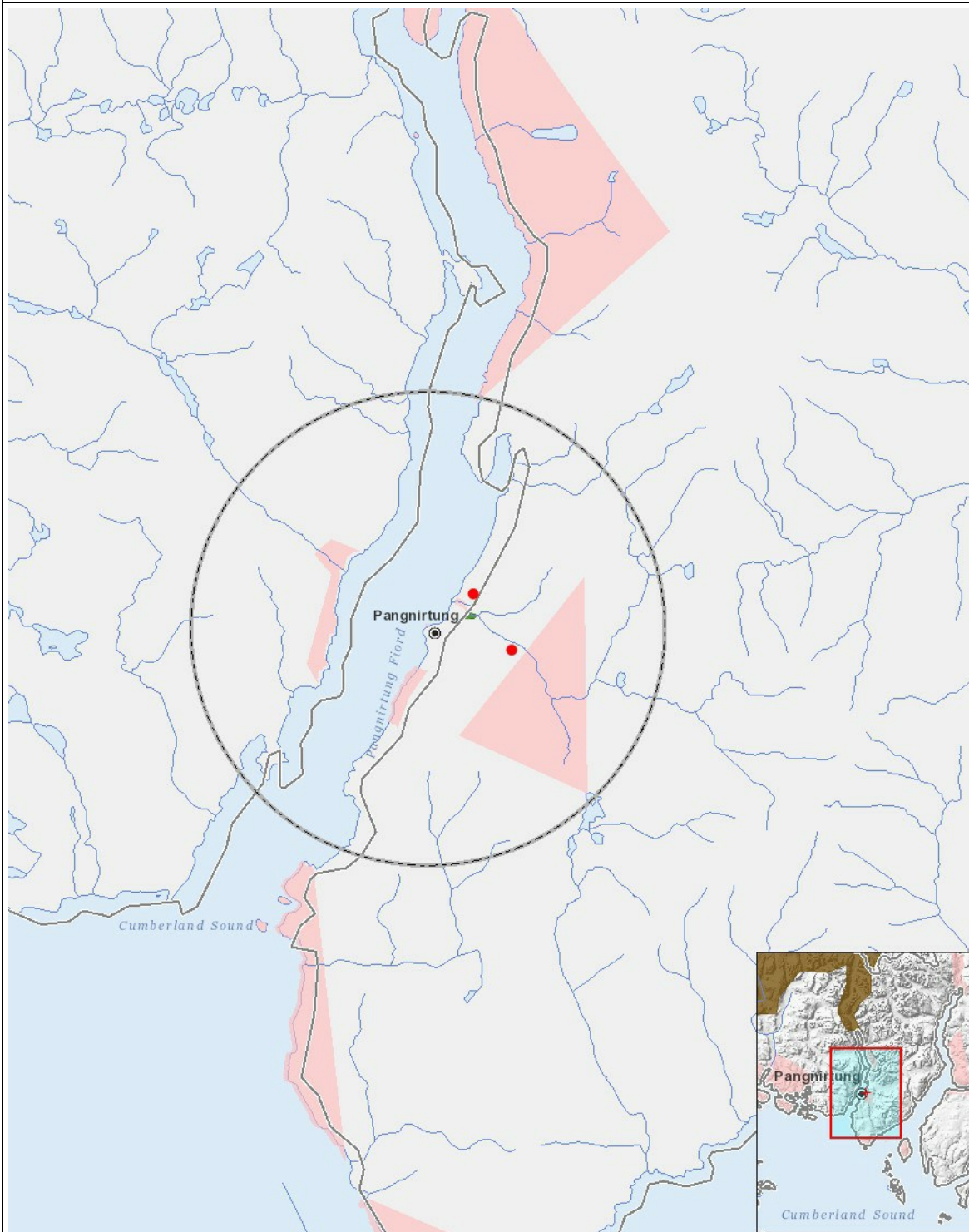
Impacts

Ilitariyauniq Avatiliriniqmut Ayurhautingit

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																											
Researching		M	M	M	-	M	M	M	M	M	M	M	M		M	M	M	M	M		M	M	M	M	M		
Aulapkaininnga																											
Researching		M	M	M	-	M	M	M	M	M	M	M	M		M	M	M	M	M		M	M	M	M	M		
Piiqtauniq																											
-		-	-	-	-	-	-	-	-	-	-	-	-		-	-	-	-	-		-	-	-	-	-		

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

Havaariyauyukhamut Nayugaa



List of Project Geometries

- 1 point Hamlet of Pangnirtung
- 2 point Weather station is proposed to be installed at 2.4km away from the Town.