

**Demande de la CNER faisant l'objet d'un examen préalable #125845**  
**Long Term Water Project - Geotechnical Investigations**

# DÉTAILS

## Description non technique de la proposition de projet

Anglais: The City of Iqaluit is facing critical challenges with its drinking water supply due to its growing population and the impact of adverse climate changes. To address this pressing issue, the City and their consultants will progress designs for upgrades to its water supply and distribution infrastructure systems. The upgrades are anticipated to include pumping and conveying water from Qikiqtalik Lake (also known as Unnamed Lake) through conveyance pipes to a newly constructed earth berm storage reservoir located adjacent to Lake Geraldine. The source water upgrades will primarily comprise three key aspects: raw water extraction, raw water conveyance, and raw water storage. To advance the engineering design of these upgrades, and ahead of future permitting phases, it is imperative that thorough geotechnical field investigations are completed. These investigations aim to assess existing site features and underground conditions. For timeframe of these investigations, the City anticipate to commence geotechnical field investigations in 2023, with completion anticipated during the summer of 2024. The purpose of this project is to advance the project geotechnical investigations. The geotechnical investigation will study the surface and subsurface conditions of the future pump station, the conveyance pipe, and the reservoir to determine if the sites are adequate to proceed with design, permitting and construction activities. A research geotechnical drilling program will be implemented to coordinate the field investigation and will consist of an estimated total of 24 boreholes (12 boreholes at ~5m depth and 12 boreholes at ~10m depth). For the raw water conveyance pipe, there are two potential alignment options identified in prior studies. Both alignments are roughly the same distance and therefore will require approximately 12 boreholes in total for a geotechnical study. Six (6) of those boreholes at 5-meter depth and six (6) of those at 10-meter depth along the line. Some of those mentioned 12 boreholes will also include the pump station structure for the geotechnical study. The new reservoir will require the other 12 boreholes, six (6) at 5m depths and six (6) at 10m depths. The exact locations will be based on project consultants' recommendations and on-site conditions/surveys. However, the tentative Geotechnical investigation boreholes would be located in three approximate areas: 1. At the proposed pump station site adjacent to Unnamed Lake on the south side in an investigation area approximately 10 m x 10 m and centered at Latitude 63.779769, Longitude -68.4504122. At the proposed reservoir site adjacent to Lake Geraldine on the East side in an investigation area approximately 750m x 350m and centered at Latitude 63.761552& Longitude -68.492085 3. Along the proposed conveyance pipe routes (2) which extend approximately 5 km between the pump station and reservoir with each route comprising an investigation width of 10m. The project proponent will prepare essential management plans, including a spill contingency plan, health and safety plan, refueling procedures, and erosion and sediment control plan for reinstating any impacts resulting from localized boreholes upon the completion of the research activity. Particular attention will be given to avoiding disruption to areas housing fragile vegetation or wildlife. The use of non-toxic drilling fluids will be used to prevent any contamination of water bodies in the vicinity.

Français: La ville d'Iqaluit est confrontée à des défis importants en matière d'approvisionnement en eau potable en raison de la croissance de sa population et des répercussions liées à un changement climatique défavorable. Pour répondre à cette situation pressante, la ville et ses consultants feront avancer les projets de modernisation de ses systèmes d'approvisionnement en eau et de son infrastructure de distribution. Les améliorations devraient comprendre le pompage et l'acheminement de l'eau du lac Qikiqtalik (également connu sous le nom de lac Sans Nom) par le biais de conduites d'adduction jusqu'à un réservoir de stockage à berme de terre nouvellement construit à proximité du lac Géraldine. L'amélioration de la source d'eau porte principalement sur trois aspects essentiels : l'extraction de l'eau non traitée, l'acheminement de l'eau non traitée et le stockage de l'eau non traitée. Afin de faire avancer la conception technique de ces améliorations, et en vue des futures phases de délivrance de permis, des études géotechniques approfondies doivent impérativement être réalisées sur le terrain. Ces études visent à évaluer les caractéristiques existantes du site et les conditions souterraines. Pour ce qui est du calendrier de ces études, la ville prévoit d'entamer les études géotechniques sur le terrain en 2023 et de les achever à l'été 2024. La présente proposition de projet a pour objectif de faire avancer les études géotechniques du projet. Les études géotechniques porteront sur les conditions de surface et de subsurface des sites prévus pour la future station de pompage, pour la conduite d'adduction d'eau et pour le réservoir afin d'établir si ces sites sont adéquats pour procéder aux activités de conception, d'obtention des permis et de construction. Un programme de forage géotechnique de recherche sera mis en œuvre afin de coordonner les études sur le terrain. Ce programme consistera en un total estimé de 24 trous de forage (12 trous de forage à environ 5 m de profondeur et 12 trous de forage à environ 10 m de profondeur). En ce qui concerne la conduite d'adduction d'eau non traitée, deux options de tracés ont été identifiées lors d'études antérieures. Les deux tracés couvrent sensiblement la même distance et environ 12 trous de forage au total sont nécessaires pour l'étude géotechnique. Six (6) de ces trous de forage seront à une profondeur de 5 mètres et six (6) autres à une profondeur de 10 mètres le long du tracé. Certains des 12 trous de forage susmentionnés tiendront également compte de la structure de la station de pompage pour l'étude géotechnique. Le nouveau réservoir nécessitera 12 autres trous de forage, six (6) à 5 mètres de profondeur et six (6) à 10 mètres de profondeur. Les emplacements précis seront en fonction des recommandations des

Iqaluit ayuqnaqtunik akirautiqaliqtut imiqtaghanik imautinut inugiaghivalliangmat mihingnautainillu hila aallannugqpalliangmat. Ihuaghainahuariamik hapkuninnga

ihumaaluutunik, Nunallaaq kivgaqtiillu hanahimmaarahuat hanayaghamik nutaannguqtiiriamik imautiqaqviit imiqtautinullu ikluqpautait. Nutaannguqtiqtaghat naahuriyayut taimaa pakpautiqarlutik halummaqhivingmiklu talvanngat Qikiqtalik Tahianit (ilihimayauyuqlu taimaa Atiittuq Tahiq) taimaa tuqhualiqhilutik talvunga nutaamut hanayauhaaqtumut tahiraliuqhimayumik kingighitiplugu avatiit talvani akiani tahiq Geraldine. Imiqtaqvingnik nutaannguqtiqtaghat pingahuuniaqtut: imainnaqmik imiqtariamik, imainnaqmik tuqhualiqhilutik, imainnaqmik imautiqaqvighamik. Hapkua hanayaghat hivumuuqpalliayaamik nutaannguqtiiriamik, hivunighamilu piinnarialiutikkut iniqhivalliaplutik, aghuurnaqpiaqtuq taimaa ihivriuqhittiriamik nunamik. Hapkua ihivriuqhitit qauyihautighayut tajja atuqtauyunik nayugaqnik ataanilu nunam qanurininganianik. Hivituniit hapkua ihivriuqtauyut, Nunallaat naahuriyut ihivriuqhivighaanik maniraqmik 2023-mi, iniqniaqhimaplutik auyami 2024-mi. Hapkua havaaghanut tughirautayut hivumuuqtittiyaamik nunamik ihivriuqhiyughat. Nunanik ihivriuqhiyut ihivriurahuaqtaat qaangat iluanilu qanurininganiinik hivunighami pakpautighaq, tughutjat, tahiraglu imautighaq ihumaliurutigiyaamik taamna maniraq naammagiaghaanik hanauhighaanut, piinnarialiutinut hanayaamiklu havaaghanut. Qauyihailutik nunamik ikuutaqtughanik aullaqtittianahuat nunamik ihivriuqhiyaamik ikuutaqlutiklu 24-nik putuliuqlutik itiyunik (12-niklu putuliuqlutik itiyunik ~ 5 meters-nik 12-niklu putuliuqlutik itiyunik 10 metersnik). Imainnaqmik tuqhuaghaanut, malruuyut atuqtaunginnarialgit ingilravighaat illitturiyauhimayut ihivriuqhitinnatik. Tamangnik ingilravighat aajjikkutavyamik ungahiktigiiktut taimaa 12-nik putuliuqtughaayut naallugit nunamik qauyihaiyaamik. 6-nguyut putuliuqlugit 5 metersnik itiyunik 6-lu putuliuqlugit 10 metersnik itiyunik tukliriiklutik. Ilangi unipkaaqqhimayut 12-nguyut putuliuqhimayut pakpautiqaqviqarniat ikluqpangmik nunamik qauyihavighaat. Nutaaq tahiraghaq 12-nik putuliuqhimayughaq, 6-nguyut 5 metersnik itilutik 6-lu itilutik 10 metersmik. Nayugaghait ihumaliuqtauniaqtut unniqtuiyim pitquhimayaigut hannavighaallu qanurininganiagut/qauyihautaigut. Kihimi, taamna Nunanik ihivriuqhivighaat putuliuqhimayut nayugaqaqniat pingahunik:1. Talvani pakpautiqaqvighami akianiittuq Atiittuq Tahiq hivuraanit ihivriuqtainit nayugaghaanit aktigiyuq taimaa 10 m x 10 m qitqaalu qulaanut ungahiktigiyuq taimaa 63.779769, haningnullu taimaa -68.4504122. Talvani tahirag nayugaghaat akiani Tahiq Geraldin kivalliqhianit ihivriuqhivianit taimaa aktigiyuq 750 m x 350 m qitaalu qulaanut ungahiktigiyuq taimaa 63.761552 taimaalu haningnut -68.492085 3. Ingilravighaanit tuqhuaq (2) takiyaaqlutik 5 km-nik akunngani pakpautiqaqvik tahiqlu tamangnik ingilraviit ihivriuqhiviqarlutik nirutuyumik 10 metersnikHavaaghanik havaktughat parnaiyainiaqtut ihariagiyaannik munaqtighat parnaiyautainik, taapkualu kuviyuqarniqqat halummaqhiyaamik parnaiyautinik, aanniaqtailiniqmut aanniqtailiniqmullu parnaiyautinik, uqhiqhiyaamik havauhiqnik, nunguvalliyunik katiqhugaqniklu munaqtighat parnaiyautainik ihuaqhautighat piqpaluiyautiinik putuliuqhimayunit iniqtaukpat qauyihaiyut havaangit. Ihumagilluarniaqtait taapkua piqpaluiyaqtaililugit amirnaqtunik nauttialingnik anngutighaniklu. Atuqlutik qayangnaittunik ikuutaqnut uqhughanik halumaiqtailiyaamik immat talvani nayugaanit.

## Personnel

Personnel on site: 5

Days on site: 10

Total Person days: 50

Operations Phase: from 2023-09-11 to 2024-09-30

## Activités

Emplacement	Type d'activité	Statut des terres	Historique du site	Site à valeur archéologique ou paléontologique	Proximité des collectivités les plus proches et de toute zone protégée
The line is used to indicate our second option for the borehole locations (option 2 (5-6km))	Drilling	Municipal	An option evaluation for the pipe routing was conducted in both 2021 and 2022 at this specific location. This evaluation aimed to assess and determine the most suitable routing options for the project.	No archaeological sites are found in the specific locations however the study team will abide by any terms and conditions for the protection of archaeological and palaeontological resources provided by the Department of Culture and Heritage.	The planned geotechnical study will be conducted on land adjacent to the communities in Iqaluit. The study area encompasses municipal land.
Area of interest for the proposed reservoir (150,000 sq.m)	Drilling	Municipal	A pre-feasibility study was previously conducted in 2019 and 2020 for evaluation of water storage at this specific location	Stone Caine is found near the proposed reservoir. The archaeological assessment is currently ongoing and the study team will abide by any terms and conditions for the protection of archaeological and palaeontological resources provided by the Department of Culture and Heritage.	The site is situated within municipal boundaries and is in close proximity to Lake Geraldine. The planned geotechnical study will be conducted on land adjacent to the communities in Iqaluit
The line is used to indicate our first option for the proposed borehole locations (option 1 (5-6km))	Drilling	Municipal	An option evaluation for the pipe routing was conducted in both 2021 and 2022 at this specific location. This evaluation aimed to assess and determine the most suitable routing options for the project.	No archaeological sites are found in the specific locations however the study team will abide by any terms and conditions for the protection of archaeological and palaeontological resources provided by the Department of Culture and Heritage.	The planned geotechnical study will be conducted on land adjacent to the communities in Iqaluit. The study area encompasses municipal land.

### Engagement de la collectivité et avantages pour la région

Collectivité	Nom	Organisme	Date de la prise de contact
Iqaluit	Jimmy Akavak	Hunters and Trapper association	2023-06-08
Iqaluit	Noah Alookie	Hunters and Trapper association	2023-06-08
Iqaluit	Tim Brown	Nunavut Tunngavik Incorporated (NTI).	2023-04-27
Iqaluit	Matthew Hamp	Qikiqtani Inuit Association	2023-03-23

		(QIA)	
Iqaluit	Navarana Beveridg	Qikiqtani Inuit Association (QIA)	2023-03-23
Iqaluit	Jared Ottenhof	Qikiqtani Inuit Association (QIA)	2023-04-27

## Autorisations

Indiquez les zones dans lesquelles le projet est situé:

South Baffin

### Autorisations

Organisme de régulation	Description des autorisations	État actuel	Date de l'émission/de la demande	Date d'échéance
Autre	Department of Culture and Heritage - for archaeological assessment	Active	2023-07-14	2023-12-31

### Project transportation types

Transportation Type	Utilisation proposée	Length of Use
Land	Access to the sites will be overland on existing road trails via truck	

### Project accomodation types

Collectivité

## Utilisation de matériel

Équipement à utiliser (y compris les perceuses, les pompes, les aéronefs, les véhicules, etc.)

Type d'équipement	Quantité	Taille – Dimensions	Utilisation proposée
Geotechnical Drill Rig	2	2.5m x 4.0m	The equipment will be used for drilling geotechnical boreholes.
Flatbed Truck	1	50ft x 8.5ft x 5ft	The equipment will be used to transport other equipment to site.
Pickup Truck	1	20ft x 6.7ft x 6ft	To transport personnel onsite

Décrivez l'utilisation du carburant et des marchandises dangereuses

Décrivez l'utilisation de carburant :	Type de carburant	Nombre de conteneurs	Capacité du conteneur	Quantité totale	Unités	Utilisation proposée
Diesel	fuel	4	20	80	Liters	To power up the drill rig and trucks (flatbed and pickup truck)
Anti-freeze	hazardous	2	5	10	Liters	For vehicle operation

Consommation d'eau

Quantité quotidienne (m3)	Méthodes de récupération de l'eau proposées	Emplacement de récupération de l'eau proposé
0		



# Déchets

## Gestion des déchets

Activités du projet	Type des déchets	Quantité prévue	Méthode d'élimination	Procédures de traitement supplémentaires
Drilling	Mort-terrain (sol organique, déchets, résidus)	Five cubic meter	Typically, during drilling activities, rock fragments and soil particles are brought to the surface. A portion of these rocks will be collected for sampling purposes, while the remaining material will be carefully distributed across the area in a manner that ensures no adverse impact on local entities.	N/a

### Répercussions environnementales :

To ensure responsible practices, the project proponent will develop essential management plans. These plans will encompass: a)A spill contingency plan b)A health and safety plan c)An erosion and sediment control plan, aimed at restoring any localized borehole impacts after the research activity concludes. Special emphasis will be placed on safeguarding areas that host delicate vegetation or wildlife to prevent any disruption. This proactive approach underscores our commitment to environmental protection and responsible project execution.

# **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**

### **Description de l'environnement existant : Environnement physique**

The geotechnical survey will be an integral part towards future designs, permitting applications and thereafter implementation. These geotechnical investigations will the project proponent to better define the physical environment for future permit applications.

### **Description de l'environnement existant : Environnement biologique**

This investigation is a critical component of a larger program that will comprehensively assess the biological environment in subsequent phases

### **Description de l'environnement existant : Environnement socio-économique**

The planned geotechnical study will be conducted on land adjacent to the communities in Iqaluit. The Project area is mostly Precambrian bedrock with some areas of littoral and nearshore sediments and intertidal sediments that consist of well-sorted gravels deposited as beaches, gravely sand, sand, and silty sand.

### **Miscellaneous Project Information**

### **Identification des répercussions et mesures d'atténuation proposées**

The project proponent will prepare essential management plans, including a spill contingency plan, health and safety plan, refueling procedures, and erosion and sediment control plan for reinstating any impacts resulting from localized boreholes upon the completion of the research activity. Particular attention will be given to avoiding disruption to areas housing fragile vegetation or wildlife.

### **Répercussions cumulatives**

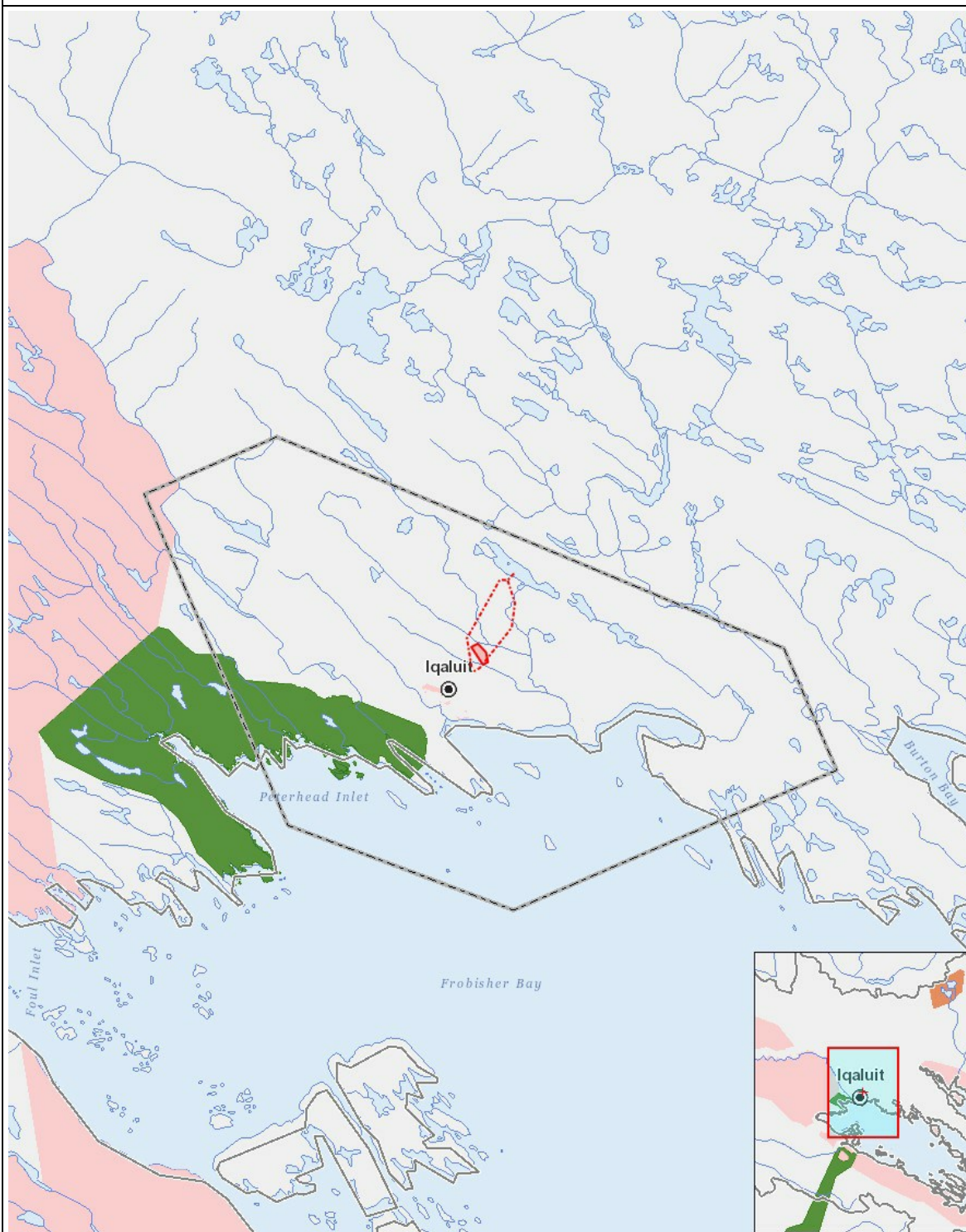
Impacts

Identification des répercussions environnementales

	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
Construction	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Exploitation																									
Drilling	-	M	M	-	-	-	-	M	-	-	-	M	-	-	-	-	-	-	-	-	P	-	-	-	-
Désaffectation	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-

(P = Positive, N = Négative et non gérable, M = Négative et gérable, U = Inconnue)

## Site du projet



## Liste des géométries de projet

- 1 polygon Area of interest for the proposed reservoir (150,000 sq.m)
- 2 polyline The line is used to indicate our first option for the proposed borehole locations (option 1 (5-6km))
- 3 polyline The line is used to indicate our second option for the borehole locations (option 2 (5-6km))