

ENVIRONMENTAL MANAGEMENT PLAN

BAKER LAKE GEOTHERMAL PROJECT Hamlet of Baker Lake, Nunavut

Prepared for:



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Qulliq Energy Corporation
Société d'énergie Qulliq
Qulliq Alruyaktuqtunik Ikumatjutiit

Prepared by:



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1 Introduction

The Baker Lake Geothermal Project (the Project) Environmental Management Plan (EMP) has been developed on behalf of Qulliq Energy Corporation (QEC or the Company) in accordance with applicable legislation, guidelines and best practices. This (EMP) provides a description and methodology for preventing, mitigating, and minimizing the environmental impacts of the Baker Lake Geothermal Project.

This EMP will come into effect as soon as all permits, licences and authorizations have been obtained for the Project. Copies and updates to this plan may be obtained via the Company or APEX Geoscience Ltd. (APEX). The EMP will be replaced, upon approval, if there are any significant changes to the activities outlined in the existing permits which warrant changes to the EMP. Minor changes will be submitted as an addendum to the EMP and submitted to the distribution list as required.

1.1 Contact Details

Qulliq Energy Corp.

1047 First Avenue
Baker Lake, NU X0C 0A0
Tel: (866) 710-4200
Fax: (867) 793-4225
www.qec.nu.ca

APEX Geoscience Ltd.

100, 11450 160 Street NW
Edmonton, AB T5M 3Y7
Tel: (780) 467-3532
Fax: (780) 467-4025
www.apexgeoscience.com

1.2 Purpose and Scope

The purpose of the Baker Lake Geothermal Project Environmental Management Plan is to address the potential environmental issues and proposed mitigation measures related to activities at the Baker Lake Geothermal Project. This plan discusses the following:

- A summary of regulatory requirements, guidance, legislation and best practices.
- Outline potential disturbances to land, flora and fauna and provide mitigation and response measures.
- Discuss wildlife disturbance mitigation practices.
- Procedures for dealing with nuisance or dangerous wildlife and appropriate use of firearms.
- Environmental requirements and best practices for diamond drilling.
- Hazardous material handling and waste management practices.
- Identification of potential stakeholder issues, including procedures for dealing with the discovery of archaeological and paleontological sites or artifacts.
- A summary of abandonment and restoration plans.

Emergency response guidelines are beyond the scope of this plan. In the event of an environmental emergency, personnel will defer to the Baker Lake Geothermal Project “Emergency Response Plan” and “Spill Contingency and Fuel Management Plan” for guidance.

1.3 Environmental Policy

Qulliq Energy Corp. is firmly committed to the protection and conservation of the natural environment, and to ensuring the health and safety of all employees, contractors, and people in surrounding communities. The environmental policy for the Baker Lake Geothermal Project is to:

- Develop the Project in a socially and environmentally responsible manner.
- Fully comply with all applicable environmental legislation and regulations.
- Work in cooperation with federal, territorial, and local governments, as well as other relevant regulatory bodies, and the general public, on all aspects of environmental protection and policy.
- Assess and mitigate any potential environmental impacts and minimize risks to the health and safety of all employees, contractors, and the general public.
- Ensure contractors operate according to the Baker Lake Geothermal Project environmental policies and procedures.
- Provide ongoing instruction on Baker Lake Geothermal Project environmental policies.
- Keep employees, contractors, inspectors, government, and regulatory bodies informed of any changes at the site or with Project activities.

1.4 Other Plans

The EMP should be considered as a part of the Project-wide management system. Other management plans in place at the Baker Lake Geothermal Project include:

- Abandonment and Restoration Plan (ARP)
- Emergency Response Plan (ERP)
- Fuel Management Plan (FMP)
- Spill Contingency and Fuel Management Plan (SCFMP)
- Waste Management Plan (WMP)

1.5 Property Description

QEC is a 100% Government of NU owned corporation that is the sole provider of electrical power in the Territory. QEC currently provides power to all 25 communities in NU by operating stand-alone diesel power plants in each, which means that it is dependent upon fossil fuels. However, QEC is actively searching for new and renewable energy resources.

QEC commissioned a Nunavut Geothermal Feasibility Study, completed by RESPEC, with guidelines set by the Canadian Geothermal Energy Association (CanGEA) for the Canadian National Geothermal Database (CNGD), published in June 2018. Baker Lake has been selected as a test site for investigating the geothermal potential in the Canadian Shield.

The Project will consist of the completion of a small diameter, temperature gradient hole in which geothermal properties will be studied. Should this work yield positive results, further investigations, will be conducted that might ultimately lead to the construction of a

geothermal heat and power facility that would help reduce, if not eliminate, the hamlet's dependence on fossil fuels.

The Project will commence in the late summer or fall and will comprise the drilling of a single, approximately 800-metre deep, vertical core hole at a target location within Lot 447 of the hamlet of Baker Lake. A small volume of fuel (less than 4,000 L) will be required to power the drill during the program and will be appropriately permitted and managed. A camp will not be required for the exploration program, as the project is within the municipal boundaries of the hamlet of Baker Lake.

A Community Consultation visit to Baker Lake to discuss the QEC Baker Lake Geothermal Project is planned prior to the commencement of the program.

All drilling will be confined to Lot 447 of Baker Lake as seen in Figure 2 of Appendix 1.

2 Applicable Legislation and Guidelines

Activities at the Baker Lake Geothermal Project will be conducted in accordance with various Acts, Regulations, Guidelines, Best Practices and Recommendations including, but not limited to:

2.1 Federal

- Canadian Environmental Protection Act
- Environment Canada's Environmental Emergency (E2) Regulations
- Implementation Guidelines for the Environmental Emergency Regulations
- Canada Wildlife Act
- Fisheries Act
- Nunavut Waters and Nunavut Surface Rights Tribunal Act
- Public Health Act
- Species at Risk Act
- Territorial Lands Act
- Nunavut Land Claims Agreement
- Department of Fisheries and Oceans Canada Operational Statements
- Guidelines for Spill Contingency Planning
- Migratory Birds Convention Act
- Workplace Hazardous Materials Information System
- Northern Land Use Guidelines

2.2 Territorial

- Nunavut Environmental Protection Act
- Nunavut Wildlife Act
- Keewatin Regional Land Use Plan
- DIAND Caribou Protection Plan
- Kivalliq Inuit Association Caribou Protection Measures
- Environmental Guideline for the General Management of Hazardous Waste
- Nunavut Archaeological and Paleontological Sites Regulations

3 Environmental Protection Measures

Activities at the Baker Lake Geothermal Project will be assessed for environmental impact risks and every measure available will be taken to ensure the protection and preservation of the natural environment. For the duration of the program, all activities will be documented and sites photographed to comply with environmental due diligence. All on-site employees and contractors will be provided with environmental training, and will become familiar with relevant regulations. The Project Field Supervisor will be responsible for implementing environmental policies and training, and managing the environmental monitoring program.

Environmental training, monitoring, reclamation, and site clearance surveys will be built into the program budget to ensure adequate resources are being allocated to environmental management. Preference will be given to contractors with high standards of environmental stewardship, and who have a proven track record of sound environmental practice.

4 Stakeholders

Stakeholders may be individuals or groups concerned with, or affected by the drilling activities at the Baker Lake Geothermal Project. Stakeholders will be identified and consulted with for the duration of the program. Approvals will be sought from stakeholders and regulatory bodies pertaining to relevant environmental, social, and cultural issues. The Project is proposed within the municipal boundary of Baker Lake. It is a priority to Qulliq Energy Corp. to conduct community consultations in order to incorporate any community feedback into the Project planning and design and to address any community member concerns.

4.1 Archaeological or Paleontological Sites

There is always a potential for discovery of previously unknown archaeological or paleontological sites when conducting activities. Actions will be taken to ensure that any known or undocumented archaeological or palaeontological sites or artifacts are not disturbed. These include, but are not limited to:

- No company staff, contractors or Project visitors will operate any vehicle over a known or suspected archaeological or palaeontological site.
- No company staff, contractors or Project visitors will remove, disturb, or displace any archaeological artifact or site, or any fossil or palaeontological site.
- The company will immediately contact the Government of Nunavut Department of Culture and Heritage (CH) at (867) 934-2046 or (867) 975-5500 should an archaeological site or specimen, or a palaeontological site or fossil, be encountered or disturbed by any land use activity. A report will be prepared documenting the discovery and sent to CH and CIRNAC. Reports will include GPS coordinates, a brief description of the site and/or artifact and photos.
- Company staff, contractors or Project visitors will immediately cease any activity that may disturb an archaeological or palaeontological site if encountered during the course of a land use operation until permitted to proceed with the authorization of CH.

- Company staff, contractors or Project visitors will follow the direction of CH in restoring disturbed archaeological or palaeontological sites to an acceptable condition. If these conditions are attached to either a Class A or B Permit under the Territorial Lands Act CIRNAC's directions will also be followed.
- Company staff, contractors or Project visitors will provide all information requested by CH concerning all archaeological sites or artifacts and all palaeontological sites.
- Before commencing any work where ground disturbance may occur, the area will be surveyed for any archaeological or paleontological sites.
- Building of inuksuk is prohibited.
- The Company will ensure that all persons working under its authority are aware of these conditions concerning archaeological sites and artifacts and palaeontological sites and fossils.

Nunavut Department of Culture and Heritage:

Phone: 867-975-5500

Fax: 867-975-5504

5 Identification of Potential Impacts and Proposed Mitigation Measures

5.1 Designated Environmental and Socio-Economic Areas

The Baker Lake Geothermal Project is not located within any federal or territorial Protected Areas. The nearest National Park is the Ukkusiksalik National Park of Canada, located approximately 255 km to the northeast. The Thelon Game Sanctuary is located approximately 180 km to the west and the Queen Maud Gulf Migratory Bird Sanctuary located approximately 250 km northwest. The Iqalugaarjuup Nunanga Territorial Park is approximately 240 km southeast of the Project Area.

The Baker Lake Geothermal Project is located within an Area of Traditional Landuse, as defined by the Draft Nunavut Land Use Plan and is within the Baker Lake Community Watershed.

5.2 Wildlife Disturbance Mitigation

5.2.1 Wildlife and Habitat

Although interaction with wildlife or their dwellings is unlikely at the Project as is located within the municipal boundaries of the Hamlet of Baker Lake, standard wildlife disturbance mitigation measures will still be discussed and implemented if required. All interaction with wildlife is discouraged; however, employees and contractors will be trained in the appropriate actions to take when encountering wildlife on the Project. Intentionally approaching, disturbing, or feeding wildlife is strictly prohibited. Any incidents will be thoroughly investigated and disciplined. All wildlife, and their dwelling sites, will be respected and efforts will be made to avoid them. All personnel will be required to record any wildlife sightings and will be instructed on the appropriate action to take when encountering wildlife.

Wildlife sightings will be recorded in the “Wildlife Record Log” and reported to CIRNAC as part of the “Wildlife and Environment” section of the Baker Lake Geothermal Project Annual Report. If any wildlife enters the area of operations, appropriate protection measures will be followed, including the suspension of operations, if required, until the animal has moved out of the vicinity. Any bears or nuisance wildlife will be immediately reported to the Project Field Supervisor, CIRNAC and the Hamlet of Baker Lake. Emergency Wildlife Contacts are listed in Appendix 2.

Appropriate screens will be placed over any water intake to reduce the potential for fish entrapment.

5.2.2 Caribou Mitigation and Monitoring

Although the Baker Lake Geothermal Project is within the municipality of the Hamlet of Baker Lake and interaction with caribou is unlikely, Qulliq Energy Corp. recognizes special consideration is required in the event caribou come near the Project and the following measures will be strictly followed to mitigate potential impacts.

All Qulliq Energy Corp. employees, contractors and visitors will be instructed and must strictly adhere to the following:

- Caribou avoidance will always be the priority mitigation measure.
- All sightings of caribou will be reported to the Project Field Supervisor.
- The Kivalliq Inuit Association Mobile Caribou Conservation Measures, although intended for use on Inuit Owned Lands, will be used to guide when work suspensions may be required. See Appendix 3 for the Mobile Caribou Conservation Measures.
- In addition to the Mobile Caribou Conservation Measures if caribou come within 1 km of the drill site, work activities will immediately cease until the caribou have moved safely beyond the buffer zone.
- Wildlife reports, containing information on sightings and interactions of all wildlife and any work suspensions will be submitted in the Annual Report.
- In the event caribou cows calve in proximity to the Project area, operations will be suspended (e.g. drilling and sampling) in all work areas within 10 km of any area occupied by cows and calves until caribou have moved out of the 10 km radius.
- Activities will be suspended if concentrations of caribou (50 or more) approach within 2 km of drilling operations. Activities will not resume until all of the caribou have moved out of the area.
- Absolutely no activities will be conducted that will interfere with caribou cows and calves. All activities that may interfere with caribou cows and calves will cease.
- Qulliq Energy Corp. will ensure that absolutely no activities will cause a diversion to the migration patterns of any caribou.
- Open communication will occur with the Hamlet of Baker Lake, the local hunters and trapper’s organization and any other interested parties, regarding caribou sightings and appraised movements in the area.

¹ Data from the Ekati Diamond Mine suggests that instantaneous negative response (alert, stop feeding) of barren-ground caribou to stressors increases within 1 km of the source.

5.2.3 Species at Risk

- Quilliq Energy Corp. recognizes that with any project, there is a potential for activities to negatively affect wildlife, and of greatest concern, affect species at risk. Although all wildlife will be protected and treated with respect during all activities at the Baker Lake Geothermal Project, special consideration will be given to the species identified below. All observations of wildlife will be recorded and with the Annual report and any human-wildlife interaction will be reported immediately.

Peregrine Falcon, anatum/tundrius complex, Red-necked Phalarope and Short-eared owl – Special Concern (SARA)

- Raptor, Red-necked Phalarope and Owl nests, as well as all birds, their nests and eggs will always be avoided during exploration activities.
- Any observed nests will be recorded and included in the wildlife record submitted annually.
- All staff, contractors and Project visitors will be trained to never approach or disturb nests.
- All staff, contractors and Project visitors will be trained on how to identify Red-necked Phalarope nests via descriptions provided by Environment Canada and photos.
- Any nest found will be recorded, photographed and reported to the Gov-NU Ecosystems Biologist. In the case of the Red-necked Phalarope, Environment Canada will be notified as well.
- The Gov-NU Ecosystems Biologist will be asked to advise on the establishment of an appropriate buffer zone, determined by the species and the surrounding habitat, to protect it until the young have naturally left the nest.

Grizzly Bear, Wolverine and Transverse Lady Beetle – Special concern (COSEWIC)

- All Quilliq Energy Corp. staff, contractors and visitors to the Project will be properly trained in wildlife disturbance mitigation, including deterrent and interaction measures.
- Proper measures will be taken at drill sites and in the field to reduce the attraction of wildlife including proper storage and handling of food and waste.
- All bears, wolverines and other wildlife, as well as their dens, will be avoided at all times by field crews.
- Any observations of bears, wolverines or Transverse Lady Beetle will be recorded and submitted with the annual report and any human-wildlife interaction will be reported immediately.

5.2.4 Migratory Birds

Quilliq Energy Corp. has implemented the following mitigation measures to prevent potential impacts on migratory birds. All Quilliq Energy Corp. employees, contractors and visitors will be instructed and must strictly adhere to the following:

- All staff, consultants and Project visitors will be educated in, and comply, with all applicable legislation and regulations.
- All wildlife, including birds and their dens and nests will be respected

- Approaching any wildlife, including birds or nests will be strictly prohibited.
- Never destroy nests or eggs of any birds.
- Avoid disturbing nests and concentrations of birds.
- Avoid approaching known nests while on foot.
- Attempt to prevent birds from nesting on man-made structures.
- Avoid areas used by flocks of migrating waterfowl by 3 km.
- Qulliq Energy Corp. prohibits depositing substances harmful to migratory birds into waters.
- Migratory bird observations will be included in the Wildlife Observation logs and submitted with the annual report
- Any inadvertent disruption of migratory birds, nests or eggs will be immediately reported.
- Special care and concern, including monitoring will take place during migratory bird nesting periods in the area (mid-May – mid-August).
- Any nest found will be recorded, photographed and reported to the Gov-NU Ecosystems Biologist. The government biologist will be asked to advise on the establishment of an appropriate buffer zone, determined by the species and the surrounding habitat, to protect it until the young have naturally left the nest.

5.3 Vegetation, Soil and Permafrost Disturbance Mitigation

Vegetation in the area of Baker Lake consists mainly of moss, lichens, stunted plants and Arctic grasses. The grasses are typically observed growing at lower elevations in areas associated with river drainage basins.

Vegetation and permafrost can potentially be impacted by drilling activities. Mitigation measures to reduce the impact include limiting the amount of vegetation disruption to ensure proper shade coverage and reduction in the potential for ground thaw and subsidence. Areas that have patterned ground, clay-rich soil and or wetlands will be avoided. Heat radiating from the drill shack may thaw permafrost, so all heated drill structures will be slightly elevated above the ground to allow air circulation. Earth may be required to be moved in order to construct a sump at drill site; however natural depressions and areas free of vegetation will be used whenever possible. Any topsoil moved will be collected to use in re-vegetation efforts. If a sump is excavated, it will be barricaded until it can be back-filled.

Soil quality can be impacted from spills of fuel and other materials and waste discharge. Preventative measures include appropriate and approved storage locations and containers with secondary containment. All fuel, hazardous materials and drilling will be a minimum 31 metres away from any watercourses. Refueling will be done with precision and appropriate due-diligence will be taken. Drums and hoses will be inspected regularly for leaks and pans or absorbent pads will be placed below fuel transfer areas and stationary machinery. See the Baker Lake Geothermal Project “Spill Containment and Fuel Management Plan” attached for more information.

5.4 Air and Noise Quality

Impacts on air quality can result from discharge of exhaust from drilling operations and diesel generators. Given the lack of air quality issues which currently exists within the Project location, the short duration and small scope of activities are not expected to result in any measurable air quality impacts.

Noise can result from the use of drills which can disturb people and wildlife. Mitigation measures will be implemented to reduce the impact including, but not be limited to:

- Regularly train workers and contractors (such as at toolbox talks) to use equipment in ways that minimize noise.
- Regularly inspect and maintain equipment to ensure that it is in good working order, including the condition of mufflers.
- Drilling operating hours will be the following: 7 am to 7 pm Monday to Friday, 8 am to 5 pm Saturday, and 10 am to 4 pm Sunday.
- Avoid shouting, and minimize talking loudly and slamming vehicle doors.
- Avoid the use of reversing alarms.
- Avoid the use of radios and stereos outdoors and the overuse of public address systems where neighbours can be affected.
- The Project Filed Manager will investigate and respond to any concern raised by nearby residences so that solutions can be quickly applied.

5.5 Drilling Operations

Drilling contracts will be awarded to companies that exhibit high standards of environmental practice and who are willing to adhere to the environmental policies of the Baker Lake Geothermal Project. The following conditions are imposed for drilling activities:

- The drill site will be as small as possible while still allowing adequate area for fire protection.
- All fuel, drill additives and other chemicals will be stored in secondary containment.
- Biodegradable and nontoxic drill additives will be used whenever possible.
- Recirculation and filtration equipment will be used to minimize the amount of water used and additives released into the environment. Secondary containment for additives will be placed around the hole.
- Any residual drill water will be contained in sumps. Sumps will be positioned down slope from the drill collar in such a manner that runoff flows into the sump. Sumps will be positioned a minimum of 31 metres from the normal high water mark of any water body.
- If any artesian water flow is detected, the hole will be plugged and cemented in bedrock to prevent continued flow. Any artesian water flow will be reported to CIRNAC and the NWB.

6 Hazardous Materials

All hazardous materials will be handled and stored in accordance with the Baker Lake Geothermal Project “Spill Containment and Fuel Management Plan”. Fuels and other hazardous materials will be stored within “Arctic Insta-Berms”, or similar products, for secondary containment. Hazardous material storage sites will be located a minimum of 31 metres from the normal high water mark of any water body.

Electric or hand wobble pumps equipped with filtration devices will be used for the transfer of diesel and gasoline from their storage containers directly to their end-use fuel tanks. Portable drip trays or mini-berms will be used to mitigate the risk of any spillage, and fully stocked spill kits will be located at the drill site.

All hazardous materials will be clearly labeled in accordance with the Workplace Hazardous Materials Information System (WHMIS) and other applicable legislation. Labels will include, but not limited to, the type of fuel, safe handling procedures, reference to Safety Data Sheets/Material Safety Data Sheets (SDS/MSDS), company name, and the date of delivery to site. Signs with the same information, along with SDS/MSDS for each fuel type will be posted at each hazardous material storage or transfer site. “No Smoking” signs will be posted at each fuel cache, drill site, and fuel transfer area.

All personnel required to handle hazardous materials will be trained in WHMIS, the Transportation of Dangerous Goods Act, and the Baker Lake Geothermal Project “Spill Containment and Fuel Management Plan” and “Emergency Response Plan”.

Contacts for Hazardous Waste Issues are listed in Appendix 4 of this plan.

7 Waste Management Planning

All waste will be handled and disposed of in accordance with the Baker Lake Geothermal Project “Waste Management Plan” and will comply with federal and territorial legislation. Waste management operations at the Baker Lake Geothermal Project comprise a number of activities with the common goal of reducing the amount of waste generated on site and to ensure that any wastes created are reused, recycled, or disposed of in a responsible manner. Waste will be separated at the source into a number of categories including: materials for incineration, inert recyclables, inert non-combustible materials, and hazardous materials.

All inert materials will be placed in appropriate sealed containers and removed from site regularly for reuse, recycling or proper disposal at an accredited facility.

All hazardous wastes will be sealed in appropriate containers, labeled, documented and removed from site for proper disposal south to an accredited disposal facility. A waste manifest will accompany hazardous waste in transit and all parties involved will be properly accredited.

All drilling waste will be contained in a properly excavated/constructed sump, within the QEC power plant property, a minimum 31 m from the normal high water mark or any waterbody.

A porta-potty, pacto toilet, or similar system will be utilized at the drillsite. Contents will be regularly emptied either via vacuum truck (for the porta-potty) or transported to the Baker Lake Waste Facility for incineration (in the case of a pacto system).

8 Abandonment and Restoration

At the termination of the drillhole, all structures, equipment, supplies, fuel, and waste will be removed from the drillsite. Core box stacks will be stored at a Qulliq Energy Corp. facility in the Hamlet of Baker Lake as permanent storage. Materials of value will be salvaged. Local businesses and residents will have the opportunity to salvage any remaining materials that will otherwise be disposed of. Any contaminated areas around the drill site that had gone unnoticed will be treated as per the “Spill Containment and Fuel Management Plan.” A thorough inspection of all areas of activity will be conducted and photographs will be taken to include in Annual Reports and the Final Plan. All relevant regulatory agencies will be notified once the Project permits and licences are closed.

If required, any areas disturbed by activities at the Baker Lake Geothermal Project will be fertilized to encourage re-vegetation. Any eroded or washed out areas related to exploration activities will be filled and re-contoured to natural levels.

Further details on abandonment and restoration can be found in the “Baker Lake Geothermal Project Abandonment and Restoration Plan.”

Appendix 1: Figures

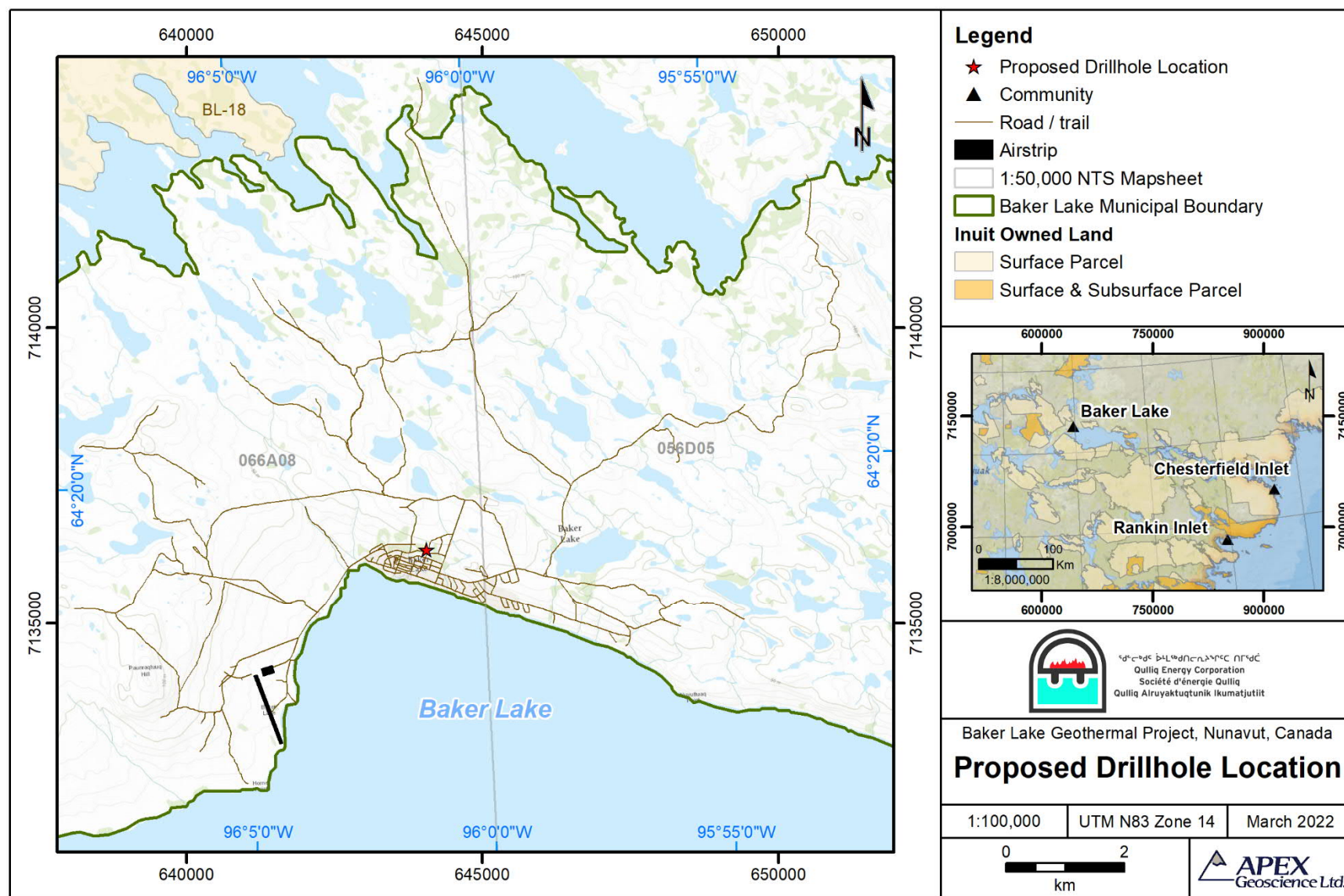
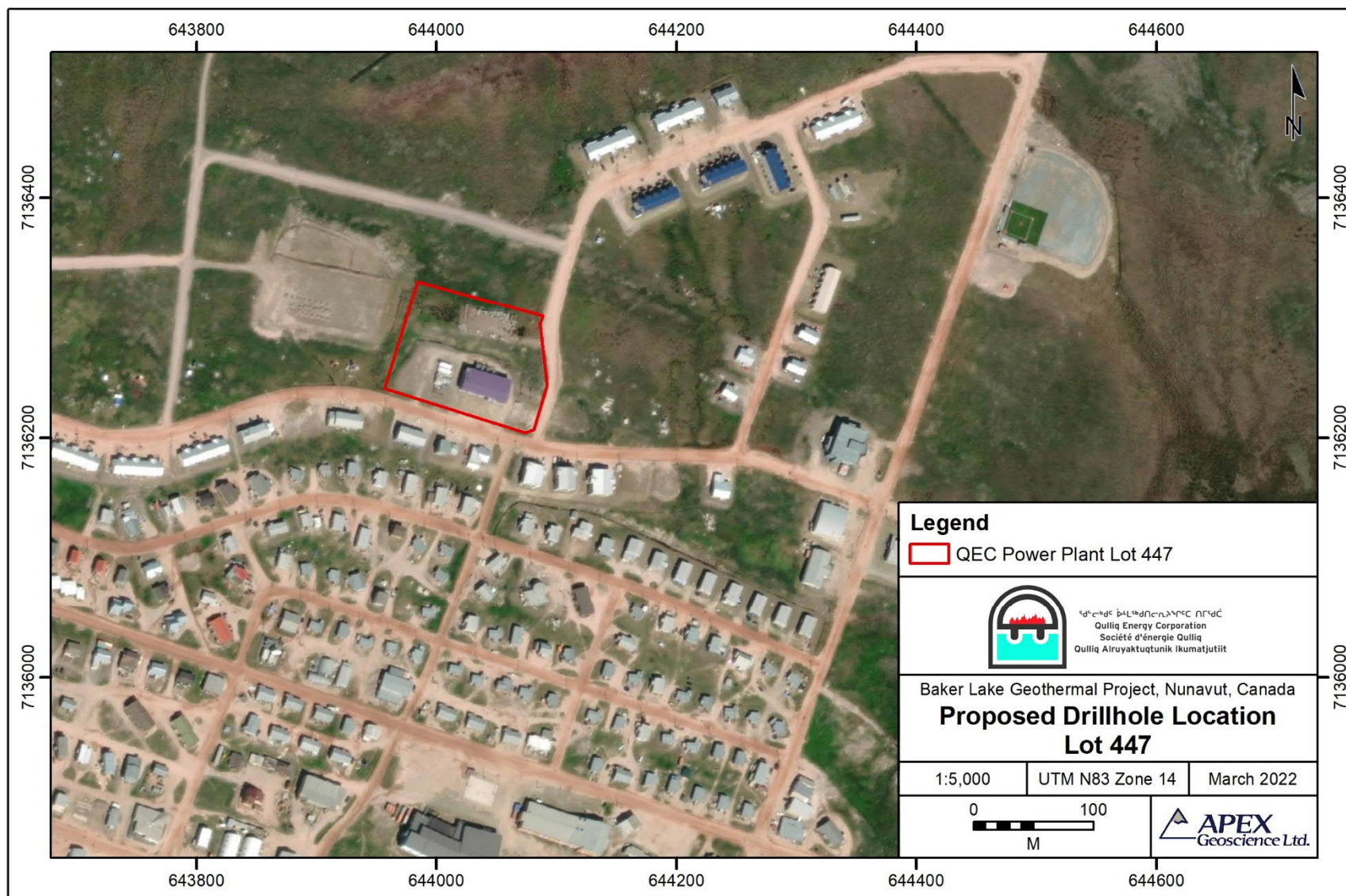


Figure 1 Baker Lake Geothermal Project Location



Appendix 2: Wildlife Emergency Contacts

Wildlife Emergency Contacts

Name	Company/Position	Phone Number(s)
Andrew Turner	APEX Project Field Supervisor	(780) 467-3532 (office) (780) 231-4117 (mobile)
Nunavut Department of Environment	Iqaluit Main Office	(867) 975-7700
CIRNAC Manager of Field Operations	Iqaluit	(867) 975-4295 (phone) (867) 979-6445 (fax)
Nunavut Department of Environment	Baker Lake Office	(867) 793-2944

Name	Position	Community	Phone
Russell Toolooktook	Conservation Officer II	Baker Lake	(867) 793-2944
Robert Arsenault	Conservation Officer II	Baker Lake	(867) 793-2944
Drikus Gissing	Wildlife Director	Iqaluit	(867) 975-7734
Caryn Smith	Senior Wildlife Advisor Legislation and Management	Iqaluit	(867) 975-7756
Jason Aliqatuqtuq	Senior Manager (Operations) Wildlife Management	Iqaluit	(867) 975-7781
Keenan Lindell	Kivalliq Regional Wildlife Technician	Arviat	(867) 857-3175

Appendix 3: Kivalliq Inuit Association Mobile Caribou Conservation Measure

MOBILE CARIBOU CONSERVATION MEASURES

Introduction

The Lessee shall comply with the measures set out herein. The Lessee shall immediately report to the Landlord any deviation from these measures, including the reason for the deviation.

The Landlord reserves the right, based on the presence of caribou within the area of the Property in any year, to vary the dates set out herein and shall provide notice to the Lessee of any such variation.

Wildlife Monitoring Personnel

The Lessee shall have wildlife monitoring personnel present at the Property during any season when caribou are reasonably expected to be present. The names of such personnel shall be sent to the Landlord and they shall maintain communication at all reasonable times. The Lessee shall monitor and immediately report the presence of caribou to the Landlord in accordance with the following directives. The report shall specify the location and estimated numbers.

A. IOL within designated calving grounds

Section 1. On IOL within designated calving grounds (as designated by the Government of Nunavut) between May 1st and July 31st (the closure period):

- 1) No activities shall occur except as authorized by the Landlord.

Section 2. On IOL within designated calving grounds between August 1st and September 30th, the Lessee shall conduct monitoring and mitigation as follows:

- 2i) If collar data or observations indicate that there are one (1) or more collared caribou or twenty-five (25) or more caribou observed within the thirty (30) km early warning zone from the boundary of the Property, then monitoring within a five (5) km buffer zone shall be conducted every second day (e.g., height of land surveys, road surveys, remote camera surveys).
- 2ii) If monitoring indicates that there are twenty-five (25) or more caribou within five (5) km of the Property boundary, then the Lessee shall monitor within a five (5) km buffer zone around the Property on a daily basis, and shall immediately suspend work that has the potential to disturb caribou, including suspension of drill operations, blasting activities and non-essential ground movements and aircraft traffic below 300 m above ground level (except as necessary for emergency purposes), suspension of all ground operations and camp closure, until caribou numbers are below the threshold within the buffer zone.

Section 3. On IOL within designated calving grounds between October 1st and April 15th, the Lessee shall conduct monitoring and mitigation as follows:

- (3i) If collar data or observations indicate that there are one (1) or more collared caribou or fifty (50) or more caribou observed within thirty (30) km of the boundary of the Property, then monitoring within a five (5) km buffer zone shall be conducted every second day (e.g., height of land surveys, road surveys, remote camera surveys).
- (3ii) If monitoring indicates that there are fifty (50) or more caribou within two and a half (2.5) km of the Property, then the Lessee shall immediately reduce above-ground activities that have the potential to disturb caribou, including non-essential ground movements and aircraft traffic below 300 m above ground level (except as necessary for emergency purposes), until caribou numbers are below the threshold within the buffer zone.

Section 4. On IOL within designated calving grounds between April 16th and April 30th, the Lessee shall conduct monitoring and mitigation as follows:

- (4i) If collar data or observations indicate that there are one (1) or more collared caribou or twenty-five (25) or more caribou within fifty (50) km of the boundary of the Property that appear to be moving in the direction of the activities, then monitoring within a five (5) km buffer zone shall be conducted every second day (e.g., height of land surveys, road surveys, snow track counts (if appropriate), remote camera surveys).
- (4ii) If monitoring indicates that there are an estimated twenty-five (25) or more caribou within the five (5) km buffer zone for the Property, then the Lessee shall conduct monitoring within a five (5) km buffer zone on a daily basis, and shall immediately suspend any activities that have the potential to disturb caribou, including suspension of drill operations, blasting activities and non-essential ground movements and aircraft traffic below 300 m above ground level (except as necessary for emergency purposes), suspension of all ground operations, and camp closure, until caribou numbers are below the threshold within the buffer zone.

B. IOL within other seasonal caribou ranges

Section 5. On IOL between June 1st and July 15th outside of designated calving grounds, the Lessee shall conduct monitoring and mitigation as follows:

- (5i) If collar data or observations indicate that there are one (1) or more collared caribou or ten (10) or more caribou observed within the fifty (50) km early warning zone for the Property, then monitoring within a five (5) km buffer zone shall be conducted every second day (e.g., height of land, road surveys, snow track counts (if appropriate), remote camera surveys).
- (5ii) If monitoring indicates that there are an estimated ten (10) or more caribou within the five (5) km buffer zone for the Property, then the Lessee shall conduct monitoring within a five (5) km buffer zone on a daily basis, and shall immediately suspend any activities that have the potential to disturb caribou, including suspension of drill operations, blasting activities and non-essential ground movements and aircraft traffic below 300 m

above ground level (except as necessary for emergency purposes), suspension of all ground operations and camp closure until caribou numbers are below the threshold within the buffer zone.

Section 6. On IOL between July 16th and September 30th outside of designated calving grounds, the Lessee shall conduct monitoring and mitigation as follows:

- (6i) If collar data or observations indicate that there are one (1) or more collared caribou or twenty-five (25) or more caribou observed within thirty (30) km of the Property, then monitoring within a five (5) km buffer zone shall be conducted every second day (e.g., height of land surveys, road surveys, snow track counts (if appropriate), remote camera surveys).
- (6ii) If monitoring indicates that there are twenty-five (25) or more caribou within five (5) km of the boundary of the Property, then the Lessee shall conduct monitoring within a five (5) km buffer zone on a daily basis, and shall immediately suspend any activities that have the potential to disturb caribou, including suspension of drill operations, blasting activities, non-essential ground movements and aircraft traffic below 300 m above ground level (except as necessary for emergency purposes), and camp closure until caribou numbers are below the threshold within the buffer zone.

Section 7. On IOL between October 1st and April 15th outside of designated calving grounds, the Lessee shall conduct monitoring and mitigation as follows:

- (7i) If collar data or observations indicate that there are one (1) or more collared caribou or fifty (50) or more caribou observed within thirty (30) km of the boundary of the Property, then monitoring within a five (5) km buffer zone shall be conducted every second day (e.g., height of land surveys, road surveys, remote camera surveys).
- (7ii) If monitoring indicates that there are fifty (50) or more caribou within 2.5 km of the boundary of the Property, then the Lessee shall immediately reduce above-ground operations that have the potential to disturb caribou, including non-essential ground movements and aircraft traffic below 300 m above ground level (except as necessary for emergency purposes), and suspension of above ground operations, until caribou numbers are below the threshold within the buffer zone.

Section 8. On IOL between April 16th and May 31st, the Lessee shall conduct monitoring and mitigation as follows:

- (8i) If collar data or observations indicate that there are one (1) or more collared caribou or twenty-five (25) or more caribou observed within fifty (50) km of the boundary of the Property that appear to be moving in the direction of the activities, then monitoring within a five (5) km buffer zone shall be conducted every second day (e.g., height of land surveys, road surveys, snow track counts (if appropriate), remote camera surveys).
- (8ii) If monitoring indicates that there are an estimated twenty-five (25) or more caribou within the five (5) km buffer zone for the Property, then then the Lessee shall conduct

monitoring within a five (5) km buffer zone on a daily basis, and shall immediately suspend any activities that have the potential to disturb caribou, including drill operations, blasting activities and non-essential ground movements and aircraft traffic below 300 m above ground level (except as necessary for emergency purposes), suspension of all ground operations and camp closure, until caribou numbers are below the threshold within the buffer zone.

C. Freshwater crossings

Section 9. On IOL between May 15th and September 30th, the Lessee will not construct camps or other permanent structures or conduct blasting within ten (10) km of designated caribou freshwater water crossings. Exploration activities will not be permitted within 5 km of water-crossings between May 15th and September 30th. Between May 15th and September 30th, the Lessee shall conduct monitoring and mitigation as follows:

- (9i) If collar data or observations indicate that there are one (1) or more collared caribou or twenty-five (25) or more caribou observed within twenty-five (25) km of the boundary of the Property that appear to be moving in the direction of the activities, then monitoring within a five (5) km buffer zone around the water crossing shall be conducted every second day (e.g., height of land surveys, remote camera surveys).
- (9ii) If monitoring indicates that there are fifty (50) or more caribou within five (5) km of the boundary of the Property that appear to be moving in the direction of the water crossing, then the Lessee shall conduct monitoring within a five (5) km buffer zone on a daily basis, and shall immediately suspend any activities that have the potential to disturb caribou, including suspension of drill operations, blasting activities and non-essential ground movements and aircraft traffic below 300 m above ground level (except as necessary for emergency purposes), suspension of all ground operations, camp closure, and removal of all non-essential personnel, until caribou numbers are below the threshold within the buffer zone.

D. Aircraft

Section 10. The Lessee shall ensure that aircraft (fixed-wing and helicopter) flights over occupied calving and post-calving areas shall be at least 610 m above ground level and avoid areas of known caribou concentrations (subject to pilot discretion regarding aircraft and human safety). In other seasons aircraft shall be at least 300 m above ground level.

Appendix 4: Hazardous Waste Contacts

Hazardous Waste Contacts

Environmental Protection Division
Nunavut Department of Environment
Inuksugait Plaza, P.O. Box 1000, Stn. 1300
Iqaluit, NU X0A 0H0
Tel: 867-975-7700
Fax: 867-975-7742
Email: environment@gov.nu.ca

Dr. Maureen Baikie
Office of Chief Medical Officer of Health
Nunavut Department of Health
P.O. Box 1000, Stn. 1000
Iqaluit, NU X0A 0H0
Tel: 975-5743
Email: mbaikie@gov.nu.ca

Workers' Safety and Compensation
Commission
Qamutiq Building, 2nd Floor
611 Queen Elizabeth Way, Box 669
Iqaluit, NU X0A 0H0
Tel: 867-979-8500
Fax: 867-979-8501

NU-NT 24 Hour Spill Report Line
Tel: 867-920-8130
Fax: 867-873-6924
Email: spills@gov.nt.ca

Gemma Braun CHSC NCSO
Manager, Health Safety and Environment
QEC
PO Box 580
Iqaluit, NU X0A 0H0
Tel: 867-979-7538
Fax: 867-979-7537
Email: gbraun@qec.nu.ca

Nunavut Emergency Management
Emergency 24 Hour
Headquarters: 867-979-6262 / 1-800-693-1666
Qikiqtaaluk: 1-888-624-4043

Nunavut Department of Community
and Government Services
W.G. Brown Building, 4th Floor
P.O. Box 1000, Stn. 700
Iqaluit, NU X0A 0H0
Tel: 867-975-5400/5413
Fax: 867-975-5305

Robert Prima
Office of the Fire Marshall
Protection Services
Nunavut Department of Community
and Government Services
Tel: 867-975-5310
Fax: 867-979-4221

Emergency Measures 24 Hour TOLL Free 1-800-693-1666
Emergency Services Response 24 Hours 867-979-6262
Emergency Services Response 24 Hours 867-979-0211, Press 911 at prompt
Emergency Measures Operations FAX 867- 979-4221/979-3364