



# ABANDONMENT & RESTORATION PLAN

## ANGILAK PROPERTY

### KIVALLIQ ENERGY CORPORATION

Effective Date: March 1, 2018

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# 1. Introduction

This Abandonment and Restoration Plan (ARP) is in effect as of March 1, 2018, and applies specifically to the Angilak Property. A property map, land tenure map and camp layout figure are included in Appendix I. Kivalliq Energy Corp. (Kivalliq Energy) is a uranium exploration company with a Nunavut focus. Kivalliq Energy was the first company in Canada to sign a comprehensive agreement with the Inuit of Nunavut to explore for uranium on Inuit Owned Lands.

Kivalliq Energy endeavors to take every reasonable precaution toward ensuring the protection and conservation of the natural environment, and the safety and health of all employees and contractors from any potential harmful effects of stored materials and operations. All plans, licences and permits are posted for review and copies of the plans will be available in the office tent for reference.

## 1.1 Corporate Details

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## 1.2 Project Description

Kivalliq Energy has been exploring in Nunavut since 2008. The property consists of both Crown and Inuit Owned Lands (IOL) in the Kivalliq Region of Nunavut. Land and water use for the purpose of exploration has been authorized by the Kivalliq Inuit Association (KIA), Indigenous and Northern Affairs Canada (INAC) and the Nunavut Water Board (NWB). In accordance with the terms and conditions of these authorizations, Kivalliq Energy will return the land to as near its original natural state as is practical and possible.

The Angilak Property, consisting of 91 active mineral claims, is located approximately 225 kilometres south-southwest of Baker Lake and 350 kilometres west of Rankin Inlet (Figure 1, Appendix I).

As indicated on Figure 2 (Appendix I), all mineral claims are contiguous and extend north, south, east and west between latitudes 62° 27' and 62° 48' North and longitudes 98° 21' and 99° 24' West in NTS map areas 65 J/06, 65 J/07, 65 J/09, 65 J/10, 65 J/11 and 65 J/15 (UTM coordinates: 6925000N to 6965000N and 479300E to 533000E, NAD83, Zone 14). The camp is located at 527975m E, 6937950m N. See Figure 3, Appendix I for a layout of the camp.

The work proposed for this project consists of diamond drilling, reverse circulation (RC) drilling, prospecting, staking, geological mapping, trenching, rock and soil/till sampling, airborne geophysics, ground geophysics, and fuel transport (fixed and rotary-wing, overland). No buildings, equipment or waste will remain once the project is complete.

## 2 Schedule

The final restoration of the camp site will begin once the program is complete. All work described in this plan will be completed prior to the date of expiry of the land use permits and water licence unless a renewal is applied for and granted. Empty fuel drums will be removed from site regularly. Once a fuel cache is retired, a thorough inspection will be conducted. Any contamination will be cleaned up according to the Spill Contingency Plan and debris will be removed from the site.

## 3 Infrastructure

### 3.1 Camp

The Nutaaq camp is on crown mineral claims administered by INAC and consists of:

- Insulated tents on wood frames. These tents function as sleep tents, an office, core tent, first aid station, kitchen, dry and storage.
- Packed toilets.
- A generator building.
- Helicopter landing area.
- Natural gravel airstrip.
- Garbage incineration area.

#### Nutaaq Camp Infrastructure

Existing:        10 – 14' x 16' tents for sleeping, an office and first aid station  
                     4 – 14' x 32' tent for kitchen, core tents and dry  
                     1 toilet facility  
                     A generator shed to house a 20 kW diesel generator as well as a back-up generator  
                     30' x 60' Sprung Type - Garage Tent

### 3.2 Vehicles and Equipment

Existing:

- 17 Snow machines
- 1 Polaris Side by Side Quad
- 1 Kubota small farm tractor
- 1 Candig Mini Excavator
- 1 D6 CAT Bull Dozer
- 1 CAT 928 Front End Loader
- 1 CAT Skid Steer
- 3 Cargo Sleds

### 3.3 Drilling Equipment

Existing: 3 Boyles 17 Core Drill Rigs

### 3.4 Fuel Caches

A main fuel cache has been established at the Nutaaq Camp. All fuel stored on site is contained in Instaberm secondary containment, manufactured by Raymac Industries in British Columbia. Drums of fuel are stored in neat, orderly rows and are inspected daily. All secondary containment berms are equipped with Rain Drain hydrocarbon filters for water drainage and Spilfyter RailMat, a 3 ply hydrocarbon absorbent fabric. A spill kit is located at each fuel cache. Empty drums are removed from site regularly and returned to Aviation Fuel Enterprises in Baker Lake.

Smaller caches may be established temporarily to support drilling activities and sampling/survey programs. Spill kits are located at every fuel cache.

Kivalliq Energy is permitted to cache 3000 drums of fuel on site at a time.

This will include:

- 1500 - 205 L drums of diesel
- 1490 - 205 L drums of Jet fuel
- 10 - 205 L drums of gasoline
- 50 - 100 lb cylinders of propane

Kivalliq endeavors to consume a majority of the cached fuel by the end of each season. However, enough fuel will be left on site over winter to ensure a supply for a safe re-opening of camp in the spring. Please refer to the Fuel Management Plan for more information.

## 4 Seasonal Shutdowns

### 4.1 Buildings and Contents

Wood structures and wood floors will be kept secured. The canvas tents will be removed from site for drying and storage. Weatherhaven sleeping tents will remain in place for the winter. Wooden bed frames will be turned upside down and secured to the wooden floors for over-winter storage. The generator may be removed from site for servicing and storage. Project equipment including Kivalliq's Caterpillar D6 bulldozer, a Caterpillar 928 front end loader, a Caterpillar skid steer and Bombardier Ranger "Side by Side" quad is stored during shutdown periods in the 30'x60' shop tent. All heavy equipment in the shop tent is underlain with Spilfyter RailMat, a 3 ply hydrocarbon absorbent fabric to catch drips or leaks while the equipment is inactive.

### 4.2 Water System

Pumps and hoses will be drained and stored inside to protect them over winter. Pumps may be removed from site for servicing and storage.

## 4.3 Fuel Caches and Chemical Storage

An inventory will be conducted prior to leaving at the end of the field season. A thorough inspection of all fuel caches will be completed and empty fuel drums will be removed from site. Every effort will be made to use up any partially full fuel drums. In the event that any partially full fuel drums are left once the season is over, they will be placed on an angle to ensure that snow and water do not enter the drum and no leakage from the drum occurs. Full fuel drums will be stored on their sides with the bungs in the 3 and 9 o'clock position. All chemicals, including cleaning products, will be stored in a sealed building.

## 4.4 Waste

Combustible Waste: All combustible waste will be incinerated. Untreated wood and large pieces of cardboard will be burned in a controlled open burn in compliance with the Municipal Solid Wastes Suitable for Open Burning Guidelines. Ash generated from the on-going incineration will be stored in sealed metal 45-gallon drums and removed from site via regularly scheduled backhaul.

Grey Water Sump: The grey water sump will be inspected and covered securely for the winter. Stakes will be placed around the sump so that it is easily identifiable when the camp is opened up again each year. The grey water sump will be located at least 31 metres away from a water body. Grey water and sludge sumps will be filled and leveled as required.

Black water: The camp uses incineration and Pacto toilets. Bags containing waste are incinerated.

Drill Sites: The drill will be partially dismantled into its main components as per the drilling contractor procedure, packaged and secured along with its ancillary equipment and rods. All drill sites will be inspected for soil contamination. Any remaining waste will be taken to camp and either incinerated if appropriate or to be flown out and transported south to an approved disposal location. As much as possible, drill sites will be restored immediately after the drill has been moved to the next site.

Non-Combustible, Recyclable and Hazardous Waste: All non-combustible, recyclable and hazardous wastes will be packaged in appropriate containers, labelled and backhauled or shipped south to an authorized disposal facility.

## 4.5 Contamination Clean Up

Any soil around camp that has become contaminated and gone unnoticed including any contamination of soils noted on the floor of the 30'x60' shop tent used for seasonal heavy equipment storage will be treated as per the Spill Contingency Plan. Before and after photos will be taken to document the contamination and the clean-up procedures implemented. These photos will make up part of the final report to be submitted to the Water Resource Inspector and the Kivalliq Inuit Association following any spill and will also be attached as part of the Annual Report submitted to the NWB and the KIA.

## 4.6 Bioremediation

At the advice, discretion and approval of land use inspectors and permitting or licensing authorities' bioremediation, or land farming, may be implemented to treat certain contaminated soils temporarily contained in sealed drums on the property. Bioremediation is performed in biotreatment cells or the upper soil zone. Contaminated soils or sediments are incorporated into non-contaminated soils and periodically turned over or tilled to aerate the mixture.

This technique has been successfully used for years in the management and disposal of oily sludge and other petroleum refinery wastes. In situ systems have been used to treat near surface soil contamination for hydrocarbons. The equipment employed in land farming is typical of that used in agricultural operations. These land farming activities cultivate and enhance microbial degradation of hazardous compounds.

Land treatment of petroleum products has been successfully utilized at numerous contaminated sites. It has been demonstrated that gasoline, jet fuel, and heating oil are extensively degraded when affected soils were treated with fertilizer, lime, and simulated tilling.

## 5 Final Closure and Reclamation

### 5.1 Buildings and Contents

All buildings will be dismantled and removed. All wooden structures including floors will either be burned in a controlled open burn in compliance with the Municipal Solid Wastes Suitable for Open Burning Guidelines or removed. The burning of the tent floors and waste lumber will only proceed with the approval from the appropriate regulating authorities. As required, impacted sites may be re-seeded with indigenous species to encourage re-vegetation.

All combustible waste will be incinerated according to the "Environmental Guidelines for the Burning and Incineration of Solid Waste" and the "Canada-Wide Standards for Dioxins and Furans" by the Canadian Council of Ministers of the Environment.

### 5.2 Equipment

All equipment, including pumps, will be dismantled and removed from the project area.

### 5.3 Fuel caches and Chemical Storage

All fuel drums will be removed. All areas where there have been fuel caches will be thoroughly inspected. Any contamination will be cleaned up as well as any debris removed. Contaminated soil will be handled as per the Spill Contingency Plan. Final photos will be taken of all fuel caches for inclusion in the final report.

All chemicals will be removed from site. Areas where chemicals have been stored will be inspected to ensure that there has been no contamination. Any contamination from chemicals found will be treated as per the "Spill Contingency Plan".

## 5.4 Waste

Combustible Waste: All combustible waste will be incinerated in accordance with the Nunavut Environmental Guideline for the Burning and Incinerator of Solid Waste. Untreated wood and large pieces of cardboard will be burned in a controlled open burn in compliance with the Municipal Solid Wastes Suitable for Open Burning Guidelines. Drums containing ash generated from the on-going incineration will be removed from site for authorized disposal.

Grey Water Sump: Upon final closure the grey water sump will be inspected and then backfilled and restored to the pre-existing natural contours of the land.

Black water: Upon final closure, Pacto toilets will be cleaned and removed from camp.

Non-Combustible, Recyclable and Hazardous Waste: All non-combustible, recyclable and hazardous wastes will be packaged in the appropriate containers and backhauled to Baker Lake for proper disposal.

Please refer to the “Waste Management Plan” for additional information on waste management.

## 5.5 Sumps

The Kivalliq Energy exploration program utilizes one central sump located in a naturally occurring depression free from any potential runoff contamination.

## 5.6 Drill Sites

The drill will be dismantled into its main components as per the drilling contractor procedure, packaged and secured along with its ancillary equipment and rods. The drill will be flown out by the drilling contractor.

All drill sites will be inspected for soil contamination. Any remaining waste will be taken to camp to be burned if possible or to be flown out to an approved disposal location.

An inspection will be conducted to ensure that all drill sites are/have been restored and sumps have been covered and leveled.

## 5.7 Trenching

Upon final closure of exploration activities on the Angilak Property, trench extensions and excavations created by Kivalliq Energy will be backfilled and disturbed areas re-contoured to their original state, using best efforts and best practices. In areas where the historic trenches have been cleaned out, these trenches will be returned to conditions existing prior to Kivalliq’s work programs. Excavation and reclamation will be carried out using hand tools or a Candig CD21 heli-portable mini-excavator currently authorized and on site.

## 5.8 Contamination Clean Up

Any contamination including any contamination noted on the floor of the 30’x60’ shop tent (Sprung Tent) used for seasonal heavy equipment storage will be treated as per the Spill Contingency Plan. Before and after photos will be taken to document the contamination and the clean-up procedures implemented. These



photos will make up part of the final report to be submitted to the Water Resource Inspector and the Kivalliq Inuit Association following any spill and will also be attached as part of the Annual Report submitted to the Nunavut Water Board and the Kivalliq Inuit Association.

## 5.9 Inspection and Documentation

A complete inspection will be conducted of all areas prior to closure. Photos will be taken to document the conditions prior to leaving the site for use in the final plan. All appropriate agencies will be contacted and notified once the final clean-up has been conducted. The photos will make up part of the final closure reports to be submitted to Indigenous and Northern Affairs Canada and the Kivalliq Inuit Association.

## 6 Emergency Contact Information

CONTACT	TELEPHONE NUMBER
24 Hour Spill Report Line - Environment Canada	(867) 920 8130
NUTAAQ CAMP OFFICE	(604) 759-4750
Andrew Berry, COO, Kivalliq Energy Corp.	(604) 646-4529 (office) (604) 765-1892 (cell)
Jeff Ward, President, Kivalliq Energy Corp.	(604) 646-4538 (office) (604) 763-8723 (cell)
Emily McNie, Project Geologist, Kivalliq Energy Corp.	(604) 646-8352 (office) (604) 603-0260 (cell)
INAC Resource Management Officer, Rankin Inlet	(867) 645-2831
INAC Water Resources Officer, Rankin Inlet	(867) 645-2830
Kivalliq Inuit Association	(867) 645-5725
Department of Environment, GN, Iqaluit	(867)-975-7700
Robert Eno, Director, Environmental Protection, GN	(867) 975-7729
Department of Fisheries and Oceans (Central/Arctic Region), Iqaluit	(867) 979-8000
RCMP (Baker Lake)	(867) 793-0123
Thompson General Hospital, Thompson, MB	(204) 677-2381
Discovery Mining Services, Yellowknife	(867) 920-4600
Kivalliq Air – 24/7 Air Medical Line (Kivalliq Office)	(867) 645-4455 (Rankin Inlet) (888) 760-4344 (Toll Free)

## APPENDIX I







