



May 11, 2017

Tara Arko  
Assistant Technical Advisor  
Nunavut Impact Review Board  
P.O. Box 1360  
Cambridge Bay, Nunavut  
X0B 0C0

**Re: Baffin Gold Property – Project Proposal - Kivalliq Energy Corp.  
NIRB Project Application # 125133**

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Please find attached Kivalliq Energy Corporation's NIRB Project Proposal for the Baffin Gold Property.

The Baffin Gold Property is located on Baffin Island in the Qikiqtani Region of Nunavut and consists of 15 prospecting permits, 6 mineral claims and 2 NTI Mineral Exploration Agreement on Inuit Owned Land Parcel BI-35. The property is centered 260 kilometres southwest of Clyde River and 360 kilometres of Qikiqtarjuaq.

Kivalliq Energy has acquired an option from Commander Resources Ltd. to earn a 100% interest in certain mineral rights held by Commander that comprise part of the Baffin Gold Property. Kivalliq Energy intends to utilize Commander's existing Dewar Lakes Camp (adjacent to the North Warning System Fox-3 Airstrip) to facilitate exploration on the property.

The purpose of Kivalliq Energy's 2017 exploration program is to evaluate the potential for economic gold deposits on the Baffin Gold Property. The proposed 2017 exploration will consist of low-impact activities such as: prospecting, geological mapping, rock/channel and soil/till sampling, airborne geophysics, ground geophysics and baseline environmental monitoring. Exploration programs will operate seasonally from June through the end of September. Future programs may commence as early as March to utilize the snow cover during winter conditions.

Due to the size of the property, Kivalliq Energy is permitting two temporary fly camps to accommodate workers and provide effective daily access to and from priority target areas. The proposed Malrok Fly Camp (68°30'06" N, 72°27'08" W) is located on IOL BI-35 administered by the QIA. The Tuktu Fly Camp (68°37'10" N, 73°12'45" W) is on Crown Lands proximal to the existing Fox-B Airstrip.

This document is reproduced electronically and contains 289 pages including the cover page.

If you have any further questions or require any additional information, please do not hesitate to contact me at (604) 765-1892, or by email, [andrewb@kivalliqenergy.com](mailto:andrewb@kivalliqenergy.com)

Regards,

  
Andrew Berry  
Chief Operating Officer  
Kivalliq Energy Corporation

## **Table of Contents**

\*Documents are listed in the same order as they are found in the hard copy.

### **Section 1**

NIRB Application #125133-Part 1 Form-English

NIRB Application #125133-Part 1 Form-Inuktitut

### **Section 2**

NIRB Application #125133-Part 2 PSIR

### **Appendix A**

Project Description and Work Plan, includes:

Property Location Map

Land Tenure Map

Exploration Target Areas Map

### **Appendix B**

Non-Technical Summary-English

Non-Technical Summary-Inuktitut

Non-Technical Summary-French

**Appendix C** - INAC Land Use Permit Application

**Appendix D** - NWB Water Licence Application

**Appendix E** - QIA Land Use Licence Application

**Appendix F** - Spill Contingency Plan

**Appendix G** - Fuel Management Plan

**Appendix H** - Environmental and Wildlife Management Plan

**Appendix I** – Abandonment and Restoration Plan

**Appendix J** - Emergency Response Plan

**Appendix K** - Waste Management Plan



## PART 1 FORM PROJECT PROPOSAL INFORMATION REQUIREMENTS

To access NIRB documents, project screenings, and project reviews please visit the Nunavut Impact Review Board's ftp site <http://ftp.nirb.ca/>. The NIRB's website ([www.nirb.ca](http://www.nirb.ca)) is currently under construction. Please contact [info@nirb.ca](mailto:info@nirb.ca) should you have any questions or require further information.

### IMPORTANT!

Please be advised that your application will not be processed until the Sections 1 - 9 are completed in their entirety, in both English and Inuktitut (+ Inuinnaqtun, if in the Kitikmeot).

### SECTION 1: APPLICANT INFORMATION

1. **Project Name** Baffin Gold Property
2. **Applicant's full name and mailing address:**  
Kivalliq Energy Corporation Phone: 1 (604) 646-4527  
Suite 1020 – 800 West Pender Street Fax: 1 (604) 646-4526  
Vancouver, British Columbia, V6C 2V6 Email: jward@kivalliqenergy.com
3. **Primary contact's full name and mailing address:**  
Andrew Berry, Chief Operating Officer Phone: 1 (604) 646-4529  
(Address same as above) Fax: 1 (604) 646-4526  
Email: andrewb@kivalliqenergy.com

### SECTION 2: AUTHORIZATION NEEDED

1. Indicate all authorizations associated with the project proposal:

<input checked="" type="checkbox"/>	Regional Inuit Association (RIA) ( <b>Qikiqtani</b> )	<input type="checkbox"/>	Canadian Launch Safety (CLS)
<input checked="" type="checkbox"/>	Nunavut Water Board (NWB)	<input type="checkbox"/>	Environment Canada (EC)
<input checked="" type="checkbox"/>	Nunavut Planning Commission (NPC)	<input type="checkbox"/>	Government of Nunavut (GN)
<input checked="" type="checkbox"/>	Indian and Northern Affairs Canada (INAC)	<input type="checkbox"/>	Department of National Defense (DND)
<input type="checkbox"/>	Department of Fisheries and Oceans (DFO)	<input type="checkbox"/>	Hamlet
<input type="checkbox"/>	Community Government & Services (CG&S)	<input type="checkbox"/>	Parks Canada (PC)
<input type="checkbox"/>	Nunavut Research Institute (NRI)	<input type="checkbox"/>	Canadian Wildlife Service (CWS)
<input type="checkbox"/>	Department of Culture, Language, Elders, and Youth (CLEY)	<input type="checkbox"/>	Other (please specify):

2. List the active permits, licenses, or other authorizations related to the project proposal, and their expiry date(s):

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3. List the pending permits, licenses, or other authorizations related to the project proposal:

**INAC Land Use Permit, NWB Water Licence, QIA Land Use Licence**

Permit/licence applications have been prepared to be submitted to NWB, INAC and QIA.

4. Has this project or any components of this project been previously screened or reviewed by NIRB?

☒ YES

☐ NO

If YES, indicate the previous project name and NIRB File No.

Baffin Gold Project/Qimmiq Project, Commander Resources Ltd., NIRB File No. 04EN022

### SECTION 3: PROJECT PROPOSAL DESCRIPTION

1. Indicate the type of project proposal (check all that apply)<sup>(1,2)</sup>:  
(See Appendix A for Project Type Definitions)

1	All-Weather Road/Access Trail	<input type="checkbox"/>	9	Site Cleanup/Remediation	<input type="checkbox"/>
2	Winter Road/ Winter Trail	<input type="checkbox"/>	10	Oil and Natural Gas Exploration/Activities	<input type="checkbox"/>
3	Mineral Exploration	<input checked="" type="checkbox"/>	11	Marine Based Activities	<input type="checkbox"/>
4	Advanced Mineral Exploration	<input type="checkbox"/>	12	Scientific/International Polar Year Research *	<input type="checkbox"/>
5	Mine Development /Bulk Sampling	<input type="checkbox"/>	13	Harvesting Activities *	<input type="checkbox"/>
6	Pits and quarries	<input type="checkbox"/>	14	Tourism Activities *	<input type="checkbox"/>
7	Offshore Infrastructure (port, break water, dock)	<input type="checkbox"/>	15	Other <sup>(2)</sup> :	<input type="checkbox"/>
8	Seismic Survey	<input type="checkbox"/>			<input type="checkbox"/>

**Please note:**

1. All project types listed above, except those marked with an asterisk (\*), will also require the Proponent to submit a **Part 2 Project Specific Information Requirement (PSIR) Form**. The NIRB application process will not be considered complete without the Part 2 PSIR Form.
2. Please be advised that in order to complete the NIRB process, the NIRB may request additional information at any time during the process.
3. If "Other" is selected, contact NIRB for direction on whether a Part 2 PSIR Form is required.





2. If Project Type 3, 4 or 5 was selected above, please indicate the mineral of interest that is being extracted. Include a brief description.

<input checked="" type="checkbox"/>	Base Metals (zinc, copper, gold, silver, etc) Gold
<input type="checkbox"/>	Diamonds
<input type="checkbox"/>	Uranium
<input type="checkbox"/>	Other: _____

3a. If Project Type 12, 13 or 14 was selected above, complete the table and questions below.

Transportation Type	Quantity	Proposed Use	Length of Use
<i>E.g. Helicopter</i>	<i>1</i>	<i>Site to site pick ups and drop offs</i>	<i>6 days</i>

3b. Describe any docks, piers, air strips or related structures that are to be used in conjunction with the proposed project activities. **Please note:** *the building of new structures may require a Part 2 Form.*

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3c. If a temporary camp site is to be established, describe the proposed structures in detail and indicate the type and source of power for the camp site if applicable.

With this application Kivalliq Energy is permitting up to two temporary fly camps. Please see the Project Description and Work Plan for complete details of the temporary field camps. To support initial work programs Kivalliq will utilize the Dewar Lakes camp permitted by Commander Resources Ltd.

#### 4. Personnel

Total No. of personnel on site = (A)	<u>20</u>	Total No. of days on-site = (B)	<u>121</u>	Total No. of Person days (A) × (B) = 2420
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#### 5. Timing

Period of operation: from June 1, 2017 to September 30, 2017

Proposed term of authorization: from June 1, 2017 to June 1, 2019

#### 6a. Region (check all that apply):

<input type="checkbox"/> North Baffin	<input type="checkbox"/> Kivalliq	<input type="checkbox"/> Kitikmeot	<input type="checkbox"/> Transboundary: _____
<input checked="" type="checkbox"/> South Baffin	<input type="checkbox"/> National Park		

6b. Describe the location of the proposed project activities in a regional context, noting the proximity to the nearest communities and any protected areas.





**Airstrip adjacent to Nadluardjuk Lake on Crown Lands administered by INAC at 68°37'10" N Lat., 73°12'45" W Long.**

If different from above for the camp:

**NTS Map Sheet No:** \_\_\_\_\_

Please ensure that maps of the project are attached (1:50,000 **if available**, 1:250, 000 **Mandatory**) available from Natural Resources Canada

Please note that additional location information may be required in a subsequent Project Specific Information Requirement (PSIR) submission. This may take the form of a digital Geographic Information Systems (GIS) file.

## SECTION 4: NON-TECHNICAL PROJECT PROPOSAL DESCRIPTION

Please include a non-technical description of the project proposal, no more than 500 words, in English and Inuktitut (+Inuinnaqtun, if in the Kitikmeot). The project description should outline the following:

- The project activities, their necessity and duration;
- Method of transportation;
- Any structures that will be erected (permanent/ temporary);
- Alternatives considered; and
- Long-term developments, the projected outcome of the development for the area and its timeline.

**IMPORTANT: IF THE PROPOSED ACTIVITIES REQUIRE SUBMISSION OF A NIRB PART 2 PSIR FORM, PLEASE COMPLETE SECTION 8 ONLY, OTHERWISE CONTINUE ON WITH SECTION 5.**

## SECTION 5: MATERIAL USE

**1. List equipment to be used (including drills, pumps, aircraft, vehicles, etc.):**

Equipment type and number	Size – dimensions	Proposed use

**2a. Detail fuel and hazardous material use:**

Fuel	Number of Containers and Capacity of Containers	Total Amount of Fuel (in Litres)	Proposed Storage Methods
<b>Hazardous Materials and Chemicals</b>		<b>Total Amount of Hazardous</b>	



		Materials and Chemicals (in Litres)	

**2b. Describe the proposed Spill Prevention Plan.**

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**3a. Detail the anticipated daily water consumption rates**

Daily amount (m <sup>3</sup> )	Proposed water retrieval methods	Proposed water retrieval location

**3b. Have you applied for a water License with the Nunavut Water Board?**

☐ YES

☐ NO

If yes, what class of licence?

☐ Class A Water Licence

☐ Class B Water Licence

**SECTION 6: WASTE DISPOSAL AND TREATMENT METHODS**

**1. List the types of waste associated with the proposed project activities:**

Type of waste	Projected amount generated	Method of Disposal	Additional treatment procedures
Sewage (human waste)			
Greywater			
Combustible wastes			
Non-Combustible wastes			
Overburden (organic soil, waste material, tailings)			
Hazardous waste			
Other:			

**2. Describe the proposed Waste Management Plan.**

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**SECTION 7: COMMUNITY INVOLVEMENT & REGIONAL BENEFITS**







## APPENDIX A Project Type Definitions

**Access Trail:** A project proposal with the objective of providing vehicular access to an area of interest involving minimal alteration to the terrain.

**Advanced Exploration:** A project proposal with the objective of identifying size, grade, and physical characteristics of a mineral occurrence and to assess the economic and technical feasibility of developing the mineral deposit into a producing mine

**All-Weather Road:** A project proposal with the objective of road construction for use in all seasons.

**Bulk Sampling:** A project proposal with the objective of extracting of large samples of mineralized material involving hundreds to thousands of tonnes. Samples are selected as representative of the potential mineral deposit being sampled. May involve crushing/milling (on small-scale)

**Harvesting activities:** A project proposal with the objective of harvesting animals, marine mammals and/or fish from their natural habitats by means of hunting or trapping for traditional and commercial use.

**Marine Based Activities:** Any activity occurring in the marine environment, such as vessel use associated with land-based activities or disposal at sea.

\*Please note that normal community re-supply or individual ship movements not associated with land-based project proposals shall not be screened by NIRB (Section 12.12.2 of NLCA).

**Mine Development:** A project proposal with the objective of extracting broken rock with mineralization of sufficient grade and tonnage to sustain commercial mining operations (ore). Mining a body of ore can be achieved by either open pit and/or underground development. Mine development may involve milling. Milling involves treatment of the extracted ore through a combination of mechanical and chemical processes to selectively recover the valuable mineral.

**Mineral Exploration:** A project proposal with the objective of exploring an area to find geological anomalies. It involves site reconnaissance (ground and/or air) to locate broad and fiscal mineral deposits.

**Offshore Infrastructure:** A project proposal with the objective of building off loading facilities constructed off the shoreline and connected to the mainland of the marine or freshwater environment. Examples include a jetty, dock, or port facility.

**Oil and Gas Exploration/Activities:** A project proposal that includes 1) exploration, such as seismic or geological mapping, 2) drilling of oil and gas wells, 3) construction and operation of a pipeline, a gas processing plant or any oil and gas facility within Nunavut.

**Pits and Quarries:** A project proposal with the objective of pitting, which involves the extraction of granular material (i.e. sands and gravels) and quarrying, which involves the removal of consolidated rock (i.e. bedrock, frozen soil).

**Scientific Research:** A project proposal with the objective of implementing a series of site activities comprised of observation of phenomena, measurement and collection of data necessary for scientific investigation in designated areas within a limited time period.

**Seismic Survey:** A project proposal with the objective of conducting a survey to map the depths and contours of rock strata by timing the reflections of sound waves released from the surface. Survey site locations may be offshore (not within 12 nautical miles of any coast), near shore, and extended onshore.



**Site Cleanups:** A project proposal with the objective of site cleanups (includes DEW line site cleanups), which focuses on the remediation of chemically contaminated soils, stabilization of landfills and dumps, demolition/disposal of infrastructure and debris and monitoring after cleanup is completed.

**Tourism Activity:** A project proposal with the objective of conducting travel predominantly for recreational, sport or leisure purposes within a designated area and limited time period.

**Winter Road:** A project proposal with the objective of building a road for winter use by leveling and compacting surface snow and ice. Winter road is removed at end of season.

**Winter Trail:** A project proposal with the objective of building a trail for winter use by a single pass of a tracked vehicle using a blade, if necessary.





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## SCREENING PART 2 FORM PROJECT SPECIFIC INFORMATION REQUIREMENTS (PSIR)

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### 1. SUBMISSIONS

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The Proponent must submit all information pertaining to the Project as a whole. The information requirements below are designed for the purpose of environmental assessment and are not limited to the scope of a single permit or license application.

**IMPORTANT:** Please be advised of the following:

1. NIRB does not accept references to an ftp or web sites as a submission.
2. The Proponent must provide NIRB with 1 (one) electronic copy and 1 (one) hardcopy of the required information in English.
3. All maps should be shapefiles, be legible, and should include grids, be of appropriate scale, indicate the scale, include latitude and longitude references, NTS Maps numbers, title, legend and a north arrow. To the extent possible, avoid hand-drawn demarcations and faxed maps; and,
4. Please complete all required information in each section below. If the required information is not applicable to the project proposal, please indicate this in the response with "n/a". If the request has been provided in a different section or report, please note the section or report where the response can be found.

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### 2. GENERAL PROJECT INFORMATION REQUIREMENTS

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#### Project Coordinates and Maps

1. The preferred method for submitting project coordinates information is through the use of a Geographic Information System (GIS) compatible digital file. Although an ESRI ArcView 3.x shape file (in decimal degrees) is the preferred interchange format, the NIRB has the capacity to receive over 100 GIS and CAD related formats, including MapInfo and AutoCAD, provided proper format and projection metadata is also submitted. The NIRB requires coordinates for the project proposal which reflect the entire project area as defined by:
  - Area/sites of investigation;
  - Boundaries of the foreseen land use permit/right-of-way area(s) to be applied for;
  - Location of any proposed infrastructure or activity(s); and,



- Boundaries of the mineral claim block(s) where proposed activities will be undertaken.

All exploration activities will be conducted within the Baffin Gold Property boundaries. The property extents are:

Maximum Latitude: 68° 45' 00" N  
 Maximum Longitude: 74° 30' 00" W  
 Minimum Latitude: 68° 22' 30" N  
 Minimum Longitude: 70° 30' 00" W

UTM Coordinate Extents:

7,584,000mN to 7,615,000mN and 520,500mE to 622,500mE, NAD83, Zone 18  
 7,586,000mN to 7,628,500mN and 377,500mE to 439,500mE, NAD 83, Zone 19

Commander Resources Ltd.'s (Commander) pre-existing Dewar Lakes Camp will be utilized as a base of operations. The Dewar Lakes Camp is located at 68°37'59" N, 71°06'38" W. Commander has an application for a land use permit pending for the Dewar Lakes Camp. Kivalliq Energy Corp. (Kivalliq Energy) will assist in the rehabilitation of the camp and will utilize Commander's camp facilities during this process and to commence exploration activities on the Baffin Gold Property. When the camp rehabilitation is complete and both INAC and Kivalliq Energy are satisfied that there are no legacy issues associated with the camp site, Commander will transfer the new Dewar Lakes Camp permit to Kivalliq Energy. **Please refer to Commander's NIRB application for details pertaining to the Dewar Lakes Camp.**

To provide effective daily access to and from priority target areas and accommodate workers, Kivalliq Energy is permitting up to two temporary fly camps. Proposed fly camp locations are:

Malrok Fly Camp: 68°30'06" N, 72°27'08" W

- Beside Malrok Lake and near the Malrok target area on IOL BI-35.

Tuktu Fly Camp: 68°37'10" N, 73°12'45" W

- Adjacent to the Fox-B North Warning System Site near Nadluardjuk Lake.

Please refer to the "Project Description and Work Plan" attached as Appendix A for property maps and complete details outlining the locations of proposed infrastructure and activities.

2. Map of the project site within a regional context indicating the distance to the closest communities.

The centre of the property is located 260 kilometres southwest of Clyde River and 360 kilometres northwest of Qikiqtarjuaq.

Please refer to the "Project Description and Work Plan" attached as Appendix A for a Property location map showing closest communities.

3. Map of any camp site including locations of camp facilities.

Please refer to the "Project Description and Work Plan" attached as Appendix A for maps of the proposed fly camp locations.

4. Map of the project site indicating existing and/or proposed infrastructure, proximity to water bodies and proximity to wildlife and wildlife habitat.

Please refer to the “Project Description and Work Plan” attached as Appendix A for maps of the proposed camp layouts and areas of potential exploration interest.

## **Project General Information**

5. Discuss the need and purpose of the proposed project.

The need and purpose of the project is to evaluate the mineral potential for gold on the claim area in the central Baffin Island area.

6. Discuss alternatives to the project and alternative methods of carrying out the project, including the no-go alternative. Provide justification for the chosen option(s).

There are no alternatives to the proposed project activities that have been described.

A compilation of the exploration work conducted in the region has defined the areas of interest which dictated boundaries staked and justifies further exploration for mineral potential.

The proposed 2017 exploration program includes low-impact activities that are consistent with grassroots exploration such as prospecting, geological mapping, rock and channel sampling, soil/till sampling, airborne geophysics, ground geophysics, drone surveying and baseline environmental monitoring.

Every effort will be made to minimize any impacts to the environment. Activities will be conducted in such a manner to avoid disturbance to wildlife. Any archaeological sites that are discovered will be designated off limits to all workers, their location will be recorded and submitted to the Chief Archaeologist at the Department of Culture, Language, Elders and Youth (CLEY), and the Qikiqtani Inuit Association.

7. Provide a schedule for all project activities.

The 2017 program will commence in June with the mobilization of crews to assist Commander in the rehabilitation of the Dewar Lakes Camp. Exploration activities will operate from June through the end of September.

Annual explorations in future years may commence as early as March to utilize winter conditions during which snowmobiles may be used to assist exploration and camp activities. All exploration activities will be concluded by the end of September annually.

The airborne geophysical survey will commence after July 15<sup>th</sup> and weather dependent, the program will run for an estimated 16 to 21 day period.

8. List the acts, regulations and guidelines that apply to project activities.

✓ ARTICLE 13 – NCLA -Nunavut Land Claims Agreement

- ✓ The Nunavut Waters and Nunavut Surface Rights Tribunal Act, 2002
- ✓ Northwest Territories Waters Regulations, 1993
- ✓ NWB - Water Licensing in Nunavut - Interim Procedures and Information Guide for Applicants
- ✓ NWB - Interim Rules of Practice and Procedure for Public Hearings
- ✓ RWED – Environmental Protection Act, R-068-93- Spill Contingency Planning and Reporting Regulations, 1993
- ✓ RWED A Guide to the Spill Contingency Planning and Reporting Regulations, 2002
- ✓ NWTWB - Guidelines for Contingency Planning
- ✓ Canadian Environmental Protection Act, 1999 (CEPA)
- ✓ Fisheries Act, RS 1985 - s.34, 35, 36 and 37
- ✓ DFO - Freshwater Intake End of Pipe Fish Screen Guideline
- ✓ NWTWB - Guidelines for the Discharge of Treated Municipal Wastewater in the NWT
- ✓ Canadian Council for Ministers of the Environment (CCME); Canadian Drinking Water Quality Guidelines, 1987
- ✓ Public Health Act - Camp Sanitation Regulations
- ✓ Public Health Act - Water Supply Regulations
- ✓ Nunavut Archaeological and Paleontological Sites Regulations
- ✓ Territorial Lands Act and Territorial Land Use Regulations, 2000
- ✓ Transport Canada – Transportation of Dangerous Goods Regulations

9. List the approvals, permits and licenses required to conduct the project.

Applications for the following permits and licences have been prepared by Kivalliq Energy Corp. for the Baffin Gold Property and are attached in the appendices. Applications will be sent to INAC, NWB and the QIA once NPC has reached a determination of conformity and NIRB has reached a screening decision.

Class A - Indigenous and Northern Affairs Canada (INAC) Land Use Permit - **Appendix C**

Class B - Nunavut Water Board (NWB) Water Licence - **Appendix D**

Class I - Qikiqtani Inuit Association (QIA) Land Use Licence – **Appendix E**

## DFO Operational Statement (OS) Conformity

10. Indicate whether any of the following Department of Fisheries and Oceans (DFO) Operational Statement (OS) activities apply to the project proposal:

- Bridge Maintenance **N/A**
- Clear Span Bridge **N/A**
- Culvert Maintenance **N/A**
- Ice Bridge **N/A**
- Routine Maintenance Dredging **N/A**
- Installation of Moorings **N/A**

Please see DFO's OS for specific definitions of these activities available from DFO's web-site at <http://www.dfo-mpo.gc.ca/regions/central/habitat/os-eo/index-eng.htm>

11. If any of the DFO's OS apply to the project proposal, does the Proponent agree to meet the conditions and incorporate the measures to protect fish and fish habitat as outlined in the applicable OS? If yes, provide a signed statement of confirmation.

**N/A**

## Transportation

12. Describe how the project site will be accessed and how supplies will be brought to site. Provide a map showing access route(s).

Access to the Baffin Gold Property is facilitated by fixed wing aircraft and helicopter flights. Fixed wing flights will bring personnel and supplies onto the Property via the Fox-3 Airstrip, located 350 metres southwest of the Dewar Lakes Camp. During the exploration program, access to various work sites across the property will be primarily facilitated by helicopter. Snow machines may be utilized during winter months.

The centre of property is located 260 kilometres southwest of Clyde River and 360 kilometres northwest of Qikiqtarjuaq. Both communities are serviced by commercial flights from Iqaluit multiple times per week. Iqaluit is located 550 kilometres from the property and has daily commercial flights to Ottawa, Ontario and commercial flights three times weekly servicing Yellowknife, Northwest Territories. Yellowknife has daily flights to major centres in the south and hosts a well-developed infrastructure of mineral exploration related companies including fixed wing and helicopter charter companies and expeditors.

Please refer to the "Project Description and Work Plan" attached as Appendix A for a map showing access routes.

13. If a previous airstrip is being used, provide a description of the type of airstrip (ice-strip/all-weather), including its location. Describe dust management procedures (if applicable) and provide a map showing location of airstrip.

The Fox-3 Airstrip is a 1,200 metre (4,000 ft.) gravel airstrip at the Dewar Lakes North Warning System radar station. The airstrip is located at 68°37'36"N 71°7'35"W and use of the airstrip requires permission from Biogenie Ltd. who maintains it on behalf of the Department of National Defense.

The Fox-B Airstrip is located at 68°37'10" N, 73°12'45" W near Nadluardjuk Lake. If the Tuktu Fly Camp is established near this location, personnel, equipment and supplies will be flown to the Fox-B airstrip via fixed wing aircraft.

Please refer to the "Project Description and Work Plan" attached as Appendix A for a property map showing the location of the airstrip.

14. If an airstrip is being constructed, provide the following information: **N/A**
- Discuss design considerations for permafrost
  - Discuss construction techniques
  - Describe the construction materials, type and sources, and the acid rock drainage (ARD) and metal leaching (ML) characteristics (if rock material is required for airstrip bed).
  - Describe dust management procedures.
  - Provide a map showing location of proposed airstrip.

15. Describe expected flight altitudes, frequency of flights and anticipated flight routes.

Weekly fixed wing flights will bring personnel and supplies to the property from Iqaluit.

Daily helicopter flights will transport personnel between the Dewar Lakes Camp or temporary fly camps and exploration areas. Approximately 2 to 4 helicopter flights will be required each day, depending on the number of crews going out. Additional flights may be needed to ferry in heavy samples at the end of the day.

Helicopter flights maintain a >300 metre altitude whenever possible. In areas where wildlife is observed helicopters are to maintain a minimum of altitude of 610 metres.

## **Camp Site**

### **16. Describe all existing and proposed camp structures and infrastructure**

**Please refer to Commander's NIRB application for details pertaining to the Dewar Lakes Camp.**

Kivalliq Energy's proposed temporary fly camps will accommodate up to 15 people and consist of a combination of WeatherPort vinyl tents, canvas prospectors' tents and small plywood structures.

- 1- Kitchen Tent
- 1- Office Tent
- 1- Dry Tent
- 1- Utility Tent
- 1- Toilet Facility (Pactos or Latrines)
- 5- Crew Accommodations (1 tent will house the First Aid Attendant and First Aid Equipment)
- 1- Generator Shack
- 1- portable fuel-fired incinerator

### **17. Describe the type of camp:**

- a. Mobile
- b. Temporary**
- c. Seasonal
- d. Permanent
- e. Other

The proposed fly camps are temporary. The field camps will be fully closed and dismantled completely once exploration activities cease. The sites will then be reclaimed and restored to their original state.

### **18. Describe the maximum number of personnel expected on site, including the timing for those personnel involved with the project.**

The 2017 exploration program will have up to 20 personnel on site and is scheduled from June through to the end of September. Mobilization of crews and equipment will commence in June 2017. A seasonal shutdown will take place at the completion of exploration activities for the year, September 2017. If temporary fly camps are constructed, they may accommodate up to 15 personnel.

## **Equipment**

### **19. Provide a list of equipment required for the project and discuss the uses for the equipment.**

Type	Size/Details	Purpose
Helicopter - 1	Bell Long Ranger	Transportation-crews/equipment
Generator - 2	20 kW	Power generation for fly camps
Water Pumps - 2	Gasoline powered	Provide water for fly camps
Snowmobiles - 4	Small to mid-size	Transportation-crews/equipment
Rock Saw - 1	Hand-held, gas powered	Cutting channel samples

20. If possible, provide digital photos of equipment.

This is the first year Kivalliq Energy is proposing to do an exploration program on the Baffin Gold Property. As such, equipment has not been purchased.

## Water

21. Describe the location of water source(s), the water intake methods, and all methods employed to prevent fish entrapment. Provide a map showing the water intake locations.

For temporary fly camp operations, water will be drawn from a nearby lake. Coordinates of the lakes near the proposed fly camp locations are:

Malrok Fly Camp: 68°30'06" N, 72°27'08" W

- Will intake water from Malrok Lake on IOL BI-35.

Tuktu Fly Camp: 68°37'10" N, 73°12'45" W

- Will intake water from Nadluardjuk Lake. The fly camp is adjacent to the Fox-B North Warning System Site.

The temporary fly camps will use a portable gasoline powered supply pump to intake water. Water intake hoses will be equipped with a screen of appropriate mesh size to ensure that there is no entrapment of fish. Small lakes or streams will not be used for water intake. The supply pump will be placed in a secondary containment structure, of sufficient height and depth to hold any potential spill.

Please refer to the "Project Description and Work Plan" attached as Appendix A for a map showing the water intake locations.

**Please refer to Commander's NIRB application for details pertaining to the Dewar Lakes Camp.**

22. Describe the estimated rate of water consumption (m<sup>3</sup>/day).

Camp Water Use: Camp water use will be 3m<sup>3</sup>/day or less. Only one temporary fly camp will be operating at a time.

No water will be required for exploration activities.

**Please refer to Commander's NIRB application for details pertaining to the Dewar Lakes Camp.**

23. Describe how waste water will be managed. If relevant, provide detail regarding location of sumps, including capacity of sumps and monitoring.

Waste water from fly camps will be discharged through a grease trap to a grey water sump. The discharge outlet will be inaccessible to wildlife. The grey water sump will be located at least 31 metres away from a water body. No contamination of the water supply is predicted.

24. If applicable, discuss how surface water and underground water will be managed and monitored.

Waste water will be returned to a grey water sump and no waste water will be allowed to flow directly into a water source. Due to the short field season and minimal water consumption, no impacts upon underground water are predicted.

### **Waste Water (Grey water, Sewage, Other)**

25. Describe the quantities, treatment, storage, transportation, and disposal methods for the following (where relevant):

- **Sewage**  
Pacto toilets or an outhouse latrine facility will be used for the temporary fly camps. Pacto bags containing waste will be incinerated. Ash generated from sewage incineration will be stored in designated, sealed metal 45-gallon drums and removed from site for proper disposal. If outhouse latrine facilities are used at the proposed temporary field camps, they will be located at least 31 metres away from a water body. When full, the pits will be treated with lime and covered with at least 30 cm of compacted soil.
- **Camp grey water.**  
No water will be returned directly to the source. Waste water will be discharged to a grey water sump for slow infiltration into the surrounding soils. The waste water sump will be located at least 31 metres away from any water body. A grease trap and screens will be installed on kitchen drains to ensure grease and food solids do not enter the waste water sump. The discharge pipe in to the sump will be inaccessible to wildlife.
- **Combustible solid waste**  
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. 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.
- **Non-combustible solid waste, including bulky items/scrap metal**  
All non-combustible and recyclable wastes will be packaged in the appropriate containers and backhauled to Iqaluit for recycling or proper disposal.
- **Hazardous waste or oil**  
Hazardous wastes will be sealed in the appropriate containers, labeled and documented in accordance with the “Transportation of Dangerous Goods Act” and removed from site for proper disposal at an accredited facility.
- **Contaminated soils/snow**  
Any soil/snow that has become contaminated will be treated as per the Baffin Gold Property “Spill Contingency Plan”. Contaminated snow/soil will be scraped/shoveled into

labelled containers and shipped from site to an appropriate and approved facility for disposal. A Waste Manifest will accompany all movements of contaminated soils/snow.

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.

- Empty barrels/ fuel drums  
Empty fuel drums will be removed from site regularly on backhaul flights and returned to the vendor for recycling or sent to an approved facility for disposal.
- Any other waste produced  
N/A

Refer to the "Waste Management Plan" for additional information pertaining to waste management.

26. If the project proposal includes a landfill or landfarm, indicate the locations on a map, provide the conceptual design parameters, and discuss waste management and contact-water management procedures.

N/A

## Fuel

27. Describe the types of fuel, quantities (number of containers, type of containers and capacity of containers), method of storage and containment. Indicate the location on a map where fuel is to be stored, and method of transportation of fuel to project site.

Kivalliq Energy is applying to store up to 60 drums of fuel on the Baffin Gold Property. This will include up to:

Material	Container	Max Quantity On-Site	Location
Diesel	205 litre drum	23	Temporary Fly Camp
Jet Fuel (A/B)	205 litre drum	25	Temporary Fly Camp
Propane	100 lb. cylinder	10	Temporary Fly Camp
Gasoline	205 litre drum	2	Temporary Fly Camp

A main cache will be established at the temporary fly camp location. Temporary supply caches of less than nine drums may be located as required to service the airborne geophysical surveying or remote exploration activities. Please refer to the "Project Description and Work Plan" attached as Appendix A for a map showing fuel storage locations.

All fuel is to be stored in secondary containment berms equipped with Spilfyter RailMat 3 ply hydrocarbon absorbent fabric and Rain Drain hydrocarbon filters for water drainage. Fuel drums will be transported to camp via fixed wing aircraft. All drums, secondary containment berms and fuel caches will be located a minimum 31 meters from any water body and will be inspected regularly. All storage, fueling and staging areas have easily visible and readily available spill kits.



Refer to the “Fuel Management Plan” attached as Appendix G for detailed description of the storage, handling and transfer of fuel.

Drummed fuel will be transported to site via fixed-wing aircraft to the Fox-3 Airstrip or the Fox-B Airstrip on the property.

**Please refer to Commander’s NIRB application for details pertaining to the fuel at the Dewar Lakes Camp.**

28. Describe any secondary containment measures to be employed, including the type of material or system used. If no secondary containment is to be employed, please provide justification.

All fuels and other hazardous materials will be stored in Arctic grade secondary containment berms from Raymac Environmental Services Inc. or similar. All secondary containment berms will be equipped with Spilfyter RailMat 3 ply hydrocarbon absorbent fabric, Rain Drain hydrocarbon filters for water drainage and a spill kit. All secondary containment berms will be capable of holding 110 percent of the volume of the largest fuel reservoir that is housed within the secondary containment.

29. Describe the method of fuel transfer and the method of refuelling.

Manual or automatic pumps will be used for the transfer of all petroleum products. Spill kits will be available and drip trays will be underlay all areas where refueling or the transfer of fuels is undertaken.

Please refer to the Baffin Gold Property’s “Fuel Management Plan” attached as Appendix G for detailed description of the storage, handling and transfer of fuel.

30. Describe spill control measures in place.

Please refer to the Baffin Gold Property’s “Spill Contingency Plan” attached as Appendix F for detailed spill control measures in place.

Please refer to Environment Canada’s fuel storage tank system regulations (*Storage Tank System for Petroleum and Allied Petroleum Products*) website at <http://www.ec.gc.ca/st-rs/> for details on fuel storage requirements.

### **Chemicals and Hazardous Materials\***

*\*included but not limited to oils, greases, drill mud, antifreeze, calcium or sodium chloride salt, lead acid batteries and cleaners*

31. Describe the types, quantities (number of containers, the type of container and capacity of containers), method of storage and containment. Indicate the location on a map where material is to be stored, and method of transportation of materials to project site.

Chemicals and hazardous materials that may be located on the Baffin Gold Property include small amounts of hydrochloric acid, cleaners, batteries, electronics, fluorescent light bulbs/tubes, motor oil and hydraulic oil. Materials will be stored in their original containers. Refer to the “Waste Management Plan” for the types, quantities and method of storage.

Please refer to the "Spill Contingency Plan" attached as Appendix F for MSDS sheets that accompany these materials.

32. Describe any secondary containment measures to be employed, including the type of material or system used.

The small supply of motor oil and hydraulic oil will be located in the utility tent at the temporary field camp. They will be kept in a drip tray with a spill kit nearby. Hydrochloric acid is used for core logging in very small amounts (<0.5 litre) and will be kept in a sealed container in the core shack. Cleaners (solvents) will be kept on drip trays in a designated area in their original containers.

33. Describe the method of chemical transfer.

Chemical transfer will be completed within designated areas, ideally in secondary containment. When secondary containment is not practical (e.g. adding hydraulic oil to the helicopter), absorbent pads will be used to protect from drips and spills. Funnels will be used to reduce the potential for spillage.

34. Describe spill control measures in place.

Please refer to the Baffin Gold Property's "Spill Contingency Plan" attached as Appendix F for detailed spill control measures in place.

### **Workforce and Human Resources/Socio-Economic Impacts**

35. Discuss opportunities for training and employment of local Inuit beneficiaries. .

Kivalliq Energy will hire Inuit whenever possible and plans to hire locals from Qikiqtarjuaq on short term employment for the 2017 program. Kivalliq Energy will utilize northern businesses and services wherever available.

36. Discuss workforce mobilization and schedule, including the duration of work and rotation length, and the transportation of workers to site.

The 2017 exploration program will operate from June through to September, pending funding. Personnel will be transported to the Baffin Gold Property via fixed-wing aircraft from Qikiqtarjuaq or Iqaluit. Field crews will be flown to the exploration targets each day via helicopters. As per the Worker's Safety and Compensation Commission, no personnel will remain onsite for more than 42 days. Duration of work and rotation length will be determined upon hiring.

37. Discuss, where relevant, any specific hiring policies for Inuit beneficiaries.

Kivalliq Energy is committed to hiring qualified local Inuit whenever possible. The company has had multiple long term employees and has employed up to ten Nunavummiut during seasonal programs at their Angilak Property in the Kivalliq Region.

### **Public Involvement/ Traditional Knowledge**

38. Indicate which communities, groups, or organizations would be affected by this project proposal.

The closest communities to the Property are Qikiqtarjuaq, Clyde River and Pangnirtung. Other

groups or organizations that may be affected by this project include: the Qikiqtani Inuit Association, the Nangmoutaq Hunters and Trappers Organization (HTO) and the Naativak HTO.

39. Describe any consultation with interested Parties which has occurred regarding the development of the project proposal.

Kivalliq has planned visits to communities adjacent to the property (Clyde River, Qikiqtarjuaq, Pangnirtung, Iqaluit) prior to the start of the exploration program to discuss available Inuit Qaujimajatuqangit (IQ), the exploration program and any potential concerns the communities may have.

40. Provide a summary of public involvement measures, a summary of concerns expressed, and strategies employed to address any concerns.

See section 39 above. Public consultations are scheduled for the coming months. Once the community visits have taken place, a community consultation log will be created that includes a summary of public involvement and concerns expressed.

41. Describe how traditional knowledge was obtained, and how it has been integrated into the project.

Inuit Qaujimajatuqangit/Traditional knowledge will be integrated into the project once it is obtained at the planned community visits.

42. Discuss future consultation plans.

Kivalliq has planned visits to communities adjacent to the property (Clyde River, Qikiqtarjuaq, Pangnirtung, Iqaluit) prior to the start of the exploration program to discuss available Inuit Qaujimajatuqangit, the exploration program and any potential concerns the communities may have.

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### 3. PROJECT SPECIFIC INFORMATION

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The following table identifies the project types identified in Section 3 of the NIRB, Part 1 Form. Please complete all relevant sections.

It is the proponent's responsibility to review all sections in addition to the required sections to ensure a complete application form.

**Table 1: Project Type and Information Required**

Project Type	Type of Project Proposal	Information Request
1	All-Weather Road/Access Trail	Section A-1 and Section A-2
2	Winter Road/Winter Trail	Section A-1 and Section A-3
3	<b>Mineral Exploration</b>	<b>Section B-1 through Section B-4</b>
4	Advanced Mineral Exploration	Section B-1 through Section B-8

<b>5</b>	Mine Development/Bulk Sampling	Section B-1 through Section B-12
<b>6</b>	Pits and Quarries	Section C
<b>7</b>	Offshore Infrastructure(port, break water, dock)	Section D
<b>8</b>	Seismic Survey	Section E
<b>9</b>	Site Cleanup/Remediation	Section F
<b>10</b>	Oil and Natural Gas Exploration/Activities	Section B-3 and Section G
<b>11</b>	Marine Based Activities	Section H
<b>12</b>	Municipal and Industrial Development	Section I

## **SECTION A: Roads/Trails – N/A**

### **A-1. Project Information – N/A**

1. Describe any field investigations and the results of field investigations used in selecting the proposed route (e.g. geotechnical, snow pack)
2. Provide a conceptual plan of the road, including example road cross-sections and water crossings.
3. Discuss the type and volume of traffic using the road/trail (i.e. type of vehicles and cargo and number of trips annually).
4. Discuss public access to the road.
5. Describe maintenance procedures.
6. Describe whether any portion of the road will be located outside of the Nunavut Settlement Area and whether any other regulatory requirements must be met (e.g. CEEA).

### **A-2. All-Weather Road/Access Trail – N/A**

7. Discuss road design considerations for permafrost.
8. Describe the construction materials (type and sources for materials), and the acid rock drainage (ARD) and metal leaching characteristics of the construction materials.
9. Discuss construction techniques, including timing for construction activities.
10. Indicate on a map the locations of designated refuelling areas, water crossings, culverts, and quarries/borrow sources.
11. Identify the proposed traffic speed and measures employed to ensure public safety.
12. Describe dust management procedures.

### **A-3. Winter Road/Trail – N/A**

13. Describe the surface preparation, including the use of snow berms or compaction, and any flooding. If flooding is to be used, provide the location of the water source on a map.

14. Describe the operating time period.
15. Identify the proposed traffic speed and measures employed to ensure public safety.
16. Discuss whether the selected route traverses any fish-bearing water bodies.

## **SECTION B: Mineral Exploration /Advanced Exploration /Development**

### **B-1. Project Information**

1. Describe the type of mineral resource under exploration.  
Gold

### **B-2. Exploration Activity**

2. Indicate the type of exploration activity:
  - Airborne Geophysical Electromagnetic (EM) Survey
  - Drone Survey
  - Ground Magnetic/EM Surveys
  - Prospecting and Geological Mapping
  - Enzyme Leach or Conventional Soil Geochemistry Soil /Till Sampling
  - Rock/Channel Sampling

3. Describe the exploration activities associated with this project:

Refer to the “Project Description and Work Plan” attached as Appendix A for details on the exploration activities.

### **B-3. Geosciences**

4. Indicate the geophysical operation type:
  - Magnetic – ground geophysical survey
  - Electromagnetic – airborne and ground surveys
5. Indicate the geological operation type:
  - Geological Mapping – during Prospecting
  - Aerial Photography – Drone survey

6. Indicate on a map the boundary subject to air and/or ground geophysical work.

Please refer to the “Project Description and Work Plan” attached as Appendix A for maps of the proposed air and ground geophysical survey grids.

7. Provide flight altitudes and locations where flight altitudes will be below 610m.

Please refer to the “Project Description and Work Plan” attached as Appendix A for the details of the proposed airborne and ground geophysical surveys and maps showing survey grid locations.

### **B-4. Drilling – N/A**

8. Provide the number of drill holes and depths (provide estimates and maximums where

possible).

9. Discuss any drill additives to be used.
10. Describe method for dealing with drill cuttings.
11. Describe method for dealing with drill water.
12. Describe how drill equipment will be mobilized.
13. Describe how drill holes will be abandoned.
14. If project proposal involves uranium exploration drilling, discuss the potential for radiation exposure and radiation protection measures. Please refer to the *Canadian Guidelines for Naturally Occurring Radioactive Materials* for more information.

#### **B-5. Stripping/ Trenching/ Pit Excavation – N/A**

15. Discuss methods employed. (i.e. mechanical, manual, hydraulic, blasting, other)
16. Describe expected dimensions of excavation(s) including depth(s).
17. Indicate the locations on a map.
18. Discuss the expected volume material to be removed.
19. Discuss methods used to determine acid rock drainage (ARD) and metal leaching potential and results.

#### **B-6. Underground Activities – N/A**

20. Describe underground access.
21. Describe underground workings and provide a conceptual plan.
22. Show location of underground workings on a map.
23. Describe ventilation system.
24. Describe the method for dealing with ground ice, groundwater and mine water when encountered.
25. Provide a Mine Rescue Plan.

#### **B-7. Waste Rock Storage and Tailings Disposal – N/A**

26. Indicate on a map the location and conceptual design of waste rock storage piles and tailings disposal facility.
27. Discuss the anticipated volumes of waste rock and tailings.
28. Discuss methods used to determine acid rock drainage (ARD) and metal leaching (ML) potential and results.

#### **B-8. Stockpiles – N/A**

29. Indicate on a map the location and conceptual design of all stockpiles.
30. Describe the types of material to be stockpiled. (i.e. ore, overburden)
31. Describe the anticipated volumes of each type of material to be stockpiled.

32. Describe any containment measures for stockpiled materials as well as treatment measures for runoff from the stockpile.
33. Discuss methods used to determine acid rock drainage (ARD) and metal leaching (ML) potential and results.

#### **B-9. Mine Development Activities – N/A**

34. Indicate the type(s) of mine development activity(s):
  - Underground
  - Open Pit
  - Strip Mining
  - Other
35. Describe mine activities.
  - Mining development plan and methods
  - Site access
  - Site infrastructure (e.g. airstrip, accommodations, offshore infrastructures, mill facilities, fuel storage facilities, site service roads)
  - Milling process
  - Water source(s) for domestic and industrial uses, required volumes, distribution and management.
  - Solid waste, wastewater and sewage management
  - Water treatment systems
  - Hazardous waste management
  - Ore stockpile management
  - Tailings containment and management
  - Waste rock management
  - Site surface water management
  - Mine water management
  - Pitting and quarrying activities (please complete Section C)
  - Explosive use, supply and storage (including on site manufacturing if required)
  - Power generation, fuel requirements and storage
  - Continuing exploration
  - Other
36. Describe the explosive type(s), hazard class, volumes, uses, location of storage (show on map), and method of storage.

#### **B-10. Geology and Mineralogy – N/A**

37. Describe the physical nature of the ore body, including known dimensions and approximate shape.
38. Describe the geology/ mineralogy of the ore deposit
39. Describe the host rock in the general vicinity of the ore body.
40. Discuss the predicted rate of production.
41. Describe mine rock geochemical test programs which have been or will be performed on the ore, host rock, waste rock and tailings to determine acid generation and contaminant leaching potential. Outline methods and provide results if possible.

#### **B-11. Mine – N/A**

42. Discuss the expected life of the mine.
43. Describe mine equipment to be used.
44. Does the project proposal involve lake and/or pit dewatering? If so, describe the

- activity as well as the construction of water retention facilities if necessary.
45. Discuss the possibility of operational changes occurring during the mine life with consideration for timing. (e.g. open pit to underground)
  46. If project proposal involves uranium mining, consider the potential for radiation exposure and radiation protection measures. Particular attention should be paid to *The Nuclear Safety and Control Act*.

#### **B-12. Mill – N/A**

47. If a mill will be operating on the property in conjunction with mining, indicate whether mine-water may be directed to the mill for reuse.
48. Describe the proposed capacity of the mill.
49. Describe the physical and chemical characteristics of mill waste as best as possible.
50. Will or does the mill handle custom lots of ore from other properties or mine sites?

#### **SECTION C: Pits and Quarries – N/A**

1. Describe all activities included in this project.
  - Pitting
  - Quarrying
  - Overburden removal
  - Road use and/or construction (please complete Section A)
  - Explosives transportation and storage
  - Work within navigable waters
  - Blasting
  - Stockpiling
  - Crushing
  - Washing
  - Other
2. Describe any field investigations and the results of field investigations used in determining new extraction sites.
3. Identify any carving stone deposits.
4. Provide a conceptual design including footprint.
5. Describe the type and volume of material to be extracted.
6. Describe the depth of overburden.
7. Describe any existing and potential for thermokarst development and any thermokarst prevention measures.
8. Describe any existing or potential for flooding and any flood control measures.
9. Describe any existing or potential for erosion and any erosion control measures.
10. Describe any existing or potential for sedimentation and any sedimentation control measures.
11. Describe any existing or potential for slumping and any slump control measures.
12. Describe the moisture content of the ground.
13. Describe any evidence of ice lenses.
14. If blasting, describe methods employed.
15. Describe the explosive type(s), hazard class, volumes, uses, location of storage (show on map), and method of storage.
16. Discuss methods used to determine acid rock drainage (ARD) and metal leaching (ML) potential and results.
17. Discuss safety measures for the workforce and the public.

#### **SECTION D: Offshore Infrastructure – N/A**



#### **D-1. Facility – N/A**

1. Describe any field investigations and the results of field investigations used in selecting the site (i.e. aerial surveys, bathymetric surveys, tidal processes, shoreline erosion processes, geotechnical foundation conditions)
2. Provide a conceptual plan, profile description and drawing(s) indicating shoreline, facility footprint, tidal variations, required vessel draft, keel offset, deck height freeboard
3. Discuss how anticipated loads on the seabed foundation and on the offloading platform will be incorporated into the design.
4. Describe how vessels will manoeuvre around the facility. (e.g. pull alongside or in front)
5. Discuss the anticipated life of the facility.
6. Describe whether part of the facility or project will be located outside of the Nunavut Settlement Area and whether any other regulatory requirements must be met (e.g. CEEA).

#### **D-2. Facility Construction – N/A**

7. Describe the types of material used for construction (i.e. granular or rock, steel piling or sheet piling, concrete). If material is granular, consider acid rock drainage potential, metal leaching potential, percentage of fines, size.
8. Describe dredging activities.
9. Indicate source of granular or rock material used in construction.
10. List quantities of the various types of material used in construction.
11. Describe construction method(s).
12. Indicate whether a site engineer will be on-site to inspect construction.
13. If proposed construction method involves dumping of fill into water, discuss measures for mitigating the release of suspended solids.

#### **D-3. Facility Operation – N/A**

14. Describe maintenance activities associated with the facility (e.g. dredging, maintenance to account for potential settlement of facility,)
15. Discuss whether the public will have access to the facility(s) and describe public safety measures.
16. Describe cargo and container handling, transfer and storage facilities.
17. Indicate whether fuel will be transferred from barges at this site and describe the method of that fuel transfer.
18. Discuss frequency of use.

#### **D-4. Vessel Use in Offshore Infrastructure – N/A**

19. Please complete Section H

### **SECTION E: Seismic Survey – N/A**

#### **E-1. Offshore Seismic Survey – N/A**

1. Indicate whether the survey is 2D or 3D at each site.

2. Describe the type of equipment used, including:
  - Type and number of vessels including length, beam, draft, motors, accommodation capacity, operational speeds when towing and when not towing
  - Sound source (type and number of airguns)
  - Type and number of hydrophones
  - Number, length, and spacing of cables/ streamers
3. On a map, indicate the grid, number of lines and total distance covered by each line, the distance to nearby community/communities and sensitive areas (e.g., National Parks, National Wildlife Areas, Migratory Bird Sanctuaries, recognized breeding grounds or migratory routes).
4. Indicate the discharge volume of the airguns, the depth of airgun discharge, the noise levels of acoustic signal at various distances from the source (e.g., 500 metres, 1000 metres), and the frequency and duration of airgun operation at each site.
5. Discuss the potential for dielectric oil to be released from the streamer array, and describe proposed mitigation measures.
6. Indicate whether additional seismic operations are required for start-up of operations, equipment testing, repeat coverage of areas.
7. Indicate whether air gun procedures will include a “ramping up” period and, if so, the proposed rate of ramping up.
8. Indicate whether the measures described in the *Statement of Canadian Practice for Mitigation of Noise in the Marine Environment* will be adhered to for this project.
9. Describe whether any part of the project will be located outside of the Nunavut Settlement Area and whether any other regulatory requirements must be met (e.g. CEAA).

#### **E-2. Nearshore/Onshore Seismic Survey – N/A**

10. For each site, indicate whether nearshore and onshore surveys will be conducted during the ice season or once the ice has melted
11. Describe how nearshore and onshore areas will be accessed.
12. Describe the survey methods to be used (e.g. explosive charge, vibration, air or water gun, other)
13. Describe equipment to be used
14. If applicable, indicate number, depth and spacing of shot holes
15. Describe explosive wastes including characteristics, quantities, treatment, storage, handling, transportation and disposal methods.

#### **E-3. Vessel Use in Seismic Survey – N/A**

16. Please complete Section H.

### **SECTION F: Site Cleanup/Remediation – N/A**

1. Describe the location, content, and condition of any existing landfills and dumps (indicate locations on a map).
2. Identify salvageable equipment, infrastructure and/or supplies.
3. Provide a list of all contaminants to be cleaned up, anticipated volumes and a map delineating contaminated areas. This includes buildings, equipment, scrap metal and debris, and barrels as well as soil, water (surface and groundwater) and sediment.
4. Describe the degree of pollution/contamination, and list the contaminants and toxicity.
5. Describe technologies used for clean-up and/or disposal of contaminated materials. Include a list of all the physical, chemical and biological cleanup/ remediation methods, operational procedures, and the dosage/frequency of reagents and bacterial medium.

6. Identify and describe all materials to be disposed of off site, including the proposed off site facilities, method of transport and containment measures.
7. Discuss the viability of landfarming, given site specific climate and geographic conditions.
8. Describe the explosive types, hazard classes, volumes, uses, location of storage (indicate on a map), and method of storage (if applicable).
9. If blasting, describe the methods employed.
10. Describe all methods of erosion control, dust suppression, and contouring and re-vegetation of lands.
11. Describe **all** activities included in this project.
  - Excavation (please complete Section B-5)
  - Road use and/or construction (please complete Section A)
  - Airstrip use and/or construction
  - Camp use and/or construction
  - Stockpiling of contaminated material
  - Pit and/or quarry (please complete Section C)
  - Work within navigable waters (please complete Section H)
  - Barrel crushing
  - Building Demolition
  - Other

## **SECTION G: Oil and Natural Gas Exploration/Activities – N/A**

### **G-1. Well Authorization – N/A**

1. Identify the location(s) of the well centre(s) by latitude and longitude. Attach a map drawn to scale showing locations of existing and proposed wells.
2. Indicate if the site contains any known former well sites.
3. Include the following information for each well:
  - a. Well name
  - b. Surface location
  - c. Proposed bottomhole location
  - d. Ground elevation (in metres)
  - e. Spacing area (in units)
  - f. Identify the well type:
    - i. Production
    - ii. Injection
    - iii. Disposal
    - iv. Observation
    - v. Storage
    - vi. Experimental
    - vii. Other (specify)
  - g. Identify the well classification:
    - i. Exploratory wildcat
    - ii. Exploratory outpost
    - iii. Development
  - h. Drilling operation (deviation):
    - i. Vertical
    - ii. Directional
    - iii. Horizontal
    - iv. Slant
  - i. Objective Zones (copy chart style below)

Objective Formation	Fluid (oil/gas/water)	Depth (mTVD)	Core (Y/N)

- j. Proposed Total Depth in mTDV and mMD.
- k. Formation of Total Depth
- l. Sour well? (yes or no)
  - i. If Yes: Maximum H<sub>2</sub>S concentration in mol/kmol  
Emergency planning zone radius in km
- m. Blowout Prevention (Well Class I – VI)
- n. Deviation Surveys
  - i. Will be run at intervals less than 150m? (yes or no)
- o. Wireline logs
  - i. Will run logs in hole for surface casing? (yes or no)
  - ii. Will run a minimum of 2 porosity measuring logs? (yes or no)

## **G-2. On-Land Exploration – N/A**

- 4. Indicate if the site contains any known:
  - a. Waste Dumps
  - b. Fuel and Chemical Storage Areas
  - c. Sump Areas
  - d. Waste Water Discharge Locations
- 5. Attach maps drawn to scale showing locations of existing and proposed items identified in (2) above, as well as all proposed:
  - a. Sumps
  - b. Water sources
  - c. Fuel and chemical storage facilities
  - d. Drilling mud storage areas
  - e. Transportation routes
- 6. If utilizing *fresh water*, estimate maximum drawdown and recharge capability of the river or lake from which water will be drawn.
- 7. Indicate if permafrost is expected to be encountered under:
  - a. Camp Facilities
  - b. Well Site
  - c. Access Routes
  - d. Sumps
  - e. Other: \_\_\_\_\_
- 8. Indicate any potential for encountering artesian aquifers or lost circulation within the surface hole (to casing depth).
- 9. Will drilling wastes contain detrimental substances (including, but not limited to, oil-based or invert mud and high salinity fluids)? If yes, indicate the substances and estimated volumes.
- 10. Indicate methods for disposal of drilling wastes:
  - a. Sump
  - b. Down Hole (requires NEB approval)
  - c. On-Site Treatment (provide plan)
  - d. Off-Site (give location and method of disposal)
- 11. If a sump is being used, attach the following information:
  - a. scale drawings and design of sumps

- b. capacity in cubic metres
  - c. berm erosion protection
  - d. soil permeability and type
  - e. recycling/reclaiming waters
  - f. surface drainage controls
  - g. abandonment procedures
12. Attach the proposed or existing contingency plan which describes the course of action, mitigative measures and equipment available for use in the event of system failures and spills of hazardous materials.
13. Attach an outline of planned abandonment and restoration procedures.

**G-3. Off-Shore Exploration – N/A**

14. Will drilling wastes contain detrimental substances (including, but not limited to, oil-based or invert mud and high salinity fluids)? If yes, indicate the substances and estimated volumes.
15. Attach the proposed or existing contingency plan which describes the course of action, mitigative measures and equipment available for use in the event of system failures and spills of hazardous materials.
16. Attach an outline of planned abandonment and restoration procedures.
17. Please complete Section H.

**G-4. Rig – N/A**

18. Type of Rig. Draw works, make and model
19. Derrick/Mast make and model
20. H.P. available to draw-works

**SECTION H: Marine Based Activities – N/A**

**H-1. Vessel Use – N/A**

1. Describe the purpose of vessel operations.
2. List classes and sizes of vessels to be used.
3. Indicate crew size.
4. Indicate operating schedule.
5. Provide a description of route to be traveled (include map).
6. Indicate whether the vessel will call at any ports. If so, where and why?
7. Describe wastes produced or carried onboard including the quantities, storage, treatment, handling and disposal methods for the following:
  - a. Ballast water
  - b. Bilge water
  - c. Deck drainage
  - d. Grey and black water
  - e. Solid waste
  - f. Waste oil
  - g. Hazardous or toxic waste
8. List all applicable regulations concerning management of wastes and discharges of materials into the marine environment
9. Provide detailed Waste Management, Emergency Response and Spill Contingency

## Plans

10. Does the vessel(s) possess an Arctic Pollution Prevention Certificate? If yes, indicate the date of issue and the name of the classification society.
11. Describe the source of fresh water and potable water
12. Indicate whether ice-breaking will be required, and if so, approximately where and when? Discuss any possible impacts to caribou migration, Inuit harvesting or travel routes, and outline proposed mitigation measures.
13. Indicate whether the operation will be conducted within the Outer Land Fast Ice Zone of the East Baffin Coast. For more information on the Outer Land Fast Ice Zone, please see the Nunavut Land Claims Agreement (NLCA), Articles 1 and 16.
14. Indicate whether Fisheries or Environmental Observers or any other *Qualified Marine Observer* will be onboard during the proposed project activities. If yes, describe their function and responsibilities.
15. Describe all proposed measures for reducing impacts to marine habitat and marine wildlife (including mammals, birds, reptiles, fish, and invertebrates).
16. Describe whether any part of the project will be located outside of the Nunavut Settlement Area and whether any other regulatory requirements must be met (e.g. CEAA).

## H-2. Disposal at Sea – N/A

17. Provide confirmation you have applied for a *Disposal at Sea* permit with Environment Canada.
18. Provide a justification for the disposal at sea.
19. Describe the substance to be disposed of, including chemical and physical properties.
20. Indicate the location where the disposal is to take place.
21. Describe the frequency of disposals (disposals per day/week or month).
22. Describe the route to be followed during disposal and indicate on a map.
23. Indicate any previous disposal methods and locations.
24. Provide an assessment of the potential effects of the disposal substance on living marine resources.
25. Provide an assessment of the potential of the disposal substance, once disposed of at sea, to cause long-term physical effects.
26. Describe all mitigation measures to be employed to minimize the environmental, health, navigational and aesthetic impacts during loading, transport and disposal.

## SECTION I: Municipal and Industrial Development – N/A

1. Describe the business type, including public, private, limited, unlimited or other.
2. Describe the activity (e.g. development of quarry, development of hydroelectric facility, bulk fuel storage, power generation with nuclear fuels or hydro, tannery operations, meat processing and packing, etc.).
3. Describe the production process or service provision procedures.
4. Describe the raw materials used in this activity, the storage and transportation methods. If hazardous materials are included in raw materials, products or by-products; include safety regulations methodology.
5. Provide detailed information about the structure and/or building in which the activity will be conducted.
6. List the PPE (personal protective equipment) and tools to be used to protect personal health and safety.
7. Describe the firefighting equipment that are or will be installed.
8. Describe the noise sources, noise level in work area, technical measurements that will

be adopted to abate the noise levels and regulatory requirements for noise abatement and noise levels.

9. Describe the type of gaseous emission that will be produced during this activity. Include the allowable thresholds and mitigation measures.
10. Describe odours that the activity might release and include corresponding allowable threshold. Describe mitigation measures if thresholds are exceeded.
11. Describe radiation sources that might be emitted during the activity. Include type and source and include mitigation measures. Also describe preventative measures for human exposure (i.e. PPE).
12. Discuss the employee safety and environment protection training program.
13. If the activity involves a bulk fuel storage facility, include drawings showing the bulk fuel storage facility location in proximity to natural water courses, high water marks, etc.
14. If the activity involves the development of a new quarry or expansion of an existing quarry, complete Section C.

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#### 4. DESCRIPTION OF THE EXISTING ENVIRONMENT

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Describe the existing environment, including physical, biological and socioeconomic aspects. Where appropriate, identify local study areas (LSA) and regional study areas (RSA).

Please note that the detail provided in the description of the existing environment should be appropriate for the type of project proposal and its scope.

The following is intended as a guide only.

##### **Physical Environment**

*Please note that a description of the physical environment is intended to cover all components of a project, including roads/trails, marine routes, etc. that are in existence at present time.*

- Proximity to protected areas, including:
  - i. designated environmental areas, including parks;
  - ii. heritage sites;
  - iii. sensitive areas, including all sensitive marine habitat areas;
  - iv. recreational areas;
  - v. sport and commercial fishing areas;
  - vi. breeding, spawning and nursery areas;
  - vii. known migration routes of terrestrial and marine species;
  - viii. marine resources;
  - ix. areas of natural beauty, cultural or historical history;
  - x. protected wildlife areas; and
  - xi. other protected areas.
- Eskers and other unique landscapes (e.g. sand hills, marshes, wetlands, floodplains).
- Evidence of ground, slope or rock instability, seismicity.
- Evidence of thermokarsts.
- Evidence of ice lenses.
- Surface and bedrock geology.
- Topography.
- Permafrost (e.g. stability, depth, thickness, continuity, taliks).



- Sediment and soil quality.
- Hydrology/ limnology (e.g. watershed boundaries, lakes, streams, sediment geochemistry, surface water flow, groundwater flow, flood zones).
- Tidal processes and bathymetry in the project area (if applicable).
- Water quality and quantity.
- Air quality.
- Climate conditions and predicted future climate trends.
- Noise levels.
- Other physical Valued Ecosystem Components (VEC) as determined through community consultation and/or literature review.

To our knowledge there are no protected areas within the Baffin Gold Property.

The regional terrain is glaciated with the topography varying from coastal plains and glacial outwash (a.s.l) on the western side of the property to rolling hills with elevations up to 350 metres on the eastern side. This region is underlain by continuous permafrost.

The Baffin Gold Property is centered on the Bravo Lake Formation (BLF), an east-west trending metavolcanic-sedimentary belt located along the southern edge of Piling Group rocks within the Foxe Fold Belt (FFB). The Foxe Fold Belt (FFB) is a Proterozoic aged supra-crustal sequence developed on Archean basement. The belt is characterized by upper greenschist to amphibolite facies metamorphism and complex poly-phase deformation.

The property is covered by a thin glacial till blanket with occasional southwest trending eskers, significant bedrock exposure and boulder float.

Due to the remote location of the property, water, soil and air quality are expected to be pristine and only effected by global factors.

## Biological Environment

- Vegetation (terrestrial as well as freshwater and marine where applicable).
- Wildlife, including habitat and migration patterns.
- Birds, including habitat and migration patterns.
- Species of concern as identified by federal or territorial agencies, including any wildlife species listed under the *Species at Risk Act (SARA)*, its critical habitat or the residences of individuals of the species.
- Aquatic (freshwater and marine) species, including habitat and migration/spawning patterns.
- Other biological Valued Ecosystem Components (VEC) as determined through community consultation and/or literature review.

The Baffin Gold Property is located on the border of the Melville Peninsula Plateau Ecoregion (MPPE) and the Baffin Island Uplands Ecoregion (BIUE) within the Northern Arctic Ecozone (NAE) (Environment Canada). These ecoregions are described as having a mid to high-arctic ecoclimate with temperatures ranging from a summer mean of 0.5°C and a winter mean of -25°C with a mean temperature of -13°C. The Baffin Island Uplands Ecoregion received more precipitation than the adjacent MPPE to the southwest. Mean annual precipitation ranges from 100-300mm and snow covers the ground from roughly September through June.



The Northern Arctic Ecozone is above the tree line; therefore, no full size tree species are present. Vegetation is generally sparse and stunted and mainly consists of mosses, sedges, grasses and lichen.

The project activities are not located within Caribou Protection Areas or Schedule 1 Species at Risk known locations.

There are no designated caribou calving grounds or caribou protection areas on the Baffin Gold Property or on the surrounding area. Kivalliq Energy plans to implement wildlife monitoring designed to describe wildlife use of the study area and produce coarse-scale population estimates for valued ecosystem components (VECs) occurring in the study area. The 2017 wildlife program will consist of logging incidental observations of all wildlife encountered by field staff and noting any listed species or high priority VEC known to occur in the study area. The wildlife incidental observations will be included in the Annual Report to QIA, INAC and NIRB.

Wildlife is rare around the project area. Species that may be present include: polar bear, muskox, caribou, arctic wolf, arctic fox, arctic hare and snowy owl. While the listed wildlife are characteristic of the Ecozone, historic exploration in the area has recorded minimal wildlife sightings. Please refer to the Baffin Gold Property's "Environmental and Wildlife Management Plan" attached as Appendix H for Kivalliq Energy's wildlife policy and a complete description of wildlife mitigation measures.

## **Socioeconomic Environment**

- Proximity to communities.
- Archaeological and culturally significant sites (e.g. pingos, soap stone quarries) in the project (Local Study Area) and adjacent area (Regional Study Area).
- Palaeontological component of surface and bedrock geology.
- Land and resource use in the area, including subsistence harvesting, tourism, trapping and guiding operations.
- Local and regional traffic patterns.
- Human Health, broadly defined as a complete state of wellbeing (including physical, social, psychological, and spiritual aspects).
- Other Valued Socioeconomic Components (VSEC) as determined through community consultation and/or literature review.

The centre of the property is located 260 kilometres southwest of Clyde River and 360 kilometres northwest of Qikiqtarjuaq. Due to the properties isolation and a lack of road access it is predicted that there will be little to no local or regional traffic in the area.

There are no known archaeological or culturally significant sites on the property. Any archaeological sites identified during the course of exploration activities will be handled with the utmost care. Site coordinates will be recorded and designated off limits to all workers. Disturbance will be prohibited.

The Naativak and Nangmoutaq Hunters and Trappers Organizations will be contacted to determine whether the project area coincides with hunting grounds and to discuss their potential concerns.

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## **5. IDENTIFICATION OF IMPACTS AND PROPOSED MITIGATION MEASURES**

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1. Please complete the attached Table 1 – Identification of Environmental Impacts, taking into consideration the components/activities and project phase(s) identified in Section 4 of this

document. Identify impacts in Table 1 as either positive (P), negative and mitigable (M), negative and non-mitigable (N), or unknown (U).

Please see Table 1: Identification of Environmental Impacts at the end of this document.

2. Discuss the impacts identified in the above table.

Temporary field camps will be constructed quickly and with minimal impact to the environment. Permafrost disturbance due to sump digging will be mitigated with backfilling upon final closure of the camp. Limited noise will be associated with the construction of camp including mobilizing equipment and personnel to site which cannot be mitigated.

All activities associated with operations are considered low-impact and mitigatable except for noise levels related to aircraft and generators for camp operations. Aircraft are necessary due to the location of the property and lack of roads.

Temporary field camps will be completely removed upon final closure according to the "Abandonment and Restoration Plan" (Appendix I). No buildings, equipment or waste will remain once the project is complete.

Please refer to the "Abandonment and Restoration Plan" which outlines reclamation procedures for the potential impacts identified on the property and the "Environmental and Wildlife Management Plan" and "Fuel Management Plan" for mitigate measures in place on the Baffin Gold Property.

3. Discuss potential socioeconomic impacts, including human health.

Kivalliq Energy predicts positive socioeconomic impacts for the nearby communities including job creation for local Inuit and increased business for northern companies and services. All employees and contractors will be required to be familiar with all of the Baffin Gold Property management plans.

4. Discuss potential for transboundary effects related to the project.

N/A

5. Identify any potentially adverse effects of the project proposal on species listed under the *Species at Risk Act (SARA)* and their critical habitats or residences, what measures will be taken to avoid or lessen those effects and how the effects will be monitored.

Please refer to the "Environmental and Wildlife Management Plan" in Appendix H. Every effort will be made to avoid all wildlife contact.

6. Discuss proposed measures to mitigate all identified negative impacts.

Please refer to the Baffin Gold Property "Environmental and Wildlife Management Plan" for mitigation measures related to the environment and wildlife, the "Fuel Management Plan" and "Spill Contingency Plan" for fuel mitigation measures.

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## 6. CUMULATIVE EFFECTS

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A cumulative impact (or effect) can be defined as the impact on the environment that results

from the incremental impact of the action when added to other past, present and reasonably foreseeable future actions. Cumulative impacts can also result from individually minor but collectively significant actions taking place over a period of time.

Discuss how the effects of this project interact with the effects of relevant past, present and reasonably foreseeable projects in a regional context.

Early stage grassroots exploration programs are low-impact and occur over a short period of time. The effects of these programs are expected to be minor and mitigable.

Please refer to the “Environmental and Wildlife Management Plan” which outlines mitigation measures employed by Kivalliq Energy. All Baffin Gold Property management plans will be used in combination to minimize effects to environment and wildlife.

Predicted positive cumulative effects include job opportunities for locals and increased business in the communities.

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## **7. SUPPORTING DOCUMENTS**

The following supporting documents are provided:

- Baffin Gold Property: Project Description and Work Plan – Appendix A
- Maps – included in Appendix A
- Non-Technical Project Proposal – English and Inuktitut – Appendix B
- INAC Land Use Permit Application – Appendix C
- NWB Water Licence Application – Appendix D
- QIA Land Use Licence Application – Appendix E
- Spill Contingency Plan – Appendix F
- Fuel Management Plan – Appendix G
- Environmental and Wildlife Management Plan – Appendix H
- Abandonment and Restoration Plan – Appendix I
- Emergency Response Plan– Appendix J
- Waste Management Plan– Appendix K

In addition, for Project Type 9 (Site Cleanup/Remediation), please provide the following additional supporting documents:

- Remediation Plan including cleanup criteria and how the criteria were derived.
- Human Health Risk Assessment of the contaminants at the site.

N/A


<p align="center"> <b>THE NUNAVUT IMPACT REVIEW BOARD</b>  <b>PROJECT SPECIFIC INFORMATION REQUIREMENT - PART 2 FORM</b>  <b>TABLE 1 - IDENTIFICATION OF ENVIRONMENTAL IMPACTS</b> </p>									
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[illegible]

Notes: Please indicate in the matrix cells whether the interaction causes an impact and whether the impact is:

- P** Positive  
**N** Negative and non-mitigatable  
**M** Negative and mitigatable  
**U** Unknown

If no impact is expected then please leave the cell blank

<p align="center"><b>THE NUNAVUT IMPACT REVIEW BOARD</b>  <b>SCREENING PART 2 FORMS</b>  <b>TABLE 2 - MITIGATION AND MONITORING</b></p>					
	<b>PROPOSED MITIGATION MEASURE</b>	<b>IMPLEMENTATION SCHEDULE</b>	<b>RESIDUAL IMPACTS</b>	<b>PROPOSED MONITORING SCHEDULE</b>	<b>REPORTING SCHEDULE</b>
<b>IMPACTS (IDENTIFIED IN TABLE 1)</b>					
Temporary Fly Camps – effects on permafrost layer and soil due to grey water sump	Backfilled to pre-existing natural contour.	Upon final abandonment and restoration.	N/A	N/A	Final camp closure report
Noise due to camp operations and flights	Minimize flights required. Noise will stop once operations cease.	Upon seasonal closure and final closure.	Unknown	N/A	
Sediment/soil quality effected by fuel cache/camp operations.	Treat spills as per the “Spill Contingency Plan”.	Immediately once spill has been discovered.	N/A	Annually until approved by INAC inspector.	Within 24 hours to NU Spill Report Line and INAC Inspector. Annually until final approval.
Effects on vegetation due to camp operations (i.e. tents, fuel cache)	Camps and fuel caches will be located in areas with minimal vegetation. Upon final closure, areas may be reseeded to encourage regrowth of vegetation.	During camp construction and final abandonment.	N/A	N/A	Final camp closure report.
Effects on wildlife.	Every effort will be made to avoid all wildlife. Refer to Environmental and Wildlife Management Plan.	During the entire exploration program.	N/A	N/A	Annually to NIRB, QIA and INAC.
Effects on birds.	No birds, eggs or nests are to be disturbed. Refer to Environmental and Wildlife Management Plan.	During the entire exploration program.	N/A	N/A	Annually to NIRB, QIA and INAC.

Note: Residual impacts refers to those impacts that remain after mitigation has been implemented.



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# PROJECT DESCRIPTION & WORK PLAN BAFFIN GOLD PROPERTY KIVALLIQ ENERGY CORPORATION

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Prepared by: Andrew Berry, Chief Operating Officer

Date: May 11, 2017

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## 1 Introduction

Kivalliq Energy Corporation (Kivalliq Energy) is a Vancouver-based exploration company that has been operating in Nunavut since 2008. Its flagship project is the Angilak Property in the Kivalliq region.

The Baffin Gold Property on Baffin Island in the Qikiqtani Region of Nunavut was acquired by Kivalliq Energy in early 2017. It comprises 15 prospecting permits (P-64 to P-76) issued by Indigenous and Northern Affairs Canada (INAC) on February 1, 2017, 6 mineral claims, Mineral Exploration Agreement (MEA) BI-35 16-0001 BAFFIN ISLAND (Segments 1 and 2) and MEA BI-35 16-0001 FOXE on Inuit Owned Land Parcel BI-35. The Baffin Gold Property totals 408,981.6 hectares.

As part of the consolidation of mineral tenure that comprises the Baffin Gold Property, Kivalliq Energy has, subject to receipt of all necessary approvals, acquired an option from Commander Resource Ltd (Commander) to earn a 100% interest in mineral rights held by Commander that includes 6 mineral claims (5,948 hectares) and MEA BI-35 16-0001 BAFFIN ISLAND (Segments 1 and 2) on Inuit Owned Lands Parcel BI-35 (8,105 hectares).

Kivalliq Energy intends to utilize Commander Resources Ltd.'s existing Dewar Lakes Camp adjacent to the North Warning System Fox-3 Airstrip (on Crown land) to facilitate exploration work on the property. The camp is located at 68°37'59" North Latitude and 71°06'38" West Longitude. Commander operated the camp seasonally from 2003 to 2011 but it has been unoccupied since 2013. Activities at the Dewar Lakes Camp are authorized (pending) under permits, licences and management plans that are administered by Commander. Refer to Commander's NIRB Application for information on the Dewar Lakes Camp.

The exploration program planned and proposed for 2017 will consist of low impact activities including: prospecting, geological mapping, rock, channel and soil/till sampling, airborne geophysics, ground geophysics, drone surveying and baseline environmental monitoring.

The program is designed to be in accordance with the North Baffin Regional Land Use Plan (NBRLUP), the NBRLUP Code of Good Conduct for Land Users and the DIAND Caribou Protection Measures.

Due to the size of the property and in addition to the use of Commander's Dewar Lakes Camp, Kivalliq Energy is permitting two temporary fly camps to accommodate workers and provide effective daily access to and from priority target areas that are remote from the Dewar Lakes location. The proposed Malrok Fly Camp (68°30'06" N, 72°27'08" W) is located on IOL BI-35 and the Tuktu Fly Camp (68°37'10" N, 73°12'45" W) on Crown Lands administered by INAC. A QIA Land Use Licence application has been prepared to cover exploration activities on the IOL and water use for the Malrok Camp. An INAC Land Use permit application will cover exploration activities on Crown Lands and the NWB water licence application will cover the Tuktu Fly Camp on Crown lands.

Land Use and Water Use Licence and Permit Applications are awaiting an NPC conformity determination and NIRB screening decision before being submitted to the Qikiqtani Inuit Association (QIA), Indigenous and Northern Affairs Canada (INAC) and the Nunavut Water Board (NWB).

Kivalliq Energy Corporation's management has extensive background working in Canada's north and Nunavut. John Robins is Chairman of the Company's board of directors, Jim Paterson is the Chief Executive Officer, Jeff Ward serves as President and Andrew Berry is Chief Operating Officer. The group is committed to the social and economic development of the north while maintaining a level of excellence in minimizing environmental impacts.

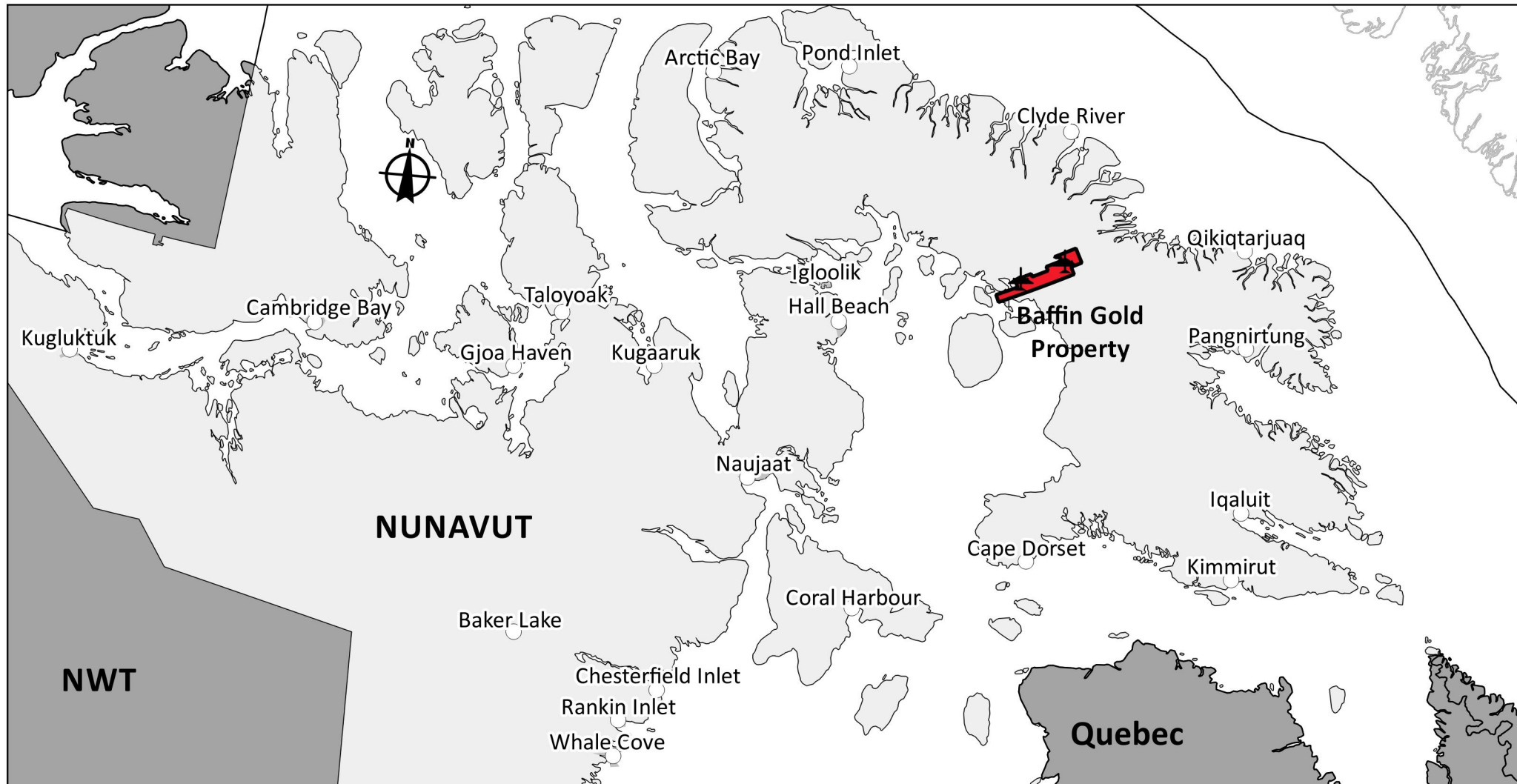
## **2 Property Description and Location**

The Baffin Gold Property on Baffin Island in the Qikiqtani Region of Nunavut consists of 15 prospecting permits, 6 mineral claims and two Mineral Exploration Agreements (MEA's) with Nunavut Tunngavik Inc. (NTI) on Inuit Owned Land Parcel BI-35 (Table 1). It is 260 kilometres southwest of Clyde River and 360 kilometres northwest of Qikiqtarjuaq (Figure 1). The property measures approximately 160 kilometres in an east-west direction by approximately 30 kilometres north-south and comprises a total area of 408,981.6 hectares (Figure 2).

All prospecting permits, mineral claims and the MEA's are contiguous and extend north, south, east and west between Latitudes 68.375° and 68.75° North and Longitudes 70.5° and 74.5° West in NTS map areas 027 B/05, 027 B/12, 027 B/11, 037 A/06, 037 A/07, 037 A/08, 037 A/09 and 037 A/10 (UTM coordinates: 7,584,000mN to 7,615,000mN and 520,500mE to 622,500mE, NAD83, Zone 18 and 7,586,000mN to 7,628,500mN and 377,500mE to 439,500mE Zone 19).

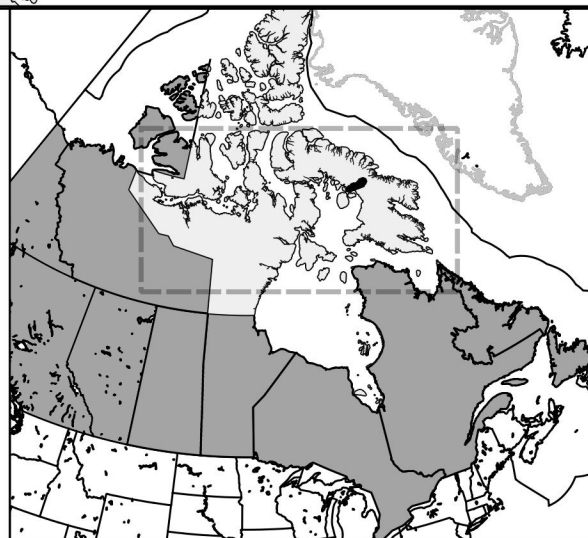
**Table 1: Land Tenure**

Permit/Claim Number	Claim Name	NTS Map Sheet	Hectares	Recorded Date	Anniversary Date	Zone	Owner
BI-35-16001-FOXE		037A09, 027B12	64,533.05	01-Jan-17	01-Jan-18	18/19	Kivalliq Energy Corp.
BI-35-16001-BAFFIN GOLD		037A09, 027B12	8,104.93	01-Jan-17	01-Jan-18	18/19	Commander Resources Ltd.
K13300	BG 10	027B12, 027B05	1,024.20	28-Sep-09	28-Sep-17	19	Commander Resources Ltd.
K13301	BG 11	027B12, 027B05	1,024.20	28-Sep-09	28-Sep-19	19	Commander Resources Ltd.
K13308	BG 18	027B12, 027B05	1,024.20	28-Sep-09	28-Sep-19	19	Commander Resources Ltd.
F79373	TUK 5	037A10	1,045.10	25-Oct-05	25-Oct-14	18	Commander Resources Ltd.
K13292	BG 2	027B11	919.69	28-Sep-09	28-Sep-17	19	Commander Resources Ltd.
K13293	BG 3	027B11	910.54	28-Sep-09	28-Sep-17	19	Commander Resources Ltd.
P-62		027B05	28,322.45	01-Feb-17	01-Feb-19	19	Kivalliq Energy Corp.
P-63		027B05	28,322.45	01-Feb-17	01-Feb-19	19	Kivalliq Energy Corp.
P-64		027B12	20,171.01	01-Feb-17	01-Feb-19	19	Kivalliq Energy Corp.
P-65		027B12	19,775.21	01-Feb-17	01-Feb-19	19	Kivalliq Energy Corp.
P-66		027B12	3,967.33	01-Feb-17	01-Feb-19	19	Kivalliq Energy Corp.
P-67		027B11	26,422.80	01-Feb-17	01-Feb-19	19	Kivalliq Energy Corp.
P-68		027B11	27,984.43	01-Feb-17	01-Feb-19	19	Kivalliq Energy Corp.
P-69		037A10	27,140.65	01-Feb-17	01-Feb-19	18	Kivalliq Energy Corp.
P-70		037A09	532.75	01-Feb-17	01-Feb-19	18	Kivalliq Energy Corp.
P-71		037A09	8,615.97	01-Feb-17	01-Feb-19	18	Kivalliq Energy Corp.
P-72		037A08	28,171.44	01-Feb-17	01-Feb-19	18	Kivalliq Energy Corp.
P-73		037A08	26,001.81	01-Feb-17	01-Feb-19	18	Kivalliq Energy Corp.
P-74		037A07	28,322.45	01-Feb-17	01-Feb-19	18	Kivalliq Energy Corp.
P-75		037A07	28,322.45	01-Feb-17	01-Feb-19	18	Kivalliq Energy Corp.
P-76		037A06	28,322.45	01-Feb-17	01-Feb-19	18	Kivalliq Energy Corp.
<b>Total</b>			<b>408,981.56</b>				



## Legend

- Baffin Gold Property
- Nunavut Communities
- Airstrip



**KIVALLIQ ENERGY CORP.**

## **BAFFIN GOLD PROPERTY**

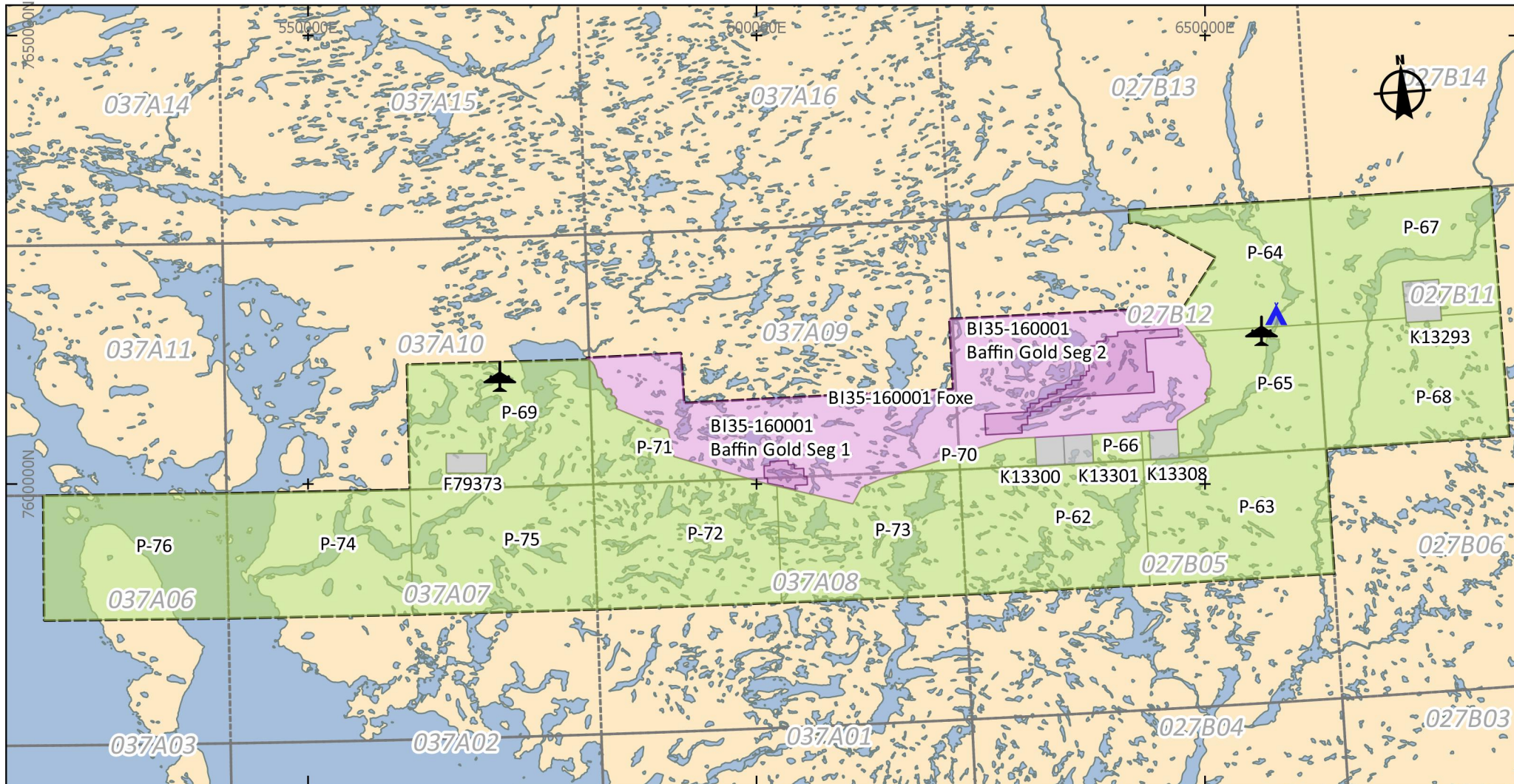
### **Figure 1: Property Location**

Nunavut Territory

April 2017 UTM NAD83 Zone 18 1:10,000,000

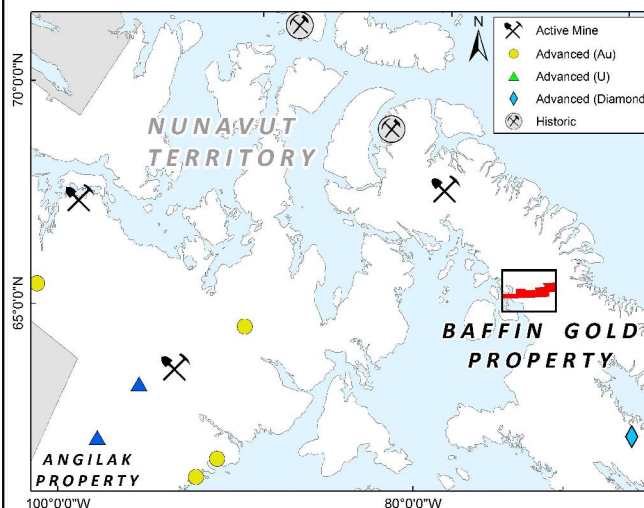
0 Kilometres 800





## Legend

- Baffin Gold Property
- Kivalliq Mineral Claims (CMD Option)
- Kivalliq IOL BI-35 MEA
- Kivalliq IOL BI-35 MEA (CMD Option)
- Kivalliq Prospecting Permits
- Airstrip
- ▲ Dewar Lakes Camp



**KIVALLIQ ENERGY CORP.**

## BAFFIN GOLD PROPERTY

### Figure 2: Land Tenure

Nunavut Territory

April 2017 UTM NAD83 Zone 18 1:625,000



### 3 Contact Information

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Suite 1020- 800 West Pender Street  
Vancouver, British Columbia, V6C 2V6  
Tel: (604) 646-4527  
Fax: (604) 646-4526  
[www.kivalliqenergy.com](http://www.kivalliqenergy.com)

#### Main Contact List

Jim Paterson (CEO)	(778) 773-9882
Jeff Ward (President)	(604) 763-8723
Andrew Berry (COO)	(604) 765-1892
Emily McNie (Project Geologist)	(604) 646-8352
FIELD CAMP MAIN CONTACT	<b>TBD</b>

### 4 Work Completed to Date

No work has been conducted by Kivalliq Energy Corp. on the Baffin Property to date.

Recent exploration work in the area was conducted by Commander Resources Ltd. who completed eight exploration programs between 2003 and 2010 that included rock sampling, soil sampling and geophysical surveying. A total of 19,083 metres in 158 diamond drill holes were completed during this period. The existing Dewar Lakes Camp was the base of operations for exploration work conducted by Commander since 2003.

The table below outlines the historic work done in the area.

**Table 2: Work Completed to Date**

Company	Years	Type of Work Conducted
GSC	Mid 1970s	Regional and reconnaissance mapping
Cominco	1976	Prospecting, silt sampling
Cominco	1981	Re-examined area as a result of GSC lake geochemical anomalies.
Petro-Canada	1985	Detailed lake geochemical sampling, ground prospecting, rock-chip sampling
Comaplex, Agnico-Eagle	1991	Lithogeochemical sampling
Savanna Resources	1994	Prospecting and geological mapping
International Capri	1995	Follow-up sampling

BHP, Falconbridge	2000-2002	Heavy mineral concentrate sampling, rock-chip sampling. Regional till sampling, geological traversing, gossan prospecting, airborne hyperspectral survey, airborne EM/mag survey
GSC	2000-2003	Geological mapping
Commander	2003-2011	Diamond drilling, airborne electromagnetic/magnetic survey, property scale till sampling, channel sampling, detailed mapping and prospecting, ground EM/mag and resistivity/IP surveying

## 5 2017 Exploration Program

The purpose of this project is to evaluate the potential for economic gold occurrences on the Baffin Gold Property. The exploration planned and proposed for 2017 will consist of low impact activities including: prospecting, geological mapping, rock, channel and soil/till sampling, airborne geophysics, ground geophysics, drone surveying and baseline environmental monitoring. Exploration targets for the 2017 are shown below in Figure 3. The exact extent of the program will depend on market conditions and funding. The program will be conducted from June 1, 2017 to September 30, 2017. Exploration activities will be supported from Commander Resource Ltd.'s existing Dewar Lakes Camp or from temporary fly camp's established proximal to target areas (see section 6.1/6.2). Commander has an application for a land use permit pending for the Dewar Lakes Camp.

The Baffin Gold Property is located above the tree line; therefore, line cutting is not required for exploration activities.

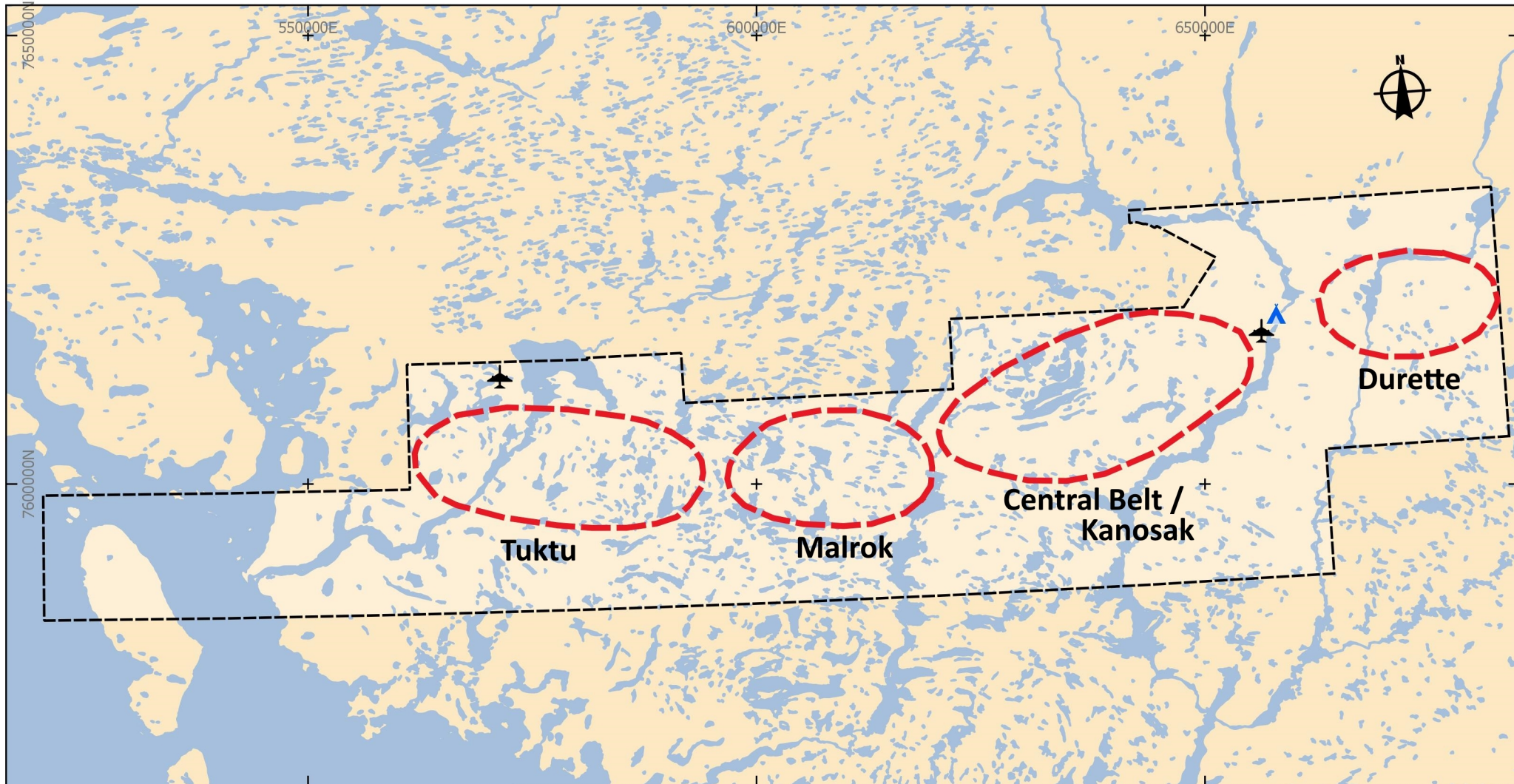
### 5.1 Airborne Geophysical Survey/Drone Survey

The proposed 2017 exploration work plan includes 5,000 line kilometres of airborne electromagnetic (EM) geophysical surveying. To mitigate impact of surveys, Kivalliq Energy will be looking into drone technology to assist airborne surveys. The drone survey would include collecting high-resolution air photos of the project area. The airborne geophysical survey will commence after July 15 and weather dependent, the program will run for an estimated 16 to 21 day period. The work performed will consist of fixed wing or helicopter borne EM surveying over selected target areas within the Baffin Property.

The proposed survey grids are shown below in Figure 4. Airborne geophysical surveys to acquire high-resolution data require flights at low altitudes. The survey will be flown at a mean altitude of 60 metres above ground level. The survey will commence after July 15<sup>th</sup> as per the DIAND Caribou Protection Measures. If wildlife are present in the area, the survey will cease until they have moved a safe distance away (at least 1 kilometre).

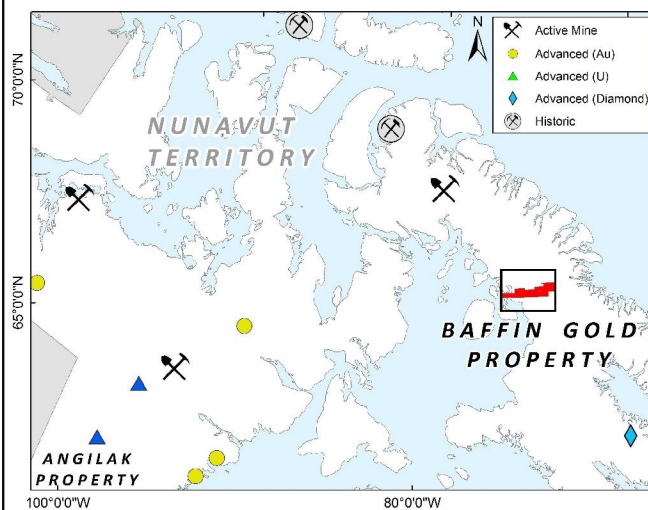
The airborne survey will be designed to avoid interference with caribou migration and ensure the survey does not disturb wildlife or people (NBRLUP, Code of Good Conduct). Airborne surveys will only take place after the appropriate consultation with communities has taken place. Kivalliq Energy will avoid low altitude flights whenever possible in areas where wildlife may be present.





## Legend

- Baffin Gold Property
- Airstrip
- ▲ Dewar Lakes Camp
- 2017 Exploration Targets



**KIVALLIQ ENERGY CORP.**

## BAFFIN GOLD PROPERTY

### Figure 3: 2017 Exploration Targets

Nunavut Territory

May 2017 UTM NAD83 Zone 18 1:625,000





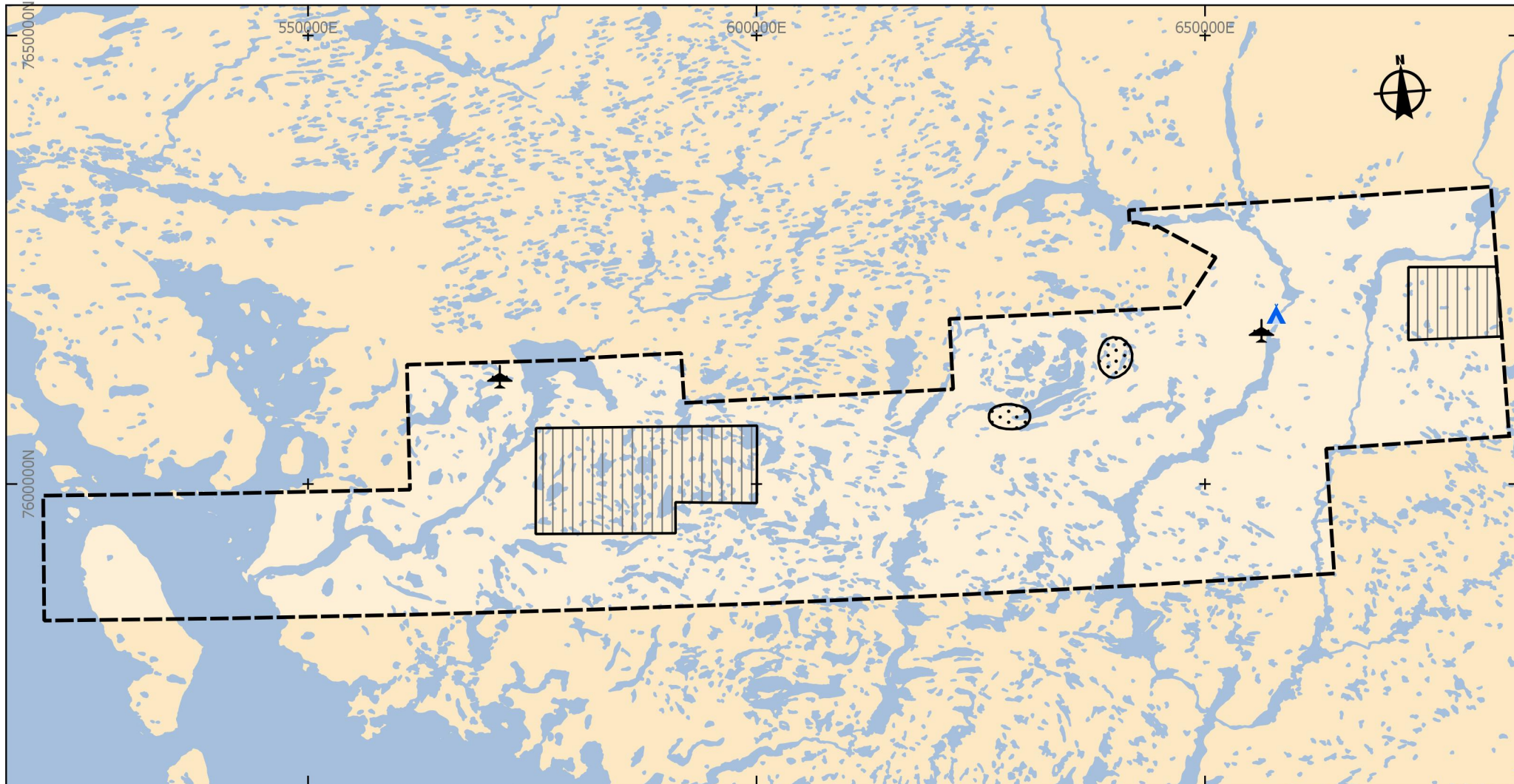
There are no designated Caribou Protection Areas or caribou calving or post-calving grounds within the property area. In the event that caribou cows calve outside of designated Caribou Protection Areas, airborne surveying at any altitude of less than 300 metres above ground level will be suspended between May 15<sup>th</sup> and July 15<sup>th</sup>, as per the DIAND Caribou Protection Measures. If caribou and/or muskox are seen in the area, the geophysical survey are not to be flown until they have moved a safe distance (at least 1 kilometre) from the area to be surveyed.

Based upon monitoring results, the company may intensify mitigation and monitoring during pre-calving, calving and post-calving seasons (May 15 to July 15) if cow-calf pairs or groups with calves are observed within proximity to the survey area.






The Fox-3 Airstrip or the heli-pad at the Dewar Lakes Camp will be the aircraft base, depending on fixed wing aircraft or helicopter borne. The majority of fuel will be supplied from the main fuel cache at the Dewar Lakes Camp. A small supply of less than nine drums will be located at a site central to the airborne geophysical survey to support exploration activities (section 6.2).

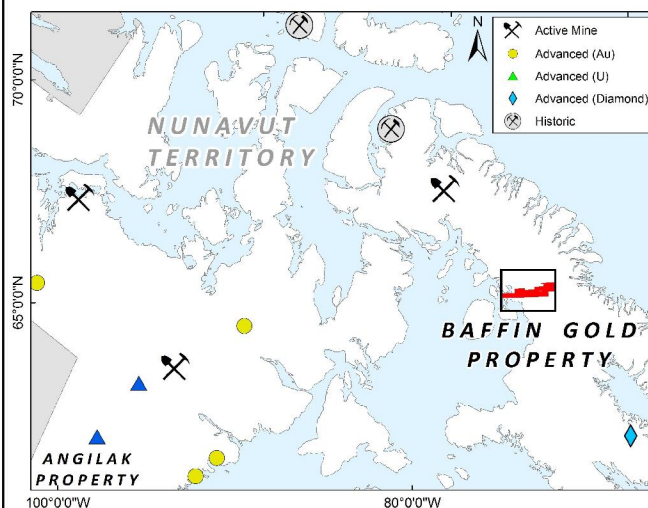
Prior to conducting any low-level airborne geophysical surveys, work plans outlining the dates, locations and duration of the surveys are sent to the Qikiqtani Inuit Association (QIA), Indigenous and Northern Affairs Canada (INAC) and Nunavut Impact Review Board (NIRB).

Kivalliq Energy will contact the CO, Environmental Wildlife Officer in Clyde River/ Iqaluit and Transport Canada for information on any flight restrictions prior to the start of any airborne geophysical surveying program.



## Legend

-  Baffin Gold Property
-  Airstrip
-  Dewar Lakes Camp
-  Proposed Geophysical Surveys
-  Proposed Drone Survey



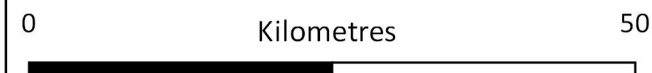
**KIVALLIQ ENERGY CORP.**

## **BAFFIN GOLD PROPERTY**

### **Figure 4: Proposed Geophysical Surveys**

Nunavut Territory

May 2017 UTM NAD83 Zone 18 1:625,000



## 5.2 Ground Geophysical Survey

Summer ground geophysical surveys are proposed as part of the 2017 exploration program. This work will be conducted on foot and be helicopter and/or fly camp supported. The program is planned to cover roughly 500 line kilometres using four crew members between June and September. Geophysical methods that may be employed include magnetic/very low frequency electromagnetic surveying or gravity surveying. Due to the vegetation found on the property, line cutting is not required.

## 5.3 Prospecting, Geological Mapping and Rock Sampling

The 2017 prospecting and geological mapping program is planned for the summer months (July through September) and will be conducted by up to four crew members. Prospecting will run concurrent to the soil sampling program. The program will include up to 300 line kilometres of prospecting traverses and the collection of approximately 1000 rock samples. Types of rock sampling that may be employed includes; “grab” sampling and chip/channel sampling. A rock saw may be used to cut shallow, parallel lines into exposed rock roughly two inches apart to create a linear channel. Using rock chisels and sledge hammers, sample material is then broken or chipped out of the channel cut manually. Rock samples will be collected in poly bags, their locations will be marked using a GPS and field notes will be taken. Traverses will be conducted on foot. Crews will be working from fly camps where warranted or supported by helicopter on a daily basis from the Dewar Lakes Camp.

## 5.4 Soil Sampling

Soil sampling will be conducted as part of the 2017 exploration program. The work will be conducted by a two to six person crew with helicopter support. The soil sampling program will be undertaken between June and September, 2017.

Soil sampling will be conducted by up to four crew members. Kivalliq Energy plans to collect up to 5,000 samples for enzyme leach or conventional soil geochemical analysis. Sampling grids will be oriented using 50 metre sample intervals with lines spaced 100 metres to 400 metres apart. Using hand tools, either of a shovel or grub hoe, samplers excavate a small hole to the targeted soil horizon (A, B or C horizon) and collect a representative sample of approximately 250-500 grams of soil. All work will be conducted on foot and will be supported by helicopter.

The geochemical surveys will be used to classify and prioritize bedrock conductors for drilling by identifying those conductors which have associated surface geochemical anomalies.

## 5.5 Environmental Baseline Monitoring

Kivalliq Energy plans to implement an early stage baseline monitoring program that corresponds with the stage of current exploration, and allows for rapid expansion or downsizing of monitoring studies as the exploration program changes in scope and/or location from year to year. The program is designed to build an understanding of the local and regional environmental attributes in areas being worked that are of

legislative, cultural, economic and/or scientific importance. The attributes selected for study are also those that will benefit from the longest record of data collection.

Initially, the monitoring program will investigate three biophysical components:

- Water Quality
- Meteorology
- Non-invasive, Observational Based Wildlife Monitoring

Additional biophysical components may be added as the program size increases over the years.

The Baffin Gold Property baseline environmental monitoring study area is presented in Figure 5. In 2017, monitoring studies will focus on water quality, meteorology and wildlife as described below.

#### **5.5.1 Water Quality**

A water quality monitoring program will be established to generate baseline water quality data in areas of active exploration. Sample sites will be chosen on representative water bodies that focus on exploration targets and camp infrastructure locations. Water samples will be analyzed for hardness, metals, pH, total suspended solids, ammonia, nitrate, cyanide and alkalinity. Refer to Figure 5 for proposed water sample sites.

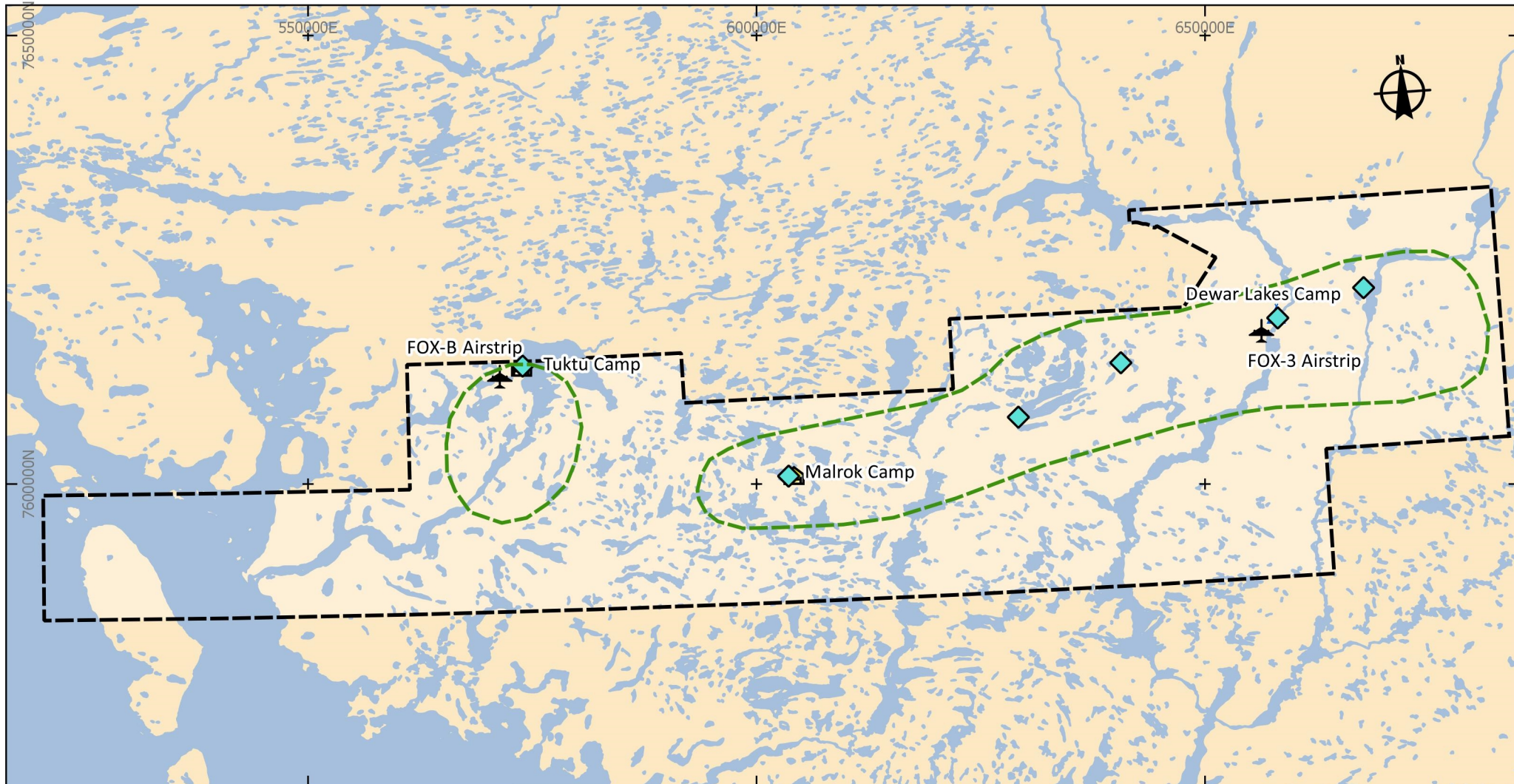
#### **5.5.2 Meteorology**

Meteorological data including air temperature, precipitation, wind speed and direction will be recorded on a daily basis. An automated weather station may be installed on the property in future years.

#### **5.5.3 Wildlife Monitoring**

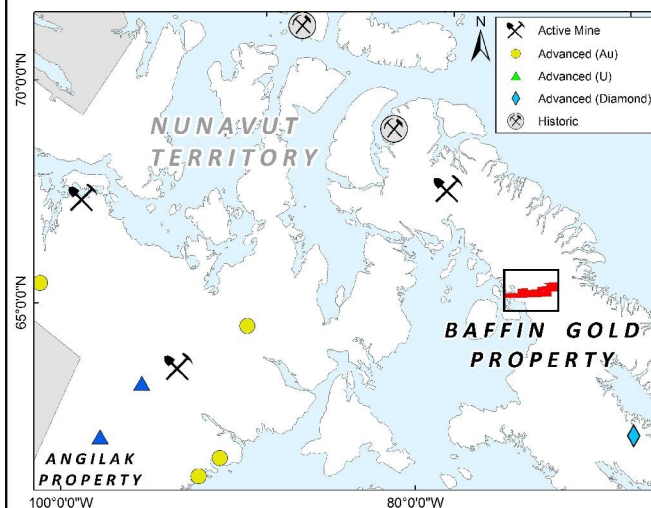
The objective of the wildlife monitoring is to describe wildlife use of the study area and produce coarse-scale population estimates for valued ecosystem components (VECs) occurring in the study area. The 2017 wildlife program will consist of logging incidental observations of all wildlife encountered by field staff and noting any listed species or high priority VEC known to occur in the study area. The wildlife incidental observations will be included in the Annual Report to QIA, INAC and NIRB.





## Legend

- Baffin Gold Property
- ✈ Airstrip
- ▲ Dewar Lakes Camp
- Environmental Monitoring Areas
- ◆ Proposed Water Sample Sites



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## BAFFIN GOLD PROPERTY

### Figure 5: Baseline Environmental Monitoring Area and Proposed Water Sampling Sites

Nunavut Territory

May 2017 UTM NAD83 Zone 18 1:625,000

0 40 Kilometres

## 6 Infrastructure, Equipment and Transportation

### 6.1 Dewar Lakes Camp - Commander Resources Ltd.

Kivalliq Energy will utilize Commander's Resources Ltd. Dewar Lakes Camp, adjacent to the North Warning System Fox-3 Airstrip, on crown lands administered by INAC. The camp is located at 68°37'59" N, 71°06'38" W (or 414199E/7614919N UTM Nad83 Zone 19) and has been unoccupied since 2013. In June 2017, Commander will mobilize a crew to rehabilitate the camp and prepare it for the exploration program. Kivalliq Energy will assist in camp rehabilitation and proactive remediation. The Dewar Lakes Camp is authorized (pending) by permits, licences and management plans that are administered by Commander.

### 6.2 Temporary Fly Camps - Kivalliq Energy Corp.

Due to the size of the property, permitting of up to two temporary fly camps is required to accommodate workers and provide effective daily access to and from priority target areas that are remote from the Dewar Lakes Camp. One temporary fly camp will operate at a time. The fly camps will operate seasonally from June through September in 2017 and as early as March in future years.

The temporary fly camps will accommodate up to 15 people and will be comprised of:

- 1- Kitchen Tent
- 1- Office Tent
- 1- Dry Tent
- 1- Utility Tent
- 1- Toilet Facility (Pactos or Latrines)
- 5- Crew Accommodations (1 tent will house the First Aid Attendant and First Aid Equipment)
- 1- Generator Shack
- 1- Portable fuel-fired incinerator

The structures will consist of a combination of WeatherPort vinyl tents, canvas prospectors' tents and small plywood sheds.

At the end of the 2017 field season, if further work from the temporary fly camp is deemed necessary, WeatherPort vinyl tents and plywood structures will be left standing for use in the 2018 field season. All canvas tent covers will be removed from tent frames. The fly camps will be fully closed and dismantled completely once exploration activities cease. The sites will then be reclaimed and restored to their original state.

See Figures 6 and 7 for proposed fly camp locations and site plans. Coordinates for the fly camp locations are as:

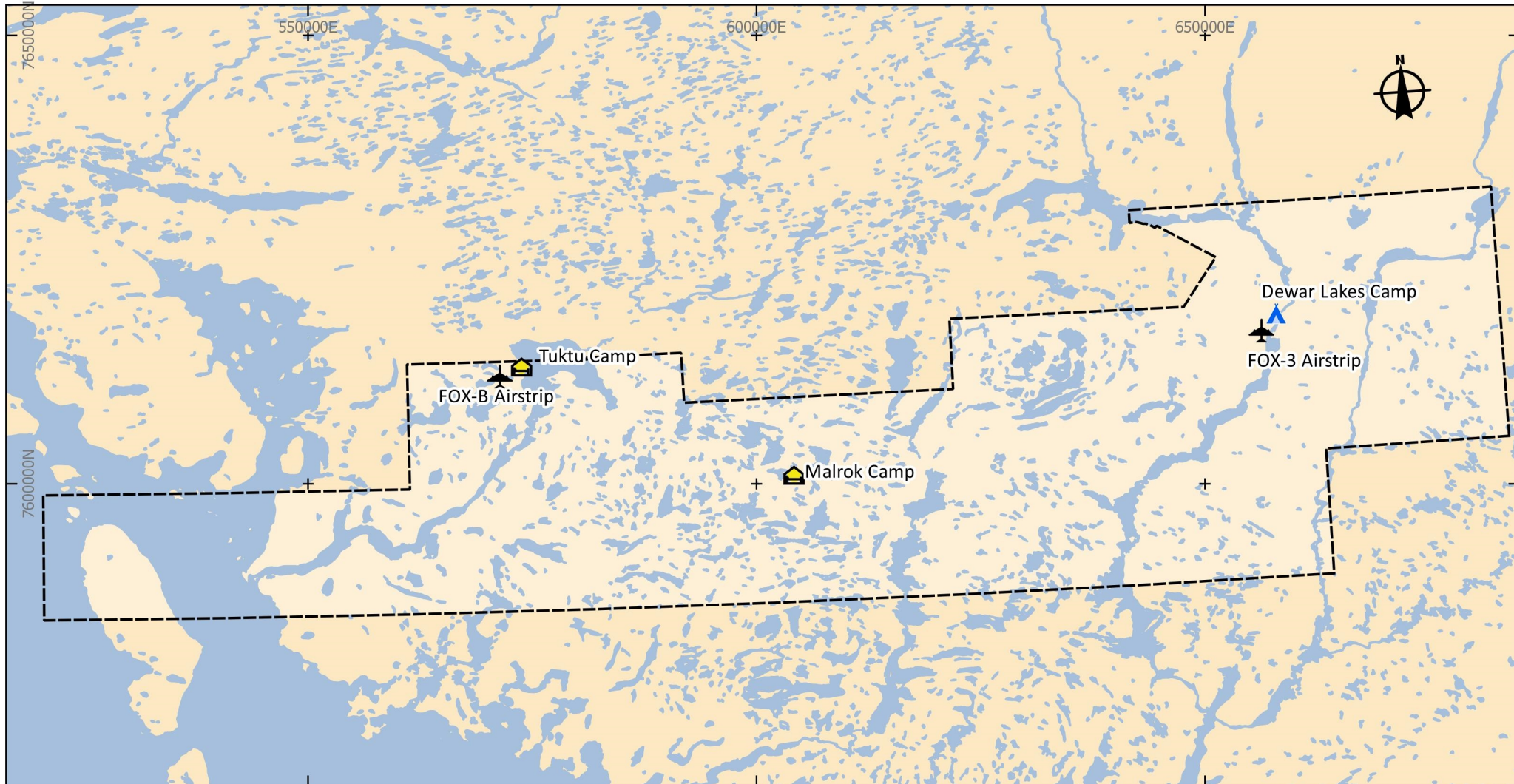
Malrok Fly Camp: 68°30'06" N, 72°27'08" W

- At Malrok Lake, near the Malrok target area. (IOL BI-35 – Administered by QIA)

Tuktu Fly Camp: 68°37'10" N, 73°12'45" W

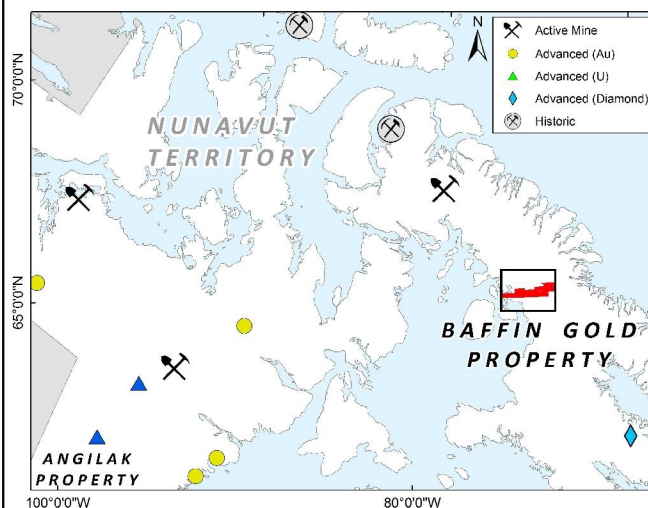
- Adjacent to the Fox-B North Warning System Airstrip near Nadluardjuk Lake.





## Legend

- Baffin Gold Property
- ▲ Dewar Lakes Camp (existing)
- Fly Camp (Proposed)
- ✈ Airstrip



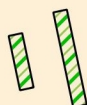
**KIVALLIQ ENERGY CORP.**

## BAFFIN GOLD PROPERTY Figure 6: Proposed Fly Camps

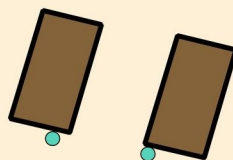
Nunavut Territory

May 2017 UTM NAD83 Zone 18 1:625,000





Existing Core Storage  
(Malrok Only)



Helipad

Utility  
Tent



Generator Tent

Office



Dry



Toilet Facility



Kitchen



Sleepers



First Aid



*Proposed Fly Camp layout  
for Malrok site. Tuktu site  
will have identical layout.*



## Legend



Airstrip



Dewar Lakes Camp



Proposed Fly Camp



First Aid



Kitchen



Dry



Office



Sleeper



Generator Tent



Utility Tent



Helicopter Pad



Fuel Berm



Toilet Facility

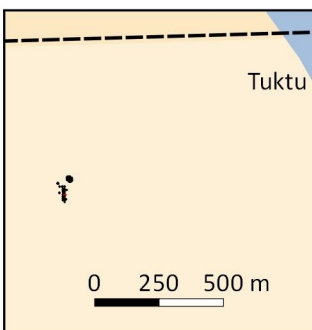


Existing Core Storage



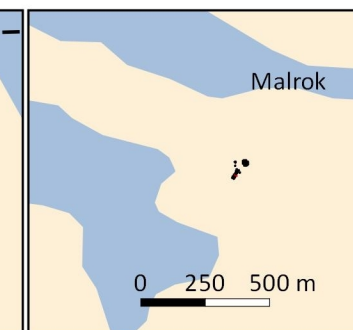
Spill Kits

## Fly Camp Layout



Tuktu

0 250 500 m



Malrok

0 250 500 m



**KIVALLIQ ENERGY CORP.**

## BAFFIN GOLD PROPERTY Figure 7: Proposed Fly Camp Layout

Nunavut Territory

May 2017 UTM NAD83 Zone 18 1 : 500

0

Metres

30





The Malrok Fly Camp location was chosen based on proximity to the Malrok target area and it is the site of Commander's reclaimed Malrok Camp that was decommissioned and cleaned up in 2011.

The Tuktu Fly Camp location was chosen because it is located near the Fox-B North Warning System airstrip which will facilitate the transportation of crews and equipment to the fly camp. The location is situated on the western side of the property which will allow for quicker access to certain exploration targets than travelling from Dewar Lakes Camp.

#### 6.2.1 Camp Water and Sump

The temporary fly camps will use a portable gasoline powered supply pump to intake water. Water intake hoses will be equipped with a screen of appropriate mesh size to ensure that there is no entrapment of fish. Small lakes or streams will not be used for water intake. The supply pump will be placed in a secondary containment structure, of sufficient height and depth to hold any potential spill and capable of holding 110 percent of the volume of the largest fuel reservoir.

Water will be drawn intermittently during the exploration program which is scheduled to be conducted from June 1, 2017 to September 30, 2017. When operating the pump will be staged on a containment platform adjacent to the water source and will draw water using a 5 meter suction hose. It will be operational for approximately 15 minutes per day to pump water into the water tanks. When not in use, the pump will be placed a minimum of 31 metres from the ordinary high water mark of the water body. The operating capacity of the pump will be approximately 9480 gallons per hour.

Waterlines for domestic use will be properly placed to minimize disturbance to the shoreline/riparian zones and substrate. Water and aquatic life will be protected. Waterlines will be screened in accordance with the "Freshwater Intake End-of-Pipe Screen Guideline" prepared by the Department of Fisheries and Oceans. Water will be stored in two 250 gallon water tanks for use in the kitchen and in the dry tent for washing.

Waste water from fly camps will be discharged to a grey water sump. The discharge pipe will be inaccessible to wildlife. The waste water sump will be located at least 31 metres away from a water body. A grease trap and screens will be installed on kitchen drains to ensure food grease and solids do not enter the waste water sump. No contamination of the water supply is predicted.

Water consumption will be kept to an absolute minimum. Water will only be used for hygiene and food preparation purposes.

Water use or waste disposal facilities at the temporary fly camps will not affect water bodies or water courses.

#### 6.2.2 Sewage

The fly camps will use either Pacto toilets or outhouse latrine facilities. Toilet facilities will be located at least 31 metres away from a water body. Refer to the "Waste Management Plan" for additional information.

### 6.2.3 Incinerator

Fly camps proposed for the Baffin Gold Property will utilize a portable, dual chamber, forced-air incinerator for the disposal of combustible solid wastes. Refer to the “Waste Management Plan” for additional information.

### 6.2.4 Fuel Caches & Chemical Storage

Kivalliq Energy has submitted an application to store up to 60 drums of fuel on the Baffin Gold Property.

This will include:

- 23 - 205 L drums of diesel
- 25- 205 L drums of Jet fuel
- 2 - 205 L drums of gasoline
- 10 - 100 lb. cylinders of propane

A main cache will be established at the temporary fly camp location. Temporary supply caches of less than nine drums may be located as required to service the airborne geophysical surveying or remote exploration activities.

All fuel and chemicals are to be stored in secondary containment berms equipped with Spilfyter RailMat 3 ply hydrocarbon absorbent fabric and Rain Drain hydrocarbon filters for water drainage. Fuel drums will be transported to camp via fixed wing aircraft. All drums, secondary containment berms and fuel caches will be located a minimum 31 meters from any water body and will be inspected regularly. All storage, fueling and staging areas have easily visible and readily available spill kits.

Chemicals and hazardous materials that may be located on the Baffin Gold Property include small amounts of hydrochloric acid, cleaners, batteries, electronics, fluorescent light bulbs/tubes, motor oil and hydraulic oil. Materials will be stored in their original containers. Refer to the “Waste Management Plan” for the types, quantities and method of storage.

Empty drums will be drained and stored in a designated area and will be removed from the property regularly to be transported south for recycling or disposal at an authorized facility. Kivalliq will endeavor to consume the majority of the cached fuel by the end of each season. Please refer to the “Fuel Management Plan” and “Spill Contingency Plan” for more information.

## 6.3 Equipment

Equipment that will be used on the Baffin Gold Property is included in Table 3 below.

**Table 3: Baffin Gold Property Equipment**

Type	Details	Purpose
Helicopter - 1	Long Ranger	Transportation-crews/equipment
Generator - 2	20 kW	Power generation for fly camps

Water Pumps - 2	Gasoline powered	Provide water for fly camps
Snowmobiles - 4	Small to mid-size	Transportation-crews/equipment
Rock Saw - 1	Handheld, gas powered	Cutting channel samples

## 6.4 Transportation

The North Warning System Fox-3 Site Airstrip is located at 68°39'02"N 071°13'58"W near the Dewar Lakes on the Baffin Gold Property. Personnel, fuel and equipment to supply camp will be flown via fixed-wing aircraft to the Fox-3 Airstrip from Iqaluit or Clyde River. Kivalliq Energy will contact Biogenie Ltd. managing the airstrip on behalf of the Department of National Defense to secure permission to use the Fox-3 Airstrip. The airstrip is located 325 metres southwest of the Dewar Lakes Camp.

Exploration activities and temporary fly camps on the property will be helicopter supported. Snowmobiles will be utilized during the winter to transport personnel and equipment from the airstrip to camp. The airstrip is situated on a sand and gravel esker and there is a pre-existing ATV trail from the airstrip to the Dewar Lakes Camp. Kivalliq Energy will not construct any roads. Refer to Commanders' permit/ licence applications for Dewar Lakes Camp information.

Another North Warning System airstrip is located at 68°37'10"N 073°12'45"W. The Fox-B Airstrip near Nadluarjuk Lake will be utilized to transport personnel and equipment to the proposed Tuktu Fly Camp.

## 6.5 Abandoned Sites

Commander Resources had a camp located near Malrok Lake at the site of one of Kivalliq Energy's proposed fly camps. The Malrok Camp at 68°30'06" N, 72°27'08" W was decommissioned and cleaned up in 2011. Before any new fly camps by are constructed at Malrok, the site will be checked by a Land Use Inspector.

## 7 Socio-Economic Benefit

This is the first year Kivalliq Energy will be conducting an exploration program on the Baffin Gold Property. The company and its management have demonstrated a strong commitment to Nunavut with the Angilak Property and will extend that commitment to the Baffin Gold Property. Kivalliq Energy will hire locally whenever possible and plans to hire locals from Qikiqtarjuaq for the 2017 program. Kivalliq Energy will utilize northern businesses and services wherever available.

## 8 Community Consultation

Kivalliq Energy is committed to the Nunavut and Nunavummiut. The company has planned visits to communities adjacent to the property (Clyde River, Qikiqtarjuaq, Pangnirtung) prior to the start of the exploration program to discuss available Inuit Qaujimajatuqangit, the exploration program and any potential concerns the communities may have. Kivalliq Energy will record the visits in a community consultation log which will be included in the Annual Report to INAC, QIA and NIRB. Consultation logs will include; a transcript of all meetings, discussions with Elders and information collected from communities regarding historic and traditional land and water use.

Groups or organizations that may be affected by this project include: the Qikiqtani Inuit Association (QIA), the Nangmautaq Hunters and Trappers Organization (HTO) and the Naativak HTO. A land use permit application has been prepared for submission to the QIA. The Naativak and Nangmautaq Hunters and Trappers Organizations will be contacted to determine whether the project area coincides with hunting grounds and to discuss their potential concerns.

## 9 Archaeological Investigation

This is the first year Kivalliq Energy will be conducting exploration activities on the Baffin Property and as such a regional assessment of the property is required. Once target areas are identified for the focus of future exploration, an archeological investigation will be conducted. Areas of potential disturbance will be examined to ensure archeological sites are identified, recorded and avoided.

Any archaeological sites identified during the course of exploration activities will be handled with the utmost care. Site coordinates will be recorded and designated off limits to all workers. Disturbance will be prohibited.



# NON-TECHNICAL PROJECT SUMMARY

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Kivalliq Energy Corporation  
1020-800 West Pender Street  
Vancouver, British Columbia, V6C 2V6

## **Baffin Gold Property - 2017**

Kivalliq Energy Corp. has submitted applications for a NWB Water Licence, an INAC land use permit and a QIA land use licence for its Baffin Gold Property. The Baffin Gold Property is on Baffin Island in the Qikiqtani Region of Nunavut and consists of 15 prospecting permits and 6 mineral claims administered by INAC and 2 Mineral Exploration Agreements (BI-35 16-0001 BAFFIN GOLD Segments 1 and 2 and BI-35 16-001 FOXE) administered by Nunavut Tunngavik Inc. (NTI) on Inuit Owned Land Parcel BI-35. It is 260 kilometres southwest of Clyde River and 360 kilometres northwest of Qikiqtarjuaq. The property measures 160 kilometres in an east-west direction by approximately 30 kilometres north-south and comprises a total area of 408,981.6 hectares on NTS map sheets 027 B/05, 027 B/12, 027 B/11, 037 A/06, 037 A/07, 037 A/08, 037 A/09 and 037 A/10.

The purpose of Kivalliq Energy's exploration program is to evaluate the gold potential on the Baffin Gold Property. The proposed 2017 exploration program will consist of prospecting, geological mapping, trenching, rock, channel and soil/till sampling, airborne geophysics, ground geophysics and baseline environmental monitoring. The program will be conducted from June 1, 2017 to September 30, 2017. Operations will be conducted from the Dewar Lakes Camp which is owned and permitted by Commander Resources Ltd. Prior to the commencement of operations, community consultation visits will be conducted to discuss available Inuit Qaujimajatuqangit, traditional knowledge, the proposed exploration program and any concerns the communities may have.

Due to the size of the property, two temporary fly camps are being permitted that will facilitate access to remote areas. The proposed Malrok Fly Camp (68°30'06" N, 72°27'08" W) is located on IOL BI-35 and the Tuktu Fly Camp (68°37'10" N, 73°12'45" W) on Crown Lands.

The temporary fly camps will accommodate up to 15 people and will be comprised of: 1 kitchen tent, 1 office tent, 1 dry tent, 1 utility tent, 5 supplementary sleep tents, an outhouse latrine facility and a small generator shed. The structures will consist of a combination of WeatherPort vinyl tents, canvas prospectors' tents and small plywood sheds. The field camps will be fully closed and dismantled completely once exploration activities cease. The sites will then be reclaimed and restored to their original state.

Personnel, fuel and equipment to supply operations will be flown via fixed-wing aircraft to the Fox-3 Airstrip from Iqaluit or Clyde River. The airstrip is located 325 metres southwest of the Dewar Lakes Camp. Exploration activities on the property will be helicopter supported. Snowmobiles will be utilized during the winter to transport personnel and equipment from the airstrip to camp.



Suite 1020, 800 Pender St W, Vancouver BC V6C 2V6 t: 604.646.4527 f: 604.646.4526 [www.kivalligenergy.com](http://www.kivalligenergy.com)



# RÉSUMÉ NON TECHNIQUE DU PROJET

Kivalliq Energy Corporation  
1020-800 West Pender Street  
Vancouver, British Columbia, V6C 2V6

## **Propriété aurifère de Baffin - 2017**

Kivalliq Energy Corp. a soumis des applications pour le permis des eaux de l'OEN, un permis d'utilisation des terres d'AADNC et un permis d'utilisation des terres de la QIA pour sa propriété aurifère de Baffin. La propriété aurifère de Baffin est sur l'Île de Baffin dans la région de Qikiqtani du Nunavut et comprend 15 permis de prospection et 6 concessions minières administrées par 2 accords d'exploration minière (BI-35 16-0001 BAFFIN GOLD Segments 1 et 2 et BI-35 16-001 FOXE) administrés par Nunavut Tunngavik Inc. (NTI) sur une parcelle de territoire appartenant aux Inuits BI-35. Ceci se trouve à 260 kilomètres au sud-ouest de Clyde River et à 360 kilomètres au nord-ouest de Qikiqtarjuaq. La propriété mesure 160 kilomètres direction est-ouest par environ 30 kilomètres direction nord-sud et comprend une superficie totale de 408 981,6 hectares sur les feuillets de cartes du SNRC 027 B/05, 027 B/12, 027 B/11, 037 A/06, 037 A/07, 037 A/08, 037 A/09 et 037 A/10.

L'objectif du programme d'exploration Kivalliq Energy est d'évaluer le potentiel d'or sur la propriété aurifère de Baffin. Le programme d'exploration proposé en 2017 consistera de prospection, cartographie géologique, tranchage, échantillonnage des roches, des canaux, des sols et du till, géophysique aérienne, géophysique au sol et suivi environnemental de base. Le programme se déroulera du 1<sup>er</sup> juin 2017 au 30 septembre 2017. Les opérations seront menées à partir du camp de Dewar Lakes, détenues et autorisées par Commander Resources Ltd. Avant le début des opérations, des visites de consultation communautaire seront menées pour discuter du Qaujimaqatugangit inuit, des connaissances traditionnelles, du programme d'exploration proposé et des préoccupations des communautés.

En raison de la taille de la propriété, deux camps de base temporaires sont autorisés, ce qui facilitera l'accès aux zones éloignées. Le camp de base Malrok proposé (68°30'06" N, 72°27'08" W) est localisé sur IOL BI-35 et le camp de base Tuktu (68°37'10" N, 73°12'45" W) est localisé sur les terres publiques.

Les camps de base temporaires accommoderont jusqu'à 15 personnes et seront composés de: 1 tente de cuisine, 1 tente de bureau, 1 tente sèche, 1 tente utilitaire, 5 tentes supplémentaires pour dormir, une latrine extérieure et un petit hangar pour la génératrice. Les structures seront composées d'une combinaison de tentes de vinyle WeatherPort, de tentes de prospecteur et de petits hangars en contre-plaqué. Les camps seront entièrement fermés et complètement démantelés une fois que les activités d'exploration cesseront. Les sites seront ensuite récupérés et restaurés dans leur état d'origine.

Le personnel, le carburant et l'équipement nécessaires aux opérations seront transportés par aéronef à voilure fixe à la piste d'atterrissage Fox-3 d'Iqaluit ou de Clyde River. La piste d'atterrissage est située à 325 mètres au sud-ouest du camp de Dewar Lakes. Les activités d'exploration sur la propriété seront





prises en charge par hélicoptère. Des motoneiges seront utilisées pendant l'hiver pour transporter le personnel et l'équipement à partir de la piste d'atterrissage au camp.



## APPLICATION FOR LAND USE PERMIT

### Privacy Act Statement

The information you provide in this document is collected under the authority of the *Territorial Land Use Regulations* for the purpose of responding to your application for land use permit. Information on individuals is used by Aboriginal Affairs and Northern Development Canada Land Administration employees who need to know the information in order to respond to your request and/or the program requirements. We share the information you give us with First Nations, Aboriginal groups and Inuit, Territorial and Federal Government Expert Agencies and Public Government Institutions. The personal information will be retained 6 years after the last administrative use and then destroyed. Individuals have the right to the protection of and access to their personal information under the *Privacy Act* <http://lois.justice.gc.ca/en/P-21/index.html>.

### For Office Use Only

Application Fee	Land Use Fee	General Receipt No.	Date (YYYYMMDD)	Class	Permit Number
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To be completed by all applicants ☒ New Application ☐ Amendment

1. Applicant's Name and Mailing Address (Full name, no initials) Kivalliq Energy Corporation Suite 1020-800 West Pender Street Vancouver, BC, V6C 2V6			Facsimile Number 604 646-4526
			Telephone Number 604 646-4527
2. Head Office Address Same as above			Facsimile Number
			Telephone Number
Field Supervisor Andrew Berry	Radio Telephone	E-Mail Address andrewb@kivalliqenergy.com	Telephone Number 604 765-1892

3. Other Personnel (Subcontractor, Contractors, Company Staff, etc.)

Discovery Mining Services (camp services).  
Contractors (i.e. helicopter, geophysics, etc.) are yet to be determined.

Total ☒ 15-20

### 4. Qualifications

Refer to Section 21 of the *Territorial Land Use Regulations*

a(i) ☒ a(ii) ☒ a(iii) ☐ b ☐ c ☐

Number(s) exploration permit mineral claims (If applicable)

See attached list of mineral claims/permits and map

### 5. a) Summary of Operation (Describe purpose, nature and location of all activities.)

Refer to Section 22(2)(b) of the *Territorial Land Use Regulations* (Use last page of form if necessary.)

The proposed exploration program for the Baffin Gold Property includes; prospecting and geological mapping, soil/till sampling, rock/channel sampling, airborne and ground geophysical surveying, drone surveying and baseline environmental observations. All work will be entirely within the area of the prospecting permits and lands held under Mineral Exploration Agreements on Inuit Owned Land Parcel BI-35. Refer to the Property Description and Work Plan attached for the Land Tenure and Exploration Targets figures and complete details on the proposed 2017 program.

b) Please indicate if a camp is to be set up (Use last page to provide details.)

Kivalliq Energy Corp. is permitting two temporary fly camps to support exploration activities. See additional information.

### 6. Summary of potential environmental and resource impacts

(Describe the effects of the proposed program on land, water, flora and fauna and related socio-economic areas.)  
(Use separate pages if necessary.)

During all activities, every effort will be made to avoid disturbance to wildlife (see attached Environmental and Wildlife Management Plan). Denning and nest sites will be avoided and the locations recorded and the information provided to the local wildlife officer and as an appendix in the annual reports required. All archaeological sites will be respected and reported immediately. There will be no discharge of any kind in to any water bodies. Sumps at camp and at the drill sites will be located a minimum of 31 metres from the normal high water mark of any water body. See the attached Spill Contingency Plan, and Abandonment and Restoration Plan.

## 7. Proposed Restoration Plans (Please use last page if required.)

Please see attached Abandonment and Restoration Plan.

8. Other rights, licences or permits related to this permit application (Mineral claims, Yukon timber permits, water licences, etc.)  
(Please use last page if required.)

Applications for the following licences have been prepared and are awaiting NPC and NIRB screening before submission.

NWB - water use licence

QIA - land use licence

Roads ☒ ☐ Is this to be a pioneered road? ☐ Has the route been laid out or ground truthed?

## 9. Proposed Disposal Methods (Please use last page if required.)

a) Garbage

Combustible Garbage will be incinerated

b) Sewage (Sanitary and Grey Water)

Sewage will be incinerated, grey water will go into a sump

c) Brush and Trees

Not applicable

d) Overburden (Organic soils, waste material, etc.)

not applicable

## 10. Equipment (Includes drills, pumps, etc.) (Please use last page if required.)

Type and Number	Size	Proposed Use
Helicopter - 1	Bell Long Ranger - LR or L3	Transportation - crews & equipment
Water pumps - 2	gasoline powered	Provide water for camp
Generator - 2	12 Kw and 20 Kw	Power generation
Snowmobiles - 4	small to mid-size	Transport crews/gear - airstrip to camp
Rock Saw - 1	hand held, gas powered	Transport crews/gear - airstrip to camp

11. Fuels	Number of Containers	Capacity of Containers
<input checked="" type="checkbox"/> Diesel	23	205 litres drums
<input checked="" type="checkbox"/> Gasoline	2	205 litres drums
<input checked="" type="checkbox"/> Aviation Fuel	25	205 litres drums
<input checked="" type="checkbox"/> Propane	10	100 lb cylinders
<input type="checkbox"/> Other: _____		

## 12. Containment Fuel Spill Contingency Plans (Please attach separate contingency plan if necessary.)

Please see attached Spill Contingency Plan.

## 13. Methods of Fuel Transfer (To other tanks, vehicles, etc.)

Manual or electric pumps will be used for the transfer of all petroleum products. Drip trays will be underlay all areas where refueling or the transfer of fuels is undertaken. Spill kits will be available at all refueling locations. Please see Fuel Management Plan attached.



14. Period of Operation (Includes time to cover all phases of project work applied for, including restoration.)  
This project will operate each year as early as March through the end of September. We are currently applying for a two year permit, the maximum period allowed, although this program will continue beyond that time frame.

15. Period of Permit (Up to two years, with maximum of one year extension.)  
Two Years Start Date (2017+06+01) Completion Date (2019+06+01)

16. Location of activities by map co-ordinates (Attach maps and sketches.)

Minimum Latitude	Degrees	Minutes	Seconds	Minimum Longitude	Degrees	Minutes	Seconds
▶ 68	22	30		▶ 70	30	00	
Maximum Latitude	Degrees	Minutes	Seconds	Maximum Longitude	Degrees	Minutes	Seconds
▶ 68	45	00		▶ 74	30	00	

Map Sheet Number

027 B/05, 027 B/12, 027 B/11, 037 A/06, 037 A/07, 037 A/08, 037 A/09 and 037 A/10

17. Applicant (Print Full Name)

ANDREW BERRY

Signature

Date

20170510

18. Fees

☒ Class A - \$150.00

☐ Class B - \$150.00

\$150.00

Land Use Fees: Less than or equal to 2 hectares

▶ \$50.00

\$ 50.00

For each additional hectare over 2 hectares or portion of a hectare

▶ X \$50.00 =

Total application and land use fees

▶

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19. Calculation of area involved (Includes access, staging areas, airstrips, campsites, etc.)

Total Area (Ha)

Less than or equal to 2 hectares

Total (For Fee Calculation)

20. Application Checklist

☐ a) Application Signed and Dated

☐ e) Screening Report

☐ b) Fees Attached

☐ f) Timber Permit Applied for - Yukon

☐ c) Map Included

☐ g) Fees Attached

☐ d) Address and Telephone Number

☐ h) Lease Applied for

Remarks (Please use last page if additional space is required.)

Accepted by

Date

(YYYYMMDD)

21. Additional Information (Attach additional pages if necessary.)

Kivalliq Energy will rent Commander Resources Ltd's Dewar Lakes Camp as a base of operations for the 2017 exploration program. Commander has an application for a land use permit pending for the Dewar Lakes Camp.

Due to the size of the property, Kivalliq Energy is permitting two temporary fly camps to accommodate workers and provide effective daily access to and from priority target areas that are remote from the Dewar Lakes Camp location. The proposed Malrok Fly Camp (68°30'06" N, 72°27'08" W) is located on IOL BI-35 and the Tuktu Fly Camp (68°37'10" N, 73°12'45" W) on Crown Lands administered by INAC.

The temporary fly camps will accommodate up to 15 people and will be comprised of: 1 kitchen tent, 1 office tent, 1 dry tent, 1 utility tent, 5 supplementary sleep tents, a Pacto or an outhouse latrine facility, a portable fuel-fired incinerator and a small generator shed. The structures will consist of a combination of WeatherPort vinyl tents, canvas prospectors' tents and small plywood sheds. The field camps will be fully closed and dismantled completely once exploration activities cease. The sites will then be reclaimed and restored to their original state. See attached Project Description and Work Plan for additional information and maps showing temporary field camp locations.



General Water Licence Application  
(Application for a new Water Licence)

Document Date: April 2013

Application Submission Date: May/11/2017  
Month/Day/Year

P.O. BOX 119  
GJOA HAVEN, NUNAVUT  
XOB 1J0  
TEL: (867)360-6338  
FAX: (867)360-6369

kNK5 wmoEp5 vtmpq  
NUNAVUT IMALIRIYIN KATIMAYIT  
NUNAVUT WATER BOARD  
OFFICE DES EAUX DU NUNAVUT

## DOCUMENT MANAGEMENT

Original Document Date: April 2010

### DOCUMENT AMENDMENTS

	Description	Date
(1)	Updated for public distribution as separate document from NWB Guide 4	June 2010
(2)	Updated NWB logos and reformatted table to allow rows to break across page	May 2011
(3)	Update NWB logo	April 2013
(4)		
(5)		
(6)		
(7)		
(8)		
(9)		
(10)		



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NUNAVUT WATER BOARD

NUNAVUT IMALIRIYIN KATIMAYIT

OFFICE DES EAUX DU NUNAVUT

### GENERAL WATER LICENCE APPLICATION (APPLICATION FOR NEW WATER LICENCE)

The applicant is referred to the NWB's Guide 4: Guide to Completing and Submitting a Water Licence Application for a New Licence for more information about this application form.

LICENCE NO: (for NWB use only)	
<b>1. APPLICANT (PROPOSED LICENSEE) CONTACT INFORMATION</b> (name, address)  Kivalliq Energy Corporation Suite 1020-800 West Pender Street Vancouver, British Columbia, V6C 2V6  Phone: 1 (604) 646-4527 Fax: 1 (604) 646-4526 e-mail: jward@kivalliqenergy.com	<b>2. APPLICANT REPRESENTATIVE CONTACT INFORMATION</b> if different from Block 1 (name, address)  Andrew Berry, Chief Operating Officer  Phone: 1(604) 765-1892 Fax: 1 (604) 646-4526 e-mail: andrewb@kivalliqenergy.com (Attach authorization letter.)
<b>3. NAME OF PROJECT</b> (including the name of the project location)  Baffin Gold Property, Baffin Island, Qikiqtani Region, Nunavut	
<b>4. LOCATION OF UNDERTAKING</b>  The Baffin Gold Property is wholly located on Baffin Island, in the Qikiqtani Region in Nunavut. It is 260 kilometres southwest of Clyde River and 360 kilometres west-northwest of Qikiqtarjuaq.  <b>Project Extents</b>  NW: Latitude: (68° 45' 00" N) Longitude: (74° 30' 00" W) NE: Latitude: (68° 45' 00" N) Longitude: (70° 30' 00" W) SE: Latitude: (68° 22' 30" N) Longitude: (70° 30' 00" W) SW: Latitude: (68° 22' 30" N) Longitude: (74° 30' 00" W)  <b>UTM Coordinate Extents</b> 7,584,000mN to 7,615,000mN and 520,500mE to 622,500mE, NAD83, Zone 18 7,586,000mN to 7,628,500mN and 377,500mE to 439,500mE, NAD83, Zone 19	



**Camp Location(s):**

Proposed temporary fly camp locations:

Latitude: (68° 30' 06" N) Longitude: (72° 27' 08" W) (Malrok Fly Camp) (on IOL BI-35)

Latitude: (68° 37' 10" N) Longitude: (73° 12' 45" W) (Tuktu Fly Camp)

**5. MAP** - Attach a topographical map, indicating the main components of the undertaking.

NTS Map Sheet No.: **37 A, 27 B** Map Name: **Foley Island, Ekalugad Fiord** Map Scale: **1:250,000**

**027 B/05, 027 B/12, 027 B/11, 037 A/06, 037 A/07, 037 A/08, 037 A/09 and 037 A/10**

**6. NATURE OF INTEREST IN THE LAND** - Check any of the following that are applicable to the proposed undertaking (at least one box under the 'Surface' header must be checked).

**Sub-surface**

✓ Mineral ~~Lease~~ **Exploration Agreements** from Nunavut Tunngavik Incorporated (NTI)

Date (expected date) of issuance: Jan 01 2017 Date of expiry: Jan 01 2037

✓ Mineral ~~Lease~~ **Claims** from Indian and Northern Affairs Canada (INAC)

Date (expected date) of issuance: Sept 28 2009 Date of expiry: Sept 28 2019

✓ **Prospecting Permits** from Indian and Northern Affairs Canada (INAC)

Date (expected date) of issuance: Feb 01 2017 Date of expiry: Feb 01 2022

**Surface**

✓ Crown Land Use Authorization from Indian and Northern Affairs Canada (INAC)

Date (expected date) of issuance: **Application Submitted** Date of expiry: **unknown**

☐ Inuit Owned Land (IOL) Authorization from Kitikmeot Inuit Association (KIA)

Date (expected date) of issuance: Date of expiry:

☐ IOL Authorization from Kivalliq Inuit Association (KivIA)

Date (expected date) of issuance: Date of expiry:

✓ IOL Authorization from Qikiqtani Inuit Association (QIA)

Date (expected date) of issuance: **Application submitted** Date of expiry: **unknown**

☐ Commissioner's Land Use Authorization

Date (expected date) of issuance: Date of expiry:

✓ Other: **All applications are currently under NPC and NIRB review.**

Date (expected date) of issuance: **under review** Date of expiry: **unknown**

Name of entity(s) holding authorizations:

**Kivalliq Energy Corporation**

**7. NUNAVUT PLANNING COMMISSION (NPC) DETERMINATION**

Indicate the land use planning area in which the project is located.

☐ North Baffin

☐ Keewatin

<input checked="" type="checkbox"/> South Baffin <input type="checkbox"/> Akunnig	<input type="checkbox"/> Sanikiluaq <input type="checkbox"/> West Kitikmeot
<p>Is a land use plan conformity determination required?</p> <p><input checked="" type="checkbox"/> Yes <span style="margin-left: 100px;"><input type="checkbox"/> No</span></p> <p>If Yes, indicate date issued and attach copy. <b>The NPC conformity review is pending.</b>          If No, provide written confirmation from NPC confirming that a land use plan conformity review is not required.</p>	
<p><b>8. NUNAVUT IMPACT REVIEW BOARD (NIRB) DETERMINATION</b></p> <p>Is an Article 12 Part 4 screening determination required?</p> <p><input checked="" type="checkbox"/> Yes <span style="margin-left: 100px;"><input type="checkbox"/> No</span></p> <p>If Yes, indicate date issued and attach copy. <b>NIRB screen decision pending.</b>          If No, provide written confirmation from NIRB confirming that a screening determination is not required.</p>	
<p><b>9. DESCRIPTION OF UNDERTAKING – List and attach plans and drawings or project proposal.</b></p> <p>The proposed exploration program for the Baffin Gold Property includes; prospecting and geological mapping; geochemical sampling: soils, lake sediments, vegetation; airborne and ground geophysical surveying; baseline environmental observations. Work programs will be undertaken entirely within the area of Kivalliq Energy's prospecting permits, mineral claims and lands held under Mineral Exploration Agreements on Inuit Owned Land Parcel BI-35. The Dewar Lakes Camp permitted (pending) by Commander Resources Ltd. will be used as a base for exploration activities. Due to the size of the Baffin Gold Property, two temporary fly camps have been proposed to facilitate access to areas where distances from the Dewar Lakes Camp is too far for daily transit. The proposed Malrok Fly Camp is located on IOL BI-35 and the Tuktu Fly Camp on Crown Lands. Refer to the "Project Description and Work Plan" for detailed descriptions of activities and fly camps.</p> <p>The attached documents include:</p> <ul style="list-style-type: none"> <li>General Water Licence Application – English</li> <li>General Water Licence Application - Inuktitut</li> <li>Project Description and Work Plan - includes figures</li> <li>Executive Summary - English and Inuktitut</li> <li>Abandonment and Restoration Plan</li> <li>Spill Contingency Plan</li> <li>Fuel Management Plan</li> <li>Waste management Plan</li> <li>Environmental and Wildlife Management Plan</li> <li>Audited Financial Statement</li> <li>List of Officers</li> <li>Certificate of Incorporation</li> <li>Certificate of Name Change</li> </ul>	

<b>10.</b>	<p><b>OPTIONS</b> – Provide a brief explanation of the alternative methods or locations that were considered to carry out the project.</p> <p>The proposed 2017 exploration program includes low-impact activities that are consistent with grassroots exploration such as prospecting, geological mapping, rock and channel sampling, soil/till sampling, airborne geophysics, ground geophysics, drone surveying and environmental baseline monitoring.</p> <p>There are no alternatives to the proposed project activities that have been described.</p> <p>If proposed temporary fly camp locations are deemed unsuitable then alternate locations may be considered.</p>																					
<b>11.</b>	<p><b>CLASSIFICATION OF PRIMARY UNDERTAKING</b> - Indicate the primary classification of undertaking by checking one of the following boxes.</p> <table style="width: 100%; border: none;"> <tr> <td><input type="checkbox"/> Industrial</td> <td><input type="checkbox"/> Agricultural</td> </tr> <tr> <td><input checked="" type="checkbox"/> Mining and Milling (includes exploration/drilling/exploration camps)</td> <td></td> </tr> <tr> <td><input type="checkbox"/> Conservation</td> <td></td> </tr> <tr> <td><input type="checkbox"/> Municipal (includes camps/lodges)</td> <td><input type="checkbox"/> Recreational</td> </tr> <tr> <td><input type="checkbox"/> Power</td> <td><input type="checkbox"/> Miscellaneous (describe below):</td> </tr> </table> <hr style="border: 0; border-top: 1px solid black; margin: 5px 0;"/> <p>See Schedule II of <i>Northwest Territories Waters Regulations</i> for Description of Undertakings.</p> <p>Information in accordance with applicable Supplemental Information Guidelines (SIG) must be submitted with a New Water Licence Application. Indicate which SIG(s) are applicable to your application.</p> <table style="width: 100%; border: none;"> <tr><td><input type="checkbox"/> Hydrostatic Testing</td></tr> <tr><td><input type="checkbox"/> Tannery</td></tr> <tr><td><input type="checkbox"/> Tourist / Remote Camp</td></tr> <tr><td><input type="checkbox"/> Landfarm &amp; On-Site Storage of Hydrocarbon Contaminated Soil</td></tr> <tr><td><input type="checkbox"/> Onshore Oil and Gas Exploration Drilling</td></tr> <tr><td><input checked="" type="checkbox"/> Mineral Exploration / Remote Camp</td></tr> <tr><td><input type="checkbox"/> Advanced Exploration</td></tr> <tr><td><input type="checkbox"/> Mine Development</td></tr> <tr><td><input type="checkbox"/> Municipal</td></tr> <tr><td><input type="checkbox"/> General Water Works</td></tr> <tr><td><input type="checkbox"/> Power</td></tr> </table>	<input type="checkbox"/> Industrial	<input type="checkbox"/> Agricultural	<input checked="" type="checkbox"/> Mining and Milling (includes exploration/drilling/exploration camps)		<input type="checkbox"/> Conservation		<input type="checkbox"/> Municipal (includes camps/lodges)	<input type="checkbox"/> Recreational	<input type="checkbox"/> Power	<input type="checkbox"/> Miscellaneous (describe below):	<input type="checkbox"/> Hydrostatic Testing	<input type="checkbox"/> Tannery	<input type="checkbox"/> Tourist / Remote Camp	<input type="checkbox"/> Landfarm & On-Site Storage of Hydrocarbon Contaminated Soil	<input type="checkbox"/> Onshore Oil and Gas Exploration Drilling	<input checked="" type="checkbox"/> Mineral Exploration / Remote Camp	<input type="checkbox"/> Advanced Exploration	<input type="checkbox"/> Mine Development	<input type="checkbox"/> Municipal	<input type="checkbox"/> General Water Works	<input type="checkbox"/> Power
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<input type="checkbox"/> Mine Development																						
<input type="checkbox"/> Municipal																						
<input type="checkbox"/> General Water Works																						
<input type="checkbox"/> Power																						
<b>12.</b>	<p><b>WATER USE</b> - Check the appropriate box(s) to indicate the type(s) of water use(s) being applied for.</p> <table style="width: 100%; border: none;"> <tr> <td><input checked="" type="checkbox"/> To obtain water for camp/ municipal purposes</td> <td></td> </tr> <tr> <td><input type="checkbox"/> To obtain water for industrial purposes</td> <td><input type="checkbox"/> To divert a watercourse</td> </tr> <tr> <td><input type="checkbox"/> To cross a watercourse</td> <td><input type="checkbox"/> To modify the bed or bank of a watercourse</td> </tr> <tr> <td><input type="checkbox"/> To alter the flow of, or store water</td> <td><input type="checkbox"/> Flood control</td> </tr> <tr> <td><input type="checkbox"/> Other: _____</td> <td></td> </tr> </table>	<input checked="" type="checkbox"/> To obtain water for camp/ municipal purposes		<input type="checkbox"/> To obtain water for industrial purposes	<input type="checkbox"/> To divert a watercourse	<input type="checkbox"/> To cross a watercourse	<input type="checkbox"/> To modify the bed or bank of a watercourse	<input type="checkbox"/> To alter the flow of, or store water	<input type="checkbox"/> Flood control	<input type="checkbox"/> Other: _____												
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<input type="checkbox"/> To alter the flow of, or store water	<input type="checkbox"/> Flood control																					
<input type="checkbox"/> Other: _____																						
<b>13.</b>	<p><b>QUANTITY AND QUALITY OF WATER INVOLVED</b> - For each type of water use indicated in Block 12, provide the source of water, the quality of the water source and available capacity, the estimated quantity to be used in cubic meters per day, method of extraction, as well as the</p>																					

quantities and qualities of water to be returned to source.

Name of water source(s) (show location(s) on map):

Malrok Lake (IOL BI-35) and Nadluarjuk Lake (Crown Lands)

Describe the quality of the water source(s) and the available capacity: \_\_\_\_\_

Water quality is predicted to be in pristine condition. Water will be drawn from water bodies with sufficient capacity to accommodate the proposed usage quantity without impact to lake level or flow rates.

Provide the overall estimated quantity of water to be used: 3 m<sup>3</sup>/day

Provide the estimated quantity(s) of water to be used from each source:

Only one temporary camp will be operating at a time. Less than 3 m<sup>3</sup>/day will be used.

Indicate the estimated quantities to be used for each purpose (camp, drilling, etc.)

Camp: 3 m<sup>3</sup>/day for approximately 4 months (122 days) = 366 m<sup>3</sup>/year

Describe the method of extraction(s): A portable gasoline-powered water pump will be used to pump water to a camp storage tank. The pump will be operational for approximately 15 minutes per day. When operating the pump will be staged on a containment platform adjacent to the water source. When not operating the pump will be staged within secondary containment no less than 31m from the high water mark of the water source. Waterlines will be properly placed and screened in accordance with the "Freshwater Intake End-of-Pipe Screen Guideline" (DFO). Refer to the "Project Description and Work Plan, section 6.2.1" for additional information.

Estimated quantity(s) of water returned to source(s) : None

Describe the quality of water(s) returned to source(s): No water will be returned directly to the source. Waste water will be discharged to a grey water sump for slow infiltration into the surrounding soils. The waste water sump will be located at least 31 metres away from any water body. A grease trap and screens will be installed on kitchen drains to ensure grease and food solids do not enter the waste water sump. The discharge pipe in to the sump will be inaccessible to wildlife.

**14. WASTE** – Check the appropriate box(s) to indicate the types of waste(s) generated and deposited.

- |   |   |
|---|---|
| <input checked="" type="checkbox"/> Sewage                  | <input checked="" type="checkbox"/> Waste oil           |
| <input checked="" type="checkbox"/> Solid Waste             | <input checked="" type="checkbox"/> Greywater           |
| <input checked="" type="checkbox"/> Hazardous               | <input type="checkbox"/> Sludges                        |
| <input checked="" type="checkbox"/> Bulky Items/Scrap Metal | <input type="checkbox"/> Contaminated soil and/or water |
| <input type="checkbox"/> Animal Waste                       |   |
| <input type="checkbox"/> Other (describe): _____            |   |

Refer to the "Waste Management Plan" attached for complete list of waste types and waste management procedures.

**15. QUANTITY AND QUALITY OF WASTE INVOLVED** – For each type of waste indicated in Block 14, describe its composition, quantity in cubic meters/day, method of treatment and method of disposal.

Type of Waste	Composition	Quantity Generated	Treatment Method	Disposal Method
Solid Waste	Combustibles Non-combustibles/plastics	~ 0.1 m <sup>3</sup> /day	Containment	205L ash drums & bulk bag of plastics shipped off site to authorized facility
Waste Oil	Oils from generators, helicopters	~ 0.001 m <sup>3</sup> /day	Containment	205L drums & shipped off site to authorized facility
Grey water	Shower/sink water	<3m <sup>3</sup> /day	Weeping bed	Weeping bed
Hazardous	Solvents, batteries, sorbents, light bulbs	Minimal	Collect in original container	Shipped off site to authorized facility
Sewage	Human Waste	~ 0.05 m <sup>3</sup> /day (<20 people for 6 weeks)	Lime-treated pit infilled or bags incinerated.	Latrine pit or Pacto toilet bags incinerated and ash collected for proper disposal.
Empty Drums	Fuel drums: diesel, jet fuel, propane, gasoline	Up to 5 drums/day	Drained, air dried	Shipped off site to the supplier or accredited recycling facility
Bulky Items	Scrap metal, mechanical equipment, electronics	Unknown	Collected in designated area	Shipped off site for proper disposal

**16. OTHER AUTHORIZATIONS** – In addition to the sub-surface and surface land use authorizations provided in Block 6, indicate any other authorizations required in relation to the proposed undertaking. For each provide the following:

Authorization: **N/A** \_\_\_\_\_

Administering Agency: **N/A** \_\_\_\_\_

Project Activity: **N/A** \_\_\_\_\_

Date (expected date) of issuance: \_\_\_\_\_ Date of expiry: \_\_\_\_\_

**17. PREDICTED ENVIRONMENTAL IMPACTS OF UNDERTAKING AND PROPOSED MITIGATION MEASURES** - Describe direct, indirect, and cumulative impacts related to water and waste.

Early stage grassroots exploration programs are low-impact and occur over a short period of time. The effects of these programs are expected to be minor and mitigable.

Changes in flow, quantity and the quality of groundwater and surface water will not be impacted by the exploration program. The proposed fly camps require <3m<sup>3</sup>/day and will operate seasonally. Water will be sourced from water bodies with sufficient capacity to accommodate the proposed usage quantity without impact to lake level or flow rates.

Waterlines for domestic use will be placed to minimize disturbance to the shoreline/riparian zones and substrate. Water and aquatic life is protected. Waterlines will be screened in accordance with the "Freshwater Intake End-of-Pipe Screen Guideline" prepared by the Department of Fisheries and Oceans. A copy of this guideline document is kept at the head office in Vancouver and at the field office at the project.

Mitigation measures are in place to minimize the environmental impacts of potential spills. All spills will be treated as per the "Spill Contingency Plan". Approved mitigations and SOPs for water use and waste water management will be applied at Kivalliq Energy's Baffin Gold Property.

No wastes enter any water bodies. This includes discharge from the camp and grey water sumps. The grey water sump will be located at least 31 meters from the high water mark of a water body and will be inspected regularly. Digging of the grey water sump may alter the permafrost layer; however, upon final closure the sump will be backfilled and restored to the pre-existing natural contours of the land. Water use is recorded for the domestic camp water daily.

The Baffin Gold Property is not expected to impact fish or fish habitats.

A water quality monitoring program will be established to generate baseline water quality data in areas of active exploration. Sample sites will be chosen on representative water bodies that focus on exploration targets and camp infrastructure locations.

The water and waste management practices have been used on Kivalliq Energy's Angilak Property in Nunavut and have been proven in cold climates.

In addition to the mitigation measures outlined above, the exploration program will not have an effect on the following environmental topics: Geologic structures, vegetation species composition and abundance, non-native species introduction, benthic invertebrates or plankton.

With the mitigation measures and SOPs in place there are no significant impacts or cumulative effects anticipated as a result of Kivalliq Energy's water use and waste water management at the Baffin Gold Property. Refer to the "Waste Management Plan", "Fuel Management Plan" and "Abandonment and Restoration Plan" for additional information.

Predicted environmental and wildlife impacts and proposed mitigation measures are outlined in detail in the "Environmental and Wildlife Management Plan" attached at the end of this document.

## **18. WATER RIGHTS OF EXISTING AND OTHER USERS OF WATER**

Provide the names, addresses and nature of use for any known persons or properties that may be adversely affected by the proposed undertaking, including those that hold licences for water use in precedent to the application, domestic users, in-stream users, authorized waste depositors, owners of property, occupiers of property, and/or holders of outfitting concessions, registered trapline holders, and holders of other rights of a similar nature.

This project will not affect the quality, quantity, or flow of water in the property area or on IOL BI-35.

Advise the Board if compensation has been paid and/or agreement(s) for compensation have been reached with any existing or other users.

Commander Resources Ltd. has applied to NWB for a General Water Use Licence (pending) for domestic water use at their Dewar Lakes Camp. On May 8, 2017, Kivalliq Energy entered into an option agreement with Commander Resources Ltd. (CMD) to acquire all of CMD's interests in the mineral exploration agreements, mineral claims and mineral leases comprising the Baffin Island Gold Project.

Commander Resources Ltd.  
11th Floor, 1111 Melville Street,  
Vancouver, BC

V6E 3V6

**Phone:** [\(604\) 685-5254](tel:6046855254)

Commanders land use and water use permits for the Dewar Lakes camp will be transferred to Kivalliq Energy when INAC, NWB and Kivalliq Energy are satisfied that there are no legacy issues impacting the Dewar Lakes camp location.

#### **19. INUIT WATER RIGHTS**

Advise the Board of any substantial affect of the quality, quantity or flow of waters flowing through Inuit Owned Land (IOL), and advise the Board if negotiations have commenced or an agreement to pay compensation for any loss or damage has been reached with one or more Designated Inuit Organization (DIO).

The Baffin Gold Property area covers parts of IOL BI-35.

A separate application for authorization for domestic water use on IOL BI-35 has been submitted to the Qikiqtani Inuit Association (QIA). Kivalliq Energy's proposed exploration program requires domestic use of less than 3m<sup>3</sup> per day to supply a temporary fly camp at Malrok Lake on the southwest boundary of IOL BI-35. Water is not required for any exploration activities (i.e. prospecting, sampling, geophysics, etc.).

The project will not affect the rights of the Inuit or the quality, quantity and flow of water flowing through Inuit Owned Land parcel BI-35.

#### **20. CONSULTATION – Provide a summary of any consultation meetings including when the meetings were held, where and with whom. Include a list of concerns expressed and measures to address concerns.**

Community consultation visits are planned for Qikiqtarjuaq, Clyde River, Pangnirtung and Iqaluit prior to the start of the exploration program to discuss available Inuit Qaujimajatuqangit and traditional knowledge, the project proposal and any potential concerns the communities may have.

Consultation logs will include; a transcript of all meetings, discussions with Elders and information collected from communities regarding historic and traditional land and water use. Inuit Qaujimajatuqangit/Traditional knowledge will be integrated into the project.

The community consultation log will be provided once visits are conducted and will be included in the Annual Report to INAC, QIA and NIRB.

#### **21. SECURITY INFORMATION**

Provide an estimate of the total financial security for final reclamation equal to the total outstanding reclamation liability for land and water combined sufficient to cover the highest liability over the life of the undertaking. Estimates of reclamation costs must be based on the cost of having the necessary reclamation work done by a third party contractor if the operator defaults. The estimate must also include contingency factors appropriate to the particular work to be undertaken.

Where applicable, the financial security assessment should be prepared in a manner consistent with the principals respecting mine site reclamation and implementation found in the *Mine Site Reclamation Policy for Nunavut*, Indian and Northern Affairs Canada, 2002.



Exploration activities are low-impact and only hand tools will be used. Hand tools required for exploration will be removed once work at a target area has been completed. Progressive reclamation related to activities will be conducted; i.e. replacing soil in holes dug for sampling.

Upon final abandonment and restoration, temporary fly camps will be dismantled and fully reclaimed. The cost to reclaim the temporary fly camps by a third-party contractor is estimated to be \$50,000 which includes a \$5,000 contingency.

## 22. FINANCIAL INFORMATION

Provide a statement of financial responsibility.

Please see the attached "Audited Financial Statements".

If the applicant is a business entity, provide a list of the officers of the company.

Please see the attached "List of Officers".

If the applicant is a business entity attach a copy of the Certificate of Incorporation or evidence of registration of the company name.

Please see the attached copy of the "Certificate of Incorporation" and the "Certificate of Name Change".

## 23. STUDIES UNDERTAKEN TO DATE - List and attach copies of studies, reports, research, etc.

To the best of our knowledge, no studies have been undertaken on the property to date.

## 24. PROPOSED TIME SCHEDULE – Indicate the proposed start and completion dates for each applicable phase of development (construction, operation, closure, and post closure).

### Construction

Proposed Start Date: **N/A** \_\_\_\_\_ Proposed Completion Date: **N/A** \_\_\_\_\_  
(month/year) (month/year)

### Operation

Proposed Start Date: **June/2017 to 2037** Proposed Completion Date: **October/2017 to 2037**  
(month/year) (month/year)

### Closure

Proposed Start Date: **Sept/2017 to 2037** Proposed Completion Date: **October/2017 to 2037**  
(month/year) (month/year)

### Post - Closure

Proposed Start Date: **N/A** \_\_\_\_\_ Proposed Completion Date: **N/A** \_\_\_\_\_  
(month/year) (month/year)

For each applicable phase of development indicate which season(s) activities occur.

	<u>Construction</u>	<input type="checkbox"/> Winter			<input type="checkbox"/> Spring	<input type="checkbox"/> Summer	<input type="checkbox"/> Fall	<input type="checkbox"/> All season
	<u>Operation</u>	<input type="checkbox"/> Winter			<input checked="" type="checkbox"/> Spring	<input checked="" type="checkbox"/> Summer	<input checked="" type="checkbox"/> Fall	<input type="checkbox"/> All season
	<u>Closure</u>	<input type="checkbox"/> Winter			<input type="checkbox"/> Spring	<input type="checkbox"/> Summer	<input checked="" type="checkbox"/> Fall	<input type="checkbox"/> All season
	<u>Post - Closure</u>	<input type="checkbox"/> Winter			<input type="checkbox"/> Spring	<input type="checkbox"/> Summer	<input type="checkbox"/> Fall	<input type="checkbox"/> All season

**25. PROPOSED TERM OF LICENCE**

Number of years (maximum of 25 years): **10 years**

Requested Date of Issuance: **July/2017** \_\_\_\_\_ Requested Expiry Date: **July/2027** \_\_\_\_\_  
(month/year) (month/year)

(The requested date of issuance must be at least three (3) months from the date of application for a type B water licence and at least one (1) year from the date of application for a type A water licence, to allow for processing of the water licence application. These timeframes are approximate and do not account for the time to complete any pre-licensing land use planning or development impact requirements, time for the applicant to prepare and submit a water licence application in accordance with any project specific guidelines issued by the NWB, or the time for the applicant to respond to requests for additional information. See the NWB's *Guide 5: Processing Water Licence Applications* for more information)

**26. ANNUAL REPORTING** – If not using the NWB's *Standardized Form for Annual Reporting*, provide details regarding the content of annual reports and a proposed outline or template of the annual report.

Kivalliq Energy Corp. will use the NWB's Standardized Form for Annual Reporting and will include water related monitoring results, an outline of actions implemented at the suggestion of NIRB and any actions taken in response to direction by the Land Use Inspector.

**27. CHECKLIST** – The following must be included with the application for the water licensing process to begin.

Written confirmation from the NPC confirming that NPC's requirements regarding land use plan conformity have been addressed.

☐ Yes ☒ No If no, date expected June 1 2017 \_\_\_\_\_

Written confirmation from the NIRB confirming that NIRB's requirements regarding development impact assessment have been addressed.

☐ Yes ☒ No If no, date expected June 1 2017 \_\_\_\_\_

Completed General Water Licence Application form.

☒ Yes ☐ No If no, date expected \_\_\_\_\_

Information addressing Supplemental Information Guideline (SIG) , where applicable (see Block 11)

☒ Yes ☐ No If no, date expected \_\_\_\_\_

English Summary of Application.

☒ Yes ☐ No If no, date expected \_\_\_\_\_

Inuktitut and/or Inuinnaqtun Summary of Application.

☒ Yes ☐ No If no, date expected \_\_\_\_\_

Application Fee of \$30.00 CDN (Payee Receiver General for Canada).

☒ Yes ☐ No If no, date expected \_\_\_\_\_

Water Use Fee Deposit of \$30.00 CDN (Payee Receiver General for Canada). The actual water use fee will be calculated by the NWB based upon the amount of water authorized for use in accordance with the Regulations at the time of issuance of the licence.

☒ Yes ☐ No If no, date expected \_\_\_\_\_

**28. SIGNATURE**

Andrew Berry  
Name (Print)

Chief Operating Officer  
Title (Print)

  
Signature

MAY 10, 2017  
Date



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Qikiqtani Inuit Association

## QIKIQTANI INUIT ASSOCIATION

### APPLICATION FOR ACCESS TO INUIT OWNED LAND

#### Office use only

Category	Application No:	Accepted By:	Date Accepted:
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#### To be completed by all applicants

1. Applicant's name and mailing address (Full name, no initials or abbreviations)

**Andrew Berry, COO, Kivalliq Energy Corporation**

**Suite 1020-800 West Pender Street**

**Vancouver, British Columbia, Canada, V6C 2V6**

Telephone no.

**(604) 646-4527**

Fax no

**(604) 646-4526**

2. Head Office address

**Kivalliq Energy Corporation**

**Suite 1020-800 West Pender Street**

**Vancouver, British Columbia, Canada, V6C 2V6**

Telephone no.

**(604) 646-4527**

Fax no.

**(604) 646-4526**

3. Field supervisor and address if different from above

**Same as above**

Telephone no.

**(604) 765-1892**

4. Other personnel list (Subcontractors or contractors to be used)

**To be determined**

Total no. of personnel: **20**

No. of person days: **2440**

5. Location of activities by map coordinates. Attach **ORIGINAL** maps and sketches.

MAX Latitude	<b>68° 45' 00" N</b>	MAX Longitude	<b>74° 30' 00" W</b>
MIN Latitude	<b>68° 22' 30" N</b>	MIN Longitude	<b>70° 30' 00" W</b>
Map Sheet No:	<b>027 B/05/11/12, 037 A/07/08/09/10</b>	Inuit Land Parcel No:	<b>BI-35</b>

Coordinate of camp (if applicable)

**Lat. 68° 30' 06" North Long. -72° 27' 08" West**

See attached 2017 Project Description and Work Plan for additional information on the proposed temporary fly camp location.

NOTE: Please specify projection, datum, and digital format. Please provide the data as an Arc Info cover, ArcView Shape file or an .E00 file.

6. Periods of operation; including periods of seasonal shut down and periods for restoration.

The proposed 2017 exploration program will be conducted from June through to September. A seasonal shutdown will take place at the completion of exploration activities for the year in September 2017. The final abandonment and restoration of the camp sites will begin once the program is complete and no further work is warranted. See attached Abandonment and Restoration Plan.

7. Period of access required (up to one or two years for licenses, depending on license level, up to five years for residential/recreational leases and level I and II commercial leases, and up to forty years for level III commercial leases)	Start date: <b>June 1, 2017</b>	Completion Date: <b>June 1, 2019</b>
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8. Other rights, licenses, permits or leases related to this application. Provide proof of rights or indicate if in the process of applying for rights.

<input checked="" type="checkbox"/> NTI Subsurface Right	<input type="checkbox"/> NRI Research License	<input type="checkbox"/> CWS Permit
<input checked="" type="checkbox"/> DIAND Subsurface Right	<input type="checkbox"/> RWED Tourism License	<input type="checkbox"/> Other
<input checked="" type="checkbox"/> NWB Water License	<input type="checkbox"/> Explosives Permit	Specify:
#		

A project description has been submitted to NPC for a conformity determination (pending) and to NIRB for a screening decision (pending). In addition, an application for a Land Use Permit has been submitted to INAC for property tenure adjacent to IOL BI-35. An application for a general water licence for domestic use in the proposed Tuktu Fly Camp has been submitted to NWB. Both applications remain pending.

Subsurface Rights on IOL BI-30 are held under Mineral Exploration Agreements BI35-16-0001 BAFFIN GOLD (Segments 1 & 2) and BI35-16-001 FOXE from NTI. 15 Prospecting Permits and 6 mineral claims on adjacent Crown Lands are held under authorization from INAC. Please the attached Appendix A: Project Description and Work Plan for a complete list of mineral claims, prospecting permits and Mineral Exploration Agreements that comprise the Baffin Gold Property.

## 9. TYPE OF LAND USE ACTIVITY

Check off the appropriate land use activities.

### Mining/Oil & Gas

### Construction:

### Tourism:

<input checked="" type="checkbox"/> Staking and Prospecting	<input checked="" type="checkbox"/> Camp	<input type="checkbox"/> Tourism facility
<input checked="" type="checkbox"/> Exploration (geophys-grd/air)	<input type="checkbox"/> Building	<input type="checkbox"/> Outfitting
<input type="checkbox"/> Drilling (diamond/ice, etc)	<input type="checkbox"/> Winter road	<input type="checkbox"/> Other
<input type="checkbox"/> Mine (open pit, underground)	<input type="checkbox"/> All Season road	
<input type="checkbox"/> Bulk fuel storage	<input type="checkbox"/> Quarrying	
<input type="checkbox"/> Other:	<input type="checkbox"/> Other:	

### Municipality:

### Research:

### Other:

<input type="checkbox"/> Bulk Storage <input type="checkbox"/> Residential Building <input type="checkbox"/> Commercial Building <input type="checkbox"/> Other:	<input type="checkbox"/> Wildlife/fish/birds/marine <input type="checkbox"/> Survey (grd/aerial/collars) <input type="checkbox"/> Collection of species <input type="checkbox"/> Research Station <input type="checkbox"/> Other :	<input type="checkbox"/> Commercial harvest <input type="checkbox"/> Recreational Camp <input type="checkbox"/> Other
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## 10. TYPE OF WATER USE

Select the kind of project for which you will use the water, and the type of water use

**Undertaking**

**Water Use:**

<input type="checkbox"/> Advanced Exploration <input type="checkbox"/> Exploration Drilling <input type="checkbox"/> Industrial <input type="checkbox"/> Mine Development <input type="checkbox"/> Power <input type="checkbox"/> Remote/Tourism <input checked="" type="checkbox"/> Other: Early Stage Exploration	<input checked="" type="checkbox"/> To Obtain Water <input type="checkbox"/> To Modify the bed or bank of water course <input type="checkbox"/> To Alter the flow of, or store water <input type="checkbox"/> To Cross the Watercourse <input type="checkbox"/> To Divert the Watercourse <input type="checkbox"/> Flood Control <input type="checkbox"/> Other:
---	--

## 11. QUANTITY OF WATER INVOLVED

Please include the quantity of water to be used during the Land Use activity

Malrok Fly Camp: Water Use will be 3m<sup>3</sup>/day or less.

Quantity of water to be used:

366 m<sup>3</sup>/year

Quantity to be returned:

N/A m<sup>3</sup>/year

## 12. WASTE

Describe the type of waste produced by the activity

<input checked="" type="checkbox"/> Bulky Items/Scrap metals <input checked="" type="checkbox"/> Grey water <input checked="" type="checkbox"/> Hazardous <input checked="" type="checkbox"/> Sewage <input type="checkbox"/> Sludge <input checked="" type="checkbox"/> Solid waste <input checked="" type="checkbox"/> Waste Oil <input type="checkbox"/> Other:	Describe: Refer to "Waste Management Plan" attached.
---	--

## 13. LAND USE PERMIT

Select Land Use Permit You have been Issued



<input checked="" type="checkbox"/> DIAND	date expected	Awaiting NPC and NIRB decision
<input checked="" type="checkbox"/> Qikiqtani Inuit Association	date expected	Awaiting NPC and NIRB decision
<input type="checkbox"/> Commissioner	date expected	
<input type="checkbox"/> Department of Environment	date expected	

#### 14. IMPACT

**Predicted environmental impacts of undertaking and proposed mitigation measures (direct, cumulative impacts)**

Describe: During all activities every effort will be made to avoid disturbances to wildlife. Denning and nest sites will be avoided and the locations recorded. All known archaeological sites will be avoided. Any new archaeological site identified will be reported immediately and all activities that may impact the site will be suspended so that the site remains undisturbed. There will be no discharge of any kind in to any water bodies. Grey water sumps will be located a minimum of 31 m from the normal high water mark of any water body. Early stage grassroots exploration programs are low-impact and occur over a short period of time. The effects of these programs are expected to be minor and mitigable. Please refer to the "Environmental and Wildlife Management Plan", "Fuel Management Plan", "Spill Contingency Plan" and "Abandonment and Restoration Plan" for additional mitigation measures.

**NPC conformity check  
NIRB Screening**

Awaiting NPC conformity check and NIRB screening decision.

#### 15. Proposed Time Schedule

☒ Same as the Land Use

☐ Check for **Annual Work**, specify the days of operation [Leave unchecked for multi year work]

Start day

Completion date

**16. On a separate page, provide a NON-TECHNICAL project summary.** This should include a non-technical description of the project proposal, no more than 300 words, in **English and Inuktitut**. The project description should outline the project activities and their necessity, method of transportation, any structures that will be erected, expected duration of activity and alternatives considered. If the proposed activity fits into any long-term developments, please describe the projected outcome of the development for the area and its timeline.

**17. Attach a detailed project description as outlined in APPENDIX A.**

### 18. Land Use Application Fees:

Land Use License I		
<b>X</b>	Inuit	\$0
	Non-Inuit	\$250.00
<input type="checkbox"/>	Land Use License II	\$500.00
<input type="checkbox"/>	Land Use License III	\$1000.00
Residential/Recreational Lease		
<input type="checkbox"/>	Inuit	\$0
	Non-Inuit	\$250.00
<input type="checkbox"/>	Exemption Certificate	\$0
<input type="checkbox"/>	Commercial Lease I	\$500.00
<input type="checkbox"/>	Commercial Lease II	\$2500.00
<input type="checkbox"/>	Commercial Lease III	\$5000.00
<input type="checkbox"/>	Right of Way Agreement	\$500

Land use fees: # of hectares used @ \$50.00/hectare = Malrok Fly Camp **0.25 ha \* \$50.00/ha = \$12.50**

**Note:** The land use fee is for the amount of land used on an annual basis.

## 19. Water Application Fees:

*Water License Application type:*

<input checked="" type="checkbox"/>	For Land Use license Class I the corresponding <i>Water Application fee</i> is <b>\$50.00</b> per year plus <b>\$ 1</b> for Water use charge, <i>Volumetric fee</i> , <b>Total \$51</b> every year
<input type="checkbox"/>	For Land Use License Class II the corresponding <i>Water Application fee</i> is <b>\$250.00</b> every year plus <b>\$ 1</b> for Water use charge, <i>Volumetric fee</i> , <b>Total \$251.00</b> every year
<input type="checkbox"/>	For Land Use License III The corresponding <i>Water Application fee</i> is <b>\$500.00</b> every 2 years and <b>\$26.35/1000m<sup>3</sup></b> for Water Use charge <i>Volumetric fee</i> . <b>Total \$276.35</b> every year
<input type="checkbox"/>	For Commercial Lease I The corresponding <i>Water Application fee</i> is <b>\$50.00</b> and <b>\$ 26.35 /1000m<sup>3</sup></b> for Water use charge, <i>Volumetric fee</i> . <b>Total \$76.35</b> every year
<input type="checkbox"/>	For Commercial Lease II The corresponding <i>Water Application fee</i> is <b>\$500.00</b> and <b>\$ 26.35 /1000m<sup>3</sup></b> for Water use charge, <i>Volumetric fee</i> . <b>Total \$526.35</b> every year
<input type="checkbox"/>	For Commercial Lease III, The corresponding <i>Water Application fee</i> is <b>\$5000.00</b> and <b>\$ 26.35</b> <b>/1000m<sup>3</sup></b> for Water use charge, <i>Volumetric fee</i> . <b>Total \$5026.35</b> every year

Water Use Fee [Volumetric fee]: \$1

**Note:** The water application type is related to the Land use application type. A water Protection fee will be charged according to the type and stage of the development project.

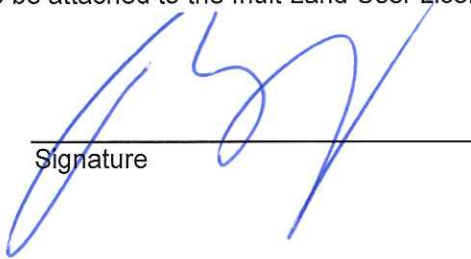
20. a) The Applicant request a Certificate of Exemption ☐

or

b) The Applicant agrees to be bound by terms and conditions to be attached to the Inuit Land User License or Lease ☒

Sign name in full:

Signature



Date

MAY 10, 2017

## **APPENDIX A**

**All applicants must provide a detailed project description that includes ALL of the following:**

1. Outline project activities, their necessity, their expected duration and alternatives considered. If the proposed activity fits into any long-term developments, describe the projected outcome of the development for the area and its timeline.
2. Schedule of activities including both operations and shutdowns.
3. Provide a preliminary plan showing the location of the lands proposed to be used and an estimate of their area in hectares. The preliminary plan should show the approximate location of all:
  - i) existing or new lines, trails, rights-of-way and cleared areas proposed to be used in the exercise of the Right;
  - ii) buildings, campsites, air landing strips, air navigation aids, fuel and supply storage sites, waste disposal sites, excavations, ponds, reservoirs and other works and places proposed to be constructed or used during the exercise of the Right;
  - iii) manmade structures and works, including bridges, dams, ditches, highways, roads, transmission lines, pipelines, survey lines and monuments, air landing strips; all topographical and natural features, including eskers, rivers, streams, lakes, inland seas and ponds; and all areas of biological interest, including wildlife and fish habitat, specifically, calving, denning, spawning or nesting areas, identified in consultation with the NWMB, RWO, or HTO, as appropriate, that may be affected by the exercise of the Right; and
  - iv) the accurate location of all carving stone, archaeological sites, and archaeological specimens.
4. Provide a list of structures that will be erected.
5. Equipment to be used, indicating type and number, size and ground pressure and proposed use. Include all drills, pumps, vehicles etc.
6. Fuels to be used, capacity of containers and number of litres. Include diesel, gasoline, aviation fuel, propane and other fuel types. Describe method of fuel transfer.
7. Provide a copy of fuel spill contingency plan.
8. Describe the methods of transportation.
9. Indicate the components of the environment that are near the project area, as applicable. Include the type of species, the important habitat area (calving, staging, denning, migratory pathways, spawning, nesting etc.), and the critical time periods (calving, post-calving, spawning, nesting, breeding etc.). Also, include information on eskers, communities, and historical/archaeological sites.
10. Summary of potential environmental, wildlife and resource impacts and mitigation measures to be used. Describe the effects of the proposed program on lands, water, flora and fauna.
11. Reclamation cost analysis for advanced exploration activities.

12. Proposed reclamation plan, that includes, but is not limited to the proposed methods and procedures for the progressive:

- i) removal of all structures, equipment, and other manmade debris;
- ii) rehabilitation of the area to its previous standard of human utilization and natural productivity;
- iii) replacement of overburden and soil;
- iv) grading of the area back to its natural contours; and
- v) re-establishment, to the extent possible, of flora.

Include information about on going site remediation throughout the duration of the project.

13. Indicate the number of Inuit to be employed, the Inuit firms to be contracted, and the socio-economic benefits to the area.

**In addition to the above requirements, COMMERCIAL LEASE APPLICANTS must provide the following information:**

- If the land is surveyed, state the lot and block number. If unsurveyed, state the size of the parcel and general area. Provide a detailed description and detailed sketch of the area applied for.
- Describe the type of commercial use.

**In addition to the above requirements, RESIDENTIAL/RECREATIONAL LEASE APPLICANTS must provide the following information:**

- If the land is surveyed, state the lot and block number. If unsurveyed, state the size of the parcel and general area. Provide a detailed description and detailed sketch of the area applied for.
- For what purposes will the land be used? Describe any buildings or improvements on this land. What is the value of the improvements on the land and who is the owner of the improvements.
- Provide a list of improvements planned for construction, the value of these improvements and within how many months of the effective date of the lease these improvements be finished.

**In addition to the above requirements, QUARRY LICENSE or QUARRY CONCESSION AGREEMENT applicants must provide the following information:**

- A description by meters and bounds of the land applied for;
- The name of the specified substances that the applicant desires to remove from the area; and
- A sketch showing clearly the position of the parcel in relation to a survey monument, prominent topographical feature or other known point and shown in its margin, copies of the markings on the posts or cairns.
- If for commercial use, the description shall contain an affidavit sworn by the applicant setting forth:
  - i) that the land contains material of the kind applied for in merchantable quantities;
  - ii) that the volume of specified substances are required for a project that has been approved by the appropriate level of government; and
  - iii) that the applicant has obtained a contract for the delivery of those Specified Substances.

**Please prepare this project description on a separate sheet of paper and attach it to your application form marked as APPENDIX A. Return the original, signed and dated application form, with attached APPENDICES A and all ORIGINAL maps of the area to QIA Lands Office at Box 1340, Iqaluit, NU, X0A 0H0.**





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# SPILL CONTINGENCY PLAN BAFFIN GOLD PROPERTY KIVALLIQ ENERGY CORPORATION

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Prepared By: Andrew Berry, Chief Operating Officer

Effective Date: June 1, 2017

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## Appendices

Appendix I:	Maps & Figures
Appendix II:	Spill Report Form
Appendix III:	Completing the Spill Report Form
Appendix IV:	MSDS Sheets



## 1. Introduction

This Spill Contingency Plan shall be in effect from February 1, 2017 and has been specifically prepared for the Baffin Gold Property, Qikiqtani Region, Nunavut. A copy of this plan will be kept in the office at site and at the head office in Vancouver. Copies of this plan may be obtained from Kivalliq Energy Corporation.

### 1.1. Corporate Details

Kivalliq Energy Corporation  
Suite 1020- 800 West Pender Street  
Vancouver, British Columbia, V6C 2V6  
Tel: (604) 646-4527  
Fax: (604) 646-4526  
[www.kivalliqenergy.com](http://www.kivalliqenergy.com)

### 1.2. Purpose and Scope

This Spill Contingency Plan provides response procedures in the event of a spill and includes procedures for proper storage and handling of fuels and other hazardous materials. The plan is designed to provide clear on-site instructions for responding to a spill while ensuring the safety of all personnel. This document provides detailed information about the equipment and contingencies in place on the project and the preventative measures outlined to promote safe handling of potentially hazardous materials. It details procedures that aim to minimize environmental impacts of spills, outline spill reporting protocol and comply with government regulations.

### 1.3. Environmental Policy

Kivalliq Energy endeavours 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.

The company's environmental policy includes:

- Ensuring all personnel and contractors adhere to Kivalliq Energy's environmental policies.
- Minimizing the risks to the health and safety of all employees.
- Complying with all applicable environmental legislation and regulations.
- Advancing the project in a socially responsible manner that includes community consultation.
- Cooperate with relevant regulatory bodies and governments on all aspects of environmental protection and policy.
- All plans, licences and permits will be reviewed with employees and contractors when hired and copies of the plans will be available in the office tent for reference.
- Company plans include: Spill Contingency Plan, Fuel Management Plan, Emergency Response Plan, Field Safety Manual, Environmental and Wildlife Management Plan, Waste Management Plan and Abandonment and Restoration Plan.

## 1.4. Project Description

The Baffin Gold Property on Baffin Island in the Qikiqtani Region of Nunavut consists of 15 prospecting permits, 6 mineral claims and two Mineral Exploration Agreements (MEA's) with Nunavut Tunngavik Inc. (NTI) on Inuit Owned Land Parcel BI-35. It is 260 kilometres southwest of Clyde River and 360 kilometres northwest of Qikiqtarjuaq. The property measures approximately 160 kilometres in an east-west direction by approximately 30 kilometres north-south and comprises a total area of 408,981.6 hectares (Appendix I).

All prospecting permits, mineral claims and the MEA's are contiguous and extend north, south, east and west between Latitudes 68.375° and 68.75° North and Longitudes 70.5° and 74.5° West in NTS map areas 027 B/05, 027 B/12, 027 B/11, 037 A/06, 037 A/07, 037 A/08, 037 A/09 and 037 A/10 (UTM coordinates: 7,584,000mN to 7,615,000mN and 520,500mE to 622,500mE, NAD83, Zone 18 and 7,586,000mN to 7,628,500mN and 377,500mE to 439,500mE Zone 19).

Kivalliq Energy intends to utilize Commander Resources Ltd.'s existing Dewar Lakes Camp (Permits Pending) on Crown lands administered by INAC to facilitate the program. The camp is located at 68°37'59" N, 71°06'38" W and operated seasonally from 2003 to 2011 but has been unoccupied since 2013. In June 2017, Commander will mobilize a crew to rehabilitate the camp and prepare it to accommodate field personnel. As the permittee, Commander Resources Ltd. has a separate Spill Contingency Plan in place for the Dewar Lakes Camp.

Due to the size of the property, Kivalliq is permitting two temporary fly camps to accommodate workers and provide effective daily access to and from priority target areas that are remote from the Dewar Lakes Camp location. The proposed Malrok Fly Camp will be located adjacent to Malrok Lake on IOL BI-35 on Inuit Owned Lands administered by QIA at 68° 30' 06" N Lat., 72° 27' 08" W Long. The proposed Tuktu Fly Camp will be located on Crown lands proximal to the Fox-3 Airstrip and adjacent to Nadluardjuk Lake at 68° 37' 10" N Lat., 73° 12' 45" W Long.

The temporary fly camps will accommodate up to 15 people and will be comprised of: 1 kitchen tent, 1 office tent, 1 dry tent, 1 utility tent, 5 supplementary sleep tents, a Pacto or outhouse latrine facility, a portable fuel-fired incinerator and a small generator shed. The structures will consist of a combination of WeatherPort vinyl tents, canvas prospectors' tents and small plywood structures. These camps will be fully closed and dismantled completely once exploration activities cease. The sites will then be reclaimed and restored to their original state.

## 1.5. Hazardous Materials On-Site

Anticipated hazardous materials to be located at the Temporary Fly Camps on the Baffin Gold Property include:

**Table 1: Proposed Hazardous Materials On-Site**

Material	Container	Quantity On-Site	Location
Diesel	205 litre drum	23	Main Fuel Cache
Jet Fuel (A/B)	205 litre drum	25	Main Fuel Cache
Propane	100 lb. cylinder	10	Main Fuel Cache
Gasoline	205 litre drum	2	Main Fuel Cache
Hydraulic Oil	1 L container	8	Utility Shed
Motor oil	1 L container	16	Utility Shed
Cleaning Products	1 L container	2	Kitchen Tent

Refer to Appendix I for the proposed fly camp layout. Material Safety Data Sheets (MSDS's) for each hazardous material are included in an Appendix IV.

## 2. Predicted Environmental Impacts

All hazardous materials pose a threat to the environment if spilled. The following list outlines potential environmental impacts of hazardous materials stored on site:

- Gasoline may be harmful to wildlife and aquatic life. It is not readily biodegradable and has the potential for bioaccumulation in the environment. Gasoline volatilizes quickly and can be explosive and a fire hazard in the event of a spill.
- Diesel may be harmful to wildlife and aquatic life. It is not readily biodegradable and has the potential for bioaccumulation in the environment. Diesel volatilizes comparatively slowly but represents a fire hazard in the event of a spill.
- Jet fuel may be harmful to wildlife and aquatic life. It is not readily biodegradable and has the potential for bioaccumulation in the environment. Jet fuel volatilizes relatively quickly and represents a fire hazard in the event of a spill.
- Propane may be harmful to wildlife and the surrounding environment, and it has the potential to accumulate in the environment. Propane is highly volatile. In the event of a spill it represents an extreme explosive hazard.
- Oils and greases may be harmful to wildlife and aquatic life. They are not readily biodegradable, their volatility is low and they have the potential for bioaccumulation in the environment.

## 3. Preventative Measures

The following actions illustrate a proactive approach to environmental stewardship. In addition, these actions minimize the potential for spills during fuel storage, handling and transfer and will prevent any chemicals, petroleum products or wastes from entering any water bodies.

### 3.1. Petroleum and Chemical Product Storage and Inventory

Remote fuel caches will be stored in accordance with approved methods of storage of drummed product. Inspections of the fuel caches will be conducted during each visit. There will be a spill kit at each fuel cache location.

#### Fuel and Chemical Storage

- All fuels and other hazardous materials will be stored in secondary containment (“berms”).
- All secondary containment will be capable of holding 110 percent of the volume of the largest fuel reservoir that is housed within the secondary containment.
- All secondary containment will be of sufficient height and depth to hold any potential spill or failure.
- Secondary containment berms will be made of material (Arctic Grade) that is sufficiently durable to withstand Nunavut’s climate and the natural terrain.
- Secondary containment berms will be equipped with hydrocarbon filtration systems (rain drains) to safely remove water that is collected inside the berms.
- Secondary containment berms will be inspected daily during operations.
- Within the secondary containment berms fuel drums will be stored in rows on their sides with bungs facing at the 3:00 and 9:00 position.
- All drums, tanks and hoses will be regularly inspected for leaks.
- Propane cylinders will be stored standing up and away from any potential sources of ignition.
- Drummed fuel used for heating tents will be placed in secondary containment.
- All fuel storage sites will be located a minimum of 31 metres from the normal high-water mark of any water body and will be inspected regularly.
- Spill Kits will be placed and will be easily identifiable with clear signage at each fuel storage site.
- “NO SMOKING” signs will be erected at each fuel storage area.
- Smoking, open flame and any potential sources of ignition are prohibited within 31 metres of any fuel storage site.
- Empty fuel drums will be removed from site regularly.

Hazardous materials that may be located on the Baffin Gold Property include small amounts of hydrochloric acid, cleaners, batteries, electronics, fluorescent light bulbs/tubes, motor oil and hydraulic oil. Materials will be stored in their original containers.

A limited inventory of motor oil and hydraulic oil will be located in the utility tent at the temporary field camp. These products typically come in 1 litre or 4 litre jugs and will be stored in a drip tray with a spill kit nearby. Hydrochloric acid is used for core logging in very small amounts (<0.5 litre) and will be kept in a sealed container in the core shack. Cleaners (solvents) will be kept in a designated area in their original containers. Cleaners, batteries and fluorescent light bulbs/tubes will be kept in their original containers.

### 3.2. Petroleum Product Transfer

Manual and automatic pumps will be used for the transfer of petroleum products. Smoking, sparks, or open flames are **prohibited** in fuel storage and re-fueling areas at all times.

A spill kit will be placed with clear signage in all areas of fuel storage and re-fueling. When re-fueling from drums those drums will be placed upon platforms underlain by a secondary containment structure.



Preventative mitigation measures include:

### Handling and Transfer

- Fuel transfer hoses with cam lock mechanisms to prevent leakage are used.
- Fuel absorbent pads are placed appropriately to protect from drips and spills.
- Personnel will carefully monitor fuel content in the receiving vessel during transfer and always have absorbent pads available while transferring fuel.
- Any drips or leakages are cleaned immediately.
- All operating personnel will be trained in proper fuel handling and spill response procedures.
- Smoking, open flame and any potential sources of ignition are prohibited within 31 metres of any fuel storage site and fuel transfer locations.
- “NO SMOKING” signs will be erected at each fuel transfer area.
- Equipment maintenance and servicing will be conducted in designated areas. Equipment will be underlain by absorbent pads and spill trays for lubricant changes.
- Funnels will be used to reduce the potential for spillage.
- Waste oils and fluids will be collected in sealed 20 litre pails and will be labelled appropriately and stored in secondary containment berms.
- Empty fuel drums will be removed from site regularly.
- All other transfers will be completed within designated areas within in secondary containment. When secondary containment is not practical (e.g. adding hydraulic oil to the helicopter), absorbent pads will be used to protect from drips and spills.

### 3.3. Spill Kit Equipment

Complete spill kits are kept on hand at all camps. Spill kits contain:

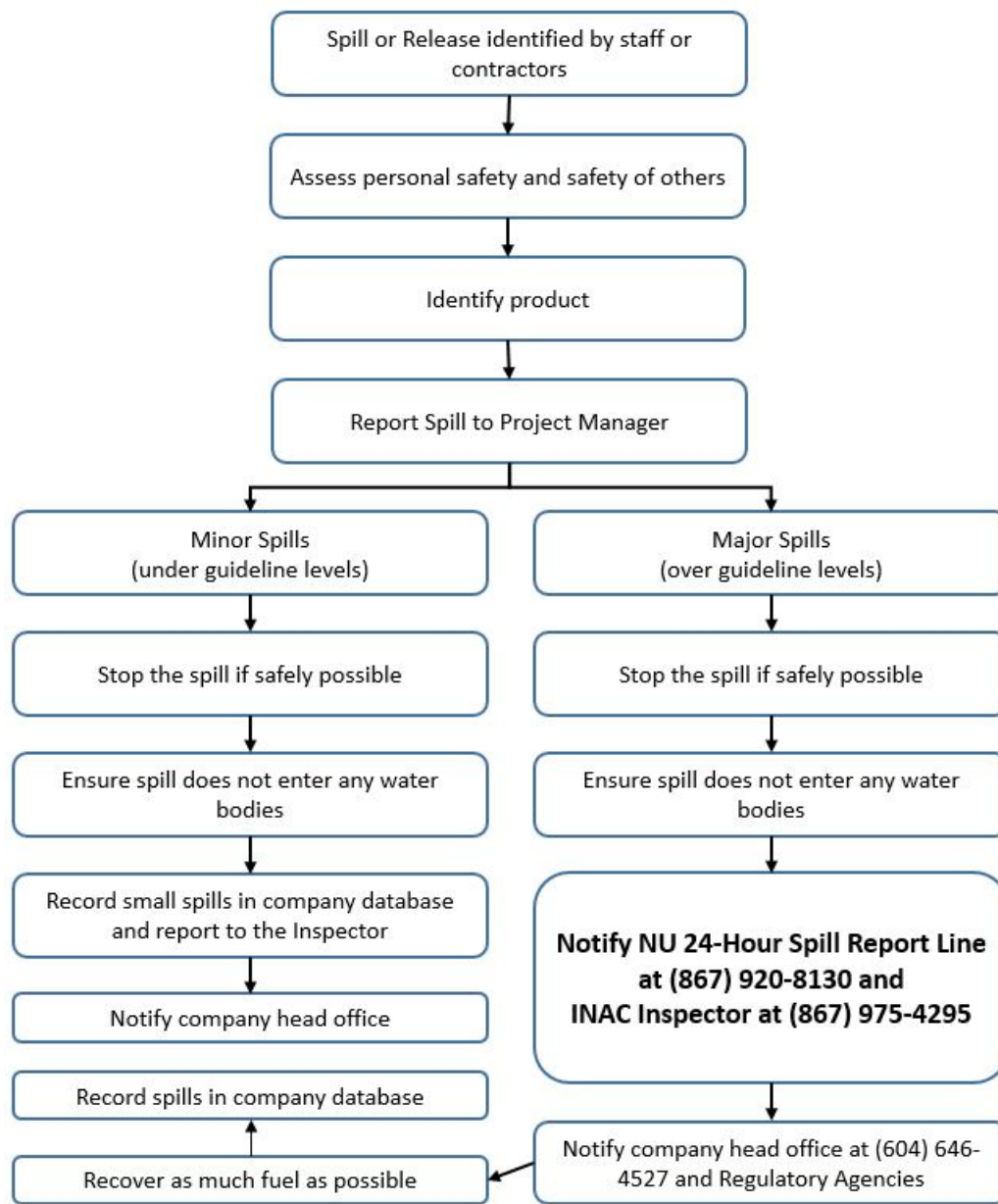
- 1 – 360 litre/79 gallon polyethylene over-pack drum
- 4 – Oil sorbent booms (5” X 10’)
- 100 – Oil sorbent sheets (16.5” X 20” X 3/8”)
- 1 – Drain cover (36” X 36” X 1/16”)
- 1 – Caution tape (3” X 500’)
- 1 – 1 lb. plugging compound
- 2 – Pairs Nitrile gloves
- 2 – Pairs Safety goggles
- 2 – Pairs Tyvek coveralls
- 1 – Instruction booklet
- 10 – Printed disposable bags (24” X 48”)
- 1 – Shovel

In the event a damaged or leaking drum is noted, at least one empty fuel drum in good condition will be located at each fuel cache to facilitate a transfer of contents into a secure container. Extra absorbent pads will be kept with the helicopter and in any area where re-fueling, transferring and/or handling is done.

## 4. Response Organization

In the case of any spill or other environmental emergency, it is necessary to react in the most immediate, safe, and environmentally responsible manner. No spill or incident is so minor that it can be ignored and every spill that meets the guideline threshold must be reported. Communications are essential when located in a remote area. A summary of available communication equipment is provided in section 4.4.

The follow flow chart depicts spill response organization, as well as the chain of command for responding to a spill or release.



#### 4.1. Basic Steps - Spill Procedure

The basic steps of the response plan are as follows:

1. Ensure the safety of all persons at all times.
2. Identify and find the spill substance and its source, and, if possible, stop the process or shut off the source.
3. Inform the Project Manager or his/her designate at once, so that he/she may take the appropriate actions. Appropriate action includes the notification of the spill to the 24 hour Spill Line and INAC Water Resource Officer. A copy of the Spill Report form can be found in **Appendix II**.
4. Contain the spill or environmental hazard, as per its nature, and as per the advice of the Spill Line and the INAC Water Resource Officer as required.
5. Implement any necessary cleanup and/or remedial action.

#### 4.2. Basic Steps - Chain of Command

1. Immediately notify and report to the 24-Hour Spill Line at (867) 920-8130, the INAC Water Resources Inspector/Manager of Field Operations in Nunavut at (867) 975-4295, Environment Canada personnel at 867-766-3737, and the Qikiqtani Inuit Association Land Inspector at (867) 975-8400.
2. A **Spill Report Form (Appendix II)** is filled out as completely as possible before or after contacting the 24 Hour Spill Line. A copy of the guidelines for completing the spill report form can be found in Appendix III.
3. Notify Jeff Ward, President at (604) 646-4538 or Andrew Berry, COO at (604) 646-4529.

#### 4.3. Spill Response/Reporting Contact Information

CONTACT	TELEPHONE NUMBER
24 Hour Spill Report Line	(867) 920-8130
Jeff Ward, President, Kivalliq Energy Corp.	(604) 646-4538 (office) (604) 763-8723 (cell)
Andrew Berry, COO, Kivalliq Energy Corp.	(604) 646-4529 (office) (604) 765-1892 (cell)
Emily McNie, Project Supervisor, Kivalliq Energy Corp.	(604) 646-8352 (office)
INAC Water Resource Officer, Iqaluit or INAC Manager of Field Operations	(867) 975-4295
Environment Canada	(867) 975-4644 24hr page: (867) 766-3737
Government of Nunavut-Department of Environment	(867) 975-7700 (Iqaluit) TDB (Community)
Robert Eno , Manager Pollution Control/Air Quality, GN	(867) 975-7748
Qikiqtani Inuit Association	(867) 975-8400
Department of Fisheries and Oceans (Iqaluit)	(867) 979-8000
Air Tindi	(867) 669-8212
Yellowknife Fire Department	(867) 873-2222

CONTACT	TELEPHONE NUMBER
RCMP	(867) 924-0123 (Clyde River) (867) 928-0123 (Hall Beach)
Stanton Regional Hospital – Yellowknife	(867) 920-4111
Discovery Mining Services	(867) 920-4600
Nunavut Water Board	(867) 360-6338
Fisheries & Oceans Canada Habitat Impact Assessment Biologist	(867) 979-8007

The Project Manager will be available **24 hours a day** at camp at TBD during operations. The camp office number will be updated once communications are established at the beginning of operations.

#### 4.4. Communications

Communications are essential when using isolated camps with aircraft support. Crew members must be taught how to use all of the communication equipment in camp. There are three types of communication used at the Dewar Lake Camp: Infosat digital satellite data / phone link, Iridium satellite phones and hand held VHF radios. The worker should ensure that they know how to operate all three communication systems as well how to summon assistance on each different piece of equipment in the event of an emergency. A summary of communication equipment procedures is below.

To use the Infosat satellite phone: (Digital data / phone link - base camp system)

- Dial as for a regular push button telephone.

To use an Iridium satellite phone:

- Press power button to turn unit.
- Unfold antenna and allow it to stand vertically.
- Ascertain 3 to 5 bar signal strength.
- Dial as for a regular push button telephone.
- Press send.

Hand held VHF radio: (personal communication with appropriate frequencies)

- Channels will be established and designated during field operations.
- Press transmit button on side of unit to talk.
- Remove pressure from transmit button to receive.

## 5. Action Plan

### 5.1. Potential Spill Hazards

The following is a list of potential spill hazards:

- Drummed products have the potential to leak or rupture. This includes drums of Jet A, Diesel, Gasoline, Waste Fuel, and Waste Oil. Ensure bungs are sealed properly.
- Propane cylinder leaks may occur at the valves. All cylinders are secured at all times. Full fuel cylinders are always stored in the upright position.
- Wheeled vehicles and equipment, aircraft (fixed and rotary wing), snowmobiles, generators, pumps. Incidents involving leaking or dripping fuels and oils may occur due to malfunctions, impact damage, and lack of regular maintenance, improper storage, or faulty operation.

Regular inspection and maintenance in accordance with recognized and accepted standard practices at all camps and fuel caches, reduces risks associated with the categories listed above.

Spill response training is provided to all personnel with particular attention to those personnel who handle fuels and other petroleum products. This training will include a presentation, review of spill kit contents and their use and reporting.

Spill Kits will be located at all camps, fuel caches and drill shacks. A description of contents is listed in Section 3.3.

### 5.2. Initial Action Procedures

1. First steps to take when a spill occurs:
  - a) Ensure your own safety and that of others around you, beginning with those nearest to the scene.
  - b) Control danger to human and aquatic life.
  - c) Identify the source of the spill.
  - d) Notify your supervisor, request assistance if needed.
  - e) Assess whether or not the spill can be readily and safely stopped.
  - f) Contain or stop the spill at the source.
2. Secondary steps to take:
  - a) Determine status of the spill event.
  - b) If necessary, pump fuel from a damaged and/or leaking tank or drum into a refuge container.
  - c) Notify the 24-hour Spill Report Line, and receive further instructions from the appropriate contact agencies listed in *Section 4.3*. (Disposal of contaminated soil or ice/snow in sealed containers for removal from site, etc.).
  - d) Complete and Fax a copy of the Spill Report Form (*Appendix II*).
  - e) Notify permitting authorities.
  - f) If possible, resume cleanup and containment.

### 5.3. Spill Response Actions – Diesel Fuel, Jet Fuel, Hydraulic Oil & Lubrication Oil

Take action only if safety permits – stop the source flow if safe to do so and eliminate all ignition sources. **Never smoke** when dealing with these types of spills.

#### ***On Land***

Build a containment berm using soil material or snow and place a plastic tarp at the foot of the berm for easy capture of the spill after all vapours have dissipated.

Remove the spill by using absorbent pads or excavating the soil, gravel or snow. Remove spill splashed on vegetation using particulate absorbent material.

Contact regulatory agencies for approval before commencing removal of any soil, gravel, or vegetation.

#### ***On Muskeg***

Do not deploy personnel and equipment on marsh or vegetation.

Remove pooled oil with sorbent pads and/or skimmer.

Flush with low pressure water to herd oil to collection point. Burn only in localized areas, e.g., trenches, piles or windrows. Do not burn if root systems can be damaged (low water table). Minimize damage caused by equipment and excavation.

#### ***On Water***

Contain spill as close to release point as possible.

Use containment boom to capture spill for recovery after vapours have dissipated. Use absorbent pads to capture small spills.

Use skimmer for larger spills.

#### ***On Ice and Snow***

Build a containment berm around spill using snow.

Remove spill using absorbent pads or particulate sorbent material.

The contaminated ice and snow must be scraped and shovelled into plastic buckets with lids, 205 litre drums, and/or polypropylene bags.

#### ***Storage and Transfer***

All contaminated water, ice, snow, soil, and clean up supplies will be temporarily stored in closed, labelled containers. All containers will be stored in a well-ventilated area away from incompatible materials.

#### ***Disposal***

Any contaminated material will be shipped from site to an appropriate and approved facility. The DOE monitors the movement of hazardous wastes from generators, carriers to receivers, through a tracking document (Waste Manifest). A Waste Manifest will accompany all movements. Kivalliq Energy Corp. has a

waste generator number (NUG 100036) and is registered at DOE with Robert Eno at [reno@gov.nu.ca](mailto:reno@gov.nu.ca) or (867) 975-7748.

### **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.

## **5.4. Spill Response Actions - Propane**

Take action only if safety permits – stop the source flow if safe to do so and eliminate all ignition sources. **Never smoke** when dealing with these types of spills.

### **On Land**

Do not attempt to contain the propane release.

### **On Water**

Do not attempt to contain the propane release.

### **On Ice and Snow**

Do not attempt to contain the propane release.

### **General**

It is not possible to contain vapours when released.

Water spray can be used to knock down vapours if there is no chance of ignition. Small fires can be extinguished with dry chemical or CO<sub>2</sub>.

Personnel should withdraw immediately from area unless a small leak is stopped immediately after it has been detected.

If tanks are damaged, gas should be allowed to disperse and no recovery attempt should be made. Personnel should avoid touching release point on containers since frost forms very rapidly.

Keep away from tank ends.

### **Storage and Transfer**

It is not possible to contain vapours when released.



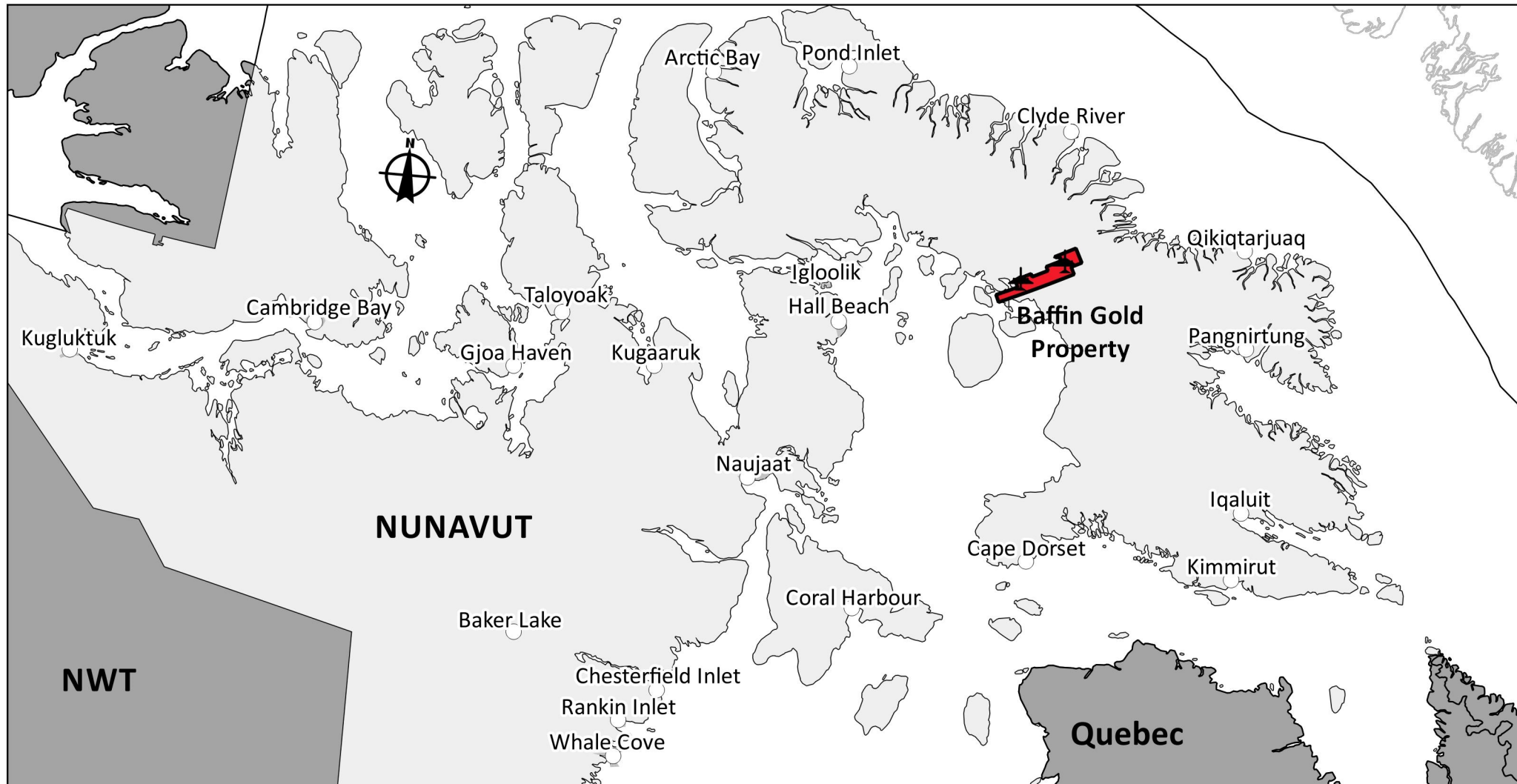
## 6. Training

All employees and contractors are required to be familiar with the Baffin Gold Property Spill Contingency Plan, and will also be trained for initial spill response methods.




All employees and contractors of Kivalliq Energy will be trained in internal policies, management plans, standard operating procedures and made familiar with the Terms and Conditions of the project's licences and permits. Every person arriving at the Baffin Gold Property will undergo an orientation session which includes information on health, safety, and environmental responsibilities and stewardship.

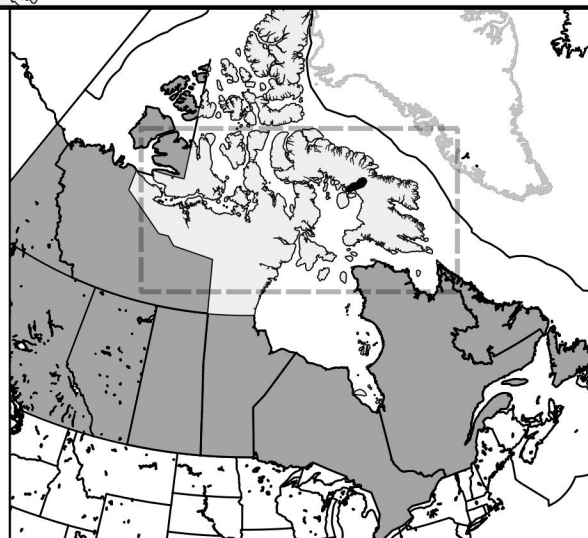
## **Appendix I**

### **Maps & Figures**



## Legend

-  Baffin Gold Property
-  Nunavut Communities
-  Airstrip




**KIVALLIQ ENERGY CORP.**

## BAFFIN GOLD PROPERTY Figure 1: Property Location

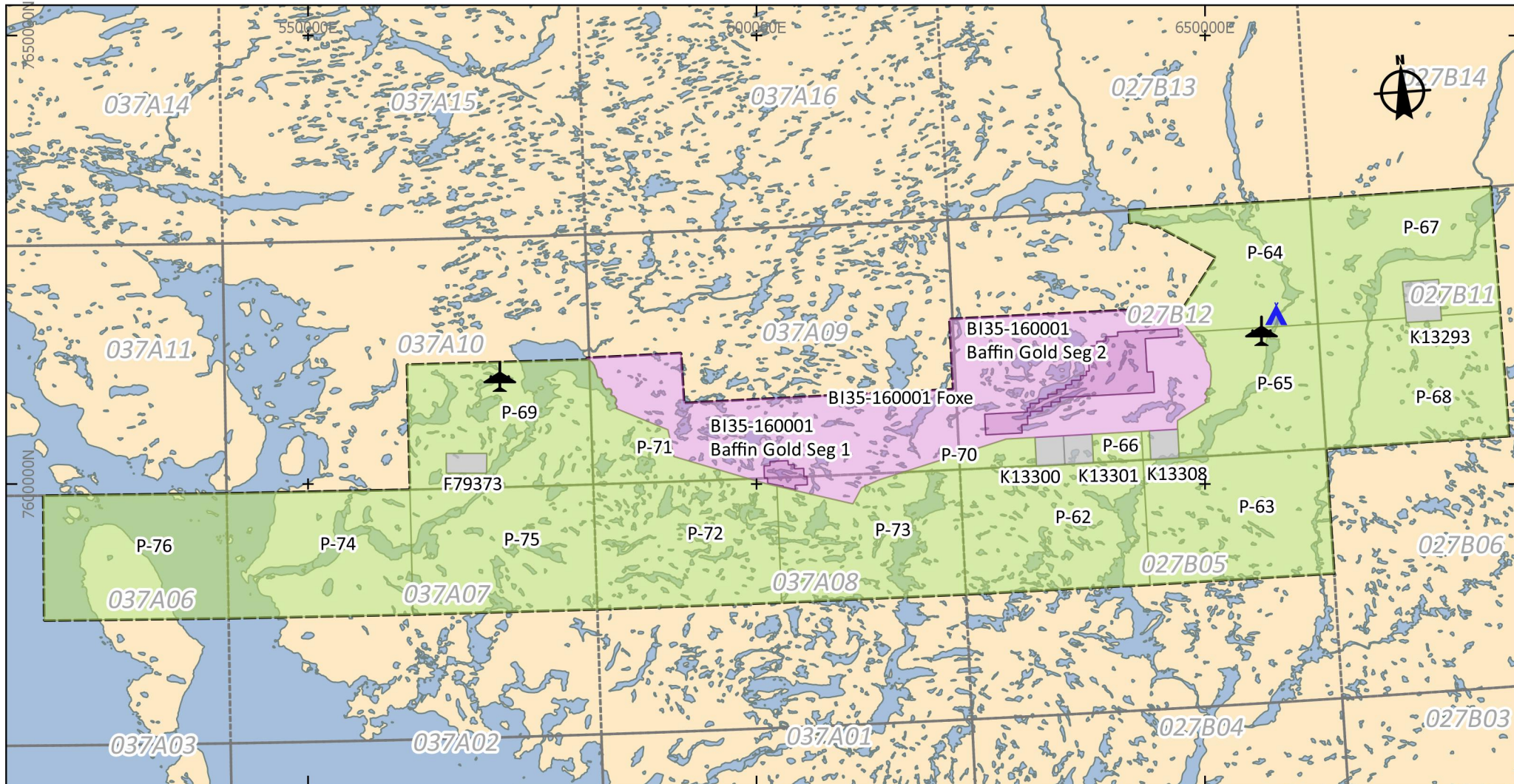
Nunavut Territory

April 2017 UTM NAD83 Zone 18 1:10,000,000

0 Kilometres 800

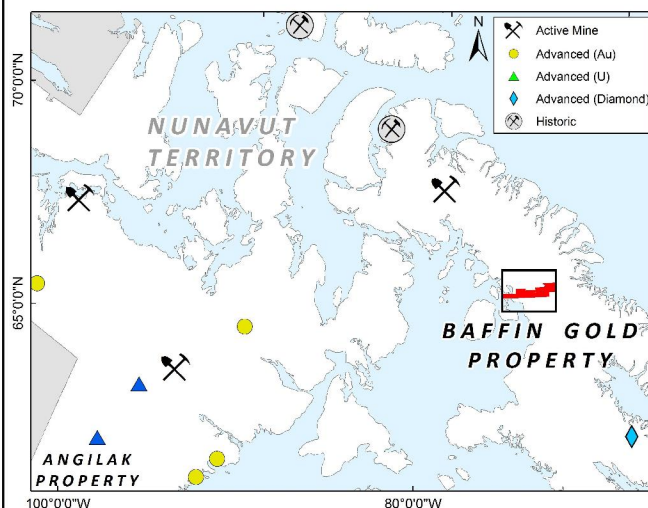






## Legend

- Baffin Gold Property
- Kivalliq Mineral Claims (CMD Option)
- Kivalliq IOL BI-35 MEA
- Kivalliq IOL BI-35 MEA (CMD Option)
- Kivalliq Prospecting Permits
-  Airstrip
-  Dewar Lakes Camp



**KIVALLIQ ENERGY CORP.**

## BAFFIN GOLD PROPERTY

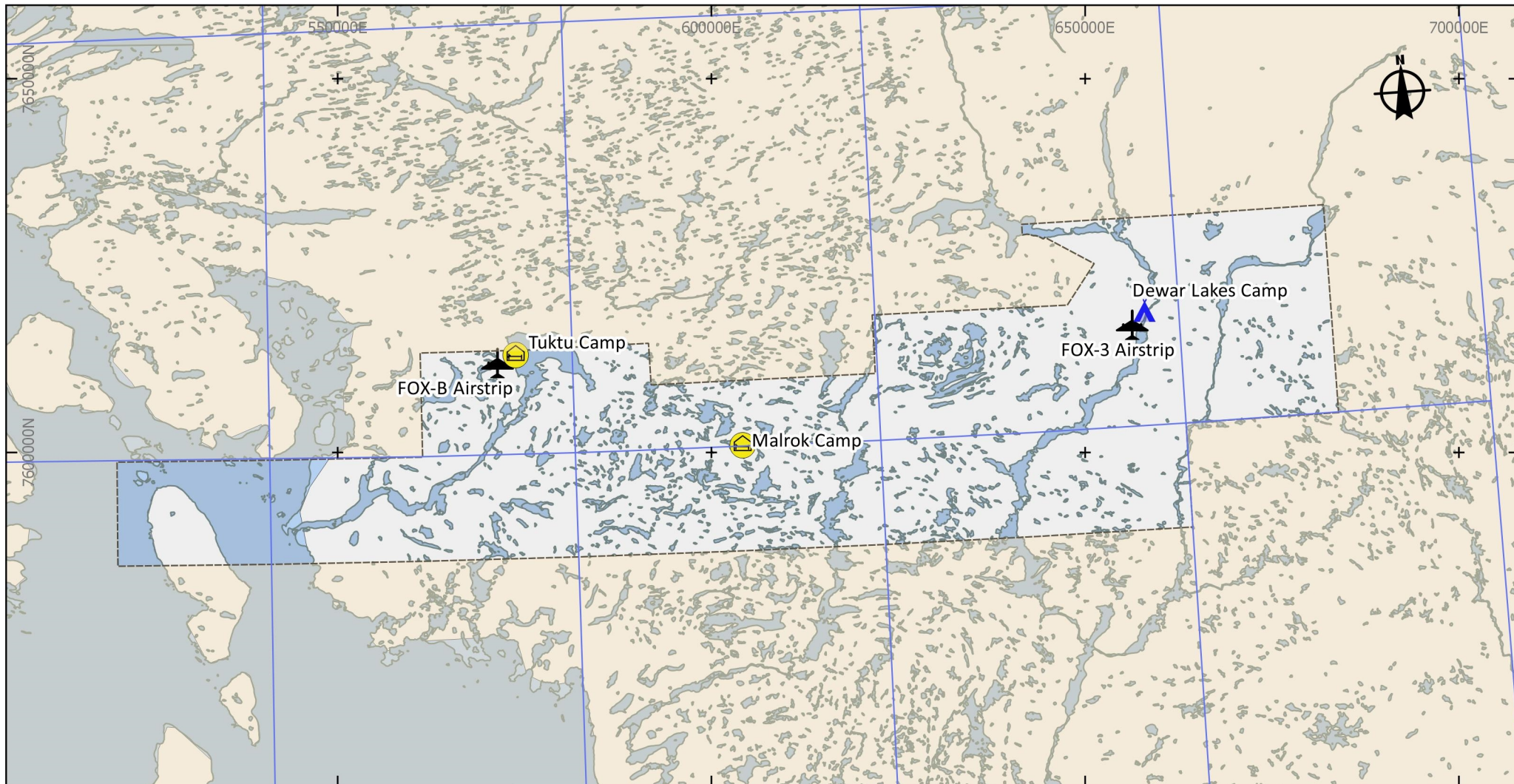
### Figure 2: Land Tenure

Nunavut Territory

April 2017 UTM NAD83 Zone 18 1:625,000








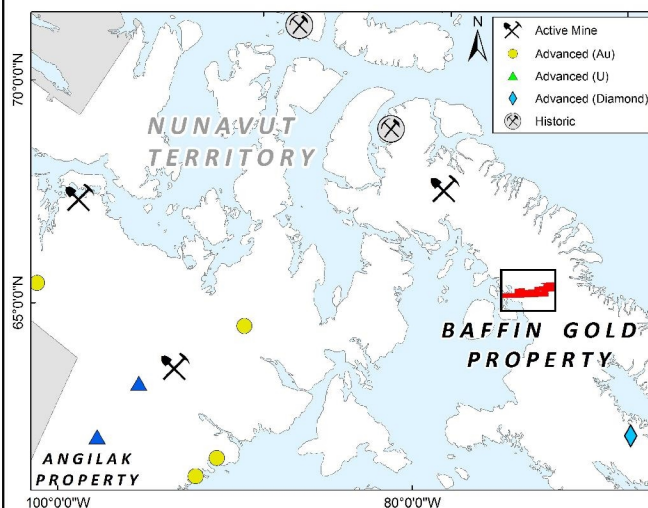


## Legend

— Baffin Gold Property

### Infrastructure

-  Dewar Lakes Camp (existing)
-  Fly Camp (Proposed)
-  Airstrip



**KIVALLIQ ENERGY CORP.**

## BAFFIN GOLD PROPERTY Figure 3: Proposed Fly Camps

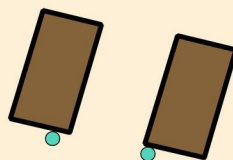
Nunavut Territory

April 2017 UTM NAD83 Zone 18 1:750,000

0 Kilometres 50



Existing Core Storage  
(Malrok Only)



Helipad

Utility  
Tent



Generator Tent

Office



Dry



Toilet Facility



Kitchen



Sleepers



First Aid

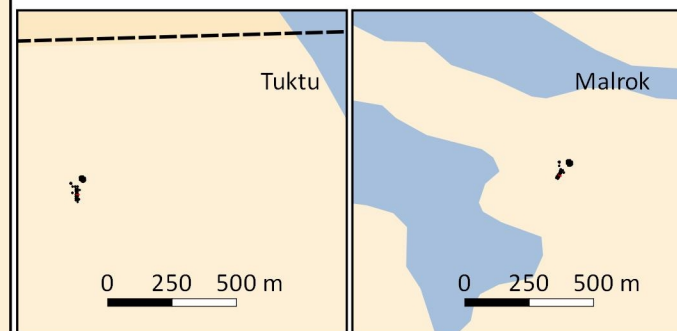


*Proposed Fly Camp layout  
for Malrok site. Tuktu site  
will have identical layout.*



## Legend

- |                        |                       |
|------------------------|-----------------------|
| Airstrip               | Generator Tent        |
| Dewar Lakes Camp       | Utility Tent          |
| Proposed Fly Camp      | Helicopter Pad        |
| <b>Fly Camp Layout</b> |                       |
| Kitchen                | Fuel Berm             |
| Dry                    | Toilet Facility       |
| Office                 | Existing Core Storage |
| Sleeper                | Spill Kits            |



**KIVALLIQ ENERGY CORP.**

## BAFFIN GOLD PROPERTY Figure 4: Proposed Fly Camp Layout

Nunavut Territory

May 2017 UTM NAD83 Zone 18 1 : 500

0 Metres 30

## **Appendix II**

### **Nunavut Spill Report Form**





Canada

# NT-NU SPILL REPORT

OIL, GASOLINE, CHEMICALS AND OTHER HAZARDOUS MATERIALS

NT-NU 24-HOUR SPILL REPORT LINE

TEL: (867) 920-8130

FAX: (867) 873-6924

EMAIL: spills@gov.nt.ca

**REPORT LINE USE ONLY**

A	REPORT DATE: MONTH – DAY – YEAR		REPORT TIME		<input type="checkbox"/> ORIGINAL SPILL REPORT, OR <input type="checkbox"/> UPDATE # _____ TO THE ORIGINAL SPILL REPORT	<b>REPORT NUMBER</b> _____-_____
	B OCCURRENCE DATE: MONTH – DAY – YEAR		B OCCURRENCE TIME			
C	LAND USE PERMIT NUMBER (IF APPLICABLE)			WATER LICENCE NUMBER (IF APPLICABLE)		
D	GEOGRAPHIC PLACE NAME OR DISTANCE AND DIRECTION FROM NAMED LOCATION				REGION	
					<input type="checkbox"/> NWT <input type="checkbox"/> NUNAVUT <input type="checkbox"/> ADJACENT JURISDICTION OR OCEAN	
E	LATITUDE			LONGITUDE		
	DEGREES	MINUTES	SECONDS	DEGREES	MINUTES	SECONDS
F	RESPONSIBLE PARTY OR VESSEL NAME		RESPONSIBLE PARTY ADDRESS OR OFFICE LOCATION			
G	ANY CONTRACTOR INVOLVED		CONTRACTOR ADDRESS OR OFFICE LOCATION			
H	PRODUCT SPILLED		QUANTITY IN LITRES, KILOGRAMS OR CUBIC METRES		U.N. NUMBER	
	SECOND PRODUCT SPILLED (IF APPLICABLE)		QUANTITY IN LITRES, KILOGRAMS OR CUBIC METRES		U.N. NUMBER	
I	SPILL SOURCE		SPILL CAUSE		AREA OF CONTAMINATION IN SQUARE METRES	
J	FACTORS AFFECTING SPILL OR RECOVERY		DESCRIBE ANY ASSISTANCE REQUIRED		HAZARDS TO PERSONS, PROPERTY OR ENVIRONMENT	
K	ADDITIONAL INFORMATION, COMMENTS, ACTIONS PROPOSED OR TAKEN TO CONTAIN, RECOVER OR DISPOSE OF SPILLED PRODUCT AND CONTAMINATED MATERIALS					
L	REPORTED TO SPILL LINE BY	POSITION	EMPLOYER	LOCATION CALLING FROM	TELEPHONE	
M	ANY ALTERNATE CONTACT	POSITION	EMPLOYER	ALTERNATE CONTACT LOCATION	ALTERNATE TELEPHONE	

**REPORT LINE USE ONLY**

N	RECEIVED AT SPILL LINE BY	POSITION	EMPLOYER	LOCATION CALLED	REPORT LINE NUMBER
		STATION OPERATOR		YELLOWKNIFE, NT	(867) 920-8130
LEAD AGENCY <input type="checkbox"/> EC <input type="checkbox"/> CCG <input type="checkbox"/> GNWT <input type="checkbox"/> GN <input type="checkbox"/> ILA <input type="checkbox"/> INAC <input type="checkbox"/> NEB <input type="checkbox"/> TC			SIGNIFICANCE <input type="checkbox"/> MINOR <input type="checkbox"/> MAJOR <input type="checkbox"/> UNKNOWN		FILE STATUS <input type="checkbox"/> OPEN <input type="checkbox"/> CLOSED
AGENCY		CONTACT NAME	CONTACT TIME	REMARKS	
LEAD AGENCY					
FIRST SUPPORT AGENCY					
SECOND SUPPORT AGENCY					
THIRD SUPPORT AGENCY					

## **Appendix III**

### **Instructions for Completing the NU Spill Report Form**

## Instructions for Completing the NT-NU Spill Report Form

This form can be filled out electronically and e-mailed as an attachment to [spills@gov.nt.ca](mailto:spills@gov.nt.ca). Until further notice, please verify receipt of e-mail transmissions with a follow-up telephone call to the spill line. Forms can also be printed and faxed to the spill line at 867-873-6924. Spills can still be phoned in by calling collect at 867-920-8130.

<b>A. Report Date/Time</b>	The actual date and time that the spill was reported to the spill line. If the spill is phoned in, the Spill Line will fill this out. <b>Please do not fill in the Report Number:</b> the spill line will assign a number after the spill is reported.
<b>B. Occurrence Date/Time</b>	Indicate, to the best of your knowledge, the exact date and time that the spill occurred. Not to be confused with the report date and time (see above).
<b>C. Land Use Permit Number /Water Licence Number</b>	This only needs to be filled in if the activity has been licenced by the Nunavut Water Board and/or if a Land Use Permit has been issued. Applies primarily to mines and mineral exploration sites.
<b>D. Geographic Place Name</b>	In most cases, this will be the name of the city or town in which the spill occurred. For remote locations – outside of human habitations – identify the most prominent geographic feature, such as a lake or mountain and/or the distance and direction from the nearest population center. <b>You must include the geographic coordinates</b> (Refer to Section E).
<b>E. Geographic Coordinates</b>	This only needs to be filled out if the spill occurred outside of an established community such as a mine site. Please note that the location should be stated in degrees, minutes and seconds of Latitude and Longitude.
<b>F. Responsible Party Or Vessel Name</b>	This is the person who was in management/control/ownership of the substance at the time that it was spilled. In the case of a spill from a ship/vessel, include the name of the ship/vessel. Please include full address, telephone number and e-mail. Use box K if there is insufficient space. <b>Please note that, the owner of the spilled substance is ultimately responsible for any spills of that substance, regardless of who may have actually caused the spill.</b>
<b>G. Contractor involved?</b>	Were there any other parties/contractors involved? An example would be a construction company who is undertaking work on behalf of the owner of the spilled substance and who may have contributed to, or directly caused the spill and/or is responding to the spill.
<b>H. Product Spilled</b>	Identify the product spilled; most commonly, it is gasoline, diesel fuel or sewage. For other substances, avoid trade names. Wherever possible, use the chemical name of the substance and further, identify the product using the four digit UN number (eg: UN1203 for gasoline; UN1202 for diesel fuel; UN1863 for Jet A & B)
<b>I. Spill Source</b>	Identify the source of the spill: truck, ship, home heating fuel tank and, if known, the cause (eg: fuel tank overfill, leaking tank; ship ran aground; traffic accident, vandalism, storm, etc.). Provide an estimate of the extent of the contaminated/impacted area (eg: 10 m <sup>2</sup> )
<b>J. Factors Affecting Spill</b>	Any factors which might make it difficult to clean up the spill: rough terrain, bad weather, remote location, lack of equipment. Do you require advice and/or assistance with the cleanup operation? Identify any hazards to persons, property or environment: for example, a gasoline spill beside a daycare centre would pose a safety hazard to children. Use box K if there is insufficient space.
<b>K. Additional Information</b>	Provide any additional, pertinent details about the spill, such as any peculiar/unique hazards associated with the spilled material. State what action is being taken towards cleaning up the spill; disposal of spilled material; notification of affected parties. If necessary, append additional sheets to the spill report. Number the pages in the same format found in the lower right hand corner of the spill form: eg. "Page 1 of 2", "Page 2 of 2" etc. <b>Please number the pages to ensure that recipients can be certain that they received all pertinent documents.</b> If only the spill report form was filled out, number the form as "Page 1 of 1".
<b>L. Reported to Spill Line by</b>	Include your full name, employer, contact number and the location from which you are reporting the spill. Use box K if there is insufficient space.
<b>M. Alternate Contact</b>	Identify any alternate contacts. This information assists regulatory agencies to obtain additional information if they cannot reach the individual who reported the spill.
<b>N. Report Line Use Only</b>	<b>Leave Blank.</b> This box is for the <b>Spill Line's use only.</b>

## **Appendix IV MSDS Sheets**

# SAFETY DATA SHEET

## DIESEL FUEL

000003000395



Version 2.0

Revision Date 2016/08/23

Print Date 2016/08/23

### SECTION 1. IDENTIFICATION

Product name : DIESEL FUEL

Synonyms : Seasonal Diesel, #1 Diesel, #2 Heating Oil, #1 Heating Oil, D50, Arctic Diesel, Farm Diesel, Marine Diesel, Low Sulphur Diesel, LSD, Ultra Low Sulphur Diesel, ULSD, Mining Diesel, Naval Distillate, Dyed Diesel, Marked Diesel, Coloured Diesel, Furnace special, Biodiesel blend, B1, B2, B5, Diesel Low Cloud (LC), Marine Gas Oil, Marine Gas Oil Dyed.

Product code : 102762, 102763, 102755, 102302, 102744, 101801, 100678, 100677, 101802, 100107, 100668, 100658, 100911, 100663, 100652, 100460, 100065, 101796, 101793, 101795, 101792, 101794, 101791, 100768, 100643, 100642, 100103, 101798, 101800, 101797, 101788, 101789, 101787, 102531, 100734, 100733, 100640, 100997, 100995, 100732, 100731, 100994

Manufacturer or supplier's details  
Petro-Canada  
P.O. Box 2844, 150 - 6th Avenue South-West  
Calgary Alberta T2P 3E3  
Canada

Emergency telephone number  
Suncor Energy: +1 403-296-3000;  
Canutec Transportation: 1-888- 226-8832 (toll-free) or 613-996-6666;  
Poison Control Centre: Consult local telephone directory for emergency number(s).

#### Recommended use of the chemical and restrictions on use

Recommended use : Diesel fuels are distillate fuels suitable for use in high and medium speed internal combustion engines of the compression ignition type. Mining diesels, marine diesels, MDO and naval distillates may have a higher flash point requirement.

Prepared by : Product Safety: +1 905-804-4752

### SECTION 2. HAZARDS IDENTIFICATION

#### Emergency Overview

Appearance	Bright oily liquid.
Colour	Clear to yellow (This product may be dyed red for taxation purposes)
Odour	Mild petroleum oil like.
Hazard Summary	Combustible liquid. May cause cancer. Irritating to eyes and skin.

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## DIESEL FUEL

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### Potential Health Effects

Primary Routes of Entry	: Eye contact Ingestion Inhalation Skin contact Skin Absorption
Target Organs	: Skin Eyes Respiratory Tract
Inhalation	: May cause respiratory tract irritation. Inhalation may cause central nervous system effects. Symptoms and signs include headache, dizziness, fatigue, muscular weakness, drowsiness and in extreme cases, loss of consciousness.
Skin	: Causes skin irritation.
Eyes	: Causes eye irritation.
Ingestion	: Ingestion may cause gastrointestinal irritation, nausea, vomiting and diarrhoea. Aspiration hazard if swallowed - can enter lungs and cause damage.
Aggravated Medical Condition	: None known.

### Other hazards

None known.

### IARC

No component of this product present at levels greater than or equal to 0.1% is identified as probable, possible or confirmed human carcinogen by IARC.

### ACGIH

Confirmed animal carcinogen with unknown relevance to humans

Fuel Oil No. 1

8008-20-6

## SECTION 3. COMPOSITION/INFORMATION ON INGREDIENTS

Substance / Mixture : Mixture

### Hazardous components

Chemical name	CAS-No.	Concentration
---------------	---------	---------------



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kerosine (petroleum), hydrodesulfurized	64742-81-0	70 - 100 %
kerosine (petroleum)	8008-20-6	
fuels, diesel	68334-30-5	
fuel oil no. 2	68476-30-2	
Alkanes, C10-20-branched and linear	928771-01-1	0 - 25 %
Soybean oil, Methyl ester	67784-80-9	0 - 5 %
Rape oil, Methyl ester	73891-99-3	
Fatty acids, tallow, Methyl esters	61788-61-2	

### SECTION 4. FIRST AID MEASURES

- If inhaled : Move to fresh air.  
Artificial respiration and/or oxygen may be necessary.  
Seek medical advice.
- In case of skin contact : In case of contact, immediately flush skin with plenty of water for at least 15 minutes while removing contaminated clothing and shoes.  
Wash skin thoroughly with soap and water or use recognized skin cleanser.  
Wash clothing before reuse.  
Seek medical advice.
- In case of eye contact : Remove contact lenses.  
Rinse immediately with plenty of water, also under the eyelids, for at least 15 minutes.  
Obtain medical attention.
- If swallowed : Rinse mouth with water.  
DO NOT induce vomiting unless directed to do so by a physician or poison control center.  
Never give anything by mouth to an unconscious person.  
Seek medical advice.
- Most important symptoms and effects, both acute and delayed : First aider needs to protect himself.

### SECTION 5. FIREFIGHTING MEASURES

- Suitable extinguishing media : Dry chemical  
Carbon dioxide (CO<sub>2</sub>)  
Water fog.  
Foam
- Unsuitable extinguishing media : Do NOT use water jet.
- Specific hazards during fire-fighting : Cool closed containers exposed to fire with water spray.
- Hazardous combustion products : Carbon oxides (CO, CO<sub>2</sub>), nitrogen oxides (NO<sub>x</sub>), sulphur oxides (SO<sub>x</sub>), sulphur compounds (H<sub>2</sub>S), smoke and irritating

# SAFETY DATA SHEET

## DIESEL FUEL

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vapours as products of incomplete combustion.

- |   |   |   |
|---|---|---|
| Further information                           | : | Prevent fire extinguishing water from contaminating surface water or the ground water system. |
| Special protective equipment for firefighters | : | Wear self-contained breathing apparatus for firefighting if necessary.                        |

---

### SECTION 6. ACCIDENTAL RELEASE MEASURES

- |   |   |   |
|---|---|---|
| Personal precautions, protective equipment and emergency procedures | : | Use personal protective equipment.<br>Ensure adequate ventilation.<br>Evacuate personnel to safe areas.<br>Material can create slippery conditions.   |
| Environmental precautions   | : | If the product contaminates rivers and lakes or drains inform respective authorities.   |
| Methods and materials for containment and cleaning up               | : | Prevent further leakage or spillage if safe to do so.<br>Remove all sources of ignition.<br>Soak up with inert absorbent material.<br>Non-sparking tools should be used.<br>Ensure adequate ventilation.<br>Contact the proper local authorities. |

---

### SECTION 7. HANDLING AND STORAGE

- |                             |   |  |
|-----------------------------|---|--|
| Advice on safe handling     | : | For personal protection see section 8.<br>Smoking, eating and drinking should be prohibited in the application area.<br>Use only with adequate ventilation.<br>In case of insufficient ventilation, wear suitable respiratory equipment.<br>Avoid spark promoters. Ground/bond container and equipment. These alone may be insufficient to remove static electricity.<br>Avoid contact with skin, eyes and clothing.<br>Do not ingest.<br>Keep away from heat and sources of ignition.<br>Keep container closed when not in use. |
| Conditions for safe storage | : | Store in original container.<br>Containers which are opened must be carefully resealed and kept upright to prevent leakage.<br>Keep in a dry, cool and well-ventilated place.<br>Keep in properly labelled containers.<br>To maintain product quality, do not store in heat or direct sunlight.  |

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### SECTION 8. EXPOSURE CONTROLS/PERSONAL PROTECTION

#### Components with workplace control parameters

# SAFETY DATA SHEET

## DIESEL FUEL

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Version 2.0

Revision Date 2016/08/23

Print Date 2016/08/23

Components	CAS-No.	Value type (Form of exposure)	Control parameters / Permissible concentration	Basis
kerosine (petroleum), hydrodesulfurized	64742-81-0	TWA	200 mg/m <sup>3</sup> (As total hydrocarbon vapour)	ACGIH
		TWA	200 mg/m <sup>3</sup> (As total hydrocarbon vapour)	ACGIH
kerosine (petroleum)	8008-20-6	TWA	200 mg/m <sup>3</sup> (total hydrocarbon vapor)	CA BC OEL
		TWA	200 mg/m <sup>3</sup> (total hydrocarbon vapor)	CA AB OEL
		TWA	200 mg/m <sup>3</sup> (total hydrocarbon vapor)	ACGIH

**Engineering measures** : Use only in well-ventilated areas.  
Ensure that eyewash station and safety shower are proximal to the work-station location.

### Personal protective equipment

Respiratory protection : Use respiratory protection unless adequate local exhaust ventilation is provided or exposure assessment demonstrates that exposures are within recommended exposure guidelines. Respirator selection must be based on known or anticipated exposure levels, the hazards of the product and the safe working limits of the selected respirator.

Filter type : organic vapour cartridge or canister may be permissible under certain circumstances where airborne concentrations are expected to exceed exposure limits. Protection provided by air-purifying respirators is limited. Use a positive-pressure, air-supplied respirator if there is any potential for uncontrolled release, exposure levels are unknown, or any other circumstances where air-purifying respirators may not provide adequate protection.

Hand protection  
Material

: neoprene, nitrile, polyvinyl alcohol (PVA), Viton(R). Consult your PPE provider for breakthrough times and the specific glove that is best for you based on your use patterns. It should be realized that eventually any material regardless of their imperviousness, will get permeated by chemicals. Therefore, protective gloves should be regularly checked for wear and tear. At the first signs of hardening and cracks, they should be changed.

Remarks

: Chemical-resistant, impervious gloves complying with an approved standard should be worn at all times when handling chemical products if a risk assessment indicates this is necessary.

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Eye protection	: Wear face-shield and protective suit for abnormal processing problems.
Skin and body protection	: Choose body protection in relation to its type, to the concentration and amount of dangerous substances, and to the specific work-place.
Protective measures	: Wash contaminated clothing before re-use.
Hygiene measures	: Remove and wash contaminated clothing and gloves, including the inside, before re-use. Wash face, hands and any exposed skin thoroughly after handling.

---

### SECTION 9. PHYSICAL AND CHEMICAL PROPERTIES

Appearance	: Bright oily liquid.
Colour	: Clear to yellow (This product may be dyed red for taxation purposes)
Odour	: Mild petroleum oil like.
Odour Threshold	: No data available
pH	: No data available
Pour point	: No data available
Boiling point/boiling range	: 150 - 371 °C (302 - 700 °F)
Flash point	: > 40 °C (104 °F) Method: closed cup
Auto-Ignition Temperature	: 225 °C (437 °F)
Evaporation rate	: No data available
Flammability	: Flammable in presence of open flames, sparks and heat. Vapours are heavier than air and may travel considerable distance to sources of ignition and flash back. This product can accumulate static charge and ignite.
Upper explosion limit	: 6 %(V)
Lower explosion limit	: 0.7 %(V)
Vapour pressure	: 7.5 mmHg (20 °C / 68 °F)
Relative vapour density	: 4.5
Relative density	: 0.8 - 0.88

# SAFETY DATA SHEET

## DIESEL FUEL

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### Solubility(ies)

Water solubility : insoluble

Partition coefficient: n-octanol/water : No data available

### Viscosity

Viscosity, kinematic : 1.3 - 4.1 cSt (40 °C / 104 °F)

Explosive properties : Do not pressurise, cut, weld, braze, solder, drill, grind or expose containers to heat or sources of ignition. Runoff to sewer may create fire or explosion hazard.

## SECTION 10. STABILITY AND REACTIVITY

Possibility of hazardous reactions : Hazardous polymerisation does not occur. Stable under normal conditions.

Conditions to avoid : Extremes of temperature and direct sunlight.

Incompatible materials : Reactive with oxidising agents and acids.

Hazardous decomposition products : May release COx, NOx, SOx, H2S, smoke and irritating vapours when heated to decomposition.

## SECTION 11. TOXICOLOGICAL INFORMATION

### Information on likely routes of exposure

Eye contact

Ingestion

Inhalation

Skin contact

Skin Absorption

### Acute toxicity

#### Product:

Acute oral toxicity : Remarks: No data available

Acute inhalation toxicity : Remarks: No data available

Acute dermal toxicity : Remarks: No data available

#### Components:

##### **kerosine (petroleum), hydrodesulfurized:**

Acute oral toxicity : LD50 (Rat): > 5,000 mg/kg,

Acute inhalation toxicity : LC50 (Rat): > 5.2 mg/l  
Exposure time: 4 hrs  
Test atmosphere: dust/mist

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Acute dermal toxicity : LD50 (Rabbit): > 2,000 mg/kg,

### **kerosine (petroleum):**

Acute oral toxicity : LD50 (Rat): > 5,000 mg/kg,

Acute inhalation toxicity : LC50 (Rat): > 5 mg/l  
Exposure time: 4 h  
Test atmosphere: dust/mist

Acute dermal toxicity : LD50 (Rabbit): > 2,000 mg/kg,

### **fuels, diesel:**

Acute oral toxicity : LD50 (Rat): 7,500 mg/kg,

Acute dermal toxicity : LD50 (Mouse): 24,500 mg/kg,

### **fuel oil no. 2:**

Acute oral toxicity : LD50 (Rat): 12,000 mg/kg,

Acute inhalation toxicity : LC50 (Rat): 4.1 mg/l  
Exposure time: 4 h  
Test atmosphere: dust/mist

### **Skin corrosion/irritation**

#### **Product:**

Remarks: No data available

### **Serious eye damage/eye irritation**

#### **Product:**

Remarks: No data available

### **Respiratory or skin sensitisation**

No data available

### **Germ cell mutagenicity**

No data available

### **Carcinogenicity**

No data available

### **Reproductive toxicity**

No data available

### **STOT - single exposure**

No data available

### **STOT - repeated exposure**

No data available

# SAFETY DATA SHEET

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### SECTION 12. ECOLOGICAL INFORMATION

#### Ecotoxicity

##### Product:

Toxicity to fish :  
Remarks: No data available

Toxicity to daphnia and other :  
aquatic invertebrates Remarks: No data available

Toxicity to algae :  
Remarks: No data available

Toxicity to bacteria : Remarks: No data available

#### Persistence and degradability

##### Product:

Biodegradability : Remarks: No data available

#### Bioaccumulative potential

No data available

#### Mobility in soil

No data available

#### Other adverse effects

No data available

### SECTION 13. DISPOSAL CONSIDERATIONS

#### Disposal methods

Waste from residues : The product should not be allowed to enter drains, water courses or the soil.  
Offer surplus and non-recyclable solutions to a licensed disposal company.  
Waste must be classified and labelled prior to recycling or disposal.  
Send to a licensed waste management company.  
Dispose of as hazardous waste in compliance with local and national regulations.  
Dispose of product residue in accordance with the instructions of the person responsible for waste disposal.

Contaminated packaging : Do not re-use empty containers.

### SECTION 14. TRANSPORT INFORMATION

#### International Regulations



# SAFETY DATA SHEET

## DIESEL FUEL

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Version 2.0

Revision Date 2016/08/23

Print Date 2016/08/23

### IATA-DGR

UN/ID No. : UN 1202  
Proper shipping name : Diesel fuel  
Class : 3  
Packing group : III  
Labels : Class 3 - Flammable Liquid  
Packing instruction (cargo aircraft) : 366

### IMDG-Code

UN number : UN 1202  
Proper shipping name : DIESEL FUEL

Class : 3  
Packing group : III  
Labels : 3  
EmS Code : F-E, S-E  
Marine pollutant : no

**Transport in bulk according to Annex II of MARPOL 73/78 and the IBC Code**

### National Regulations

#### TDG

UN number : UN 1202  
Proper shipping name : DIESEL FUEL

Class : 3  
Packing group : III  
Labels : 3  
ERG Code : 128  
Marine pollutant : no

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## SECTION 15. REGULATORY INFORMATION

**WHMIS Classification** : B3: Combustible Liquid  
D2A: Very Toxic Material Causing Other Toxic Effects  
D2B: Toxic Material Causing Other Toxic Effects

This product has been classified according to the hazard criteria of the CPR and the MSDS contains all of the information required by the CPR.

**The components of this product are reported in the following inventories:**

**DSL** : On the inventory, or in compliance with the inventory  
**TSCA** : All chemical substances in this product are either listed on the TSCA Inventory or are in compliance with a TSCA Inventory exemption.  
**EINECS** : On the inventory, or in compliance with the inventory

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## SECTION 16. OTHER INFORMATION

# SAFETY DATA SHEET

## DIESEL FUEL

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Version 2.0

Revision Date 2016/08/23

Print Date 2016/08/23

For Copy of SDS : Internet: [www.petro-canada.ca/msds](http://www.petro-canada.ca/msds)  
Canada-wide: telephone: 1-800-668-0220; fax: 1-800-837-1228  
For Product Safety Information: 1 905-804-4752

Prepared by : Product Safety: +1 905-804-4752

Revision Date : 2016/08/23

The information provided in this Safety Data Sheet is correct to the best of our knowledge, information and belief at the date of its publication. The information given is designed only as a guidance for safe handling, use, processing, storage, transportation, disposal and release and is not to be considered a warranty or quality specification. The information relates only to the specific material designated and may not be valid for such material used in combination with any other materials or in any process, unless specified in the text.

**Avjet Holding Inc.**  
**Material Safety Data Sheet**

Effective Date: 2016-01-01

Supersedes: 2013-01-01

Class B3 Combustible Class D2B Other Toxic  
Liquid Effects - Skin Irritant**1. PRODUCT AND COMPANY IDENTIFICATION**

PRODUCT: **JET A-1**  
SYNONYMS: Aviation Turbine Fuel (Kerosene Type)  
May contain anti-icing additive (Diethylene Glycol Monomethyl Ether)  
PRODUCT USE: Fuel Solvent  
MSDS Number: 142-011

**MANUFACTURER**  
**Avjet Holding Inc.****TELEPHONE NUMBERS**  
**Avjet Emergency Number**

1-866-472-0007

900, Lemire Boulevard  
Drummondville, QC Canada  
J2C 7W8For general information:  
For MSDS information:(819) 479-1000  
(819) 479-1000

This MSDS was prepared by the Toxicology and Product Stewardship Section of Avjet Holding Inc.

**2. COMPOSITION/INFORMATION ON INGREDIENTS**

Component Name	CAS Number	% Range	WHMIS Controlled
Kerosene (Petroleum), Hydrodesulfurized	64742-81-0	60 - 100	Yes

See Section 8 for Occupational Exposure Guidelines.

**3. HAZARDS IDENTIFICATION****Physical Description:** Liquid Bright Clear Hydrocarbon Odour**Routes of Exposure:** Exposure will most likely occur through skin contact or inhalation.**Hazards:**

Combustible Liquid.  
Irritating to skin.  
Vapours are moderately irritating to the eyes.  
Ingestion may result in vomiting. Avoid aspiration of vomitus into lungs as small quantities may result in aspiration pneumonitis.  
Vapours are moderately irritating to the respiratory passages.

**Handling:** Eliminate all ignition sources.  
Avoid prolonged exposure to vapours.  
Wear suitable gloves and eye protection.  
Bond and ground transfer containers and equipment to avoid static accumulation.  
Empty containers are hazardous, may contain flammable / explosive dusts, liquid residue or vapours. Keep away from sparks and open flames.

For further information on health effects, see Section 11.

#### 4. FIRST AID

**Eyes:** Flush eyes with water for at least 15 minutes while holding eyelids open. If irritation occurs and persists, obtain medical attention.

**Skin:** Wash contaminated skin with mild soap and water for 15 minutes. If irritation occurs and persists, obtain medical attention.

**Ingestion:** DO NOT INDUCE VOMITING! OBTAIN MEDICAL ATTENTION IMMEDIATELY.  
Guard against aspiration into lungs by having the individual turn on to their left side. If vomiting occurs spontaneously keep head below hips to prevent aspiration of liquid into the lungs.

**Inhalation:** Remove victim from further exposure and restore breathing, if required. Obtain medical attention.

**Notes to Physician:** The main hazard following accidental ingestion is aspiration of the liquid into the lungs producing chemical pneumonitis. If more than 2.0 mL/kg has been ingested, vomiting should be induced with supervision. If symptoms such as loss of gag reflex, convulsions or unconsciousness occur before vomiting, gastric lavage with a cuffed endotracheal tube should be considered.

#### 5. FIRE FIGHTING MEASURES

**Extinguishing Media:** Carbon Dioxide  
Foam  
Dry Chemical  
Water Fog

**Firefighting Instructions:** Caution - Combustible. Vapour forms a flammable/explosive mixture with air between upper and lower flammable limits. Vapours may travel along ground and flashback along vapour trail may occur. Product will float and can be reignited on surface of water. Do not use a direct stream of water as it may spread fire. Containers exposed to intense heat from fires should be cooled with water to prevent vapour pressure buildup which could result in container rupture. Container areas exposed to direct flame contact should be cooled with large quantities of water as needed to prevent weakening of container structure. Do not enter confined fire space without adequate protective clothing and an approved positive pressure self-contained breathing apparatus.

**Hazardous Combustion Products:** A complex mixture of airborne solid, liquid, particulates and gases will evolve when this material undergoes pyrolysis or combustion. Carbon dioxide, carbon monoxide and unidentified organic compounds may be formed upon combustion.

## 6. ACCIDENTAL RELEASE MEASURES

Issue warning "Combustible". Eliminate all ignition sources. Isolate hazard area and restrict access. Handling equipment must be grounded. Try to work upwind of spill. Avoid direct contact with material. Wear appropriate breathing apparatus (if applicable) and protective clothing. Stop leak only if safe to do so. Dike and contain land spills; contain water spills by booming. Use water fog to knock down vapours; contain runoff. Absorb residue or small spills with absorbent material and remove to non-leaking containers for disposal. Recommended materials: Clay or Sand Flush area with water to remove trace residue. Dispose of recovered material as noted under Disposal Considerations. Notify appropriate environmental agency(ies).

## 7. HANDLING AND STORAGE

**Handling:** Avoid excessive heat, sparks, open flames and all other sources of ignition. Fixed equipment as well as transfer containers and equipment should be grounded to prevent accumulation of static charge. Vapours are heavier than air and will settle and collect in low areas and pits, displacing breathing air. Extinguish pilot lights, cigarettes and turn off other sources of ignition prior to use and until all vapours are gone. Vapours may accumulate and travel to distant ignition sources and flashback. Do not cut, drill, grind, weld or perform similar operations on or near containers. Empty containers are hazardous, may contain flammable/explosive dusts, residues or vapours. Do not pressurize drum containers to empty them. Wash with soap and water prior to eating, drinking, smoking, applying cosmetics or using toilet facilities. Launder contaminated clothing prior to reuse. Use good personal hygiene. Combustible.

**Storage:** Store in a cool, dry, well ventilated area, away from heat and ignition sources. Keep container tightly closed.

## 8. EXPOSURE CONTROLS / PERSONAL PROTECTION

THE FOLLOWING INFORMATION, WHILE APPROPRIATE FOR THIS PRODUCT, IS GENERAL IN NATURE. THE SELECTION OF PERSONAL PROTECTIVE EQUIPMENT WILL VARY DEPENDING ON THE CONDITIONS OF USE.

### OCCUPATIONAL EXPOSURE LIMITS (Current ACGIH TLV/TWA unless otherwise noted):

Kerosene/Jet fuels, as total hydrocarbon vapour (skin) : 200 mg/m<sup>3</sup> ( Application restricted to conditions in which there are negligible aerosol exposures.)

Skin Notation: Absorption through skin, eyes and mucous membranes may contribute significantly to the total exposure.

**Mechanical Ventilation:** Use explosion-proof ventilation as required to control vapour concentrations. Concentrations in air should be maintained below the recommended threshold limit value if unprotected personnel are involved. Local ventilation recommended where mechanical ventilation is ineffective in controlling airborne concentrations below the recommended occupational exposure limit. Make up air should always be supplied to balance air exhausted (either generally or locally). For personnel entry into confined spaces (i.e. bulk storage tanks) a proper confined space entry procedure must be followed including ventilation and testing of tank atmosphere.

#### PERSONAL PROTECTIVE EQUIPMENT:

**Eye Protection:** Chemical safety goggles and/or full face shield to protect eyes and face, if product is handled such that it could be splashed into eyes. Provide an eyewash station in the area.

**Skin Protection:** Avoid contact with skin. Use protective clothing and gloves manufactured from nitrile. Safety showers should be available for emergency use.

**Respiratory Protection:** Avoid breathing vapour or mists. If exposure has the potential to exceed occupational exposure limits, use an appropriate NIOSH-approved respirator. Use a NIOSH-approved chemical cartridge respirator with organic vapour cartridges or use a NIOSH-approved supplied-air respirator.

## 9. PHYSICAL DATA

<b>Physical State:</b>	Liquid
<b>Appearance:</b>	Bright Clear
<b>Odour:</b>	Hydrocarbon Odour
<b>Odour Threshold:</b>	Not available
<b>Freezing/Pour Point:</b>	Freeze Point < -47 °C
<b>Boiling Point:</b>	145 - 300 °C
<b>Density:</b>	775 - 840 kg/m <sup>3</sup> @ 15 °C
<b>Vapour Density (Air = 1):</b>	Not available
<b>Vapour Pressure (absolute):</b>	1 - 1.4 kPa @ 37.8 °C
<b>pH:</b>	Not available
<b>Flash Point:</b>	Tag Closed Cup > 43 °C
<b>Lower Explosion Limit:</b>	0.7 % (vol.)
<b>Upper Explosion Limit:</b>	5 % (vol.)
<b>Autoignition Temperature:</b>	210 °C
<b>Viscosity:</b>	< 8 cSt @ -20 °C
<b>Evaporation Rate (n-BuAc = 1):</b>	Not available
<b>Partition Coefficient (log K<sub>ow</sub>):</b>	3.3 - 6
<b>Water Solubility:</b>	Insoluble
<b>Other Solvents:</b>	Hydrocarbon Solvents

## 10. STABILITY AND REACTIVITY

<b>Chemically Stable:</b>	Yes
<b>Hazardous Polymerization:</b>	No
<b>Sensitive to Mechanical Impact:</b>	No
<b>Sensitive to Static Discharge:</b>	Yes
<b>Hazardous Decomposition Products:</b>	Thermal decomposition products are highly dependent on combustion conditions.
<b>Incompatible Materials:</b>	Avoid strong oxidizing agents.

**Conditions of Reactivity:**

Avoid excessive heat, open flames and all ignition sources.

**11. TOXICOLOGICAL INFORMATION****Ingredient (or Product if not specified)      Toxicological Data**

Kerosene (Petroleum), Hydrodesulfurized      LD50 Dermal Rabbit > 2000 mg/kg  
LD50 Oral Rat > 5000 mg/kg

**Routes of Exposure:** Exposure will most likely occur through skin contact or inhalation.

**Irritancy:** This product is expected to be irritating to skin but is not predicted to be a skin sensitizer.

**Chronic Effects:** Prolonged and repeated contact with skin can cause defatting and drying of the skin resulting in skin irritation and dermatitis. Prolonged exposure to high vapour concentration can cause headache, dizziness, nausea, blurred vision and central nervous system depression.

**Pre-existing Conditions:** Pre-existing eye, skin and respiratory disorders may be aggravated by exposure to this product.

**Carcinogenicity and Mutagenicity:** The International Agency for Research on Cancer (IARC) considers that this product is not classifiable as to its carcinogenicity to humans. Middle distillates have caused skin cancers in laboratory animals when applied repeatedly and left in place between applications. This effect is believed to be caused by the continuous irritation of the skin. Good personal hygiene should be maintained to avoid this risk.

**12. ECOLOGICAL INFORMATION**

Do not allow product or runoff from fire control to enter storm or sanitary sewers, lakes, rivers, streams, or public waterways. Block off drains and ditches. Provincial regulations require and federal regulations may require that environmental and/or other agencies be notified of a spill incident. Spill area must be cleaned and restored to original condition or to the satisfaction of authorities. May cause physical fouling of aquatic organisms.

**Biodegradability:** Not readily biodegradable.  
Rapid volatilization.

**Bioaccumulation:** Potential for bioaccumulation.

**Partition Coefficient (log  $K_{ow}$ ):** 3.3 - 6

**Aquatic Toxicity**

Product is expected to be toxic to aquatic organisms.

**Ingredient:      Toxicological Data**

**Kerosene** EL50 - growth rate (WAF method) Algae (72hr) 1 - 10 mg/L.  
**(Petroleum),** EL50 (WAF method) Daphnia Magna (48hr) 1 - 10 mg/L.  
**Hydrodesulfurized** LL50 (WAF method) Rainbow Trout (96hr) 1 - 10 mg/L.



**Definition(s):** LL and EL are the lethal loading concentration and effective loading concentration respectively. The concentration represents the amount of substance added to the system to obtain a toxic concentration. They replace the traditional LC and EC for low solubility substances.

WAF is the water accommodated fraction. A slightly soluble hydrocarbon is stirred into water and the insoluble portions are removed. The remaining solution is the water accommodated fraction.

### 13. DISPOSAL CONSIDERATIONS

Waste management priorities (depending on volumes and concentration of waste) are: 1. recycle (reprocess), 2. energy recovery (cement kilns, thermal power generation), 3. incineration, 4. disposal at a licenced waste disposal facility. Do not attempt to combust waste on-site. Incinerate at a licenced waste disposal site with approval of environmental authority.

### 14. TRANSPORTATION INFORMATION

#### Canadian Road and Rail Shipping Classification:

UN Number	UN1863
Proper Shipping Name	FUEL, AVIATION, TURBINE ENGINE
Hazard Class	Class 3 Flammable Liquids
Packing Group	PG III
Additional Information	Not Regulated in Containers Less Than or Equal to 450 Litres.
Shipping Description	FUEL, AVIATION, TURBINE ENGINE Class 3 UN1863 PG III Not Regulated in Containers Less Than or Equal to 450 Litres.

### 15. REGULATORY INFORMATION

This product has been classified in accordance with the hazard criteria of the *Controlled Products Regulations (CPR)* and the MSDS contains all the information required by the CPR.

<b>WHMIS Class:</b>	Class B3 Combustible Liquid Class D2B Other Toxic Effects - Skin Irritant
<b>DSL/NDL Status:</b>	This product, or all components, are listed on the Domestic Substances List, as required under the Canadian Environmental Protection Act.
<b>Other Regulatory Status:</b>	No Canadian federal standards.

### 16. ADDITIONAL INFORMATION

#### LABEL STATEMENTS

**Hazard Statement :** Combustible Liquid.  
Irritating to skin.

**Handling Statement:** Eliminate all ignition sources.  
Avoid prolonged exposure to vapours.  
Wear suitable gloves and eye protection.  
Bond and ground transfer containers and equipment to avoid static accumulation.  
Empty containers are hazardous, may contain flammable / explosive dusts, liquid residue or vapours. Keep away from sparks and open flames.

**First Aid Statement :** Wash contaminated skin with soap and water.  
Flush eyes with water.  
If overcome by vapours remove to fresh air.  
Do not induce vomiting.  
Obtain medical attention.

**Revisions:** This MSDS has been reviewed and updated.  
Changes have been made to:  
Section 3  
Section 4  
Section 5  
Section 7  
Section 8  
Section 9  
Section 12  
Section 14

**Avjet Holding Inc.**  
**Material Safety Data Sheet**

Effective Date: 2016-01-01

Supersedes: 2013-01-01

Class B2 Flammable  
LiquidClass D2B Other Toxic  
Effects - Skin Irritant**1. PRODUCT AND COMPANY IDENTIFICATION**

PRODUCT: **AVGAS 100 LL**  
SYNONYMS: AVIATION GASOLINE  
PRODUCT USE: Fuel  
MSDS Number: 101-200

**MANUFACTURER**  
**Avjet Holding Inc.****TELEPHONE NUMBERS**  
**Avjet Emergency Number**

1-866-472-0007

900, Lemire Boulevard  
Drummondville, QC Canada  
J2C 7W8

For general information:  
For MSDS information:

(819) 479-1000  
(819) 479-1000

This MSDS was prepared by the Toxicology and Product Stewardship Section of Avjet Holding Inc.

**2. COMPOSITION/INFORMATION ON INGREDIENTS**

Component Name	CAS Number	% Range	WHMIS Controlled
Naphtha (Petroleum), Light Alkylate	64741-66-8	70 - 90	Yes
Toluene	108-88-3	10 - 30	Yes

See Section 8 for Occupational Exposure Guidelines.

**3. HAZARDS IDENTIFICATION**

**Physical Description:** Liquid Blue Colour Clear Typical Gasoline Odour

**Routes of Exposure:** Exposure will most likely occur through skin contact or inhalation.

**Hazards:**

Vapour concentrations above the recommended exposure level are irritating to the eyes and respiratory tract, may cause headaches and dizziness, are anesthetic and may have other central nervous system effects.

Flammable Liquid.

Irritating to skin.

Ingestion may result in vomiting. Avoid aspiration of vomitus into lungs as small quantities may result in aspiration pneumonitis.

May be absorbed by skin contact.

**Handling:** Eliminate all ignition sources.

Wear suitable gloves and eye protection.

Bond and ground transfer containers and equipment to avoid static accumulation.

Avoid prolonged exposure to vapours.

Empty containers are hazardous, may contain flammable / explosive dusts, liquid residue or vapours. Keep away from sparks and open flames.

For further information on health effects, see Section 11.

#### 4. FIRST AID

**Eyes:** Flush eyes with water for at least 15 minutes while holding eyelids open. If irritation occurs and persists, obtain medical attention.

**Skin:** Wash contaminated skin with mild soap and water for 15 minutes. If irritation occurs and persists, obtain medical attention.

**Ingestion:** Do not induce vomiting. Guard against aspiration into lungs by having the individual turn on to their left side. If vomiting occurs spontaneously keep head below hips to prevent aspiration of liquid into the lungs. Do not give anything by mouth to an unconscious person. Obtain medical attention immediately.

**Inhalation:** Remove victim from further exposure and restore breathing, if required. Obtain medical attention.

**Notes to Physician:** The main hazard following accidental ingestion is aspiration of the liquid into the lungs producing chemical pneumonitis. If more than 2.0 mL/kg has been ingested, vomiting should be induced with supervision. If symptoms such as loss of gag reflex, convulsions or unconsciousness occur before vomiting, gastric lavage with a cuffed endotracheal tube should be considered.

#### 5. FIRE FIGHTING MEASURES

**Extinguishing Media:** Dry Chemical  
Carbon Dioxide  
Foam  
Water Fog

**Firefighting Instructions:** Extremely flammable. Vapour forms a flammable/explosive mixture with air between upper and lower flammable limits. Vapours may travel along ground and flashback along vapour trail may occur. Product will float and can be reignited on surface of water. Do not use water except as a fog. Avoid breathing vapours. Avoid inhalation of smoke. Do not enter confined fire space without adequate protective clothing and an approved positive pressure self-contained breathing apparatus.

**Hazardous Combustion Products:** Carbon dioxide, carbon monoxide and unidentified organic compounds may be formed upon combustion.

## 6. ACCIDENTAL RELEASE MEASURES

Issue warning "Flammable". Eliminate all ignition sources. Isolate hazard area and restrict access. Handling equipment must be grounded. Try to work upwind of spill. Avoid direct contact with material. Wear appropriate breathing apparatus (if applicable) and protective clothing. Stop leak only if safe to do so. Dike and contain land spills; contain water spills by booming. Use water fog to knock down vapours; contain runoff. Absorb residue or small spills with absorbent material and remove to non-leaking containers for disposal. Recommended materials: Clay or Sand Flush area with water to remove trace residue. Dispose of recovered material as noted under Disposal Considerations. Notify appropriate environmental agency(ies).

## 7. HANDLING AND STORAGE

- Handling:** Extremely flammable. Avoid breathing vapours and prolonged or repeated contact with skin. Fixed equipment as well as transfer containers and equipment should be grounded to prevent accumulation of static charge. Provide adequate ventilation. Vapours may accumulate and travel to distant ignition sources and flashback. Do not cut, drill, grind, weld or perform similar operations on or near containers. Empty containers are hazardous, may contain flammable/explosive dusts, residues or vapours. Wash with soap and water prior to eating, drinking, smoking, applying cosmetics or using toilet facilities. Launder contaminated clothing prior to reuse. Use good personal hygiene.
- Storage:** Store in a cool, dry, well ventilated area, away from heat and ignition sources. Protect against physical damage to containers.

## 8. EXPOSURE CONTROLS / PERSONAL PROTECTION

THE FOLLOWING INFORMATION, WHILE APPROPRIATE FOR THIS PRODUCT, IS GENERAL IN NATURE. THE SELECTION OF PERSONAL PROTECTIVE EQUIPMENT WILL VARY DEPENDING ON THE CONDITIONS OF USE.

### OCCUPATIONAL EXPOSURE LIMITS (Current ACGIH TLV/TWA unless otherwise noted):

Gasoline: 300 ppm (STEL: 500 ppm)

Toluene (skin): 50 ppm

Skin Notation: Absorption through skin, eyes and mucous membranes may contribute significantly to the total exposure.

- Mechanical Ventilation:** Use explosion-proof ventilation as required to control vapour concentrations. Concentrations in air should be maintained below lower explosive limit at all times or below the recommended threshold limit value if unprotected personnel are involved. Make up air should always be supplied to balance air exhausted (either generally or locally). For personnel entry into confined spaces (i.e. bulk storage tanks) a proper confined space entry procedure must be followed including ventilation and testing of tank atmosphere.

### PERSONAL PROTECTIVE EQUIPMENT:

- Eye Protection:** Chemical safety goggles and/or full face shield to protect eyes and face, if product is handled such that it could be splashed into eyes. Provide an eyewash station in the area.

**Skin Protection:** Avoid contact with skin. Use protective clothing and gloves manufactured from nitrile. Safety showers should be available for emergency use.

**Respiratory Protection:** Avoid breathing vapour or mists. If exposure has the potential to exceed occupational exposure limits, use an appropriate NIOSH-approved respirator. For high airborne concentrations, use a NIOSH-approved supplied-air respirator, either self-contained or airline breathing apparatus, operated in positive pressure mode.

## 9. PHYSICAL DATA

**Physical State:** Liquid  
**Appearance:** Blue Colour Clear  
**Odour:** Typical Gasoline Odour  
**Odour Threshold:** Not available  
**Freezing/Pour Point:** Freeze Point < -58 °C  
**Boiling Point:** 70 - 170 °C  
**Density:** Not available  
**Vapour Density (Air = 1):** Not available  
**Vapour Pressure (absolute):** > 285 mm Hg @ 38 °C  
**pH:** Not applicable  
**Flash Point:** Tag Closed Cup < 1 °C  
**Lower Explosion Limit:** 1.4 % (vol.)  
**Upper Explosion Limit:** 7.6 % (vol.)  
**Autoignition Temperature:** Not available  
**Viscosity:** Not available  
**Evaporation Rate (n-BuAc = 1):** Not available  
**Partition Coefficient (log  $K_{ow}$ ):** Not available  
**Water Solubility:** Insoluble  
**Other Solvents:** Hydrocarbon Solvents

## 10. STABILITY AND REACTIVITY

**Chemically Stable:** Yes  
**Hazardous Polymerization:** No  
**Sensitive to Mechanical Impact:** No  
**Sensitive to Static Discharge:** Yes  
**Incompatible Materials:** Avoid strong oxidizing agents.  
**Conditions of Reactivity:** Avoid excessive heat, open flames and all ignition sources.

## 11. TOXICOLOGICAL INFORMATION

Ingredient (or Product if not specified)	Toxicological Data
Naphtha (Petroleum), Light Alkylate	LD50 Oral Rat > 8000 mg/kg LD50 Dermal Rat > 4000 mg/kg LC50 Inhalation Rat > 11000 mg/m <sup>3</sup> for 4hours
Toluene	LD50 Dermal Rabbit = 14000 mg/kg LC50 Inhalation Rat = 8000 ppm for 4 hours LD50 Oral Rat = 5000 mg/kg

**Routes of Exposure:** Exposure will most likely occur through skin contact or inhalation.  
**Formulation:** This product contains n-hexane.

<b>Irritancy:</b>	This product is expected to be irritating to skin but is not predicted to be a skin sensitizer.
<b>Acute Toxicity:</b>	Vapour concentrations above the recommended exposure level are irritating to the eyes and respiratory tract, may cause headaches and dizziness, are anesthetic and may have other central nervous system effects.
<b>Chronic Effects:</b>	Prolonged and repeated contact with skin can cause defatting and drying of the skin resulting in skin irritation and dermatitis. Prolonged or repeated exposure to high vapour concentration or ingestion can cause headache, nausea, dizziness, and central nervous system depression, and in rare cases may sensitize heart muscles causing heart arrhythmia. Peripheral neurotoxicity has been reported in connection with over exposure to n-hexane. This product contains low levels of lead. Chronic, low grade exposure to lead compounds could lead to insomnia, anorexia, nausea and vomiting, diarrhea, anemia, sensory loss and muscular weakness.
<b>Pre-existing Conditions:</b>	Pre-existing eye, skin and respiratory disorders may be aggravated by exposure to this product.

## 12. ECOLOGICAL INFORMATION

Do not allow product or runoff from fire control to enter storm or sanitary sewers, lakes, rivers, streams, or public waterways. Block off drains and ditches. Provincial regulations require and federal regulations may require that environmental and/or other agencies be notified of a spill incident. Spill area must be cleaned and restored to original condition or to the satisfaction of authorities.

**Biodegradability:** Rapid volatilization.

**Bioaccumulation:** Not available.

**Partition Coefficient (log  $K_{ow}$ ):** Not available

### Aquatic Toxicity

Product is expected to be toxic to aquatic organisms.

<b>Ingredient:</b>	<b>Toxicological Data</b>
<b>Naphtha</b>	EL50 - growth rate (WAF method) Algae (72hr) 1 - 10 mg/L.
<b>(Petroleum), Light</b>	EL50 (WAF method) Daphnia Magna (48hr) 1 - 10 mg/L.
<b>Alkylate</b>	LL50 (WAF method) Rainbow Trout (96hr) 1 - 10 mg/L.
<b>Toluene</b>	EL50 - growth rate Algae (72hr) 10 - 100 mg/L.
	EL50 Daphnia Magna (48hr) 10 - 100 mg/L.
	LL50 Rainbow Trout (96hr) 10 - 100 mg/L.

## 13. DISPOSAL CONSIDERATIONS

Waste management priorities (depending on volumes and concentration of waste) are: 1. recycle (reprocess), 2. energy recovery (cement kilns, thermal power generation), 3. incineration, 4. disposal at a licenced waste disposal facility. Do not attempt to combust waste on-site. Incinerate at a licenced waste disposal site with approval of environmental authority.

## 14. TRANSPORTATION INFORMATION



**Canadian Road and Rail Shipping Classification:**

UN Number	UN1203
Proper Shipping Name	GASOLINE
Hazard Class	Class 3 Flammable Liquids
Packing Group	PG II
Additional Information	Marine Pollutant
Shipping Description	GASOLINE Class 3 UN1203 PG II Marine Pollutant

**15. REGULATORY INFORMATION**

This product has been classified in accordance with the hazard criteria of the *Controlled Products Regulations* (CPR) and the MSDS contains all the information required by the CPR.

<b>WHMIS Class:</b>	Class B2 Flammable Liquid Class D2B Other Toxic Effects - Skin Irritant
<b>DSL/NDL Status:</b>	This product, or all components, are listed on the Domestic Substances List, as required under the Canadian Environmental Protection Act.
<b>Other Regulatory Status:</b>	No Canadian federal standards.

**16. ADDITIONAL INFORMATION****LABEL STATEMENTS**

<b>Hazard Statement :</b>	Flammable Liquid. Irritating to skin.
<b>Handling Statement:</b>	Eliminate all ignition sources. Wear suitable gloves and eye protection. Bond and ground transfer containers and equipment to avoid static accumulation. Avoid prolonged exposure to vapours. Empty containers are hazardous, may contain flammable / explosive dusts, liquid residue or vapours. Keep away from sparks and open flames.
<b>First Aid Statement :</b>	Wash contaminated skin with soap and water. Flush eyes with water. If overcome by vapours remove to fresh air. Do not induce vomiting. Obtain medical attention.

**Revisions:**

This MSDS has been reviewed and updated.  
Changes have been made to:

Section 3  
Section 5  
Section 6  
Section 7  
Section 8  
Section 9  
Section 12  
Section 14



# Shell Canada Limited Material Safety Data Sheet

Effective Date: 2010-05-07

Supersedes: 2007-05-25



Class B2 Flammable Liquid



Class D2A Carcinogenicity

## 1. PRODUCT AND COMPANY IDENTIFICATION

PRODUCT: **REGULAR UNLEADED GASOLINE**

SYNONYMS: Automotive Fuel  
Petrol

PRODUCT USE: Fuel

PRODUCT CODE: **211-001**

### SUPPLIER

**Shell Canada Limited (SCL)**

P.O. Box 100, Station M

400-4th Ave. S.W.

Calgary, AB Canada

T2P 2H5

### TELEPHONE NUMBERS

**Shell Emergency Number**

**CANUTEC 24 HOUR EMERGENCY NUMBER**

For general information:

1-800-661-7378

1-613-996-6666

1-800-661-1600

[www.shell.ca](http://www.shell.ca)

This MSDS was prepared by the Toxicology and Product Stewardship Section of Shell Canada Limited.

\*An asterisk in the product name designates a trade-mark of Shell Brands International AG. Used under license.

## 2. COMPOSITION/INFORMATION ON INGREDIENTS

Component Name	CAS Number	% Range	WHMIS Controlled
Gasoline	86290-81-5	> 90	Yes
Benzene	71-43-2	< 1.5	Yes

See Section 8 for Occupational Exposure Guidelines.

## 3. HAZARDS IDENTIFICATION

**Physical Description:** Volatile Liquid Colourless Typical Gasoline Odour

**Routes of Exposure:** Exposure will most likely occur through skin contact or inhalation.

### Hazards:

Vapour concentrations above the recommended exposure level are irritating to the eyes and respiratory tract, may cause headaches and dizziness, are anesthetic and may have other central nervous system effects.

Flammable Liquid.

Contains Benzene.

May cause cancer.

Ingestion may result in vomiting. Avoid aspiration of vomitus into lungs as small quantities may result in aspiration pneumonitis.  
May be absorbed by skin contact.  
In rare cases may sensitize heart muscle causing heart arrhythmia.

**Handling:** Eliminate all ignition sources.  
Wear suitable gloves and eye protection.  
Bond and ground transfer containers and equipment to avoid static accumulation.  
Avoid prolonged exposure to vapours.  
Empty containers are hazardous, may contain flammable / explosive dusts, liquid residue or vapours. Keep away from sparks and open flames.

For further information on health effects, see Section 11.

#### 4. FIRST AID MEASURES

**Eyes:** Flush eyes with water for at least 15 minutes while holding eyelids open. If irritation occurs and persists, obtain medical attention.

**Skin:** Wash contaminated skin with mild soap and water for at least 15 minutes. If irritation occurs and persists, obtain medical attention.

**Ingestion:** DO NOT INDUCE VOMITING! OBTAIN MEDICAL ATTENTION IMMEDIATELY.  
Guard against aspiration into lungs by having the individual turn on to their left side. If vomiting occurs spontaneously, keep head below hips to prevent aspiration of liquid into the lungs. Do not give anything by mouth to an unconscious person.

**Inhalation:** Remove victim from further exposure and restore breathing, if required. Obtain medical attention.

**Notes to Physician:** The main hazard following accidental ingestion is aspiration of the liquid into the lungs producing chemical pneumonitis.

#### 5. FIRE FIGHTING MEASURES

**Extinguishing Media:** Dry Chemical  
Carbon Dioxide  
Foam  
Water Fog

**Firefighting Instructions:** Flammable. Clear area of unprotected personnel. Do not use a direct stream of water as it may spread fire. Product will float and can be reignited on surface of water. Vapour forms a flammable/explosive mixture with air between upper and lower flammable limits. Avoid breathing vapours. Use water to cool fire exposed containers. Vapours may travel along ground and flashback along vapour trail may occur. Do not enter confined fire space without adequate protective clothing and an approved positive pressure self-contained breathing apparatus. Delayed lung damage can be experienced after exposure to combustion products, sometimes hours after the exposure.

**Hazardous Combustion Products:** Carbon dioxide, carbon monoxide and unidentified organic compounds may be formed upon combustion.

#### 6. ACCIDENTAL RELEASE MEASURES

Issue warning "Flammable". Eliminate all ignition sources. Isolate hazard area and restrict access. Handling

equipment must be grounded. Work upwind of spill if it is safe to do so. Avoid direct contact with material. Wear appropriate breathing apparatus (if applicable) and protective clothing. Stop leak only if safe to do so. Dike and contain land spills; contain spills to water by booming. Use water fog to knock down vapours; contain runoff. Adsorb residue or small spills with adsorbent material and remove to non-leaking containers for disposal. Notify appropriate environmental agency(ies). After area has been cleaned up to the satisfaction of regulatory authorities, flush area with water to remove trace residue. Dispose of recovered material as noted under Disposal Considerations.

## 7. HANDLING AND STORAGE

- Handling:** Flammable. Fixed equipment as well as transfer containers and equipment should be grounded to prevent accumulation of static charge. Avoid breathing vapours and prolonged or repeated contact with skin. Vapours may accumulate and travel to distant ignition sources and flashback. Empty containers are hazardous, may contain flammable/explosive dusts, residues or vapours. Do not pressurize drum containers to empty them. Do not cut, drill, grind, weld or perform similar operations on or near containers. Provide adequate ventilation. Launder contaminated clothing prior to reuse. Wash with soap and water prior to eating, drinking, smoking, applying cosmetics or using toilet facilities.
- Storage:** Store in a cool, dry, well ventilated area, away from heat and ignition sources. Use explosion-proof ventilation to prevent vapour accumulation.

## 8. EXPOSURE CONTROLS / PERSONAL PROTECTION

The following information, while appropriate for this product, is general in nature. The selection of personal protective equipment will vary depending on the conditions of use.

### OCCUPATIONAL EXPOSURE LIMITS (Current ACGIH TLV/TWA unless otherwise noted):

The exposure limits listed here are provided for guidance only. Consult local, provincial and territorial authorities for specific values.

Gasoline: 300 ppm (STEL: 500 ppm)

Benzene (skin) : 0.5 ppm (STEL: 2.5 ppm)

Benzene: Shell internal standard is 0.5 ppm or 1.6 mg/m<sup>3</sup> (8-12 hour time-weighted average limit), 2.5 ppm or 8 mg/m<sup>3</sup> (15-minute short term limit)

Skin Notation: Absorption through skin, eyes and mucous membranes may contribute significantly to the total exposure.

- Mechanical Ventilation:** Concentrations in air should be maintained below the occupational exposure limit if unprotected personnel are involved. Use explosion-proof ventilation as required to control vapour concentrations. Local ventilation recommended where general ventilation is ineffective in controlling airborne concentrations below the recommended occupational exposure limit. Make up air should always be supplied to balance air exhausted (either generally or locally). For personnel entry into confined spaces (i.e. bulk storage tanks) a proper confined space entry procedure must be followed including ventilation and testing of tank atmosphere.

### PERSONAL PROTECTIVE EQUIPMENT:

- Eye Protection:** Chemical safety goggles and/or full face shield to protect eyes and face, if product is handled such that it could be splashed into eyes. Provide an eyewash station in the area.

- Skin Protection:** Avoid contact with skin. Use protective clothing and gloves manufactured from nitrile. Safety showers should be available for emergency use.
- Respiratory Protection:** Avoid breathing vapour or mists. If exposure has the potential to exceed occupational exposure limits, use an appropriate NIOSH-approved respirator. For high airborne concentrations, use a NIOSH-approved supplied-air respirator, either self-contained or airline breathing apparatus, operated in positive pressure mode.

## 9. PHYSICAL AND CHEMICAL PROPERTIES

<b>Physical State:</b>	Volatile Liquid
<b>Appearance:</b>	Colourless
<b>Odour:</b>	Typical Gasoline Odour
<b>Odour Threshold:</b>	< 0.25 ppm
<b>Freezing/Pour Point:</b>	Not available
<b>Boiling Point:</b>	35 - 220 °C
<b>Density:</b>	720 - 760 kg/m <sup>3</sup> @ 15 °C
<b>Vapour Density (Air = 1):</b>	3.5
<b>Vapour Pressure (absolute):</b>	< 107 kPa @ 38 °C
<b>Specific Gravity (Water = 1):</b>	0.74
<b>pH:</b>	Not applicable
<b>Flash Point:</b>	TCC -30 °C
<b>Lower Flammable Limit:</b>	1.4 % (vol.)
<b>Upper Flammable Limit:</b>	7.6 % (vol.)
<b>Autoignition Temperature:</b>	280 °C
<b>Viscosity:</b>	< 1 mm <sup>2</sup> /s @ 38 °C
<b>Evaporation Rate (n-BuAc = 1):</b>	Not available
<b>Partition Coefficient (log K<sub>OW</sub>):</b>	2.3
<b>Water Solubility:</b>	Insoluble
<b>Other Solvents:</b>	Hydrocarbon Solvents
<b>Formula:</b>	C4 - C11

## 10. STABILITY AND REACTIVITY

<b>Chemically Stable:</b>	Yes
<b>Hazardous Polymerization:</b>	No
<b>Sensitive to Mechanical Impact:</b>	No
<b>Sensitive to Static Discharge:</b>	Yes
<b>Incompatible Materials:</b>	Avoid contact with strong oxidizing agents and acids.
<b>Conditions of Reactivity:</b>	Avoid excessive heat, open flames and all ignition sources.

## 11. TOXICOLOGICAL INFORMATION

<b>Ingredient (or Product if not specified)</b>	<b>Toxicological Data</b>
Gasoline	LD50 Oral Rat > 18 mL/kg LD50 Dermal Rabbit > 5 mL/kg
Benzene	LD50 Oral Rat 690 - 3400 mg/kg LC50 Inhalation Rat 13700 ppm for 4 hours LD50 Dermal Rabbit > 8260 mg/kg

<b>Routes of Exposure:</b>	Exposure will most likely occur through skin contact or inhalation.
<b>Formulation:</b>	No data is specifically available for this product and therefore this toxicological information is based on testing completed with the ingredients.
<b>Irritancy:</b>	Based on testing with similar materials, this product is not expected to be a primary skin irritant after exposure of short duration, would not be a skin sensitizer and would not be irritating to the eye.
<b>Acute Toxicity:</b>	Vapour concentrations above the recommended exposure level are irritating to the eyes and respiratory tract, may cause headaches and dizziness, are anesthetic and may have other central nervous system effects.
<b>Chronic Effects:</b>	Prolonged and repeated contact with skin can cause defatting and drying of the skin resulting in skin irritation and dermatitis. Prolonged exposure to high vapour concentration can cause headache, dizziness, nausea, blurred vision and central nervous system depression. Prolonged and repeated exposure may cause serious injury to blood forming organs, resulting in anemia and similar conditions. Myelodysplastic syndrome (MDS) has been observed in people exposed to very high levels (50 to 300 ppm) of benzene over a long period of time in the workplace. The relevance of these results to lower levels of exposure is not known.
<b>Carcinogenicity and Mutagenicity:</b>	According to the International Agency for Research on Cancer (IARC) this product is considered to be possibly carcinogenic to humans. This product contains benzene. Carcinogenic hazard. Repeated exposure to benzene concentrations greater than the recommended TLV/TWA may reduce the cellular components of peripheral blood and bone marrow. Epidemiological studies indicate that long term inhalation of benzene vapour can cause leukaemia in man. Benzene has also produced chromosomal aberrations in peripheral blood lymphocytes. May cause heritable genetic damage.

## 12. ECOLOGICAL INFORMATION

Do not allow product or runoff from fire control to enter storm or sanitary sewers, lakes, rivers, streams, or public waterways. Block off drains and ditches.

<b>Biodegradability:</b>	Inherently biodegradable. Rapid volatilization.
<b>Bioaccumulation:</b>	Potential for bioaccumulation.
<b>Partition Coefficient (log K<sub>ow</sub>):</b>	2.3
<b>Aquatic Toxicity:</b>	Product is expected to be toxic to aquatic organisms.

<b>Ingredient:</b>	<b>Toxicological Data</b>
<b>Gasoline</b>	LL50 (WAF method) Rainbow Trout (96hr) 1 - 10 mg/L. EL50 (WAF method) Daphnia Magna (48hr) 1 - 10 mg/L. EL50 - growth rate (WAF method) Algae (72hr) 1 - 10 mg/L.
<b>Benzene</b>	LL50 Rainbow Trout (96hr) 1 - 10 mg/L. EL50 Daphnia Magna (48hr) 10 - 100 mg/L. EL50 - growth rate Algae (72hr) 10 - 100 mg/L.

<b>Definition(s):</b>	LL and EL are the lethal loading concentration and effective loading concentration respectively. The concentration represents the amount of substance added to the system to obtain a toxic concentration. They replace the traditional LC and EC for low solubility substances. WAF is the water accommodated fraction. A slightly soluble hydrocarbon is stirred
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into water and the insoluble portions are removed. The remaining solution is the water accommodated fraction.

### 13. DISPOSAL CONSIDERATIONS

Waste management priorities (depending on volumes and concentration of waste) are: 1. recycle (reprocess), 2. energy recovery 3. incineration, 4. disposal at a licenced waste disposal facility. Do not attempt to combust waste on-site. Incinerate at a licenced waste disposal site with approval of environmental authority.

### 14. TRANSPORT INFORMATION

#### Canadian Road and Rail Shipping Classification:

UN Number	UN1203
Proper Shipping Name	GASOLINE
Hazard Class	Class 3 Flammable Liquids
Packing Group	PG II
Additional Information	Marine Pollutant
Shipping Description	GASOLINE Class 3 UN1203 PG II Marine Pollutant

### 15. REGULATORY INFORMATION

This product has been classified in accordance with the hazard criteria of the *Controlled Products Regulations* (CPR) and the MSDS contains all the information required by the CPR.

<b>WHMIS Class:</b>	Class B2 Flammable Liquid Class D2A Carcinogenicity
<b>DSL/NDSL Status:</b>	This product, or all components, are listed on the Domestic Substances List, as required under the Canadian Environmental Protection Act. This product and/or all components are listed on the U.S. EPA TSCA Inventory.
<b>Other Regulatory Status:</b>	The regulatory information is not intended to be comprehensive. Other regulations may apply to this material.

### 16. OTHER INFORMATION

#### LABEL STATEMENTS

<b>Hazard Statement :</b>	Flammable Liquid. Contains Benzene. May cause cancer.
<b>Handling Statement:</b>	Eliminate all ignition sources. Wear suitable gloves and eye protection. Bond and ground transfer containers and equipment to avoid static accumulation. Avoid prolonged exposure to vapours. Empty containers are hazardous, may contain flammable / explosive dusts, liquid residue or vapours. Keep away from sparks and open flames.
<b>First Aid Statement :</b>	Wash contaminated skin with soap and water. Flush eyes with water.

If overcome by vapours remove to fresh air.  
Do not induce vomiting.  
Obtain medical attention.

**Revisions:**

This MSDS has been reviewed and updated. Section 4 Section 5 Section 7 Section  
8 Section 11 Section 15

# SAFETY DATA SHEET

## HYDREX<sup>TM/MC</sup> AW 46

000003000469



Version 5.1

Revision Date 2017/02/17

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### SECTION 1. IDENTIFICATION

Product name : HYDREX<sup>TM/MC</sup> AW 46

Product code : HDXAW46P5R, HDXAW46P20, HDXAW46ICT, HDXAW46IBC, HDXAW46DRR, HDXAW46DRM, HDXAW46DCT, HDXAW46, HDXAW46BLK

Manufacturer or supplier's details  
Petro-Canada Lubricants Inc.  
2310 Lakeshore Road West  
Mississauga ON L5J 1K2  
Canada

Emergency telephone number  
Petro-Canada Lubricants Inc.: +1 905-403-5770;  
CHEMTREC Transport Emergency: 1-800-424-9300;  
Poison Control Centre: Consult local telephone directory for emergency number(s).

#### Recommended use of the chemical and restrictions on use

Recommended use : These products are designed for use as heavy duty hydraulic power transmission fluids and for lubrication where good anti-wear and anti-oxidation properties are required. They would typically be used in high-pressure hydraulic systems, machine tools, presses, compressors, pumps, gear sets, and centralized bearing lubrication systems.

Prepared by : Product Safety: +1 905-804-4752

### SECTION 2. HAZARDS IDENTIFICATION

#### Emergency Overview

Appearance	viscous liquid
Colour	Pale, straw-yellow.
Odour	Mild petroleum oil like.

#### GHS Classification

Not a hazardous substance or mixture.

#### GHS label elements

Not a hazardous substance or mixture.

#### Potential Health Effects

Primary Routes of Entry : Eye contact  
Ingestion  
Inhalation

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Skin contact

Aggravated Medical Condition : None known.

### Other hazards

None known.

### IARC

No component of this product present at levels greater than or equal to 0.1% is identified as probable, possible or confirmed human carcinogen by IARC.

### ACGIH

No component of this product present at levels greater than or equal to 0.1% is identified as a carcinogen or potential carcinogen by ACGIH.

## SECTION 3. COMPOSITION/INFORMATION ON INGREDIENTS

Substance / Mixture : Mixture

### Hazardous components

Chemical name	CAS-No.	Concentration
lubricating oils (petroleum), C20-50, hydrotreated neutral oil-based	72623-87-1	70 - 90 %
lubricating oils (petroleum), C20-50, hydrotreated neutral oil-based, high viscosity	72623-85-9	10 - 20 %
distillates (petroleum), hydrotreated heavy paraffinic	64742-54-7	10 - 20 %
lubricating oils (petroleum), C15-30, hydrotreated neutral oil-based	72623-86-0	10 - 20 %

## SECTION 4. FIRST AID MEASURES

If inhaled : Move to fresh air.  
Artificial respiration and/or oxygen may be necessary.  
Seek medical advice.

In case of skin contact : In case of contact, immediately flush skin with plenty of water for at least 15 minutes while removing contaminated clothing and shoes.  
Wash skin thoroughly with soap and water or use recognized skin cleanser.  
Wash clothing before reuse.  
Seek medical advice.

In case of eye contact : Remove contact lenses.  
Rinse immediately with plenty of water, also under the eyelids, for at least 15 minutes.  
Obtain medical attention.

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|---|---|
| If swallowed  | : Rinse mouth with water.<br>DO NOT induce vomiting unless directed to do so by a physician or poison control center.<br>Never give anything by mouth to an unconscious person.<br>Seek medical advice. |
| Most important symptoms and effects, both acute and delayed | : First aider needs to protect himself.   |

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## SECTION 5. FIREFIGHTING MEASURES

- |                                       |   |
|---------------------------------------|---|
| Suitable extinguishing media          | : Use extinguishing measures that are appropriate to local circumstances and the surrounding environment.   |
| Unsuitable extinguishing media        | : No information available.   |
| Specific hazards during fire-fighting | : Cool closed containers exposed to fire with water spray.  |
| Hazardous combustion products         | : Carbon oxides (CO, CO <sub>2</sub> ), nitrogen oxides (NO <sub>x</sub> ), sulphur oxides (SO <sub>x</sub> ), smoke and irritating vapours as products of incomplete combustion. |
| Further information                   | : Prevent fire extinguishing water from contaminating surface water or the ground water system.   |

---

## SECTION 6. ACCIDENTAL RELEASE MEASURES

- |   |   |
|---|---|
| Personal precautions, protective equipment and emergency procedures | : Use personal protective equipment.<br>Ensure adequate ventilation.<br>Evacuate personnel to safe areas.<br>Material can create slippery conditions.   |
| Environmental precautions   | : Do not allow uncontrolled discharge of product into the environment.  |
| Methods and materials for containment and cleaning up               | : Prevent further leakage or spillage if safe to do so.<br>Remove all sources of ignition.<br>Soak up with inert absorbent material.<br>Non-sparking tools should be used.<br>Ensure adequate ventilation.<br>Contact the proper local authorities. |

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## SECTION 7. HANDLING AND STORAGE

- |                         |  |
|-------------------------|--|
| Advice on safe handling | : For personal protection see section 8.<br>Smoking, eating and drinking should be prohibited in the ap- |
|-------------------------|--|

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plication area.  
Use only with adequate ventilation.  
In case of insufficient ventilation, wear suitable respiratory equipment.  
Avoid contact with skin, eyes and clothing.  
Do not ingest.  
Keep away from heat and sources of ignition.  
Keep container closed when not in use.

Conditions for safe storage : Store in original container.  
Containers which are opened must be carefully resealed and kept upright to prevent leakage.  
Keep in a dry, cool and well-ventilated place.  
Keep in properly labelled containers.  
To maintain product quality, do not store in heat or direct sunlight.

### SECTION 8. EXPOSURE CONTROLS/PERSONAL PROTECTION

#### Components with workplace control parameters

Components	CAS-No.	Value type (Form of exposure)	Control parameters / Permissible concentration	Basis
lubricating oils (petroleum), C20-50, hydrotreated neutral oil-based	72623-87-1	TWA (Mist)	5 mg/m3	CA AB OEL
		STEL (Mist)	10 mg/m3	CA AB OEL
		TWAEV (Mist)	5 mg/m3	CA QC OEL
		STEV (Mist)	10 mg/m3	CA QC OEL
		TWA (Inhalable fraction)	5 mg/m3	ACGIH
lubricating oils (petroleum), C20-50, hydrotreated neutral oil-based, high viscosity	72623-85-9	TWA (Mist)	5 mg/m3	CA AB OEL
		STEL (Mist)	10 mg/m3	CA AB OEL
		TWAEV (Mist)	5 mg/m3	CA QC OEL
		STEV (Mist)	10 mg/m3	CA QC OEL
		TWA (Inhalable fraction)	5 mg/m3	ACGIH
lubricating oils (petroleum), C15-30, hydrotreated neutral oil-based	72623-86-0	TWA (Mist)	5 mg/m3	CA AB OEL
		STEL (Mist)	10 mg/m3	CA AB OEL
		TWAEV (Mist)	5 mg/m3	CA QC OEL
		STEV (Mist)	10 mg/m3	CA QC OEL
		TWA (Inhalable fraction)	5 mg/m3	ACGIH

Engineering measures : No special ventilation requirements. Good general ventilation should be sufficient to control worker exposure to airborne

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contaminants.

### Personal protective equipment

Respiratory protection : Use respiratory protection unless adequate local exhaust ventilation is provided or exposure assessment demonstrates that exposures are within recommended exposure guidelines. Respirator selection must be based on known or anticipated exposure levels, the hazards of the product and the safe working limits of the selected respirator.

Filter type : organic vapour filter

Hand protection  
Material : neoprene, nitrile, polyvinyl alcohol (PVA), Viton(R).

Remarks : Chemical-resistant, impervious gloves complying with an approved standard should be worn at all times when handling chemical products if a risk assessment indicates this is necessary.

Eye protection : Wear face-shield and protective suit for abnormal processing problems.

Skin and body protection : Choose body protection in relation to its type, to the concentration and amount of dangerous substances, and to the specific work-place.

Protective measures : Wash contaminated clothing before re-use.

Hygiene measures : Remove and wash contaminated clothing and gloves, including the inside, before re-use.  
Wash face, hands and any exposed skin thoroughly after handling.

### SECTION 9. PHYSICAL AND CHEMICAL PROPERTIES

Appearance : viscous liquid

Colour : Pale, straw-yellow.

Odour : Mild petroleum oil like.

Odour Threshold : No data available

pH : No data available

Pour point : -39 °C (-38 °F)

Boiling point/boiling range : No data available

Flash point : 236 °C (457 °F)  
Method: Cleveland open cup



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Fire Point	: No data available
Auto-Ignition Temperature	: No data available
Evaporation rate	: No data available
Flammability	: Low fire hazard. This material must be heated before ignition will occur.
Upper explosion limit	: No data available
Lower explosion limit	: No data available
Vapour pressure	: No data available
Relative vapour density	: No data available
Density	: 0.8660 kg/l (15 °C / 59 °F)
Solubility(ies)	
Water solubility	: insoluble
Partition coefficient: n-octanol/water	: No data available
Viscosity	
Viscosity, kinematic	: 46.4 cSt (40 °C / 104 °F)  6.92 cSt (100 °C / 212 °F)
Explosive properties	: Do not pressurise, cut, weld, braze, solder, drill, grind or expose containers to heat or sources of ignition.

---

## SECTION 10. STABILITY AND REACTIVITY

Possibility of hazardous reactions	: Hazardous polymerisation does not occur. Stable under normal conditions.
Conditions to avoid	: No data available
Incompatible materials	: Reactive with oxidising agents and reducing agents.
Hazardous decomposition products	: May release CO <sub>x</sub> , H <sub>2</sub> S, metal oxides, methacrylate monomers, smoke and irritating vapours when heated to decomposition.

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## SECTION 11. TOXICOLOGICAL INFORMATION

### Information on likely routes of exposure

Eye contact  
Ingestion

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Inhalation  
Skin contact

## Acute toxicity

### Product:

Acute oral toxicity : Remarks: No data available

Acute inhalation toxicity : Remarks: No data available

Acute dermal toxicity : Assessment: The substance or mixture has no acute dermal toxicity  
Remarks: No data available

### Components:

#### **lubricating oils (petroleum), C20-50, hydrotreated neutral oil-based:**

Acute oral toxicity : LD50 (Rat): > 5,000 mg/kg,

Acute inhalation toxicity : LC50 (Rat): > 5.2 mg/l  
Exposure time: 4 h  
Test atmosphere: dust/mist

Acute dermal toxicity : LD50 (Rabbit): > 2,000 mg/kg,

#### **lubricating oils (petroleum), C20-50, hydrotreated neutral oil-based, high viscosity:**

Acute oral toxicity : LD50 (Rat): > 5,000 mg/kg,

Acute inhalation toxicity : LC50 (Rat): > 5.2 mg/l  
Exposure time: 4 h  
Test atmosphere: dust/mist

Acute dermal toxicity : LD50 (Rabbit): > 2,000 mg/kg,

#### **lubricating oils (petroleum), C15-30, hydrotreated neutral oil-based:**

Acute oral toxicity : LD50 (Rat): > 5,000 mg/kg,

Acute inhalation toxicity : LC50 (Rat): > 5.2 mg/l  
Exposure time: 4 h  
Test atmosphere: dust/mist

Acute dermal toxicity : LD50 (Rabbit): > 2,000 mg/kg,

## Skin corrosion/irritation

### Product:

Remarks: No data available

## Serious eye damage/eye irritation

### Product:

Remarks: No data available

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## **Respiratory or skin sensitisation**

No data available

## **Germ cell mutagenicity**

No data available

## **Carcinogenicity**

No data available

## **Reproductive toxicity**

No data available

## **STOT - single exposure**

No data available

## **STOT - repeated exposure**

No data available

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## **SECTION 12. ECOLOGICAL INFORMATION**

### **Ecotoxicity**

#### **Product:**

Toxicity to fish : Remarks: No data available

Toxicity to daphnia and other aquatic invertebrates : Remarks: No data available

Toxicity to algae : Remarks: No data available

Toxicity to bacteria : Remarks: No data available

### **Persistence and degradability**

#### **Product:**

Biodegradability : Remarks: No data available

### **Bioaccumulative potential**

No data available

### **Mobility in soil**

No data available

### **Other adverse effects**

No data available

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## SECTION 13. DISPOSAL CONSIDERATIONS

### Disposal methods

Waste from residues : The product should not be allowed to enter drains, water courses or the soil.  
Offer surplus and non-recyclable solutions to a licensed disposal company.  
Waste must be classified and labelled prior to recycling or disposal.  
Send to a licensed waste management company.  
Dispose of product residue in accordance with the instructions of the person responsible for waste disposal.

---

## SECTION 14. TRANSPORT INFORMATION

### International Regulations

#### IATA-DGR

Not regulated as a dangerous good

#### IMDG-Code

Not regulated as a dangerous good

#### Transport in bulk according to Annex II of MARPOL 73/78 and the IBC Code

Not applicable for product as supplied.

### National Regulations

#### TDG

Not regulated as a dangerous good

---

## SECTION 15. REGULATORY INFORMATION

This product has been classified according to the hazard criteria of the CPR and the MSDS contains all of the information required by the CPR.

### The components of this product are reported in the following inventories:

#### DSL

On the inventory, or in compliance with the inventory

#### TSCA

All chemical substances in this product are either listed on the TSCA Inventory or are in compliance with a TSCA Inventory exemption.

#### EINECS

On the inventory, or in compliance with the inventory

#### IECSC

One or more components has been notified but may not be listed in the inventory.

---

## SECTION 16. OTHER INFORMATION

For Copy of SDS

: Internet: [lubricants.petro-canada.com/sds](http://lubricants.petro-canada.com/sds)  
Western Canada, telephone: 1-800-661-1199; fax: 1-800-378-

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Ontario & Central Canada, telephone: 1-800-268-5850; fax: 1-800-201-6285

Quebec & Eastern Canada, telephone: 1-800-576-1686; fax: 1-800-201-6285

For Product Safety Information: 1 905-804-4752

Prepared by : Product Safety: +1 905-804-4752

Revision Date : 2017/02/17

The information provided in this Safety Data Sheet is correct to the best of our knowledge, information and belief at the date of its publication. The information given is designed only as a guidance for safe handling, use, processing, storage, transportation, disposal and release and is not to be considered a warranty or quality specification. The information relates only to the specific material designated and may not be valid for such material used in combination with any other materials or in any process, unless specified in the text.

# Material Safety Data Sheet



## SECTION 1 PRODUCT AND COMPANY IDENTIFICATION

### Chevron Hydraulic Oil AW

**Product Use:** Hydraulic Oil

**Product Number(s):** CPS255673, CPS255674, CPS255675

**Synonyms:** Chevron Hydraulic Oil AW ISO 32, Chevron Hydraulic Oil AW ISO 46, Chevron Hydraulic Oil AW ISO 68

**Company Identification**

Chevron Products Company  
a division of Chevron U.S.A. Inc.  
6001 Bollinger Canyon Rd.  
San Ramon, CA 94583  
United States of America  
www.chevronlubricants.com

**Transportation Emergency Response**

CHEMTREC: (800) 424-9300 or (703) 527-3887

**Health Emergency**

Chevron Emergency Information Center: Located in the USA. International collect calls accepted. (800) 231-0623 or (510) 231-0623

**Product Information**

email : lubemsds@chevron.com  
Product Information: (800) LUBE TEK

## SECTION 2 COMPOSITION/ INFORMATION ON INGREDIENTS

COMPONENTS	CAS NUMBER	AMOUNT
Highly refined mineral oil (C15 - C50)	Mixture	70 - 100 %wt/wt

## SECTION 3 HAZARDS IDENTIFICATION

### IMMEDIATE HEALTH EFFECTS

**Eye:** Not expected to cause prolonged or significant eye irritation.

**Skin:** Contact with the skin is not expected to cause prolonged or significant irritation. Contact with the skin is not expected to cause an allergic skin response. Not expected to be harmful to internal organs if absorbed through the skin. High-Pressure Equipment Information: Accidental high-velocity injection under the skin of materials of this type may result in serious injury. Seek medical attention at once should an accident like this occur. The initial wound at the injection site may not appear to be serious at first; but, if left untreated, could result in disfigurement or amputation of the affected part.

**Ingestion:** Not expected to be harmful if swallowed.

**Inhalation:** Not expected to be harmful if inhaled. Contains a petroleum-based mineral oil. May cause respiratory irritation or other pulmonary effects following prolonged or repeated inhalation of oil mist at airborne levels above the recommended mineral oil mist exposure limit. Symptoms of respiratory irritation may include coughing and difficulty breathing.

#### SECTION 4 FIRST AID MEASURES

**Eye:** No specific first aid measures are required. As a precaution, remove contact lenses, if worn, and flush eyes with water.

**Skin:** No specific first aid measures are required. As a precaution, remove clothing and shoes if contaminated. To remove the material from skin, use soap and water. Discard contaminated clothing and shoes or thoroughly clean before reuse.

**Ingestion:** No specific first aid measures are required. Do not induce vomiting. As a precaution, get medical advice.

**Inhalation:** No specific first aid measures are required. If exposed to excessive levels of material in the air, move the exposed person to fresh air. Get medical attention if coughing or respiratory discomfort occurs.

**Note to Physicians:** In an accident involving high-pressure equipment, this product may be injected under the skin. Such an accident may result in a small, sometimes bloodless, puncture wound. However, because of its driving force, material injected into a fingertip can be deposited into the palm of the hand. Within 24 hours, there is usually a great deal of swelling, discoloration, and intense throbbing pain. Immediate treatment at a surgical emergency center is recommended.

#### SECTION 5 FIRE FIGHTING MEASURES

Leaks/ruptures in high pressure system using materials of this type can create a fire hazard when in the vicinity of ignition sources (eg. open flame, pilot lights, sparks, or electric arcs).

##### FIRE CLASSIFICATION:

OSHA Classification (29 CFR 1910.1200): Not classified by OSHA as flammable or combustible.

**NFPA RATINGS:** Health: 0 Flammability: 1 Reactivity: 0

##### FLAMMABLE PROPERTIES:

**Flashpoint:** (Cleveland Open Cup) 170 °C (338 °F) Minimum

**Autoignition:** No data available

**Flammability (Explosive) Limits (% by volume in air):** Lower: Not Applicable Upper: Not Applicable

**EXTINGUISHING MEDIA:** Use water fog, foam, dry chemical or carbon dioxide (CO<sub>2</sub>) to extinguish flames.

##### PROTECTION OF FIRE FIGHTERS:

**Fire Fighting Instructions:** This material will burn although it is not easily ignited. For fires involving this material, do not enter any enclosed or confined fire space without proper protective equipment, including self-contained breathing apparatus.

**Combustion Products:** Highly dependent on combustion conditions. A complex mixture of airborne solids, liquids, and gases including carbon monoxide, carbon dioxide, and unidentified organic compounds will be evolved when this material undergoes combustion.

#### SECTION 6 ACCIDENTAL RELEASE MEASURES



**Protective Measures:** Eliminate all sources of ignition in vicinity of spilled material.

**Spill Management:** Stop the source of the release if you can do it without risk. Contain release to prevent further contamination of soil, surface water or groundwater. Clean up spill as soon as possible, observing precautions in Exposure Controls/Personal Protection. Use appropriate techniques such as applying non-combustible absorbent materials or pumping. Where feasible and appropriate, remove contaminated soil. Place contaminated materials in disposable containers and dispose of in a manner consistent with applicable regulations.

**Reporting:** Report spills to local authorities and/or the U.S. Coast Guard's National Response Center at (800) 424-8802 as appropriate or required.

## SECTION 7 HANDLING AND STORAGE

**Precautionary Measures:** DO NOT USE IN HIGH PRESSURE SYSTEMS in the vicinity of flames, sparks and hot surfaces. Use only in well ventilated areas. Keep container closed.

**General Handling Information:** Avoid contaminating soil or releasing this material into sewage and drainage systems and bodies of water.

**Static Hazard:** Electrostatic charge may accumulate and create a hazardous condition when handling this material. To minimize this hazard, bonding and grounding may be necessary but may not, by themselves, be sufficient. Review all operations which have the potential of generating and accumulating an electrostatic charge and/or a flammable atmosphere (including tank and container filling, splash filling, tank cleaning, sampling, gauging, switch loading, filtering, mixing, agitation, and vacuum truck operations) and use appropriate mitigating procedures. For more information, refer to OSHA Standard 29 CFR 1910.106, 'Flammable and Combustible Liquids', National Fire Protection Association (NFPA 77, 'Recommended Practice on Static Electricity', and/or the American Petroleum Institute (API) Recommended Practice 2003, 'Protection Against Ignitions Arising Out of Static, Lightning, and Stray Currents'.

**Container Warnings:** Container is not designed to contain pressure. Do not use pressure to empty container or it may rupture with explosive force. Empty containers retain product residue (solid, liquid, and/or vapor) and can be dangerous. Do not pressurize, cut, weld, braze, solder, drill, grind, or expose such containers to heat, flame, sparks, static electricity, or other sources of ignition. They may explode and cause injury or death. Empty containers should be completely drained, properly closed, and promptly returned to a drum reconditioner or disposed of properly.

## SECTION 8 EXPOSURE CONTROLS/PERSONAL PROTECTION

### GENERAL CONSIDERATIONS:

Consider the potential hazards of this material (see Section 3), applicable exposure limits, job activities, and other substances in the work place when designing engineering controls and selecting personal protective equipment. If engineering controls or work practices are not adequate to prevent exposure to harmful levels of this material, the personal protective equipment listed below is recommended. The user should read and understand all instructions and limitations supplied with the equipment since protection is usually provided for a limited time or under certain circumstances.

### ENGINEERING CONTROLS:

Use in a well-ventilated area.

### PERSONAL PROTECTIVE EQUIPMENT

**Eye/Face Protection:** No special eye protection is normally required. Where splashing is possible, wear safety glasses with side shields as a good safety practice.

**Skin Protection:** No special protective clothing is normally required. Where splashing is possible, select protective clothing depending on operations conducted, physical requirements and other substances in the

workplace. Suggested materials for protective gloves include: 4H (PE/EVAL), Nitrile Rubber, Silver Shield, Viton.

**Respiratory Protection:** No respiratory protection is normally required.

If user operations generate an oil mist, determine if airborne concentrations are below the occupational exposure limit for mineral oil mist. If not, wear an approved respirator that provides adequate protection from the measured concentrations of this material. For air-purifying respirators use a particulate cartridge. Use a positive pressure air-supplying respirator in circumstances where air-purifying respirators may not provide adequate protection.

#### Occupational Exposure Limits:

Component	Agency	TWA	STEL	Ceiling	Notation
Highly refined mineral oil (C15 - C50)	ACGIH	5 mg/m <sup>3</sup>	10 mg/m <sup>3</sup>	--	--
Highly refined mineral oil (C15 - C50)	OSHA Z-1	5 mg/m <sup>3</sup>	--	--	--

Consult local authorities for appropriate values.

### SECTION 9 PHYSICAL AND CHEMICAL PROPERTIES

Attention: the data below are typical values and do not constitute a specification.

**Color:** Yellow

**Physical State:** Liquid

**Odor:** Petroleum odor

**pH:** Not Applicable

**Vapor Pressure:** <0.01 mmHg @ 37.8 °C (100 °F)

**Vapor Density (Air = 1):** >1

**Boiling Point:** >315°C (599°F)

**Solubility:** Soluble in hydrocarbon solvents; insoluble in water.

**Freezing Point:** Not Applicable

**Density:** 0.87 kg/l @ 15°C (59°F) (Typical)

**Viscosity:** 28.8 mm<sup>2</sup>/s @ 40°C (104°F) Minimum

### SECTION 10 STABILITY AND REACTIVITY

**Chemical Stability:** This material is considered stable under normal ambient and anticipated storage and handling conditions of temperature and pressure.

**Incompatibility With Other Materials:** May react with strong acids or strong oxidizing agents, such as chlorates, nitrates, peroxides, etc.

**Hazardous Decomposition Products:** None known (None expected)

**Hazardous Polymerization:** Hazardous polymerization will not occur.

### SECTION 11 TOXICOLOGICAL INFORMATION

#### IMMEDIATE HEALTH EFFECTS

**Eye Irritation:** The eye irritation hazard is based on evaluation of data for similar materials or product components.

**Skin Irritation:** The skin irritation hazard is based on evaluation of data for similar materials or product components.

**Skin Sensitization:** The skin sensitization hazard is based on evaluation of data for similar materials or product components.

**Acute Dermal Toxicity:** The acute dermal toxicity hazard is based on evaluation of data for similar

materials or product components.

**Acute Oral Toxicity:** The acute oral toxicity hazard is based on evaluation of data for similar materials or product components.

**Acute Inhalation Toxicity:** The acute inhalation toxicity hazard is based on evaluation of data for similar materials or product components.

#### **ADDITIONAL TOXICOLOGY INFORMATION:**

This product contains petroleum base oils which may be refined by various processes including severe solvent extraction, severe hydrocracking, or severe hydrotreating. None of the oils requires a cancer warning under the OSHA Hazard Communication Standard (29 CFR 1910.1200). These oils have not been listed in the National Toxicology Program (NTP) Annual Report nor have they been classified by the International Agency for Research on Cancer (IARC) as; carcinogenic to humans (Group 1), probably carcinogenic to humans (Group 2A), or possibly carcinogenic to humans (Group 2B). These oils have not been classified by the American Conference of Governmental Industrial Hygienists (ACGIH) as: confirmed human carcinogen (A1), suspected human carcinogen (A2), or confirmed animal carcinogen with unknown relevance to humans (A3).

### **SECTION 12 ECOLOGICAL INFORMATION**

#### **ECOTOXICITY**

This material is not expected to be harmful to aquatic organisms. The ecotoxicity hazard is based on an evaluation of data for the components or a similar material.

#### **ENVIRONMENTAL FATE**

**Ready Biodegradability:** This material is not expected to be readily biodegradable. The biodegradability of this material is based on an evaluation of data for the components or a similar material.

### **SECTION 13 DISPOSAL CONSIDERATIONS**

Use material for its intended purpose or recycle if possible. Oil collection services are available for used oil recycling or disposal. Place contaminated materials in containers and dispose of in a manner consistent with applicable regulations. Contact your sales representative or local environmental or health authorities for approved disposal or recycling methods.

### **SECTION 14 TRANSPORT INFORMATION**

The description shown may not apply to all shipping situations. Consult 49CFR, or appropriate Dangerous Goods Regulations, for additional description requirements (e.g., technical name) and mode-specific or quantity-specific shipping requirements.

**DOT Shipping Description:** PETROLEUM LUBRICATING OIL, NOT REGULATED AS A HAZARDOUS MATERIAL FOR TRANSPORTATION UNDER 49 CFR

**IMO/IMDG Shipping Description:** PETROLEUM LUBRICATING OIL; NOT REGULATED AS DANGEROUS GOODS FOR TRANSPORT UNDER THE IMDG CODE

**ICAO/IATA Shipping Description:** PETROLEUM LUBRICATING OIL; NOT REGULATED AS DANGEROUS GOODS FOR TRANSPORT UNDER ICAO TI OR IATA DGR

## SECTION 15 REGULATORY INFORMATION

<b>EPCRA 311/312 CATEGORIES:</b>	1. Immediate (Acute) Health Effects:	NO
	2. Delayed (Chronic) Health Effects:	NO
	3. Fire Hazard:	NO
	4. Sudden Release of Pressure Hazard:	NO
	5. Reactivity Hazard:	NO

### REGULATORY LISTS SEARCHED:

01-1=IARC Group 1	03=EPCRA 313
01-2A=IARC Group 2A	04=CA Proposition 65
01-2B=IARC Group 2B	05=MA RTK
02=NTP Carcinogen	06=NJ RTK
	07=PA RTK

No components of this material were found on the regulatory lists above.

### CHEMICAL INVENTORIES:

All components comply with the following chemical inventory requirements: AICS (Australia), DSL (Canada), EINECS (European Union), ENCS (Japan), IECSC (China), KECI (Korea), PICCS (Philippines), TSCA (United States).

### NEW JERSEY RTK CLASSIFICATION:

Under the New Jersey Right-to-Know Act L. 1983 Chapter 315 N.J.S.A. 34:5A-1 et. seq., the product is to be identified as follows: PETROLEUM OIL (Hydraulic oil)

### WHMIS CLASSIFICATION:

This product is not considered a controlled product according to the criteria of the Canadian Controlled Products Regulations.

## SECTION 16 OTHER INFORMATION

**NFPA RATINGS:** Health: 0 Flammability: 1 Reactivity: 0

**HMIS RATINGS:** Health: 1 Flammability: 1 Reactivity: 0  
(0-Least, 1-Slight, 2-Moderate, 3-High, 4-Extreme, PPE:- Personal Protection Equipment Index recommendation, \*- Chronic Effect Indicator). These values are obtained using the guidelines or published evaluations prepared by the National Fire Protection Association (NFPA) or the National Paint and Coating Association (for HMIS ratings).

### LABEL RECOMMENDATION:

Label Category : INDUSTRIAL OIL 1 - IND1

**REVISION STATEMENT:** This revision updates the following sections of this Material Safety Data Sheet:  
1,2,9,16

**Revision Date:** FEBRUARY 16, 2012

### ABBREVIATIONS THAT MAY HAVE BEEN USED IN THIS DOCUMENT:

TLV - Threshold Limit Value	TWA - Time Weighted Average
STEL - Short-term Exposure Limit	PEL - Permissible Exposure Limit

	CAS - Chemical Abstract Service Number
ACGIH - American Conference of Governmental Industrial Hygienists	IMO/IMDG - International Maritime Dangerous Goods Code
API - American Petroleum Institute	MSDS - Material Safety Data Sheet
CVX - Chevron	NFPA - National Fire Protection Association (USA)
DOT - Department of Transportation (USA)	NTP - National Toxicology Program (USA)
IARC - International Agency for Research on Cancer	OSHA - Occupational Safety and Health Administration

Prepared according to the OSHA Hazard Communication Standard (29 CFR 1910.1200) and the ANSI MSDS Standard (Z400.1) by the Chevron Energy Technology Company, 100 Chevron Way, Richmond, California 94802.

**The above information is based on the data of which we are aware and is believed to be correct as of the date hereof. Since this information may be applied under conditions beyond our control and with which we may be unfamiliar and since data made available subsequent to the date hereof may suggest modifications of the information, we do not assume any responsibility for the results of its use. This information is furnished upon condition that the person receiving it shall make his own determination of the suitability of the material for his particular purpose.**

# SAFETY DATA SHEET

## PROPANE

000003000646



Version 2.0

Revision Date 2016/07/20

Print Date 2016/07/20

### SECTION 1. IDENTIFICATION

Product name : PROPANE

Synonyms : Propane HD-5, Propane commercial, Liquefied Petroleum Gas (LPG), C<sub>3</sub>H<sub>8</sub>, CGSB Propane Grade 1, CGSB Propane Grade 2, odorized propane, stench propane, automotive propane.

Product code : 100139

Manufacturer or supplier's details  
Petro-Canada  
P.O. Box 2844, 150 - 6th Avenue South-West  
Calgary Alberta T2P 3E3  
Canada

Emergency telephone number : Suncor Energy: +1 403-296-3000;  
Poison Control Centre: Consult local telephone directory for emergency number(s).

#### Recommended use of the chemical and restrictions on use

Recommended use : Propane is used as a fuel gas, refrigerant and as a raw material for organic synthesis. It is also used as a laboratory gas. The grade determines the propane content. It is supplied as pressurized liquid in tanks.

Prepared by : Product Safety: +1 905-804-4752

### SECTION 2. HAZARDS IDENTIFICATION

#### Emergency Overview

Appearance	Gas at room temperature; liquid when stored under pressure., Liquefied compressed gas.
Colour	colourless
Odour	Propane is an odourless gas. Odourized propane will contain up to 30 g Ethyl Mercaptan per 1000 L of propane.

#### GHS Classification

Flammable gases : Category 1

Gases under pressure : Liquefied gas

Simple Asphyxiant : Category 1

#### GHS label elements

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Hazard pictograms



Signal word

: Danger

Hazard statements

: Extremely flammable gas.  
Contains gas under pressure; may explode if heated.  
May displace oxygen and cause rapid suffocation.

Precautionary statements

: **Prevention:**  
Keep away from heat, hot surfaces, sparks, open flames and other ignition sources. No smoking.  
**Response:**  
Leaking gas fire: Do not extinguish, unless leak can be stopped safely.  
In case of leakage, eliminate all ignition sources.  
**Storage:**  
Protect from sunlight. Store in a well-ventilated place.

### Potential Health Effects

Primary Routes of Entry

: Eye contact  
Inhalation  
Skin contact

Inhalation

: Inhalation may cause central nervous system effects.  
May cause respiratory tract irritation.  
Inhalation of vapours may cause drowsiness, headache, dizziness, and disorientation.

Skin

: Contact with rapidly expanding gas may cause burns or frost-bite.

Eyes

: Contact with rapidly expanding gas may cause burns or frost-bite.

Ingestion

: Exposure by this route unlikely.

Aggravated Medical Condition

: Overexposure may lead to cardiac sensitization.

### Other hazards

None known.

### IARC

No component of this product present at levels greater than or equal to 0.1% is identified as probable, possible or confirmed human carcinogen by IARC.

### ACGIH

No component of this product present at levels greater than or equal to 0.1% is identified as a carcinogen or potential carcinogen by ACGIH.



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## PROPANE

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### SECTION 3. COMPOSITION/INFORMATION ON INGREDIENTS

Substance / Mixture : Mixture

#### Hazardous components

Chemical name	CAS-No.	Concentration
propane	74-98-6	90 - 100 %
propylene	115-07-1	1 - 5 %
butane	106-97-8	1 - 2.5 %
ethane	74-84-0	1 - 1.5 %
methane	74-82-8	0.1 - 0.2 %

### SECTION 4. FIRST AID MEASURES

- If inhaled : Move to fresh air.  
Artificial respiration and/or oxygen may be necessary.  
Seek medical advice.
- In case of skin contact : In case of contact, immediately flush skin with plenty of water for at least 15 minutes while removing contaminated clothing and shoes.  
Wash skin thoroughly with soap and water or use recognized skin cleanser.  
Wash contaminated clothing before reuse.  
Seek medical advice.
- In case of eye contact : Remove contact lenses.  
Rinse immediately with plenty of water, also under the eyelids, for at least 15 minutes.  
Obtain medical attention.
- If swallowed : Not a significant route of exposure.
- Most important symptoms and effects, both acute and delayed : First aider needs to protect himself.

### SECTION 5. FIREFIGHTING MEASURES

- Suitable extinguishing media : Use extinguishing measures that are appropriate to local circumstances and the surrounding environment.
- Unsuitable extinguishing media : No information available.
- Specific hazards during fire-fighting : If the product release cannot be shut off safely, allow the product to burn itself out.  
Cool closed containers exposed to fire with water spray.
- Hazardous combustion prod- : Carbon oxides (CO, CO<sub>2</sub>), smoke and irritating vapours as

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ucts	products of incomplete combustion.
Further information	: Prevent fire extinguishing water from contaminating surface water or the ground water system.
Special protective equipment for firefighters	: Wear self-contained breathing apparatus and full protective wear. Wear a positive-pressure supplied-air respirator with full face-piece.

### SECTION 6. ACCIDENTAL RELEASE MEASURES

Personal precautions, protective equipment and emergency procedures	: Use personal protective equipment. Ensure adequate ventilation. Evacuate personnel to safe areas. In case of inadequate ventilation wear respiratory protection. Remove all sources of ignition.
Environmental precautions	: If the product contaminates rivers and lakes or drains inform respective authorities.
Methods and materials for containment and cleaning up	: Prevent further leakage or spillage if safe to do so. Ensure adequate ventilation. Use explosion-proof ventilation equipment. Non-sparking tools should be used. Contact the proper local authorities.

### SECTION 7. HANDLING AND STORAGE

Advice on safe handling	: For personal protection see section 8. Smoking, eating and drinking should be prohibited in the application area. In case of insufficient ventilation, wear suitable respiratory equipment. Avoid contact with skin, eyes and clothing. Avoid breathing gas. Avoid spark promoters. Ground/bond container and equipment. These alone may be insufficient to remove static electricity. Use only with adequate ventilation. Keep away from heat and sources of ignition. Keep container closed when not in use. Do not use sparking tools. Do not enter areas where used or stored until adequately ventilated.
Conditions for safe storage	: Store in original container. Containers which are opened must be carefully resealed and kept upright to prevent leakage. Keep in a dry, cool and well-ventilated place. Keep in properly labelled containers. To maintain product quality, do not store in heat or direct sunlight. Keep away from sources of ignition - No smoking.

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Ensure the storage containers are grounded/bonded.

### SECTION 8. EXPOSURE CONTROLS/PERSONAL PROTECTION

#### Components with workplace control parameters

Components	CAS-No.	Value type (Form of exposure)	Control parameters / Permissible concentration	Basis
propane	74-98-6	TWA	1,000 ppm	CA AB OEL
		TWA	1,000 ppm	CA BC OEL
		TWAEV	1,000 ppm 1,800 mg/m3	CA QC OEL
propylene	115-07-1	TWA	500 ppm 860 mg/m3	CA AB OEL
		TWA	500 ppm	CA BC OEL
		TWA	500 ppm	ACGIH
butane	106-97-8	TWA	1,000 ppm	CA AB OEL
		TWA	600 ppm	CA BC OEL
		STEL	750 ppm	CA BC OEL
		TWAEV	800 ppm 1,900 mg/m3	CA QC OEL
ethane	74-84-0	TWA	1,000 ppm	CA AB OEL
		TWA	1,000 ppm	CA BC OEL

**Engineering measures** : Use only in well-ventilated areas.  
Use explosion-proof ventilation equipment.  
Adequate ventilation to ensure that Occupational Exposure Limits are not exceeded.

#### Personal protective equipment

**Respiratory protection** : Respirator selection must be based on known or anticipated exposure levels, the hazards of the product and the safe working limits of the selected respirator.

**Filter type** : Always wear NIOSH-approved self-contained breathing apparatus when handling this material.

**Hand protection**  
**Material** : Wear insulated gloves to prevent frostbite.

**Remarks** : Chemical-resistant, impervious gloves complying with an approved standard should be worn at all times when handling chemical products if a risk assessment indicates this is necessary.

**Eye protection** : Wear face-shield and protective suit for abnormal processing problems.

**Skin and body protection** : Choose body protection in relation to its type, to the concentration and amount of dangerous substances, and to the specific work-place.

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Protective measures	: Wash contaminated clothing before re-use. Wear suitable protective equipment.
Hygiene measures	: Remove and wash contaminated clothing and gloves, including the inside, before re-use. Wash face, hands and any exposed skin thoroughly after handling.

### SECTION 9. PHYSICAL AND CHEMICAL PROPERTIES

Appearance	: Gas at room temperature; liquid when stored under pressure., Liquefied compressed gas.
Colour	: colourless
Odour	: Propane is an odourless gas. Odourized propane will contain up to 30 g Ethyl Mercaptan per 1000 L of propane.
Odour Threshold	: No data available
pH	: No data available
Pour point	: No data available
Boiling point/boiling range	: -42 °C (-44 °F)
Flash point	: -104 °C (-155 °F) Method: closed cup
Fire Point	: No data available
Auto-Ignition Temperature	: 450 °C (842 °F)
Evaporation rate	: No data available
Flammability	: Extremely flammable in presence of open flames, sparks, and heat. Vapours are heavier than air and may travel considerable distance to sources of ignition and flash back. Rapid escape of vapour may generate static charge causing ignition. May accumulate in confined spaces.
Upper explosion limit	: 9.5 %(V)
Lower explosion limit	: 2.1 %(V)
Vapour pressure	: 10,763 mmHg (38 °C / 100 °F)
Relative vapour density	: 1.56
Relative density	: No data available
Density	: No data available
Solubility(ies)	

# SAFETY DATA SHEET

## PROPANE

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Water solubility	: No data available
Partition coefficient: n-octanol/water	: No data available
Viscosity	
Viscosity, kinematic	: No data available
Explosive properties	: Do not pressurise, cut, weld, braze, solder, drill, grind or expose containers to heat or sources of ignition. Containers may explode in heat of fire. Vapour explosion hazard indoors, outdoors or in sewers. Propane may form explosive mixtures with air.

### SECTION 10. STABILITY AND REACTIVITY

Possibility of hazardous reactions	: Hazardous polymerisation does not occur. Stable under normal conditions.
Conditions to avoid	: Heat, flames and sparks.
Incompatible materials	: Reactive with oxidising agents and halogenated compounds.
Hazardous decomposition products	: May release COx, smoke and irritating vapours when heated to decomposition.

### SECTION 11. TOXICOLOGICAL INFORMATION

#### Information on likely routes of exposure

Eye contact

Inhalation

Skin contact

#### Acute toxicity

##### Product:

Acute oral toxicity : Remarks: No data available

Acute inhalation toxicity : Remarks: No data available

Acute dermal toxicity : Remarks: No data available

##### Components:

##### **butane:**

Acute inhalation toxicity : LC50 (Rat): 658 mg/l  
Exposure time: 4 h  
Test atmosphere: gas

#### Skin corrosion/irritation

##### Product:

Remarks: No data available

# SAFETY DATA SHEET

## PROPANE

000003000646



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### Serious eye damage/eye irritation

#### Product:

Remarks: No data available

### Respiratory or skin sensitisation

No data available

### Germ cell mutagenicity

No data available

### Carcinogenicity

No data available

### Reproductive toxicity

No data available

### STOT - single exposure

No data available

### STOT - repeated exposure

No data available

---

## SECTION 12. ECOLOGICAL INFORMATION

### Ecotoxicity

#### Product:

Toxicity to fish : Remarks: No data available

Toxicity to daphnia and other aquatic invertebrates : Remarks: No data available

Toxicity to algae : Remarks: No data available

Toxicity to bacteria : Remarks: No data available

### Persistence and degradability

#### Product:

Biodegradability : Remarks: No data available

### Bioaccumulative potential

No data available

### Mobility in soil

No data available

# SAFETY DATA SHEET

## PROPANE

000003000646



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### Other adverse effects

No data available

## SECTION 13. DISPOSAL CONSIDERATIONS

### Disposal methods

Waste from residues : The product should not be allowed to enter drains, water courses or the soil.  
Offer surplus and non-recyclable solutions to a licensed disposal company.  
Waste must be classified and labelled prior to recycling or disposal.  
Send to a licensed waste management company.  
Dispose of as hazardous waste in compliance with local and national regulations.  
Dispose of product residue in accordance with the instructions of the person responsible for waste disposal.

## SECTION 14. TRANSPORT INFORMATION

### International Regulations

#### IATA-DGR

UN/ID No. : UN 1978  
Proper shipping name : Propane  
Class : 2.1  
Packing group : Not assigned by regulation  
Labels : Class 2 - Gases: Flammable (Division 2.1)  
Packing instruction (cargo aircraft) : 200

#### IMDG-Code

UN number : UN 1978  
Proper shipping name : PROPANE  
  
Class : 2.1  
Packing group : Not assigned by regulation  
Labels : 2.1  
EmS Code : F-D, S-U  
Marine pollutant : no

### Transport in bulk according to Annex II of MARPOL 73/78 and the IBC Code

### National Regulations

#### TDG

UN number : UN 1978  
Proper shipping name : PROPANE  
  
Class : 2.1  
Packing group : Not assigned by regulation  
Labels : 2.1  
ERG Code : 115



# SAFETY DATA SHEET

## PROPANE

000003000646



Version 2.0

Revision Date 2016/07/20

Print Date 2016/07/20

Marine pollutant : no

### SECTION 15. REGULATORY INFORMATION

This product has been classified according to the hazard criteria of the CPR and the MSDS contains all of the information required by the CPR.

**The components of this product are reported in the following inventories:**

<b>DSL</b>	On the inventory, or in compliance with the inventory
<b>TSCA</b>	All chemical substances in this product are either listed on the TSCA Inventory or are in compliance with a TSCA Inventory exemption.
<b>EINECS</b>	On the inventory, or in compliance with the inventory

### SECTION 16. OTHER INFORMATION

For Copy of (M)SDS : Internet: [www.petro-canada.ca/msds](http://www.petro-canada.ca/msds)  
Canada-wide: telephone: 1-800-668-0220; fax: 1-800-837-1228  
For Product Safety Information: 1 905-804-4752

Prepared by : Product Safety: +1 905-804-4752

Revision Date : 2016/07/20

The information provided in this Safety Data Sheet is correct to the best of our knowledge, information and belief at the date of its publication. The information given is designed only as a guidance for safe handling, use, processing, storage, transportation, disposal and release and is not to be considered a warranty or quality specification. The information relates only to the specific material designated and may not be valid for such material used in combination with any other materials or in any process, unless specified in the text.

# SAFETY DATA SHEET

## SUPREME<sup>TM/MC</sup> 5W-30



000003000704

Version 4.1

Revision Date 2017/03/02

Print Date 2017/03/02

### SECTION 1. IDENTIFICATION

Product name : SUPREME<sup>TM/MC</sup> 5W-30

Product code : MOSP53CBE, MOSP53P5R, MOSP53ICT, MOSP53IBC, MOSP53DRR, MOSP53DRM, MOSP53DCT, MOSP53C16, MOSP53C12, MOSP53, MOSP53BLK

Manufacturer or supplier's details  
Petro-Canada Lubricants Inc.  
2310 Lakeshore Road West  
Mississauga ON L5J 1K2  
Canada

Emergency telephone number  
Petro-Canada Lubricants Inc.: +1 905-403-5770;  
CHEMTREC Transport Emergency: 1-800-424-9300;  
Poison Control Centre: Consult local telephone directory for emergency number(s).

#### Recommended use of the chemical and restrictions on use

Recommended use : Supreme motor oils are for use in all engines fuelled with gasoline, gasoline-ethanol blends up to E85, propane or CNG where the manufacturer recommends the use of API SN or SM quality oils. SAE 5W-20, 5W-30 and 10W-30 grades also meet the requirements of ILSAC GF-5 and GF-4.

Prepared by : Product Safety: +1 905-804-4752

### SECTION 2. HAZARDS IDENTIFICATION

#### Emergency Overview

Appearance	viscous liquid
Colour	Light amber.
Odour	Mild petroleum oil like.

#### GHS Classification

Not a hazardous substance or mixture.

#### GHS label elements

Not a hazardous substance or mixture.

#### Potential Health Effects

Primary Routes of Entry : Eye contact  
Ingestion  
Inhalation  
Skin contact

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## SUPREME<sup>TM/MC</sup> 5W-30

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Aggravated Medical Condition : None known.

### Other hazards

None known.

### IARC

No component of this product present at levels greater than or equal to 0.1% is identified as probable, possible or confirmed human carcinogen by IARC.

### ACGIH

No component of this product present at levels greater than or equal to 0.1% is identified as a carcinogen or potential carcinogen by ACGIH.

## SECTION 3. COMPOSITION/INFORMATION ON INGREDIENTS

Substance / Mixture : Mixture

### Hazardous components

Chemical name	CAS-No.	Concentration
lubricating oils (petroleum), C15-30, hydrotreated neutral oil-based	72623-86-0	70 - 90 %
lubricating oils (petroleum), C20-50, hydrotreated neutral oil-based	72623-87-1	5 - 10 %

## SECTION 4. FIRST AID MEASURES

- If inhaled : Move to fresh air.  
Artificial respiration and/or oxygen may be necessary.  
Seek medical advice.
- In case of skin contact : In case of contact, immediately flush eyes or skin with plenty of water for at least 15 minutes while removing contaminated clothing and shoes.  
Wash skin thoroughly with soap and water or use recognized skin cleanser.  
Wash clothing before reuse.  
Seek medical advice.
- In case of eye contact : Remove contact lenses.  
Rinse immediately with plenty of water, also under the eyelids, for at least 15 minutes.  
Obtain medical attention.
- If swallowed : Rinse mouth with water.  
DO NOT induce vomiting unless directed to do so by a physician or poison control center.  
Never give anything by mouth to an unconscious person.

# SAFETY DATA SHEET

## SUPREME<sup>TM/MC</sup> 5W-30



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Seek medical advice.

Most important symptoms and effects, both acute and delayed : First aider needs to protect himself.

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### SECTION 5. FIREFIGHTING MEASURES

Suitable extinguishing media : Use extinguishing measures that are appropriate to local circumstances and the surrounding environment.

Unsuitable extinguishing media : No information available.

Specific hazards during fire-fighting : Cool closed containers exposed to fire with water spray.

Hazardous combustion products : Carbon oxides (CO, CO<sub>2</sub>), smoke and irritating vapours as products of incomplete combustion.

Further information : Prevent fire extinguishing water from contaminating surface water or the ground water system.

---

### SECTION 6. ACCIDENTAL RELEASE MEASURES

Personal precautions, protective equipment and emergency procedures : Use personal protective equipment.  
Ensure adequate ventilation.  
Evacuate personnel to safe areas.  
Material can create slippery conditions.

Environmental precautions : If the product contaminates rivers and lakes or drains inform respective authorities.

Methods and materials for containment and cleaning up : Prevent further leakage or spillage if safe to do so.  
Remove all sources of ignition.  
Soak up with inert absorbent material.  
Non-sparking tools should be used.  
Ensure adequate ventilation.  
Contact the proper local authorities.

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### SECTION 7. HANDLING AND STORAGE

Advice on safe handling : For personal protection see section 8.  
Smoking, eating and drinking should be prohibited in the application area.  
In case of insufficient ventilation, wear suitable respiratory equipment.  
Avoid contact with skin, eyes and clothing.  
Do not ingest.  
Keep away from heat and sources of ignition.

# SAFETY DATA SHEET

## SUPREME<sup>TM/MC</sup> 5W-30



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Keep container closed when not in use.

Conditions for safe storage : Store in original container.  
Containers which are opened must be carefully resealed and kept upright to prevent leakage.  
Keep in a dry, cool and well-ventilated place.  
Keep in properly labelled containers.  
To maintain product quality, do not store in heat or direct sunlight.

### SECTION 8. EXPOSURE CONTROLS/PERSONAL PROTECTION

#### Components with workplace control parameters

Components	CAS-No.	Value type (Form of exposure)	Control parameters / Permissible concentration	Basis
lubricating oils (petroleum), C15-30, hydrotreated neutral oil-based	72623-86-0	TWA (Mist)	5 mg/m <sup>3</sup>	CA AB OEL
		STEL (Mist)	10 mg/m <sup>3</sup>	CA AB OEL
		TWAEV (Mist)	5 mg/m <sup>3</sup>	CA QC OEL
		STEV (Mist)	10 mg/m <sup>3</sup>	CA QC OEL
		TWA (Inhalable fraction)	5 mg/m <sup>3</sup>	ACGIH
lubricating oils (petroleum), C20-50, hydrotreated neutral oil-based	72623-87-1	TWA (Mist)	5 mg/m <sup>3</sup>	CA AB OEL
		STEL (Mist)	10 mg/m <sup>3</sup>	CA AB OEL
		TWAEV (Mist)	5 mg/m <sup>3</sup>	CA QC OEL
		STEV (Mist)	10 mg/m <sup>3</sup>	CA QC OEL
		TWA (Inhalable fraction)	5 mg/m <sup>3</sup>	ACGIH

**Engineering measures** : No special ventilation requirements. Good general ventilation should be sufficient to control worker exposure to airborne contaminants.

#### Personal protective equipment

Respiratory protection : Use respiratory protection unless adequate local exhaust ventilation is provided or exposure assessment demonstrates that exposures are within recommended exposure guidelines. Respirator selection must be based on known or anticipated exposure levels, the hazards of the product and the safe working limits of the selected respirator.

Filter type : organic vapour filter

Hand protection :  
Material : neoprene, nitrile, polyvinyl alcohol (PVA), Viton(R).

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Remarks	: Chemical-resistant, impervious gloves complying with an approved standard should be worn at all times when handling chemical products if a risk assessment indicates this is necessary.
Eye protection	: Wear face-shield and protective suit for abnormal processing problems.
Skin and body protection	: Choose body protection in relation to its type, to the concentration and amount of dangerous substances, and to the specific work-place.
Protective measures	: Wash hands and face before breaks and immediately after handling the product. Wash contaminated clothing before re-use. Ensure that eyewash station and safety shower are proximal to the work-station location.
Hygiene measures	: Remove and wash contaminated clothing and gloves, including the inside, before re-use. Wash face, hands and any exposed skin thoroughly after handling.

### SECTION 9. PHYSICAL AND CHEMICAL PROPERTIES

Appearance	: viscous liquid
Colour	: Light amber.
Odour	: Mild petroleum oil like.
Odour Threshold	: No data available
pH	: No data available
Pour point	: -45 °C (-49 °F)
Boiling point/boiling range	: No data available
Flash point	: 229 °C (444 °F) Method: Cleveland open cup
Fire Point	: No data available
Auto-Ignition Temperature	: No data available
Evaporation rate	: No data available
Flammability	: Low fire hazard. This material must be heated before ignition will occur.
Upper explosion limit	: No data available
Lower explosion limit	: No data available
Vapour pressure	: No data available
Relative vapour density	: No data available

# SAFETY DATA SHEET

## SUPREME<sup>TM/MC</sup> 5W-30



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Density	: 0.8517 kg/l (15 °C / 59 °F)
Solubility(ies)	
Water solubility	: insoluble
Partition coefficient: n-octanol/water	: No data available
Viscosity	
Viscosity, kinematic	: 61.45 cSt (40 °C / 104 °F)
	10.69 cSt (100 °C / 212 °F)
Explosive properties	: Do not pressurise, cut, weld, braze, solder, drill, grind or expose containers to heat or sources of ignition.

### SECTION 10. STABILITY AND REACTIVITY

Possibility of hazardous reactions	: Hazardous polymerisation does not occur. Stable under normal conditions.
Conditions to avoid	: No data available
Incompatible materials	: Reactive with oxidising agents and reducing agents.
Hazardous decomposition products	: May release COx, H2S, metal oxides, smoke and irritating vapours when heated to decomposition.

### SECTION 11. TOXICOLOGICAL INFORMATION

#### Information on likely routes of exposure

Eye contact  
Ingestion  
Inhalation  
Skin contact

#### Acute toxicity

##### Product:

Acute oral toxicity	: Remarks: No data available
Acute inhalation toxicity	: Remarks: No data available
Acute dermal toxicity	: Remarks: No data available

##### Components:

#### **lubricating oils (petroleum), C15-30, hydrotreated neutral oil-based:**

Acute oral toxicity	: LD50 (Rat): > 5,000 mg/kg,
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## SUPREME<sup>TM/MC</sup> 5W-30



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Acute inhalation toxicity : LC50 (Rat): > 5.2 mg/l  
Exposure time: 4 h  
Test atmosphere: dust/mist

Acute dermal toxicity : LD50 (Rabbit): > 2,000 mg/kg,

### **lubricating oils (petroleum), C20-50, hydrotreated neutral oil-based:**

Acute oral toxicity : LD50 (Rat): > 5,000 mg/kg,

Acute inhalation toxicity : LC50 (Rat): > 5.2 mg/l  
Exposure time: 4 h  
Test atmosphere: dust/mist

Acute dermal toxicity : LD50 (Rabbit): > 2,000 mg/kg,

### **Skin corrosion/irritation**

#### **Product:**

Remarks: No data available

### **Serious eye damage/eye irritation**

#### **Product:**

Remarks: No data available

### **Respiratory or skin sensitisation**

No data available

### **Germ cell mutagenicity**

No data available

### **Carcinogenicity**

No data available

### **Reproductive toxicity**

No data available

### **STOT - single exposure**

No data available

### **STOT - repeated exposure**

No data available

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## **SECTION 12. ECOLOGICAL INFORMATION**

### **Ecotoxicity**

#### **Product:**

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## SUPREME<sup>TM/MC</sup> 5W-30



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Toxicity to fish :  
Remarks: No data available

Toxicity to daphnia and other :  
aquatic invertebrates Remarks: No data available

Toxicity to algae :  
Remarks: No data available

Toxicity to bacteria : Remarks: No data available

### Persistence and degradability

#### Product:

Biodegradability : Remarks: No data available

### Bioaccumulative potential

No data available

### Mobility in soil

No data available

### Other adverse effects

No data available

---

## SECTION 13. DISPOSAL CONSIDERATIONS

### Disposal methods

Waste from residues : The product should not be allowed to enter drains, water courses or the soil.  
Offer surplus and non-recyclable solutions to a licensed disposal company.  
Waste must be classified and labelled prior to recycling or disposal.  
Send to a licensed waste management company.  
Dispose of product residue in accordance with the instructions of the person responsible for waste disposal.

---

## SECTION 14. TRANSPORT INFORMATION

### International Regulations

#### IATA-DGR

Not regulated as a dangerous good

#### IMDG-Code

Not regulated as a dangerous good

### Transport in bulk according to Annex II of MARPOL 73/78 and the IBC Code

Not applicable for product as supplied.

### National Regulations

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## SUPREME<sup>TM/MC</sup> 5W-30

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### TDG

Not regulated as a dangerous good

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## SECTION 15. REGULATORY INFORMATION

This product has been classified according to the hazard criteria of the CPR and the MSDS contains all of the information required by the CPR.

### The components of this product are reported in the following inventories:

<b>DSL</b>	On the inventory, or in compliance with the inventory
<b>TSCA</b>	All chemical substances in this product are either listed on the TSCA Inventory or are in compliance with a TSCA Inventory exemption.
<b>IECSC</b>	On the inventory, or in compliance with the inventory
<b>ELINCS</b>	At least one component is not listed in EINECS but all such components are listed in ELINCS.

---

## SECTION 16. OTHER INFORMATION

For Copy of SDS : Internet: [lubricants.petro-canada.com/sds](http://lubricants.petro-canada.com/sds)  
Western Canada, telephone: 1-800-661-1199; fax: 1-800-378-4518  
Ontario & Central Canada, telephone: 1-800-268-5850; fax: 1-800-201-6285  
Quebec & Eastern Canada, telephone: 1-800-576-1686; fax: 1-800-201-6285  
For Product Safety Information: 1 905-804-4752

Prepared by : Product Safety: +1 905-804-4752

Revision Date : 2017/03/02

The information provided in this Safety Data Sheet is correct to the best of our knowledge, information and belief at the date of its publication. The information given is designed only as a guidance for safe handling, use, processing, storage, transportation, disposal and release and is not to be considered a warranty or quality specification. The information relates only to the specific material designated and may not be valid for such material used in combination with any other materials or in any process, unless specified in the text.

# SAFETY DATA SHEET

## DURON<sup>TM/MC</sup> -E 10W-30



000003001098

Version 3.0

Revision Date 2016/11/11

Print Date 2016/11/11

### SECTION 1. IDENTIFICATION

Product name : DURON<sup>TM/MC</sup> -E 10W-30

Product code : DE13ICT, DE13P5R, DE13P20, DE13IBC, DE13DRR, DE13DRM, DE13DCT, DE13C16, DE13C12, DE13, DE13BLK

Manufacturer or supplier's details  
Petro-Canada Lubricants Inc.  
2310 Lakeshore Road West  
Mississauga ON L5J 1K2  
Canada

Emergency telephone number  
Suncor Energy: +1 403-296-3000;  
Canutec Transportation: 1-888- 226-8832 (toll-free) or 613-996-6666;  
Poison Control Centre: Consult local telephone directory for emergency number(s).

#### Recommended use of the chemical and restrictions on use

Recommended use : A superior performance heavy duty engine oil suitable for 4-stroke diesel, gasoline and natural gas automotive applications where SAE 10W-30 is recommended. Applications include vehicles equipped with exhaust after-treatment devices such as diesel particulate filters and catalytic converters. It is suitable for wet clutch transmission and hydraulic applications in mobile equipment where a 10W-30 engine oil is recommended.

Prepared by : Product Safety: +1 905-804-4752

### SECTION 2. HAZARDS IDENTIFICATION

#### Emergency Overview

Appearance	viscous liquid
Colour	Light amber.
Odour	Mild petroleum oil like.

#### GHS Classification

Not a hazardous substance or mixture.

#### GHS label elements

Not a hazardous substance or mixture.

#### Potential Health Effects

Primary Routes of Entry : Eye contact

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## DURON<sup>TM/MC</sup> -E 10W-30



000003001098

Version 3.0

Revision Date 2016/11/11

Print Date 2016/11/11

Ingestion  
Inhalation  
Skin contact

Aggravated Medical Condition : None known.

### Other hazards

None known.

### IARC

No component of this product present at levels greater than or equal to 0.1% is identified as probable, possible or confirmed human carcinogen by IARC.

### ACGIH

No component of this product present at levels greater than or equal to 0.1% is identified as a carcinogen or potential carcinogen by ACGIH.

## SECTION 3. COMPOSITION/INFORMATION ON INGREDIENTS

Substance / Mixture : Mixture

### Hazardous components

Chemical name	CAS-No.	Concentration
lubricating oils (petroleum), C15-30, hydrotreated neutral oil-based	72623-86-0	30 - 50 %
White mineral oil (petroleum)	8042-47-5	30 - 50 %
lubricating oils (petroleum), C20-50, hydrotreated neutral oil-based, high viscosity	72623-85-9	20 - 30 %
Zinc alkyldithiophosphate	113706-15-3	1 - 5 %

## SECTION 4. FIRST AID MEASURES

If inhaled : Move to fresh air.  
Artificial respiration and/or oxygen may be necessary.  
Seek medical advice.

In case of skin contact : In case of contact, immediately flush eyes or skin with plenty of water for at least 15 minutes while removing contaminated clothing and shoes.  
Wash skin thoroughly with soap and water or use recognized skin cleanser.  
Wash clothing before reuse.  
Seek medical advice.

In case of eye contact : Remove contact lenses.  
Rinse immediately with plenty of water, also under the eyelids, for at least 15 minutes.  
Obtain medical attention.

# SAFETY DATA SHEET

## DURON<sup>TM/MC</sup> -E 10W-30



000003001098

Version 3.0

Revision Date 2016/11/11

Print Date 2016/11/11

- |   |   |
|---|---|
| If swallowed  | : Rinse mouth with water.<br>DO NOT induce vomiting unless directed to do so by a physician or poison control center.<br>Never give anything by mouth to an unconscious person.<br>Seek medical advice. |
| Most important symptoms and effects, both acute and delayed | : First aider needs to protect himself.   |

---

### SECTION 5. FIREFIGHTING MEASURES

- |                                       |  |
|---------------------------------------|--|
| Suitable extinguishing media          | : Use extinguishing measures that are appropriate to local circumstances and the surrounding environment.  |
| Unsuitable extinguishing media        | : No information available.  |
| Specific hazards during fire-fighting | : Cool closed containers exposed to fire with water spray.   |
| Hazardous combustion products         | : Carbon oxides (CO, CO <sub>2</sub> ), nitrogen oxides (NO <sub>x</sub> ), sulphur oxides (SO <sub>x</sub> ), phosphorus oxides (PO <sub>x</sub> ), sulphur compounds (H <sub>2</sub> S), zinc oxides (ZnO <sub>x</sub> ), metal oxides, hydrocarbons, smoke and irritating vapours as products of incomplete combustion. |
| Further information                   | : Prevent fire extinguishing water from contaminating surface water or the ground water system.  |

---

### SECTION 6. ACCIDENTAL RELEASE MEASURES

- |   |   |
|---|---|
| Personal precautions, protective equipment and emergency procedures | : Use personal protective equipment.<br>Ensure adequate ventilation.<br>Evacuate personnel to safe areas.<br>Material can create slippery conditions.   |
| Environmental precautions   | : If the product contaminates rivers and lakes or drains inform respective authorities.   |
| Methods and materials for containment and cleaning up               | : Prevent further leakage or spillage if safe to do so.<br>Remove all sources of ignition.<br>Soak up with inert absorbent material.<br>Non-sparking tools should be used.<br>Ensure adequate ventilation.<br>Contact the proper local authorities. |

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### SECTION 7. HANDLING AND STORAGE

- |                         |  |
|-------------------------|--|
| Advice on safe handling | : For personal protection see section 8.<br>Smoking, eating and drinking should be prohibited in the ap- |
|-------------------------|--|

# SAFETY DATA SHEET

**DURON<sup>TM/MC</sup> -E 10W-30**

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plication area.

In case of insufficient ventilation, wear suitable respiratory equipment.

Avoid contact with skin, eyes and clothing.

Do not ingest.

Keep away from heat and sources of ignition.

Keep container closed when not in use.

Conditions for safe storage : Store in original container.  
Containers which are opened must be carefully resealed and kept upright to prevent leakage.  
Keep in a dry, cool and well-ventilated place.  
Keep in properly labelled containers.  
To maintain product quality, do not store in heat or direct sunlight.

## SECTION 8. EXPOSURE CONTROLS/PERSONAL PROTECTION

### Components with workplace control parameters

Components	CAS-No.	Value type (Form of exposure)	Control parameters / Permissible concentration	Basis
lubricating oils (petroleum), C15-30, hydrotreated neutral oil-based	72623-86-0	TWA (Mist)	5 mg/m3	CA AB OEL
		STEL (Mist)	10 mg/m3	CA AB OEL
		TWAEV (Mist)	5 mg/m3	CA QC OEL
		STEV (Mist)	10 mg/m3	CA QC OEL
		TWA (Inhalable fraction)	5 mg/m3	ACGIH
White mineral oil (petroleum)	8042-47-5	TWA (Mist)	5 mg/m3	CA AB OEL
		STEL (Mist)	10 mg/m3	CA AB OEL
		TWAEV (Mist)	5 mg/m3	CA QC OEL
		STEV (Mist)	10 mg/m3	CA QC OEL
		TWA (Inhalable fraction)	5 mg/m3	ACGIH
lubricating oils (petroleum), C20-50, hydrotreated neutral oil-based, high viscosity	72623-85-9	TWA (Mist)	5 mg/m3	CA AB OEL
		STEL (Mist)	10 mg/m3	CA AB OEL
		TWAEV (Mist)	5 mg/m3	CA QC OEL
		STEV (Mist)	10 mg/m3	CA QC OEL
		TWA (Inhalable fraction)	5 mg/m3	ACGIH

Engineering measures : No special ventilation requirements. Good general ventilation should be sufficient to control worker exposure to airborne contaminants.

### Personal protective equipment



# SAFETY DATA SHEET

## DURON<sup>TM/MC</sup> -E 10W-30



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Respiratory protection	: Use respiratory protection unless adequate local exhaust ventilation is provided or exposure assessment demonstrates that exposures are within recommended exposure guidelines. Respirator selection must be based on known or anticipated exposure levels, the hazards of the product and the safe working limits of the selected respirator.
Filter type	: organic vapour filter
Hand protection Material	: neoprene, nitrile, polyvinyl alcohol (PVA), Viton(R).
Remarks	: Chemical-resistant, impervious gloves complying with an approved standard should be worn at all times when handling chemical products if a risk assessment indicates this is necessary.
Eye protection	: Wear face-shield and protective suit for abnormal processing problems.
Skin and body protection	: Choose body protection in relation to its type, to the concentration and amount of dangerous substances, and to the specific work-place.
Protective measures	: Wash hands and face before breaks and immediately after handling the product. Wash contaminated clothing before re-use. Ensure that eyewash station and safety shower are proximal to the work-station location.
Hygiene measures	: Remove and wash contaminated clothing and gloves, including the inside, before re-use. Wash face, hands and any exposed skin thoroughly after handling.

### SECTION 9. PHYSICAL AND CHEMICAL PROPERTIES

Appearance	: viscous liquid
Colour	: Light amber.
Odour	: Mild petroleum oil like.
Odour Threshold	: No data available
pH	: No data available
Pour point	: -42 °C (-44 °F)
Boiling point/boiling range	: No data available
Flash point	: 220 °C (428 °F) Method: Cleveland open cup
Fire Point	: 241 °C (466 °F)

# SAFETY DATA SHEET

## DURON<sup>TM/MC</sup> -E 10W-30



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Print Date 2016/11/11

Auto-Ignition Temperature	: No data available
Evaporation rate	: No data available
Flammability	: Low fire hazard. This material must be heated before ignition will occur.
Upper explosion limit	: No data available
Lower explosion limit	: No data available
Vapour pressure	: No data available
Relative vapour density	: No data available
Relative density	: No data available
Density	: 0.8627 kg/l (15 °C / 59 °F)
Solubility(ies)	
Water solubility	: insoluble
Partition coefficient: n-octanol/water	: No data available
Viscosity	
Viscosity, kinematic	: 80.1 cSt (40 °C / 104 °F)  12.00 cSt (100 °C / 212 °F)
Explosive properties	: Do not pressurise, cut, weld, braze, solder, drill, grind or expose containers to heat or sources of ignition.

---

### SECTION 10. STABILITY AND REACTIVITY

Possibility of hazardous reactions	: Hazardous polymerisation does not occur. Stable under normal conditions.
Conditions to avoid	: No data available
Incompatible materials	: Reactive with oxidizing agents and water.
Hazardous decomposition products	: May release CO <sub>x</sub> , H <sub>2</sub> S, smoke and irritating vapours when heated to decomposition.

---

### SECTION 11. TOXICOLOGICAL INFORMATION

#### Information on likely routes of exposure

Eye contact  
Ingestion  
Inhalation  
Skin contact

# SAFETY DATA SHEET

## DURON<sup>TM/MC</sup> -E 10W-30



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### Acute toxicity

#### Product:

- Acute oral toxicity : Remarks: No data available
- Acute inhalation toxicity : Remarks: No data available
- Acute dermal toxicity : Assessment: The substance or mixture has no acute dermal toxicity

#### Components:

##### **lubricating oils (petroleum), C15-30, hydrotreated neutral oil-based:**

- Acute oral toxicity : LD50 (Rat): > 5,000 mg/kg,
- Acute inhalation toxicity : LC50 (Rat): > 5.2 mg/l  
Exposure time: 4 h  
Test atmosphere: dust/mist
- Acute dermal toxicity : LD50 (Rabbit): > 2,000 mg/kg,

##### **White mineral oil (petroleum):**

- Acute oral toxicity : LD50 (Rat): > 5,000 mg/kg,
- Acute inhalation toxicity : LC50 (Rat): > 5.2 mg/l  
Exposure time: 4 h  
Test atmosphere: dust/mist
- Acute dermal toxicity : LD50 (Rabbit): > 2,000 mg/kg,

##### **lubricating oils (petroleum), C20-50, hydrotreated neutral oil-based, high viscosity:**

- Acute oral toxicity : LD50 (Rat): > 5,000 mg/kg,
- Acute inhalation toxicity : LC50 (Rat): > 5.2 mg/l  
Exposure time: 4 h  
Test atmosphere: dust/mist
- Acute dermal toxicity : LD50 (Rabbit): > 2,000 mg/kg,

### Skin corrosion/irritation

#### Product:

Remarks: No data available

### Serious eye damage/eye irritation

#### Product:

Remarks: No data available

### Respiratory or skin sensitisation

No data available

# SAFETY DATA SHEET

## DURON<sup>TM/MC</sup> -E 10W-30



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### Germ cell mutagenicity

No data available

### Carcinogenicity

No data available

### Reproductive toxicity

No data available

### STOT - single exposure

No data available

### STOT - repeated exposure

No data available

---

## SECTION 12. ECOLOGICAL INFORMATION

### Ecotoxicity

#### Product:

Toxicity to fish : Remarks: No data available

Toxicity to daphnia and other aquatic invertebrates : Remarks: No data available

Toxicity to algae : Remarks: No data available

Toxicity to bacteria : Remarks: No data available

### Persistence and degradability

#### Product:

Biodegradability : Remarks: No data available

### Bioaccumulative potential

No data available

### Mobility in soil

No data available

### Other adverse effects

No data available

---

## SECTION 13. DISPOSAL CONSIDERATIONS

### Disposal methods

Waste from residues : The product should not be allowed to enter drains, water courses or the soil.  
Offer surplus and non-recyclable solutions to a licensed dis-

# SAFETY DATA SHEET

**DURON<sup>TM/MC</sup> -E 10W-30**

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posal company.  
Waste must be classified and labelled prior to recycling or disposal.  
Send to a licensed waste management company.  
Dispose of product residue in accordance with the instructions of the person responsible for waste disposal.

## SECTION 14. TRANSPORT INFORMATION

### International Regulations

#### IATA-DGR

Not regulated as a dangerous good

#### IMDG-Code

Not regulated as a dangerous good

#### Transport in bulk according to Annex II of MARPOL 73/78 and the IBC Code

Not applicable for product as supplied.

### National Regulations

#### TDG

Not regulated as a dangerous good

## SECTION 15. REGULATORY INFORMATION

This product has been classified according to the hazard criteria of the CPR and the MSDS contains all of the information required by the CPR.

### The components of this product are reported in the following inventories:

#### DSL

On the inventory, or in compliance with the inventory

#### TSCA

All chemical substances in this product are either listed on the TSCA Inventory or are in compliance with a TSCA Inventory exemption.

#### ELINCS

At least one component is not listed in EINECS but all such components are listed in ELINCS.

## SECTION 16. OTHER INFORMATION

For Copy of SDS

: Internet: [lubricants.petro-canada.ca/msds](http://lubricants.petro-canada.ca/msds)  
Western Canada, telephone: 1-800-661-1199; fax: 1-800-378-4518  
Ontario & Central Canada, telephone: 1-800-268-5850; fax: 1-800-201-6285  
Quebec & Eastern Canada, telephone: 1-800-576-1686; fax: 1-800-201-6285  
For Product Safety Information: 1 905-804-4752

Prepared by

: Product Safety: +1 905-804-4752

# SAFETY DATA SHEET

**DURON<sup>TM/MC</sup> -E 10W-30**

**000003001098**



Version 3.0

Revision Date 2016/11/11

Print Date 2016/11/11

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Revision Date : 2016/11/11

The information provided in this Safety Data Sheet is correct to the best of our knowledge, information and belief at the date of its publication. The information given is designed only as a guidance for safe handling, use, processing, storage, transportation, disposal and release and is not to be considered a warranty or quality specification. The information relates only to the specific material designated and may not be valid for such material used in combination with any other materials or in any process, unless specified in the text.

# Material Safety Data Sheet

## TWO CYCLE MOTOR OIL



000003000604

Version 2.0

Revision Date 2014/08/08

Print Date 2014/08/08

### SECTION 1. PRODUCT AND COMPANY IDENTIFICATION

Product name : TWO CYCLE MOTOR OIL

Product code : TWOCYCDRM, TWOCYCC12, TWOCYC, TWOCYCBK

Manufacturer or supplier's details

Petro-Canada Lubricants Inc.  
2310 Lakeshore Road West  
Mississauga ON L5J 1K2  
Canada

Petro-Canada America Lubricants Inc.  
115N Oak Park Avenue #1C  
Oak Park IL 60301-1366  
United States

Emergency telephone number : Suncor Energy: +1 403-296-3000;  
Poison Control Centre: Consult local telephone directory for emergency number(s).

### Recommended use of the chemical and restrictions on use

Recommended use : A low ash 2-cycle engine oil designed to lubricate conventional pre-mixed fuel/oil as well as oil injection lubricated engines powering air-cooled two-stroke cycle engines.

Prepared by : Product Safety: +1 905-804-4752

### SECTION 2. HAZARDS IDENTIFICATION

#### Emergency Overview

Form	viscous liquid
Colour	Blue-green.
Odour	Mild petroleum oil like.

#### Potential Health Effects

Primary Routes of Entry : Eye contact  
Ingestion  
Inhalation  
Skin contact

Aggravated Medical Condition : None known.

#### Carcinogenicity:

##### IARC

No component of this product present at levels greater than or equal to 0.1% is identified as probable, possible or confirmed human carcinogen by IARC.

# Material Safety Data Sheet

## TWO CYCLE MOTOR OIL



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<b>OSHA</b>	No component of this product present at levels greater than or equal to 0.1% is identified as a carcinogen or potential carcinogen by OSHA.
<b>NTP</b>	No component of this product present at levels greater than or equal to 0.1% is identified as a known or anticipated carcinogen by NTP.
<b>ACGIH</b>	No component of this product present at levels greater than or equal to 0.1% is identified as a carcinogen or potential carcinogen by ACGIH.

---

### SECTION 3. COMPOSITION/INFORMATION ON INGREDIENTS

Pure substance/mixture : Mixture

#### Hazardous components

No hazardous ingredients

---

### SECTION 4. FIRST AID MEASURES

If inhaled	: Move to fresh air. Artificial respiration and/or oxygen may be necessary. Seek medical advice.
In case of skin contact	: In case of contact, immediately flush eyes or skin with plenty of water for at least 15 minutes while removing contaminated clothing and shoes. Wash skin thoroughly with soap and water or use recognized skin cleanser. Wash clothing before reuse. Seek medical advice.
In case of eye contact	: Remove contact lenses. Rinse immediately with plenty of water, also under the eyelids, for at least 15 minutes. Obtain medical attention.
If swallowed	: Rinse mouth with water. DO NOT induce vomiting unless directed to do so by a physician or poison control center. Never give anything by mouth to an unconscious person. Seek medical advice.
Most important symptoms and effects, both acute and delayed	: First aider needs to protect himself.

---

### SECTION 5. FIREFIGHTING MEASURES

Suitable extinguishing media : Use extinguishing measures that are appropriate to local



# Material Safety Data Sheet

## TWO CYCLE MOTOR OIL



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Version 2.0

Revision Date 2014/08/08

Print Date 2014/08/08

circumstances and the surrounding environment.

Unsuitable extinguishing media	: No information available.
Specific hazards during firefighting	: Cool closed containers exposed to fire with water spray.
Hazardous combustion products	: Carbon oxides (CO, CO <sub>2</sub> ), nitrogen oxides (NO <sub>x</sub> ), sulphur oxides (SO <sub>x</sub> ), phosphorus oxides (PO <sub>x</sub> ), hydrocarbons, aldehydes, smoke and irritating vapours as products of incomplete combustion.
Specific extinguishing methods	: Prevent fire extinguishing water from contaminating surface water or the ground water system.

---

### SECTION 6. ACCIDENTAL RELEASE MEASURES

Personal precautions, protective equipment and emergency procedures	: Use personal protective equipment. Ensure adequate ventilation. Evacuate personnel to safe areas. Material can create slippery conditions.
Environmental precautions	: If the product contaminates rivers and lakes or drains inform respective authorities.
Methods and materials for containment and cleaning up	: Prevent further leakage or spillage if safe to do so. Remove all sources of ignition. Soak up with inert absorbent material. Non-sparking tools should be used. Ensure adequate ventilation. Contact the proper local authorities.

---

### SECTION 7. HANDLING AND STORAGE

Advice on safe handling	: For personal protection see section 8. Smoking, eating and drinking should be prohibited in the application area. In case of insufficient ventilation, wear suitable respiratory equipment. Avoid contact with skin, eyes and clothing. Do not ingest. Keep away from heat and sources of ignition. Keep container closed when not in use.
Conditions for safe storage	: Store in original container. Containers which are opened must be carefully resealed and kept upright to prevent leakage. Keep in a dry, cool and well-ventilated place. Keep in properly labelled containers. To maintain product quality, do not store in heat or direct sunlight.

# Material Safety Data Sheet

## TWO CYCLE MOTOR OIL



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Version 2.0

Revision Date 2014/08/08

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### SECTION 8. EXPOSURE CONTROLS/PERSONAL PROTECTION

#### Components with workplace control parameters

Contains no substances with occupational exposure limit values.

**Engineering measures** : No special ventilation requirements. Good general ventilation should be sufficient to control worker exposure to airborne contaminants.  
Adequate ventilation to ensure that Occupational Exposure Limits are not exceeded.

#### Personal protective equipment

**Respiratory protection** : Use respiratory protection unless adequate local exhaust ventilation is provided or exposure assessment demonstrates that exposures are within recommended exposure guidelines. Respirator selection must be based on known or anticipated exposure levels, the hazards of the product and the safe working limits of the selected respirator.  
Recommended Filter type:

**Filter type** : organic vapour filter

**Hand protection**  
**Material** : neoprene, nitrile, polyvinyl alcohol (PVA), Viton(R).  
**Remarks** : Chemical-resistant, impervious gloves complying with an approved standard should be worn at all times when handling chemical products if a risk assessment indicates this is necessary.

**Eye protection** : Wear face-shield if splashing hazard is likely.

**Skin and body protection** : Choose body protection in relation to its type, to the concentration and amount of dangerous substances, and to the specific work-place.

**Protective measures** : Wash hands and face before breaks and immediately after handling the product.  
Wash contaminated clothing before re-use.  
Ensure that eyewash station and safety shower are proximal to the work-station location.

**Hygiene measures** : Remove and wash contaminated clothing and gloves, including the inside, before re-use.  
Wash face, hands and any exposed skin thoroughly after handling.

### SECTION 9. PHYSICAL AND CHEMICAL PROPERTIES

**Appearance** : viscous liquid

**Colour** : Blue-green.

# Material Safety Data Sheet

## TWO CYCLE MOTOR OIL



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Odour	: Mild petroleum oil like.
Odour Threshold	: No data available
pH	: No data available
Pour point	: -48 °C (-54 °F)
Boiling point/boiling range	: No data available
Flash point	: 149 °C (300 °F) Method: Cleveland open cup
Fire Point	: No data available
Auto-Ignition Temperature	: No data available
Evaporation rate	: No data available
Flammability	: Low fire hazard. This material must be heated before ignition will occur.
Upper explosion limit	: No data available
Lower explosion limit	: No data available
Vapour pressure	: No data available
Density	: 0.8508 kg/l (15 °C / 59 °F)
Solubility(ies)	
Water solubility	: insoluble
Partition coefficient: n-octanol/water	: No data available
Viscosity	
Viscosity, kinematic	: 37.1 cSt (40 °C / 104 °F)  7.03 cSt (100 °C / 212 °F)
Explosive properties	: Do not pressurise, cut, weld, braze, solder, drill, grind or expose containers to heat or sources of ignition.

---

### SECTION 10. STABILITY AND REACTIVITY

Possibility of hazardous reactions	: Hazardous polymerisation does not occur. Stable under normal conditions.  No dangerous reaction known under conditions of normal use.
Conditions to avoid	: No data available
Incompatible materials	: Reactive with oxidising agents, reducing agents, and acids.

Hazardous decomposition : May release CO<sub>x</sub>, NO<sub>x</sub>, SO<sub>x</sub>, aldehydes, methacrylate  
Internet: [lubricants.petro-canada.ca/msds](http://lubricants.petro-canada.ca/msds)  
Petro-Canada is a Suncor Energy business.

# Material Safety Data Sheet

## TWO CYCLE MOTOR OIL



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products

monomers, hydrocarbons, smoke and irritating vapours when heated to decomposition.

---

### SECTION 11. TOXICOLOGICAL INFORMATION

#### Acute toxicity

##### Product:

Acute oral toxicity : Remarks: No data available

Acute inhalation toxicity : Remarks: No data available

Acute dermal toxicity : Remarks: No data available

#### Skin corrosion/irritation

##### Product:

Result: Mild skin irritation

#### Serious eye damage/eye irritation

##### Product:

Result: Mild eye irritation

#### Respiratory or skin sensitisation

No data available

#### Germ cell mutagenicity

No data available

#### Carcinogenicity

No data available

#### Reproductive toxicity

No data available

#### STOT - single exposure

No data available

#### STOT - repeated exposure

No data available

#### Aspiration toxicity

No data available

---

### SECTION 12. ECOLOGICAL INFORMATION

#### Ecotoxicity

Internet: [lubricants.petro-canada.ca/msds](http://lubricants.petro-canada.ca/msds)  
Petro-Canada is a Suncor Energy business.

Page: 6 / 9  
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# Material Safety Data Sheet

## TWO CYCLE MOTOR OIL



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Revision Date 2014/08/08

Print Date 2014/08/08

### Product:

Toxicity to fish : Remarks: No data available

Toxicity to daphnia and other aquatic invertebrates : Remarks: No data available

Toxicity to algae : Remarks: No data available

Toxicity to bacteria : Remarks: No data available

### Persistence and degradability

#### Product:

Biodegradability : Remarks: No data available

No data available

### Bioaccumulative potential

#### Product:

Partition coefficient: n-octanol/water : Remarks: No data available

### Mobility in soil

No data available

### Other adverse effects

No data available

#### Product:

Additional ecological information : No data available

---

## SECTION 13. DISPOSAL CONSIDERATIONS

### Disposal methods

Waste from residues : The product should not be allowed to enter drains, water courses or the soil.  
Offer surplus and non-recyclable solutions to a licensed disposal company.  
Waste must be classified and labelled prior to recycling or disposal.  
Send to a licensed waste management company.  
Dispose of as hazardous waste in compliance with local and national regulations.  
Dispose of product residue in accordance with the instructions of the person responsible for waste disposal.

Contaminated packaging : Do not re-use empty containers.

---

## SECTION 14. TRANSPORT INFORMATION

# Material Safety Data Sheet

## TWO CYCLE MOTOR OIL



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Version 2.0

Revision Date 2014/08/08

Print Date 2014/08/08

### International Regulation

#### IATA-DGR

Not regulated as a dangerous good

#### IMDG-Code

Not regulated as a dangerous good

### Transport in bulk according to Annex II of MARPOL 73/78 and the IBC Code

Not applicable for product as supplied.

#### 49 CFR

Not regulated as a dangerous good

#### TDG

Not regulated as a dangerous good

### Special precautions for user

Not applicable

---

## SECTION 15. REGULATORY INFORMATION

<b>OSHA Hazards</b>	: This material is non-hazardous as defined by the American OSHA Hazard Communication Standard.
<b>WHMIS Classification</b>	: Not Rated

### The components of this product are reported in the following inventories:

<b>DSL</b>	On the inventory, or in compliance with the inventory
<b>TSCA</b>	All chemical substances in this product are either listed on the TSCA Inventory or are in compliance with a TSCA Inventory exemption.
<b>ELINCS</b>	At least one component is not listed in EINECS but all such components are listed in ELINCS.
<b>IECSC</b>	On the inventory, or in compliance with the inventory

---

## SECTION 16. OTHER INFORMATION

# Material Safety Data Sheet

## TWO CYCLE MOTOR OIL



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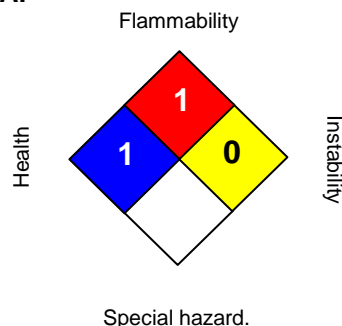
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### Further information

#### NFPA:



#### HMIS III:

HEALTH	1
FLAMMABILITY	1
PHYSICAL HAZARD	0
PERSONAL PROTECTION	B

0 = not significant, 1 = Slight,  
2 = Moderate, 3 = High  
4 = Extreme, \* = Chronic

For Copy of (M)SDS

: The Canadian Controlled Products Regulations (CPR) (Under the Hazardous Products Act, part of the WHMIS legislation) only apply to WHMIS Controlled (i.e., hazardous) products. Therefore, the CPR and the 3-year update rule specified therein do not apply to WHMIS Non-Controlled products. Although this is true, customarily Petro-Canada reviews and updates Non-Controlled product MSDS if a customer requests such an update. These Non-Controlled product updates are given a lower priority than Controlled products but are handled as soon as practicable. If you would like to verify if the MSDS you have is the most current, or you require any further information, please contact:

Internet: [lubricants.petro-canada.ca/msds](http://lubricants.petro-canada.ca/msds)

Western Canada, telephone: 1-800-661-1199; fax: 1-800-378-4518

Ontario & Central Canada, telephone: 1-800-268-5850; fax: 1-800-201-6285

Quebec & Eastern Canada, telephone: 1-800-576-1686; fax: 1-800-201-6285

United States, telephone: 1-800-268-5850; fax: 1-800-201-6285

For Product Safety Information: 1 905-804-4752

Prepared by

: Product Safety: +1 905-804-4752

The information provided in this Safety Data Sheet is correct to the best of our knowledge, information and belief at the date of its publication. The information given is designed only as a guidance for safe handling, use, processing, storage, transportation, disposal and release and is not to be considered a warranty or quality specification. The information relates only to the specific material designated and may not be valid for such material used in combination with any other materials or in any process, unless specified in the text.

USED OIL

MATERIAL SAFETY DATA SHEET



SECTION 1: PRODUCT AND COMPANY IDENTIFICATION

**PRODUCT NAME:** USED OIL

**SYNONYMS:** Waste oil; Used lubricating oil; Oil and water mixture

**PRODUCT PART  
NUMBER(S):** Not applicable.

**PRODUCT USE:** Oil or water mixture for re-refining or reprocessing.  
If this product is used in combination with other products, refer to the  
Material Safety Data Sheets for those products.

**24-HOUR EMERGENCY PHONE NUMBERS  
MEDICAL AND TRANSPORTATION (SPILL):**

These numbers are for  
emergency use only. If  
you desire non-emergency  
product information,  
please call a phone  
number listed below.

**1-800-468-1760**

**MANUFACTURER/ SUPPLIER:** Safety-Kleen Systems, Inc.  
5400 Legacy Drive  
Cluster II, Building 3  
Plano, Texas 75024  
USA  
**1-800-669-5740**  
**www.Safety-Kleen.com**

**TECHNICAL INFORMATION:** 1-800-669-5740 Press 1 then 1 then Extension 7500

**MSDS FORM NUMBER:** 81451 **ISSUE:** September 20, 2007

**ORIGINAL ISSUE:** January 15, 1990 **SUPERSEDES:** June 11, 2007

**PREPARED BY:** Product MSDS Coordinator **APPROVED BY:** MSDS Task Force

Revision 9/07; MSDS Form No. 81451 - Page 1 of 10



# USED OIL MATERIAL SAFETY DATA SHEET

## SECTION 2: COMPOSITION/INFORMATION ON INGREDIENTS

WT%	NAME	SYNONYM	CAS NO.	OSHA PEL		ACGIH TLV®		LD <sup>a</sup>	LC <sup>b</sup>
				TWA	STEL	TWA	STEL		
80 to 100	Lubricating oils, used	Used oil	70514-12-4	N. Av.	N. Av.	N. Av.	N. Av.	N. Av.	N. Av.
0 to 20*	Water/solids	N. Av.	N. Av.	N. Av.	N. Av.	N. Av.	N. Av.	N. Av.	N. Av.
0 to 10*	Hydrocarbon solvents. May include gasoline, diesel fuel, jet fuel, mineral spirits, etc.	N. Av.	N. Av.	N. Av.	N. Av.	N. Av.	N. Av.	N. Av.	N. Av.
0 to 1.5*	Metals. May include lead, iron, zinc, copper, chromium, arsenic, nickel, and others: each below 1.0 WT%.	N. Av.	N. Av.	N. Av.	N. Av.	N. Av.	N. Av.	N. Av.	N. Av.
0 to 1.0*	Polynuclear aromatics. May include naphthalene, fluoranthene, phenanthrene, pyrene, and others: each below 0.3 WT%.	N. Av.	N. Av.	N. Av.	N. Av.	N. Av.	N. Av.	N. Av.	N. Av.
0 to 0.5*	Chlorinated solvents.	N. Av.	N. Av.	N. Av.	N. Av.	N. Av.	N. Av.	N. Av.	N. Av.

N.Av. = Not Available      \*Even though the concentration range does not fall under the ranges prescribed by WHMIS, this is the actual range which varies with each batch of the product.

<sup>a</sup>Oral-Rat LD<sub>50</sub> (mg/kg)  
<sup>b</sup>Inhalation-Rat LC<sub>50</sub>

## SECTION 3: HAZARDS IDENTIFICATION

### EMERGENCY OVERVIEW

#### APPEARANCE

Liquid, black and viscous (thick), petroleum odor.

#### WARNING!

#### PHYSICAL HAZARDS

Combustible liquid.

#### HEALTH HAZARDS

May be harmful if inhaled.

May be harmful if absorbed through skin.

May be harmful or fatal if swallowed.

May irritate the respiratory tract (nose, throat, and lungs), eyes, and skin.

Suspect cancer hazard. Contains material which can cause cancer. Risk of cancer depends on duration and level of exposure.

Contains material which can cause birth defects.

Contains material which can cause central nervous system damage.

#### ENVIRONMENTAL HAZARDS

Product may be toxic to fish, plants, wildlife, and/or domestic animals.

Revision 9/07; MSDS Form No. 81451 - Page 2 of 10

**USED OIL**  
**MATERIAL SAFETY DATA SHEET**

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**POTENTIAL HEALTH EFFECTS**

Effects may vary depending on material composition. Typical effects may include:

**INHALATION (BREATHING):** High concentrations of vapor or mist may be harmful if inhaled. High concentrations of vapor or mist may irritate the respiratory tract (nose, throat, and lungs). High concentrations of vapor or mist may cause nausea, vomiting, headaches, dizziness, loss of coordination, numbness, and other central nervous system effects. Massive acute overexposure may cause rapid central nervous system depression, sudden collapse, coma, and/or death.

**EYES:** May cause irritation.

**SKIN:** May cause irritation. Product may be absorbed through the skin and cause harm as noted under **INHALATION (BREATHING)**.

**INGESTION (SWALLOWING):** May be harmful or fatal if swallowed. May cause throat irritation, nausea, vomiting, and central nervous system effects as noted under **INHALATION (BREATHING)**. Breathing product into the lungs during ingestion or vomiting may cause lung injury and possible death.

**MEDICAL CONDITIONS AGGRAVATED BY EXPOSURE:** Individuals with pre-existing cardiovascular, liver, kidney, respiratory tract (nose, throat, and lungs), central nervous system, eye, and/or skin disorders may have increased susceptibility to the effects of exposure.

**CHRONIC:** Prolonged or repeated inhalation may cause oil pneumonia, lung tissue inflammation, fibrous tissue formation, and/or toxic effects as noted under **INHALATION (BREATHING)**. Prolonged or repeated eye contact may cause inflammation of the membrane lining the eyelids and covering the eyeball (conjunctivitis). Prolonged or repeated skin contact may cause drying, cracking, redness, itching, and/or swelling (dermatitis).

**CANCER INFORMATION:** This product contains mineral oils, untreated or mildly treated, which can cause cancer. This product may contain hydrocarbon and chlorinated solvents; metals, and polynuclear aromatics which can cause cancer. Risk of cancer depends on duration and level of exposure. For more information, see **SECTION 11: CARCINOGENICITY**.

**POTENTIAL ENVIRONMENTAL EFFECTS**

Product may be toxic to fish, plants, wildlife, and/or domestic animals. Also see **SECTION 12: ECOLOGICAL INFORMATION**.

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USED OIL  
MATERIAL SAFETY DATA SHEET

**SECTION 4: FIRST AID MEASURES**

<b>INHALATION: (BREATHING)</b>	Remove to fresh air. If not breathing, give artificial respiration. If breathing is difficult, give oxygen. Oxygen should only be administered by qualified personnel. Someone should stay with victim. Get medical attention if breathing difficulty persists.
<b>EYES:</b>	If irritation or redness from exposure to vapor develops, move away from exposure into fresh air. Upon contact, immediately flush eyes with plenty of lukewarm water, holding eyelids apart, for 15 minutes. Get medical attention.
<b>SKIN:</b>	Remove affected clothing and shoes. Wash skin thoroughly with soap and water. Get medical attention if irritation or pain develops or persists.
<b>INGESTION: (SWALLOWING)</b>	Do NOT induce vomiting. Immediately get medical attention. Call 1-800-468-1760 for additional information. If spontaneous vomiting occurs, keep head below hips to avoid breathing the product into the lungs. Never give anything to an unconscious person by mouth.
<b>NOTE TO PHYSICIANS:</b>	Treat symptomatically and supportively. Treatment may vary with condition of victim and specifics of incident. Call 1-800-468-1760 for additional information.

**SECTION 5: FIRE FIGHTING MEASURES**

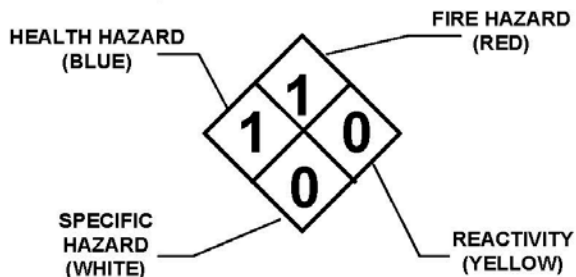
<b>FLASH POINT:</b>	>200°F (93°C) (minimum) Pensky-Martens Closed Cup
<b>FLAMMABLE LIMITS IN AIR:</b>	Not available.
<b>AUTOIGNITION TEMPERATURE:</b>	Not available.
<b>HAZARDOUS COMBUSTION PRODUCTS:</b>	Decomposition and combustion materials may be toxic. Burning may produce phosgene gas, nitrogen oxides, carbon monoxide, and unidentified organic compounds.
<b>CONDITIONS OF FLAMMABILITY:</b>	Heat, sparks, or flame. Product may burn but does not ignite readily.
<b>EXTINGUISHING MEDIA:</b>	Use carbon dioxide, regular foam, dry chemical, water spray, or water fog.

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## USED OIL MATERIAL SAFETY DATA SHEET

### NFPA 704 HAZARD IDENTIFICATION:

This information is intended solely for the use by individuals trained in this system.



### FIRE FIGHTING INSTRUCTIONS:

Keep storage containers cool with water spray. A positive-pressure, self-contained breathing apparatus (SCBA) and full-body protective equipment are required for fire emergencies.

### FIRE AND EXPLOSION HAZARDS:

Heated containers may rupture. "Empty" containers may retain residue and can be dangerous. Product is not sensitive to mechanical impact. Product may be sensitive to static discharge, which could result in fire or explosion.

### SECTION 6: ACCIDENTAL RELEASE MEASURES

Remove all ignition sources. Do not touch or walk through spilled product. Stop leak if you can do it without risk. Wear protective equipment and provide engineering controls as specified in **SECTION 8: EXPOSURE CONTROLS/PERSONAL PROTECTION**. Isolate hazard area. Keep unnecessary and unprotected personnel from entering. Ventilate area and avoid breathing vapor or mist. A vapor suppressing foam may be used to reduce vapors. Contain spill away from surface waters and sewers. Contain spill as a liquid for possible recovery, or sorb with compatible sorbent material and shovel with a clean, sparkproof tool into a sealable container for disposal.

Additionally, for large spills: Water spray may reduce vapor, but may not prevent ignition in closed spaces. Dike far ahead of liquid spill for collection and later disposal.

There may be specific federal regulatory reporting requirements associated with spills, leaks, or releases of this product. Also see **SECTION 15: REGULATORY INFORMATION**.

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USED OIL  
MATERIAL SAFETY DATA SHEET

**SECTION 7: HANDLING AND STORAGE**

- HANDLING:** Keep away from heat, sparks, or flame. Where flammable mixtures may be present, equipment safe for such locations should be used. Use clean, sparkproof tools and explosion-proof equipment. When transferring product, storage tanks, tanker trucks, and rail tank cars should be grounded and bonded. Do not breathe vapor or mist. Use in a well ventilated area. Avoid contact with eyes, skin, clothing, and shoes. Do not smoke while using this product.
- SHIPPING AND STORING:** Keep container tightly closed when not in use and during transport. Do not pressurize, cut, weld, braze, solder, drill, or grind containers. Keep containers away from heat, flame, sparks, static electricity, or other sources of ignition. Empty product containers may retain product residue and can be dangerous. See **SECTION 14: TRANSPORT INFORMATION** for Packing Group information.

**SECTION 8: EXPOSURE CONTROLS/PERSONAL PROTECTION**

- ENGINEERING CONTROLS:** Use general ventilation, process enclosures, local exhaust ventilation, or other engineering controls to control air-borne levels. Where explosive mixtures may be present, equipment safe for such locations should be used.

**PERSONAL PROTECTIVE EQUIPMENT**

- RESPIRATORY PROTECTION:** A respiratory protection program which meets USA's OSHA General Industry Standard 29 CFR 1910.134 or Canada's CSA Standard Z94.4-M1982 requirements must be followed whenever workplace conditions warrant a respirator's use. Consult a qualified Industrial Hygienist or Safety Professional for respirator selection guidance.
- EYE PROTECTION:** Wearing chemical goggles is recommended.  
Contact lens may be worn with eye protection.
- SKIN PROTECTION:** Where prolonged or repeated skin contact is likely, wear neoprene, nitrile (4 mil minimum), PVC (polyvinyl chloride), or equivalent protective gloves; wearing natural rubber or equivalent gloves is not recommended.
- When product is heated and skin contact is likely, wear heat-insulating gloves, boots, and other protective clothing.
- To avoid prolonged or repeated contact with product where spills and splashes are likely, wear appropriate chemical-resistant faceshield, boots, apron, whole body suits, or other protective clothing.

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**USED OIL  
MATERIAL SAFETY DATA SHEET**

**PERSONAL HYGIENE:** Wash thoroughly with soap and water after handling product and before eating, drinking, or using tobacco products. Clean affected clothing, shoes, and protective equipment before reuse. Discard affected clothing, shoes, and/or protective equipment if they cannot be thoroughly cleaned. Discard leather articles, such as shoes, saturated with the product.

**OTHER PROTECTIVE EQUIPMENT:** Where spills and splashes are likely, facilities storing or using this product should be equipped with an emergency eyewash and shower, both equipped with clean water, in the immediate work area.

**SECTION 9: PHYSICAL AND CHEMICAL PROPERTIES**

**PHYSICAL STATE, APPEARANCE, AND ODOR:** Liquid, black and viscous (thick), petroleum odor.

**ODOR THRESHOLD:** Not available.

**MOLECULAR WEIGHT:** Not applicable.

**SPECIFIC GRAVITY:** 0.8 to 1.0 at 60°F (15.6°C) (water = 1)

**DENSITY:** 6.7 to 8.3 LB/US gal (800 to 1000 g/l) (approximately)

**VAPOR DENSITY:** greater than 1 (air = 1) (based on kerosene)

**VAPOR PRESSURE:** Not available.

**BOILING POINT:** Not available.

**FREEZING/MELTING POINT:** Not available.

**pH:** Not applicable.

**EVAPORATION RATE:** less than 1 (butyl acetate = 1)

**SOLUBILITY IN WATER:** Slight.

**FLASH POINT:** >200°F (93°C) (minimum) Pensky-Martens Closed Cup

**FLAMMABLE LIMITS IN AIR:** Not available.

**AUTOIGNITION TEMPERATURE:** Not available.

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USED OIL  
MATERIAL SAFETY DATA SHEET

**SECTION 10: STABILITY AND REACTIVITY**

**STABILITY:** Stable under normal temperatures and pressures. Avoid heat, sparks, or flame.

**INCOMPATIBILITY:** Avoid acids, alkalies, oxidizing agents, reducing agents, reactive halogens, or reactive metals.

**REACTIVITY:** Polymerization is not known to occur under normal temperatures and pressures. Not reactive with water.

**HAZARDOUS DECOMPOSITION PRODUCTS:** None under normal temperatures and pressures. Also see **SECTION 5: HAZARDOUS COMBUSTION PRODUCTS.**

**SECTION 11: TOXICOLOGICAL INFORMATION**

**SENSITIZATION:** Based on best current information, there may be known human sensitization associated with this product.

**MUTAGENICITY:** Based on best current information, there may be mutagenicity associated with this product.

**CARCINOGENICITY:** Mineral oils, untreated or mildly treated are listed by IARC as a known carcinogen. Mineral oils, untreated or mildly treated are classified by NTP as having limited evidence of carcinogenicity in humans or sufficient evidence of carcinogenicity in experimental animals.

There may be hydrocarbon and chlorinated solvents; metals, and polynuclear aromatics present in this product which are listed by OSHA as known carcinogens. There may be hydrocarbon and chlorinated solvents; metals, and polynuclear aromatics present in this product which are listed by IARC as known, probable, or possible carcinogens. There may be hydrocarbon and chlorinated solvents; metals, and polynuclear aromatics present in this product which are classified by NTP as known carcinogens or as having limited evidence of carcinogenicity in humans or sufficient evidence of carcinogenicity in experimental animals. There may be hydrocarbon and chlorinated solvents; metals, and polynuclear aromatics present in this product which are recognized by ACGIH as confirmed or suspected human carcinogens.

Also see **SECTION 3: CANCER INFORMATION.**

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## USED OIL MATERIAL SAFETY DATA SHEET

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**REPRODUCTIVE TOXICITY:** Based on best current information, there may be reproductive toxicity associated with this product.

**TERATOGENICITY:** Based on best current information, there may be teratogenicity associated with this product.

**TOXICOLOGICALLY SYNERGISTIC PRODUCT(S):** Based on best current information, there may be toxicologically synergistic products associated with this product.

### SECTION 12: ECOLOGICAL INFORMATION

**ECOTOXICITY:** Not available.

**OCTANOL/WATER PARTITION COEFFICIENT:** Not available.

**VOLATILE ORGANIC COMPOUNDS:** Not available.  
As per 40 CFR Part 51.100(s).

### SECTION 13: DISPOSAL CONSIDERATIONS

Dispose in accordance with federal, state, provincial, and local regulations. Regulations may also apply to empty containers. The responsibility for proper waste disposal lies with the owner of the waste. Contact Safety-Kleen regarding proper recycling or disposal.

### SECTION 14: TRANSPORT INFORMATION

**DOT:** Not regulated.

**TDG:** Not regulated.

**EMERGENCY RESPONSE GUIDE NUMBER:** Not applicable.  
Reference *North American Emergency Response Guidebook*

### SECTION 15: REGULATORY INFORMATION

**USA REGULATIONS SARA SECTIONS 302 AND 304:** Based on the ingredient(s) listed in **SECTION 2**, this product does not contain any "extremely hazardous substances" listed pursuant to Title III of the Superfund Amendments and Reauthorization Act of 1986 (SARA) Section 302 or Section 304 as identified in 40 CFR Part 355, Appendix A and B.

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## USED OIL MATERIAL SAFETY DATA SHEET

### SARA SECTIONS 311 AND 312:

This product poses the following physical and health hazards as defined in 40 CFR Part 370 and is subject to the requirements of sections 311 and 312 of Title III of the Superfund Amendments and Reauthorization Act of 1986 (SARA):  
Immediate (Acute) Health Hazard  
Delayed (Chronic) Health Hazard

### SARA SECTION 313:

This product may contain "toxic" chemicals subject to the requirements of section 313 of Title III of the Superfund Amendments and Reauthorization Act of 1986 (SARA) and 40 CFR Part 372.

### CERCLA:

This product may contain "hazardous substances" listed pursuant to Comprehensive Environmental Response, Compensation and Liability Act of 1980 (CERCLA) in 40 CFR Part 302, Table 302.4.

### TSCA:

Not available.

### CALIFORNIA:

This product is not for sale or use in the State of California.

### CANADIAN REGULATIONS

WHMIS: Not regulated

### CANADIAN ENVIRONMENTAL PROTECTION ACT (CEPA):

Not available.

### SECTION 16: OTHER INFORMATION

REVISION INFORMATION: Change from MSIS to MSDS.

LABEL/OTHER INFORMATION: Not available.

User assumes all risks incident to the use of this product. To the best of our knowledge, the information contained herein is accurate. However, Safety-Kleen assumes no liability whatsoever for the accuracy or completeness of the information contained herein. No representations or warranties, either express or implied, or merchantability, fitness for a particular purpose or of any other nature are made hereunder with respect to information or the product to which information refers. The data contained on this sheet apply to the product as supplied to the user.



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# FUEL MANAGEMENT PLAN BAFFIN GOLD PROPERTY KIVALLIQ ENERGY CORPORATION

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Prepared by: Andrew Berry, Chief Operating Officer

Effective Date: June 1, 2017

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## 1. Introduction

This Fuel Management Plan (FMP) shall be in effect from June 1, 2017 and has been specifically prepared for the Baffin Gold Property. The Baffin Gold Property is located 260 kilometres southwest of Clyde River and 360 kilometres northwest of Qikiqtarjuaq in the Qikiqtani Region of Nunavut.

The purpose of this Fuel Management Plan is to ensure that the storage, transportation and handling of fuel and chemical materials is done in a manner that is environmentally sound and safe to personnel and contractors. A copy of this plan will be kept in the office at site and at the head office in Vancouver. Copies of this plan may be obtained from Kivalliq Energy Corporation.

This Fuel Management Plan should be used in conjunction with other property plans and best management practices. Other plans at the Baffin Gold Property include:

- Abandonment and Restoration Plan
- Emergency Response Plan
- Environmental and Wildlife Management Plan
- Field Safety Manual
- Spill Contingency Plan
- Waste Management Plan

### 1.1. Corporate Details

Kivalliq Energy Corporation  
Suite 1020- 800 West Pender Street  
Vancouver, British Columbia, V6C 2V6  
Tel: (604) 646-4527  
Fax: (604) 646-4526  
[www.kivalliqenergy.com](http://www.kivalliqenergy.com)

### 1.2. Project Description

The Baffin Gold Property on Baffin Island in the Qikiqtani Region of Nunavut consists of 15 prospecting permits, 6 mineral claims and two Mineral Exploration Agreements (MEA's) with Nunavut Tunngavik Inc. (NTI) on Inuit Owned Land Parcel BI-35. The property is located 260 kilometres southwest of Clyde River and 360 kilometres west-northwest of Qikiqtarjuaq, measures approximately 160 kilometres in an east-west direction by approximately 30 kilometres north-south and comprises a total area of 408,981.6 hectares.

All prospecting permits, mineral claims and the MEA's are contiguous and the property extends north, south, east and west between latitudes 68.375° and 68.75° North and longitudes 70.5° and 74.5° West in NTS map areas 027 B/05, 027 B/12, 027 B/11, 037 A/06, 037 A/07, 037 A/08, 037 A/09 and 037 A/10 (UTM coordinates: 7,584,000mN to 7,615,000mN and 520,500mE to 622,500mE, NAD83, Zone 18 and 7,586,000mN to 7,628,500mN and 377,500mE to 439,500mE Zone 19).

The work proposed for the 2017 exploration program consists of low-impact activities including: prospecting, geological mapping, rock and soil/till sampling, airborne geophysics, ground geophysics, and fuel transport (fixed wing).

Kivalliq Energy intends to utilize Commander Resources Ltd.'s (Commander) existing Dewar Lakes Camp (Permits Pending) on Crown lands administered by INAC to facilitate the program. The camp is located at 68°37'59" N, 71°06'38" W and operated seasonally from 2001 to 2011 but has been unoccupied since 2012. In June 2017, Commander will mobilize a crew to rehabilitate the camp and prepare it to accommodate field personnel. As the permittee, Commander has a separate Fuel Management Plan in place for the Dewar Lakes Camp that is consistent with this Kivalliq Energy FMP document.

Due to the size of the property Kivalliq is permitting two temporary fly camps to accommodate workers and provide effective daily access to and from priority target areas that are remote from the Dewar Lakes camp location. The proposed Malrok Fly Camp will be located adjacent to Malrok Lake on IOL BI-35 on Inuit Owned Lands administered by QIA at 68° 30' 06" N Lat., 72° 27' 08" W Long. The proposed Tuktu Fly Camp will be located on Crown lands proximal to the Fox-B Airstrip and adjacent to Nadluardjuk Lake at 68° 37' 10" N Lat., 73° 12' 45" W Long.

The temporary fly camps will accommodate up to 15 people and will be comprised of: 1 kitchen tent, 1 office tent, 1 dry tent, 1 utility tent, 5 supplementary sleep tents, a portable fuel-fired incinerator and a small generator shed. The structures will consist of a combination of WeatherPort vinyl tents, canvas prospectors' tents and small plywood structures. These camps will be fully closed and dismantled completely once exploration activities cease. The sites will then be reclaimed and restored to their original state. Full details regarding the temporary fly camps can be found in the "Project Description and Work Plan".

### **1.3. Applicable Legislation and Guidelines**

Acts, Regulations, and Legislation that applies to the storage, handling and transport of fuel include but are not limited to:

#### **1.3.1. Federal**

- National Fire Code of Canada (Federal)
- Storage Tank Systems for Petroleum Products and Allied Petroleum Products Regulations
- Federal Aboveground Storage Tank Technical Guidelines
- CCME Environmental Codes of Practice for Underground and Aboveground Storage Tank Systems
- Transport of Dangerous Goods Act
- The Workplace Hazardous Materials Information System (WHMIS)
- Workers' compensation Board
- Canadian Environmental Protection Act
- Fisheries Act
- Environmental Protection Act

- Guidelines for Spill Contingency Planning, INAC
- Draft Fuel Storage and Handling Guidelines, April 2009, Indian and Northern Affairs Canada - Nunavut

### 1.3.2. Territorial

- Fire Prevention Act
- Nunavut Waters Act
- Nunavut Surface Rights Tribunal Act
- Draft Recommended Best Practices for the Storage and Handling of Petroleum and Allied Petroleum Products on Federal Crown Lands in Nunavut
- Nunavut “Guideline for the General Management of Hazardous Waste”
- The Mine, Health and Safety Act and Regulations (Nunavut)
- The NWT and Nunavut Safety Act, the Occupational Health and Safety Regulations

## 2. Training

Proper use and monitoring is paramount to safe fuel storage and handling. Personnel that will be tasked with handling and inspecting will be required to receive proper and adequate training. This training will include, but not be limited to the following areas:

Operations/Maintenance  
 Spill Response  
 WHMIS

## 3. Fuel Inventory

Diesel, jet fuel, propane and gasoline will be stored at the Baffin Gold Property. These fuels must be stored in a manner that minimizes risks to the environment, personnel/contractors and camp, while minimizing and preventing the potential impact of infrastructure developments. Fuel will be transported by air and stored in drums.

Kivalliq Energy has applied for authorization to cache 60 drums of fuel at two temporary fly camp locations.

This will include:

- 23 - 205 L drums of diesel
- 25- 205 L drums of Jet fuel
- 2 - 205 L drums of gasoline
- 10 - 100 lb. cylinders of propane

Small temporary fuel caches of 3 to 9 drums may be established for daily use to support remote exploration activities such as airborne surveying or reconnaissance rock or soil sampling programs. Spill kits are located at every fuel cache. Kivalliq endeavors to consume a majority of the cached fuel by the end of each season. Please refer to the “Spill Contingency Plan” for more information.

A complete inventory of all fuel and hazardous materials on site will be recorded at the beginning and end of seasonal operations. The Camp Manager will be responsible for daily inspections of the fuel berms and the monitoring, tracking and recording of fuel inventories while operations are active.

#### 4. Storage and Secondary Containment

To support operations at Kivalliq's temporary fly camp facilities, limited capacity fuel caches (up to 60 drums) are required. These fuel caches will be established and operated in accordance with this Fuel Management Plan and Kivalliq Energy's Spill Contingency Plan.

- All fuel drums will be stored in secondary containment berms.
- All secondary containment berms will be capable of holding 110 percent of the volume of the largest fuel reservoir that is housed within the secondary containment.
- All secondary containment will be of sufficient height and depth to hold any potential spill or failure.
- Secondary containment berms will be made of material (Arctic Grade) that is sufficiently durable to withstand Nunavut's climate and the natural terrain.
- Secondary containment berms will be equipped with hydrocarbon filtration systems (rain drains) to safely remove water that is collected inside the berms.
- Secondary containment berms will be inspected daily during operations.
- Within the secondary containment berms fuel drums will be stored in rows on their sides with bungs facing at the 3:00 and 9:00 position.
- Propane cylinders will be stored standing up and away from any potential sources of ignition.
- All drums, tanks, valves, regulators and hoses will be regularly inspected for cracks or leaks.
- Drummed fuel used for heating tents will be placed in secondary containment.
- All fuel storage sites will be located a minimum of 31 metres from the normal high-water mark of any water body and will be inspected regularly.
- Spill Kits will be placed and will be easily identifiable with clear signage at each fuel storage site.
- "NO SMOKING" signs will be erected at each fuel storage area.
- Smoking, open flame and any potential sources of ignition are prohibited within 31 metres of any fuel storage site.
- Empty fuel drums will be removed from site regularly.

Chemicals materials that may be located on the Baffin Gold Property include small amounts of hydrochloric acid, cleaners, batteries, electronics, fluorescent light bulbs/tubes, motor oil and hydraulic oil. Materials will be stored in their original containers.

The small supply of motor oil and hydraulic oil will be located in the utility tent at the temporary field camp. They will be kept in a drip tray with a spill kit nearby. Hydrochloric acid is used for core logging in very small amounts (<0.5 litre) and will be kept in a sealed container in the core shack. Cleaners (solvents) will be kept in a designated area in their original containers. Cleaners, batteries and fluorescent light bulbs/tubes will be kept in their original containers.

Please refer to the “Spill Contingency Plan” for MSDS sheets that accompany these materials and the “Waste Management Plan” for additional information.

## 5. Handling, Transfer and Transportation

Fuel will be transported to the property via fixed-wing aircraft in accordance with the regulations outlined in the Transportation of Dangerous Goods Act and Transport Canada Aviation legislation. Empty drums will be removed from the property regularly and shipped to an authorized facility for recycling or disposal.

Manual and electric pumps will be used for the transfer of petroleum products. Smoking, sparks, or open flames are **prohibited** in fuel storage and re-fueling areas at all times. A spill kit will be placed with clear signage in all areas of fuel storage and re-fueling. When re-fueling from drums those drums will be placed upon platforms underlain by a secondary containment.

Preventative mitigation measures include:

### Handling and Transfer

- Fuel transfer hoses with cam lock mechanisms to prevent leakage are used.
- Fuel absorbent pads are placed appropriately to protect from drips and spills.
- Personnel will carefully monitor fuel content in the receiving vessel during transfer and always have absorbent pads available while transferring fuel.
- Any drips or leakages are cleaned immediately.
- All operating personnel will be trained in proper fuel handling and spill response procedures.
- Smoking, open flame and any potential sources of ignition are prohibited within 31 metres of any fuel storage site and fuel transfer locations.
- “NO SMOKING” signs will be erected at each fuel transfer area.
- Equipment maintenance and servicing will be conducted in designated areas. Equipment will be underlain by absorbent pads and spill trays for lubricant changes.



- Funnels will be used to reduce the potential for spillage.
- Waste oils and fluids will be collected in sealed 20 litre pails and will be labelled appropriately and stored in secondary containment berms.
- Empty fuel drums will be removed from site regularly.

Please refer to Kivalliq Energy's Baffin Gold Property "Spill Contingency Plan" in the event of a spill.

## **6. Signs and Labels**

All drummed fuel will be clearly labeled in accordance with the Workplace Hazardous Materials Information System (WHMIS) which includes the name of the company and the type of fuel contained within. Signs will be erected at each fuel cache with the same information. "NO SMOKING" signs will be erected at each fuel cache and fuel storage area.

## **7. Inspections**

The Camp Manager will be responsible for daily inspections of the fuel berms and the monitoring, tracking and recording of fuel inventories while operations are active. Secondary containment berms will be inspected for signs of punctures, failures, leaks, etc. Drums will be inspected for proper storage, leaking bungs, cracks and punctures. Any issues noted will be remediated immediately.

## **8. Spill Kits**

A spill kit capable of addressing potential spills (based on type, location and volume of fuel cache) shall be located at each fuel cache, storage area and re-fueling station. Refer to the "Spill Response Plan" for more information.



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# ENVIRONMENTAL & WILDLIFE MANAGEMENT PLAN BAFFIN GOLD PROPERTY KIVALLIQ ENERGY CORPORATION

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Prepared By: Andrew Berry, Chief Operating Officer

Effective Date: June 1, 2017

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## 1. Introduction

This Environmental and Wildlife Management Plan (EWMP) shall be in effect from June 1, 2017 and has been specifically prepared for Kivalliq Energy Corp.'s (Kivalliq Energy) Baffin Gold Property. A copy of this plan will be kept in the office at site and at the head office in Vancouver. Copies of this plan may be obtained from Kivalliq Energy Corporation.

Kivalliq Energy is an exploration company with a Nunavut focus. The company 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.

### 1.1. Corporate Details

Kivalliq Energy Corporation  
Suite 1020- 800 West Pender Street  
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Tel: (604) 646-4527  
Fax: (604) 646-4526  
[www.kivalliqenergy.com](http://www.kivalliqenergy.com)

### 1.2. Purpose and Scope

This Environmental and Wildlife Management Plan outlines Kivalliq Energy's environmental policy and will be implemented to ensure that exploration activities at the Baffin Gold Property are operating in an environmentally responsible manner.

This plan includes:

- Kivalliq Energy's environmental policy.
- Applicable legislation and guidelines.
- Environmental protection measures.
- Wildlife predicted impacts and mitigation measures.
- Potential impacts to aquatic life, air and noise quality.
- Vegetation and soil disturbance mitigation.
- Archaeological site procedures.
- Hazardous materials mitigation measures.
- A summary of the Waste Management Plan and Abandonment and Restoration Plan.

This Environmental and Wildlife Management Plan should be used in conjunction with other property plans and best management practices. Copies of all plans will be located in the office at site and at the head office in Vancouver and are available upon request. Other plans at the Baffin Gold Property include:

- Abandonment and Restoration Plan

- Emergency Response Plan
- Field Safety Manual
- Fuel Management Plan
- Spill Contingency Plan
- Waste Management Plan

### 1.3. Environmental Policy

Kivalliq Energy endeavours 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.

The company's environmental policy includes:

- Ensuring all personnel and contractors adhere to Kivalliq Energy's environmental policies.
- Minimizing the risks to the health and safety of all employees.
- Complying with all applicable environmental legislation and regulations.
- Assess and mitigate any potential environmental impacts.
- Advancing the project in an environmentally and socially responsible manner that includes community consultation.
- Cooperate with relevant regulatory bodies and governments on all aspects of environmental protection and policy.
- All plans, licences and permits will be reviewed with employees and contractors when hired and copies of the plans will be available in the site office for reference.

### 1.4. Project Description

The Baffin Gold Property on Baffin Island in the Qikiqtani Region of Nunavut consists of 15 prospecting permits, 6 mineral claims and two Mineral Exploration Agreements (MEA's) with Nunavut Tunngavik Inc. (NTI) on Inuit Owned Land Parcel BI-35. The property is located 260 kilometres southwest of Clyde River and 360 kilometres northwest of Qikiqtarjuaq, measures 160 kilometres in an east-west direction by approximately 30 kilometres north-south and comprises a total area of 408,981.6 hectares (Appendix B).

All prospecting permits, mineral claims and the MEA's are contiguous and the property extends north, south, east and west between latitudes 68.375° and 68.75° North and longitudes 70.5° and 74.5° West in NTS map areas 027 B/05, 027 B/12, 027 B/11, 037 A/06, 037 A/07, 037 A/08, 037 A/09 and 037 A/10 (UTM coordinates: 7,584,000mN to 7,615,000mN and 520,500mE to 622,500mE, NAD83, Zone 18 and 7,586,000mN to 7,628,500mN and 377,500mE to 439,500mE Zone 19).

Property access is limited to fixed-wing aircraft or helicopter. Chartered fixed-wing flights from Iqaluit to the Fox-3 Airstrip (a North Warning System airstrip) will be used to transport personnel and equipment to the Dewar Lakes Camp. Helicopters will be used to support exploration activities. The property location is extremely remote and the only people expected on site will be employees and contractors.

The work proposed for the 2017 exploration program consists of low-impact activities including: prospecting, geological mapping, rock and soil/till sampling, airborne geophysics, ground geophysics, drone surveying, environmental baseline monitoring and fuel transport (fixed wing).

Kivalliq Energy intends to utilize Commander Resources Ltd.'s (Commander) existing Dewar Lakes Camp (Permits Pending) on Crown lands administered by INAC to facilitate the program. The camp is located at 68°37'59" N Lat., 71°06'38" W Long. and operated seasonally from 2003 to 2011 but has been unoccupied since 2013. In June 2017, Commander will mobilize a crew to rehabilitate the camp and prepare it to accommodate field personnel. As the permittee, Commander has a separate EWMP in place for the Dewar Lakes Camp. This document is consistent with the Commander EWMP.

Due to the size of the property Kivalliq Energy is permitting two temporary fly camps to accommodate workers and provide effective daily access to and from priority target areas that are remote from the Dewar Lakes camp location. The proposed Malrok Fly Camp will be located adjacent to Malrok Lake on IOL BI-35 on Inuit Owned Lands administered by QIA at 68° 30' 06" N Lat., 72° 27' 08" W Long. The proposed Tuktu Fly Camp will be located on Crown lands proximal to the Fox-B Airstrip and adjacent to Nadluardjuk Lake at 68° 37' 10" N Lat., 73° 12' 45" W Long.

The temporary fly camps will accommodate up to 15 people and will be comprised of: 1 kitchen tent, 1 office tent, 1 dry tent, 1 utility tent, 5 supplementary sleep tents, a Pacto or outhouse latrine facility, a portable fuel-fired incinerator and a small generator shed. The structures will consist of a combination of WeatherPort vinyl tents, canvas prospectors' tents and small plywood structures. These camps will be fully closed and dismantled completely once exploration activities cease. The sites will then be reclaimed and restored to their original state.

Full details regarding the temporary fly camps can be found in the Baffin Gold Property Project Description and Work Plan.

## **1.5. Applicable Legislation and Guidelines**

Exploration at the Baffin Gold Property will be conducted in accordance with Federal and Territorial Acts, Regulations, Guidelines and Recommendations including, but not limited to

### **1.5.1. Federal**

- Aeronautics Act
- Canada-Wide Standards for Dioxins and Furans (Canadian Council of Ministers of the Environment)
- Canada Wildlife Act
- Canadian Environmental Protection Act (Environment Canada)
- Department of Fisheries and Oceans Operational Statements and Guidelines
- Draft Fuel Storage and Handling Guidelines, April 2009, Indian and Northern Affairs Canada - Nunavut
- Fisheries Act (Fisheries and Oceans Canada; DFO)
- Guidelines for Spill Contingency Planning (INAC)

- Migratory Birds Convention Act and Migratory Birds Regulations
- National Fire Code of Canada (Federal)
- Nunavut Land Claims Agreement
- Public Health Act
- Species at Risk Act
- Territorial Lands Act
- Transportation of Dangerous Goods Act (Transport Canada)
- Workers' compensation Board
- Workplace Hazardous Materials Information System (WHMIS)

#### **1.5.2. Territorial**

- Caribou Protection Plan/Caribou Protection Measures
- Draft Recommended Best Practices For The Storage And Handling Of Petroleum And Allied Petroleum Products on Federal Crown Lands in Nunavut
- Environmental Guidelines for the Burning and Incineration of Solid Waste
- Fire Prevention Act (Territorial)
- North Baffin Regional Land Use Plan (NBRLUP)
- Nunavut Environmental Protection Act
- Nunavut “Guideline for the General Management of Hazardous Waste”
- Nunavut Waters Act and Nunavut Surface Rights Tribunal Act
- Nunavut Wildlife Act
- The Mine, Health and Safety Act and Regulations (Nunavut)
- The NWT and Nunavut Safety Act, the Occupational Health and Safety Regulations

#### **1.5.3. Municipal**

- Municipal Solid Wastes Suitable for Open Burning Guidelines

## **2. Training**

All employees and contractors of Kivalliq Energy will be trained in the company’s internal policies, management plans, standard operating procedures and made familiar with the Terms and Conditions of the project’s licences and permits. Every person arriving at Kivalliq Energy’s Baffin Gold Property will undergo an orientation which includes information on health, safety, and environmental responsibilities and stewardship. Training will include, but not be limited to:

- Emergency Response Plan
- Spill Response (Spill Contingency Plan)
- Bear Safety
- General Safety



- Environmental Management Plan
- Environmental Baseline Monitoring
- Wildlife Mitigation Measures
- Field Safety Manual
- Fuel Management Plan
- Abandonment and Restoration Plan
- Waste Management Plan

All employees and contractors will receive Bear Safety Training. Bear safety information and material will be kept in a binder on site. The Government of Nunavut published the manual “Bear Safety-Reducing Bear-People Conflicts in Nunavut”. This document will be referred to in the safety orientation that all personnel, contractors and consultants receive when they arrive at site. A copy of the manual will be kept at the camp office and in Vancouver in the head office.

### **3. Environmental Protection Measures**

Kivalliq Energy endeavors to take every reasonable precaution toward ensuring the protection and conservation of the natural environment from any potential harmful effects of stored materials and operations. All exploration activities at the Baffin Gold Property will operate in an environmentally responsible manner. The Project Manager is responsible for implementing the Environmental Management Plan and overseeing Environmental Baseline Monitoring (section 3.1).

#### **3.1. Environmental Baseline Monitoring**

Kivalliq Energy plans to implement an early stage baseline monitoring program that is designed to build an understanding of the local and regional environmental attributes in areas being worked that are of legislative, cultural, economic and/or scientific importance. The attributes selected for study are also those that will benefit from the longest record of data collection.

Initially, the monitoring program will investigate three biophysical components:

- Water Quality
- Meteorology
- Non-invasive, Observational Based Wildlife Monitoring

Additional biophysical components may be added as the program size increases over the years.

##### **3.1.1. Water Quality**

A water quality monitoring program will be established to generate baseline water quality data in areas of active exploration. Sample sites will be chosen on representative water bodies that focus on exploration targets and camp infrastructure locations. Water samples will be analyzed for hardness, metals, pH, total suspended solids, ammonia, nitrate, cyanide and alkalinity.

### **3.1.2. Meteorology**

Meteorological data including air temperature, precipitation, wind speed and direction will be recorded on a daily basis. An automated weather station may be installed on the property in future years.

### **3.1.3. Wildlife Monitoring**

The objective of the wildlife monitoring is to describe wildlife use of the study area and produce coarse-scale population estimates for valued ecosystem components (VECs) occurring in the study area. The 2017 wildlife program will consist of logging incidental observations of all wildlife encountered by field staff and noting any listed species or high priority VEC known to occur in the study area. The wildlife incidental observations will be included in the Annual Report to QIA, INAC and NIRB. Predicted impacts to wildlife and wildlife mitigation measures can be seen below in section 4.

## **4. Potential Impacts & Wildlife Management**

### **4.1. Predicted Impacts to Wildlife**

Kivalliq Energy's proposed exploration programs are of limited scope and will be operated seasonally due to weather limitations.

Kivalliq Energy has monitoring and mitigation strategies in place to minimize the potential for any temporary impact to wildlife and wildlife habitat caused by exploration activities. All terms and conditions of the permits and licences will be adhered to including Caribou Protection Measures.

The Baffin Gold Property is not located within any federal or territorial Protected Areas, as defined by Environment and Climate Change Canada. The edge of the property lies 110 kilometres northwest of the Auyuittuq National Park and the proposed Igalirtuq National Wildlife Area surrounding Clyde River is approximately 100 kilometres north of the Dewar Lakes Camp.

In developing mitigation measures toward the protection of wildlife, Kivalliq Energy Corporation has identified three areas of potential impact to wildlife due to the presence of this project: attracting wildlife; habitat disturbance; and unintentional interactions and disturbances. Mitigation measures specific to these areas of potential impact are outlined below.

### **4.2. Wildlife Mitigation Measures**

#### **4.2.1. Attracting Wildlife**

Every effort will be made to ensure that wildlife are not attracted or encouraged to linger at the project. These efforts will include:

- Waste handling practices – All waste will be stored such that it is not accessible to wildlife. Food wastes will be incinerated on a regular basis to limit odours which could attract wildlife.
- Strict rules regarding feeding wildlife – Any personnel, contractor or consultant found to be feeding wildlife will be terminated immediately.

- Keeping lunches out of reach – Field crews and drill crews will store their lunches so that they are not accessible to wildlife. All food wastes, wrappers, drink containers are to be brought back to camp for disposal, recycling and/or cleaning.
- Keeping work areas clean and tidy – Field crews and drill crews will keep the work areas free of litter and garbage. No food or beverage will be dumped out or left behind, this includes thermoses.

#### 4.2.2. Habitat Disturbance

Habitat disturbance at exploration programs is temporary and is the result of exploration activities and infrastructure. Progressive reclamation is to be practiced at site, meaning that before an exploration program is considered complete, every effort will be made to reclaim and restore the area to its original state. Refer to the Kivalliq Energy's "Abandonment and Restoration Plan".

#### 4.2.3. Unintentional Interactions and Disturbances

The potential exists for unintentional wildlife interactions and disturbances despite best efforts to avoid them. These interactions and disturbances will be documented, reported immediately to the GN and the QIA and will be reported in the required annual reports.

**Approaching and feeding wildlife is prohibited.** There are absolutely no exceptions to this rule. If wildlife are present in the area, all employees and contractors are to avoid any contact with wildlife. These policies/regulations will be strictly enforced. Any employee or contractor who is found to be violating any of these rules will find their employment terminated and will be removed from site immediately.

Harassment and disturbance of wildlife is prohibited. If any employees and contractors are approaching a work site where migrating caribou, caribou cows and calves, muskoxen nurse groups or other wildlife are in the area, this work site will be avoided until the animals have moved on a distance of one (1) kilometre from the site.

If employees and/or contractors encounter wildlife at any time, every effort should be made to stay out of sight of wildlife or redirect travel away from wildlife where possible, to avoid impact to the wildlife.

While conducting business on behalf of Kivalliq Energy, **hunting is strictly forbidden.** There are no exceptions to this rule.

#### 4.2.4. Caribou, Muskoxen and Other Wildlife

##### Migration

A one kilometre buffer is used as a measure of a safe distance for working in areas where migrating caribou are present. If migrating caribou and/or caribou cows and calves come within one kilometre of any work site, work activities must cease until the caribou have moved safely beyond the one kilometre buffer area.

Outside of the migration window, if caribou approach the work site, workers must remain out of sight where possible, must not approach the caribou and must cease activities that incidentally draw the attention of the caribou or cause them to flee.

### Flights & Landings

Helicopter flights maintain a >300 metre altitude whenever possible. In areas where wildlife is observed helicopters are to maintain a minimum of altitude of 610 metres. Helicopter and aircraft pilots are instructed to avoid caribou calving grounds on their way to or from the project area.

Absolutely no landings are allowed in areas where there are migrating caribou, caribou cows and/or calves and/or muskox nurse groups present unless under an emergency situation.

### Crossings

Between May 15 and September 1, no fuel cache is to be established, and no blasting is to occur within 10 kilometres of a “designated caribou crossing”. Absolutely no activities are to act as a block or in any way cause a diversion to migration of caribou. There are no designated caribou crossings on the Baffin Gold Property or in areas currently being worked by Kivalliq Energy.

### Airborne Geophysical Surveys

Prior to conducting any low-level airborne geophysical surveys, work plans outlining the dates, locations and duration of the surveys will be sent to the Qikiqtani Inuit Association (QIA), Indigenous and Northern Affairs Canada (INAC) and Nunavut Impact Review Board (NIRB). If caribou and/or muskox are seen in the area, the geophysical survey will not to be flown until they have moved a safe distance (at least one kilometre) from the area to be surveyed.

#### 4.2.5. Bear and other Carnivores

If bears are present in the area, work is to cease until the bears have moved safely out of the area. All human-bear interactions or incidents are to be reported immediately to the QIA and to the GN Wildlife Biologist.

### Dens

Known carnivore dens are to be avoided. Any new dens discovered are to be reported to the regional wildlife biologist and the QIA and avoided.

If a den site is discovered, the GPS coordinates will be recorded so that the site can be avoided. These coordinates will be provided to the appropriate regulatory authorities. No dens are to be disturbed.

Any exploration activities within the den buffers stated below will cease immediately. The following buffers are provided (by the Government of the Northwest Territories) for active dens, between the den and all exploration activities between May 1<sup>st</sup> and July 15<sup>th</sup>.

- Wolves 800m buffer
- Grizzly Bear 300m buffer
- Wolverine 2km buffer

- Fox 150m buffer

#### 4.2.6. Breeding and Nesting Birds

No eggs or nests are to be disturbed by any activities. If any employee or contractor comes across any active nests, they are to cease all activities immediately to ensure that the nest is not disturbed. Coordinates are to be recorded on the wildlife incidental observation log and these coordinates are to be reported to Environment Canada. Moving or disturbing the nest of a migratory bird is in contravention of the Migratory Birds Convention Act.

The peregrine falcon has been identified as species of Special Concern by COSEWIC. If any nests are found, a buffer must be maintained. A 1.5 kilometre buffer is recommended for the peregrine falcon. Any nests discovered will be recorded on the wildlife incidental observation log and the GPS coordinates provided to the applicable regulatory authorities and interested parties.

#### 4.2.7. Wildlife Observation Log

**Sightings of wildlife will be recorded.** Sightings of wildlife will be reported by all employees and contractors to an appointed staff member who will record the wildlife sighting information into the Kivalliq Energy Wildlife Incidental Observation Spreadsheet. This information will be reported in the required annual reports provided to various regulatory agencies.

#### 4.2.8. Firearms

Registered firearms will only be carried to ensure the safety of personnel on the Baffin Gold Property. Firearms on site are required to be properly registered and stored in accordance with applicable legislation. All personnel handling a firearm must have a valid firearms licence and be approved by the Project Manager.

**Hunting by all employees and contractors is strictly prohibited and will result in immediate termination.** All firearm discharges must be reported immediately to the Project Manager. The use of firearms against dangerous wildlife is considered a last resort.

### 4.3. Aquatic Life

The following practices are in place to ensure aquatic life will be protected on the Baffin Gold Property.

- Working in and around waterbodies must be done in such a way that prevents disturbance to aquatic life and habitat.
- Waterlines must be properly placed and screened in accordance with the “Freshwater Intake End-of-Pipe Screen Guideline” (DFO).
- No wastes are to enter any water-bodies. This includes any discharge from any exploration camp.
- All sumps, fuel caches and camps must be located at least 31 metres from the high water mark of any water-body unless otherwise approved by the appropriate regulatory authority.
- Fishing while conducting business on behalf of Kivalliq Energy is strictly prohibited.

The Baffin Gold Property does not occur in or near any aquatic species at risk or their critical habitat according to the “Aquatic Species at Risk Maps” provided by the Department of Fisheries and Oceans.

#### 4.4. Air and Noise Quality

Potential impacts on air quality resulting from activities on the Baffin Gold Property include discharge of exhaust from airplanes, helicopters and generators and incinerator emissions. Exploration programs are generally small in nature and operated seasonally in the northern regions due to weather limitations. Due to the short duration of the program, the low-impact activities involved and the remote location of the property, measureable impacts to the air quality are not anticipated. As exploration program scope expands over the years, a dustfall collection program may be initiated to generate baseline air quality data.

Noise quality on the Baffin Gold Property may be affected by airplanes, helicopters and generators which can disturb wildlife. Wildlife mitigation measures are outlined above in Section 4.2. If caribou and/or muskox are seen in the survey area, the geophysical survey are not to be flown until they have moved a safe distance (at least one kilometre) away. Helicopters are to maintain a minimum of altitude of 610 metres in areas where wildlife is observed and are instructed to avoid caribou calving grounds on their way to or from the project area.

#### 4.5. Vegetation and Soil Disturbance Mitigation

A grassroots exploration program is proposed for the Baffin Gold Property in 2017. Activities planned are considered to be low impact and are predicted to have none to very little effect on vegetation and soil. Vegetation on the property mainly consists of mosses, lichen, grasses and saxifrage.

Potential impacts to vegetation and soil on the Baffin Gold Property include disturbance due to camp and exploration activities. The Baffin Gold Property is located above the tree line; therefore, line cutting is not required for exploration activities. All-terrain vehicles will be restricted to designated pre-existing trails between the airstrip and camp. Kivalliq Energy will not construct any roads.

Any sumps associated with Kivalliq Energy's proposed temporary fly camps will utilize a naturally occurring depression free from vegetation and any potential runoff contamination as a sump. All sumps will be backfilled and restored to the pre-existing natural contours of the land during final abandonment and restoration.

Soil quality can be impacted from hazardous materials spills and waste discharge. Refer to Section 7: Hazardous Materials for mitigation measures regarding hazardous materials spills and Sections 8: Waste Management Plan for an outline of waste discharge protocols.

#### 4.6. Archeological Sites

Any archaeological sites identified during the course of exploration activities will be handled with the utmost care. Site coordinates will be recorded, reported to the Government of Nunavut and the Qikiqtani Inuit Association and designated off limits to all workers. **Disturbance is prohibited.** Kivalliq Energy shall assist communities and government(s) in identifying and protecting archaeological sites and carving-stone sites, as required by law (Code of Good Conduct for Land Users, NBRLUP). Any archeological sites

identified will be reported to the Chief Archaeologist at the Department of Culture, Language, Elders and Youth (CLEY), the INAC Land Administrator and the QIA.

This is the first year Kivalliq Energy will be conducting exploration activities on the Baffin Gold Property and as such a regional assessment of the property is required. Once specific target areas have been identified as a focus of future exploration programs, archeological investigations will be conducted. Areas of potential disturbance will be examined to ensure archeological sites are identified, recorded and avoided.

## **5. Community Consultation and Inuit Qaujimajatuqangit**

Kivalliq Energy is committed to Nunavut and the Nunavummiut. Kivalliq Energy will establish working relationships with local communities and respect the traditional users of the land as per the Code of Good Conduct for Land Users in the North Baffin Regional Land Use Plan. The company has planned visits to communities adjacent to the property (Clyde River, Qikiqtarjuaq, Pangnirtung and Iqaluit) prior to the start of the exploration program to discuss available Inuit Qaujimajatuqangit, the exploration program and any potential concerns the communities may have. Kivalliq Energy will record the visits in a community consultation log which will be included in the Annual Report to INAC, QIA and NIRB.

## **6. Internal Inspections**

All personnel are responsible for maintaining a clean and safe workspace; The Project Manager will inspect camp and exploration sites periodically to ensure cleanliness is satisfactory.

Regular inspections of fuel drums, tanks and hoses for leaks, or potential to leak, and for proper storage will be conducted by the designated Camp Supervisor. Records are kept for daily camp water use, incinerator use and backhaul logs.

An inspection will be conducted of all areas prior to seasonal closure. Photographs will be taken to document the conditions prior to leaving the site. All appropriate agencies (QIA, INAC, NIRB, NWB, and WSCC) will be contacted and notified that exploration operations have ceased for the season.

A complete inspection will be conducted of all areas prior to final 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, Qikiqtani Inuit Association and Nunavut Impact Review Board.

## **7. Hazardous Materials**

Complete procedures for storing and handling hazardous materials are included in the Baffin Gold Property “Fuel Management Plan” and “Spill Contingency Plan”. The Camp Manager is required to oversee the handling of hazardous materials and will be trained in WHMIS, first aid and all Baffin Gold Property management plans. The Project Supervisor is responsible for the shipping of all dangerous goods and will

be trained in the “Transportation of Dangerous Goods Act”. All hazardous materials will be clearly labeled in accordance with WHMIS.

The following preventative measures illustrate a proactive approach to environmental stewardship. In addition, these actions minimize the potential for spills during fuel storage, handling and transfer and will prevent any chemicals, petroleum products or wastes from entering any water bodies.

### **7.1. Fuel Storage, Handling and Transfer**

- All fuels and other hazardous materials will be stored in secondary containment (“berms”).
- All Secondary containment will be capable of holding 110 percent of the volume of the largest fuel reservoir that is housed within the secondary containment.
- All secondary containment will be of sufficient height and depth to hold any potential spill or failure.
- Secondary containment berms will be made of material (Arctic Grade) that is sufficiently durable to withstand Nunavut’s climate and the natural terrain.
- Secondary containment berms will be equipped with hydrocarbon filtration systems (rain drains) to safely remove water that is collected inside the berms.
- Secondary containment berms will be inspected daily during operations.
- Within the secondary containment berms fuel drums will be stored in rows on their sides with bungs facing at the 3:00 and 9:00 position.
- All operating personnel will be trained in proper fuel handling and spill response procedures.
- Propane cylinders will be stored standing up and away from any potential sources of ignition.
- Personnel will carefully monitor fuel content in the receiving vessel during transfer and always have absorbent pads available while transferring fuel. Drips or leakages are cleaned immediately.
- All drums, tanks and hoses will be regularly inspected for leaks. All fuel storage/transfer sites will be located a minimum of 31 metres from the normal high-water mark of any water body and will be inspected regularly.
- Spill Kits will be placed and will be easily identifiable with clear signage at each fuel storage/transfer site.
- “NO SMOKING” signs will be erected at each fuel cache and fuel storage/transfer area.
- Smoking, open flame and any potential sources of ignition are prohibited within 31 metres of any fuel storage/ transfer locations.
- Empty fuel drums will be removed from site regularly.

## **8. Waste Management Plan**

Waste will be managed properly in accordance with the Baffin Gold Property “Waste Management Plan”.

Proper food storage and handling of cooking wastes will prevent problems with attracting wildlife. Food waste will be stored such that it is not accessible to wildlife and will be burned in an incinerator on a regular basis. 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. 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 backhauls.

All non-combustible and recyclable wastes will be packaged in the appropriate containers and backhauled to Iqaluit for recycling or proper disposal. Hazardous wastes will be sealed in the appropriate containers, labeled and documented in accordance with the “Transportation of Dangerous Goods Act” and removed from site for proper disposal at an accredited facility.

Kitchen grey water is discharged through a grease trap and screen to a grey water sump. The discharge pipe will be inaccessible to wildlife. The grey water pit will be located at least 31 metres away from a water body.

At the Dewar Lakes Camp, Pecto latrine facilities are used. Bags containing waste are incinerated. Ash generated from black water incineration will be stored in designated, sealed metal 45 gallon drums and removed from site for proper disposal. If outhouse latrine facilities are used at the proposed temporary fly camps, they will be located at least 31 metres away from a water body. When full, the pits will be covered with at least 30 cm of compacted soil.

## **9. Abandonment and Restoration Plan**

Land use permits and water licences will be maintained for the life of project and will be extended or renewed as required to maintain activities. Reclamation of work sites is on-going as work is conducted. Final abandonment and restoration of the camp sites will begin once the program is deemed complete and no further work is warranted. 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.

Tent sites and areas disturbed by exploration activities may be fertilized to encourage re-growth of vegetation. The Kivalliq Energy exploration program will utilize naturally occurring depressions free from any potential runoff contamination as a sump. All sumps will be backfilled and restored to the pre-existing natural contours of the land during final abandonment and restoration.

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, Qikiqtani Inuit Association and Nunavut Impact Review Board.

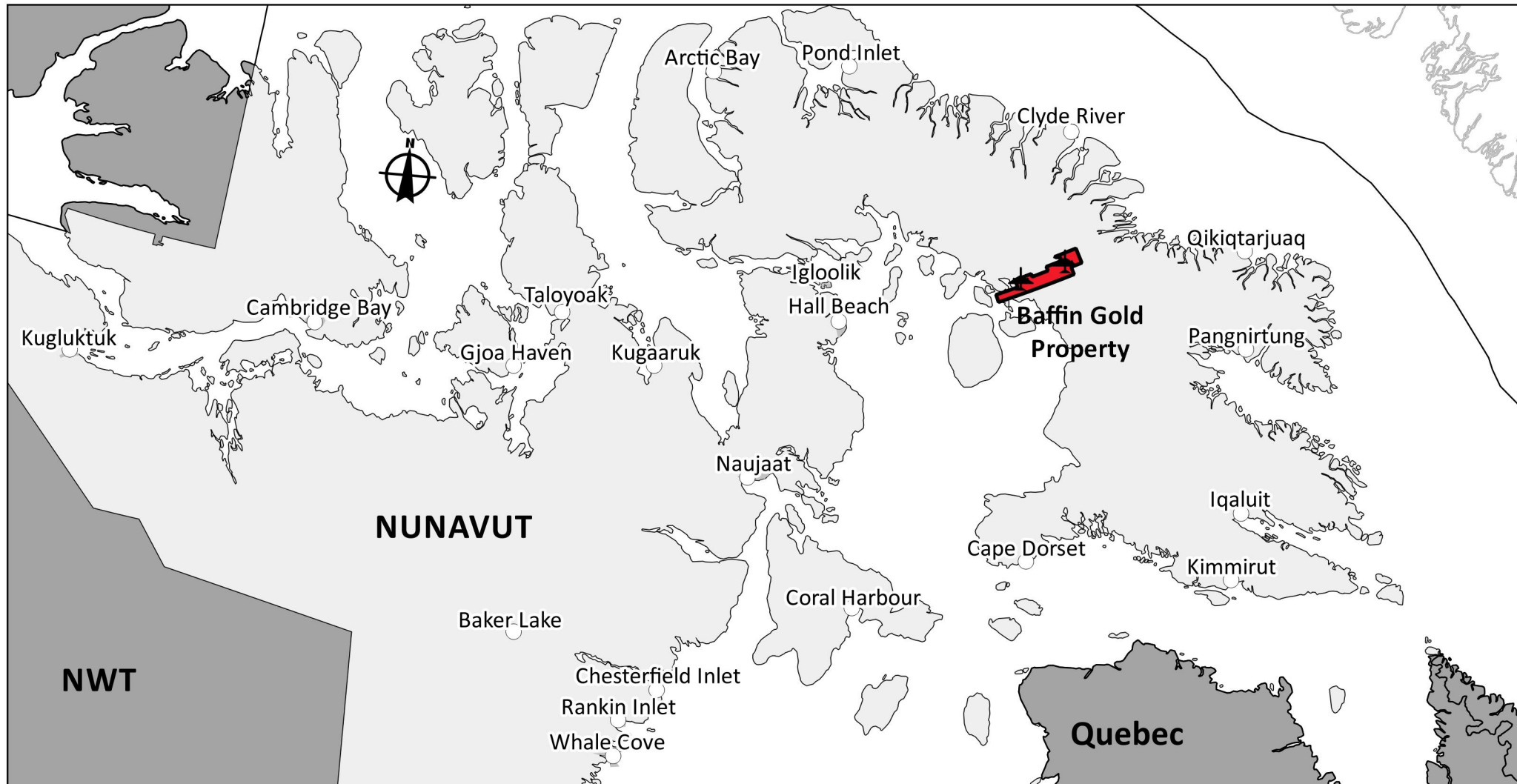
Please refer to the “Abandonment and Restoration Plan” for the Baffin Gold Property for complete details regarding abandonment and restoration.

## APPENDIX A: WILDLIFE CONTACTS




Name	Company/Position	Phone Number(s)
Emily McNie	Kivalliq Energy Corp./ Project Supervisor	(604) 646-8352 (office)
		(604) 603-0260 (cell)
Nunavut Department of Environment	Iqaluit Main Office	(867) 975-7700
NAC Manager of Field Operations	Iqaluit	(867) 975-4295 (phone)
		(867) 979-6445 (fax)
Nunavut Wildlife Management Board	Iqaluit	(867) 793-2944

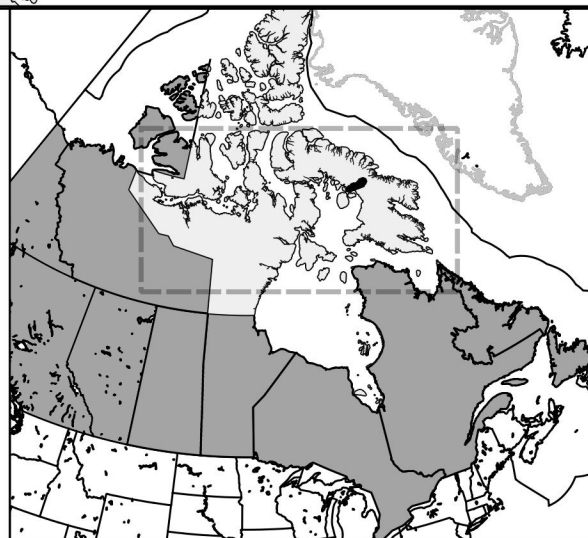
Name	Position	Community	Phone
Jason Aliqatuqtuq	Wildlife Manager - South Baffin	Iqaluit	(867) 975-7900
Drikus Gissing	Wildlife Director	Iqaluit	(867) 975-7734
Peterloosie Papatsie	Conservation officer II	Iqaluit	(867) 462-4002
Vicki Sahanatien	Wildlife Deterrent Specialist	Iqaluit	(867) 975-7724
Caryn Smith	Senior Wildlife Advisor	Iqaluit	
Alden Williams	Wildlife Officer III	Iqaluit	(867) 975-7900
Malik Awan	Wildlife Biologist - Carnivores	Igloolik	(867) 934-2179
Mitch Campbell	Biologist	Arviat	(867) 857-3171
Markus Dyck	Polar Bear Biologist II	Other	(867) 934-2181
Joseph Guay	Conservation Officer II	Qikiqtarjuaq	(867) 927-8966
George Koonoo	Wildlife Officer II	Pond Inlet	(867) 899-8819
Maha Ghazal	Advisor - Marine Mammals	Pangnirtung	(867) 473-2669
Chris Wex	Conservation Officer III	Pangnirtung	(867) 473-8937
Navarana Beveridge	Executive Director, QIA	Iqaluit	(867) 975-8400
Joel Fortier	Acting Director or Lands, QIA	Iqaluit	(867) 975-8400
Rosanne D'Orazio	Director of Lands, QIA	Iqaluit	(867) 975-8400
Mathew Akavak	Lands and Resources Officer, QIA	Iqaluit	(867) 975-8400

## **APPENDIX B: MAPS**



## Legend

-  Baffin Gold Property
-  Nunavut Communities
-  Airstrip



**KIVALLIQ ENERGY CORP.**


## **BAFFIN GOLD PROPERTY**

### **Figure 1: Property Location**

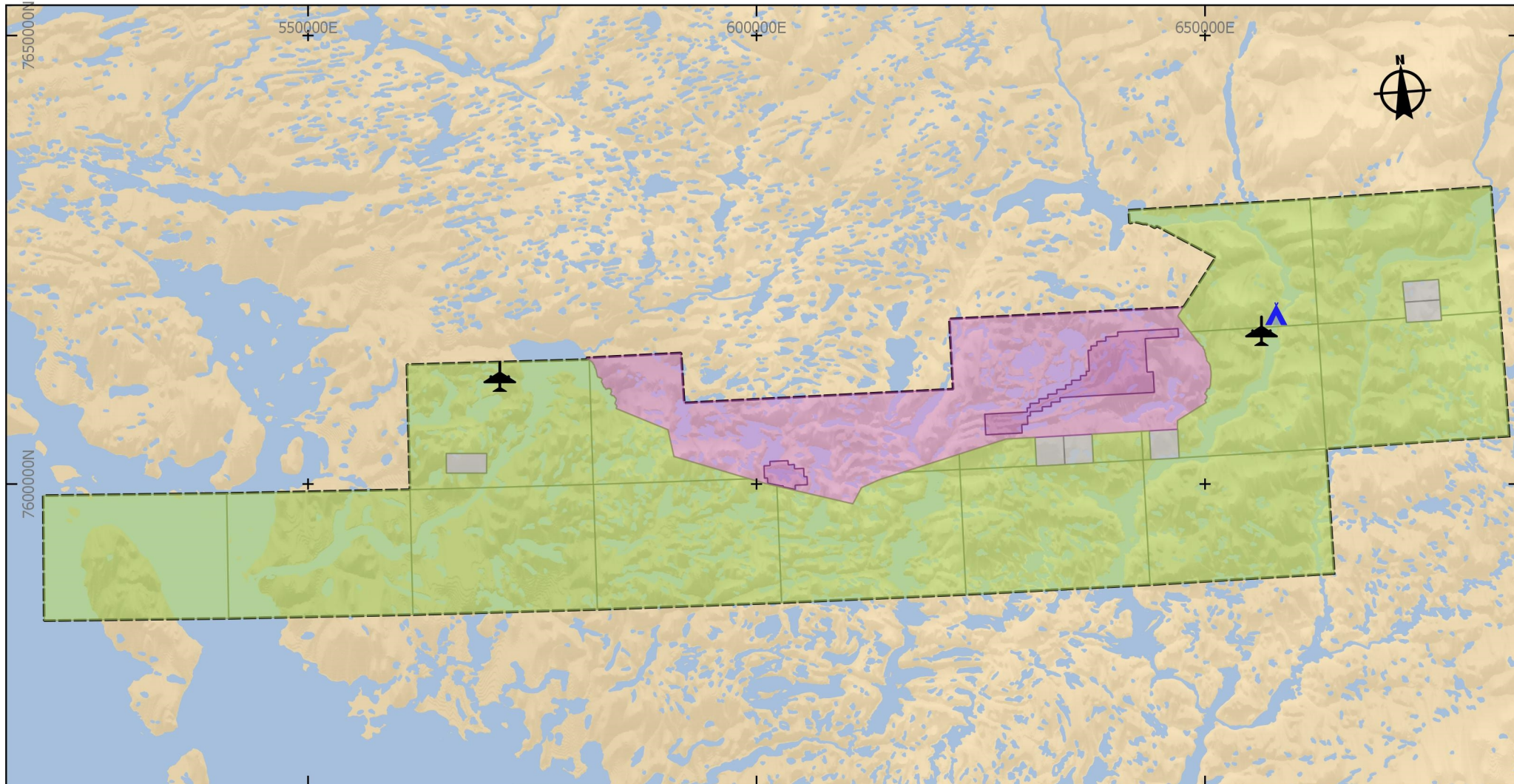
Nunavut Territory

April 2017 UTM NAD83 Zone 18 1:10,000,000

0 Kilometres 800

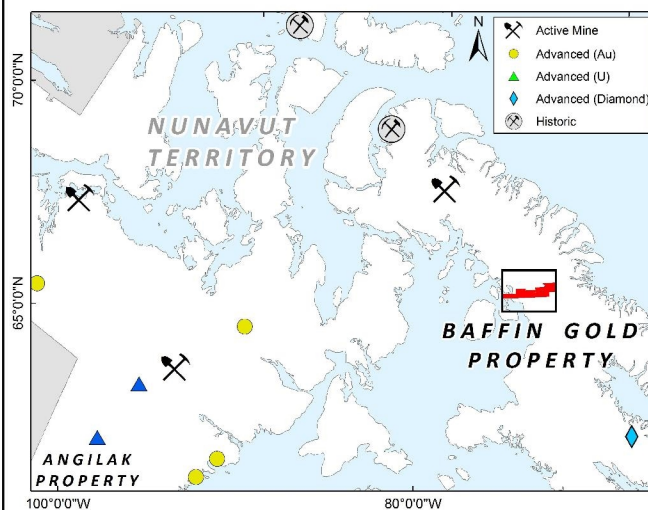






## Legend

- Baffin Gold Property
- IOL BI-35 MEA -Kivalliq
- Prospecting Permits - Kivalliq
- IOL BI-35 MEA - CMD Option
- Mineral Claims - CMD Option
- ✈ Airstrip
- ▲ Dewar Lakes Camp



**KIVALLIQ ENERGY CORP.**

## BAFFIN GOLD PROPERTY

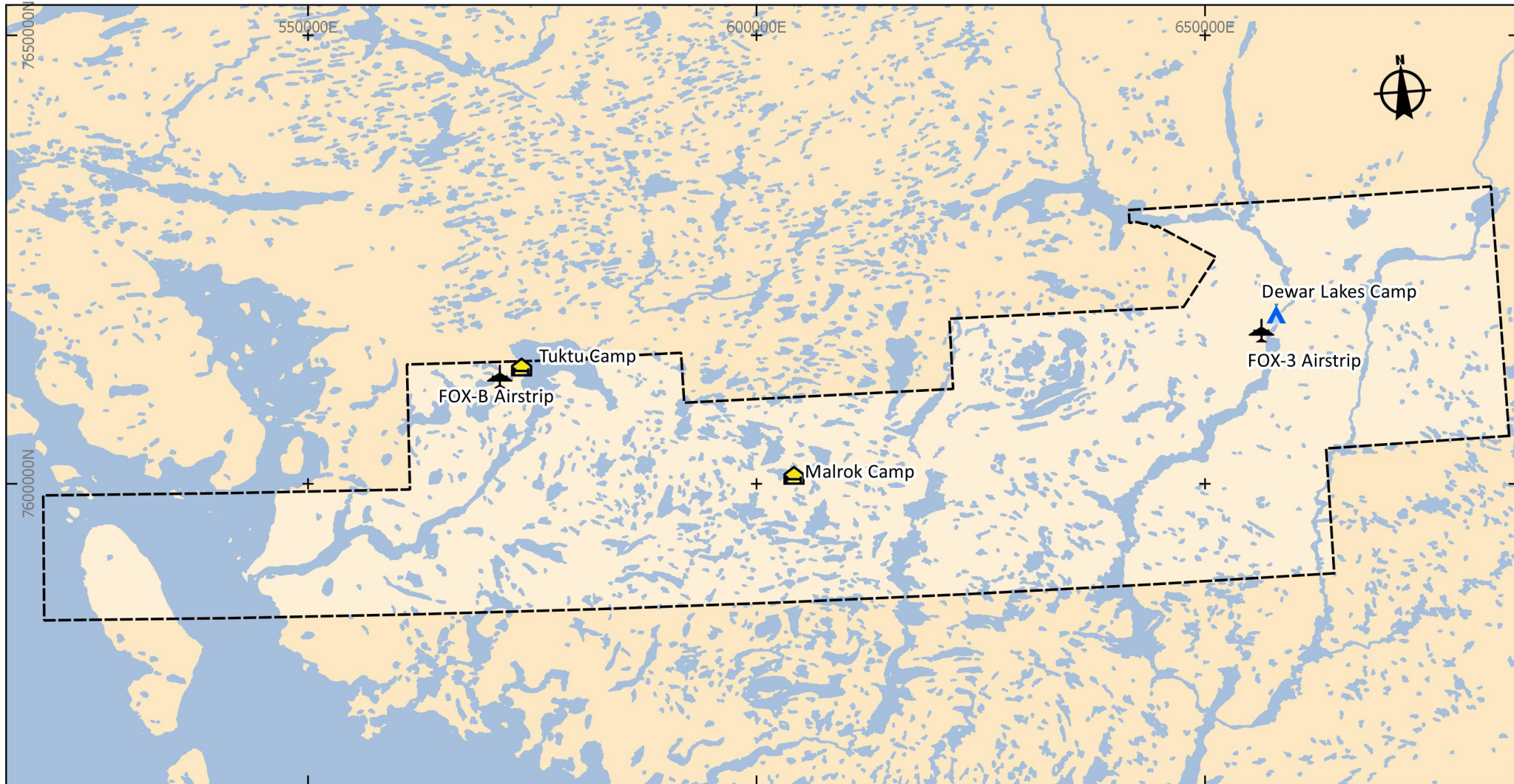
### Figure 2: Land Tenure

Nunavut Territory

April 2017 UTM NAD83 Zone 18 1:625,000

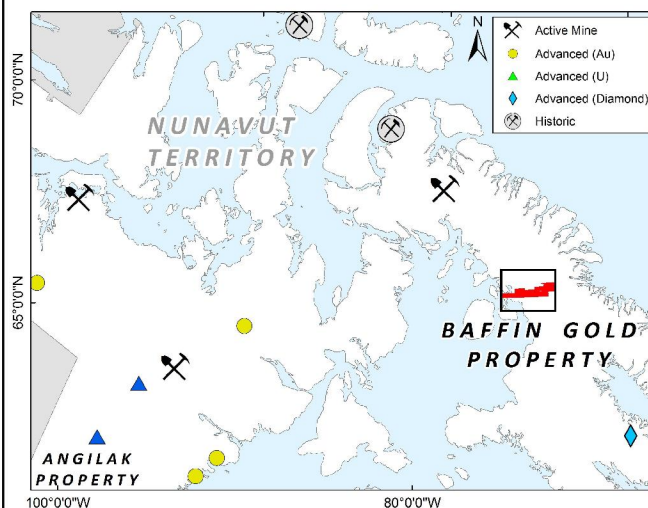






## Legend

- Baffin Gold Property
- ▲ Dewar Lakes Camp (existing)
- Fly Camp (Proposed)
- ✈ Airstrip



**KIVALLIQ ENERGY CORP.**

## BAFFIN GOLD PROPERTY Figure 3: Proposed Fly Camps

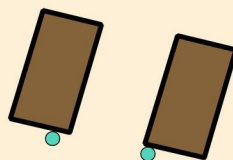
Nunavut Territory

May 2017 UTM NAD83 Zone 18 1:625,000





Existing Core Storage  
(Malrok Only)



Helipad

Utility  
Tent



Generator Tent

Office



Dry



Toilet Facility



Kitchen



Sleepers



First Aid

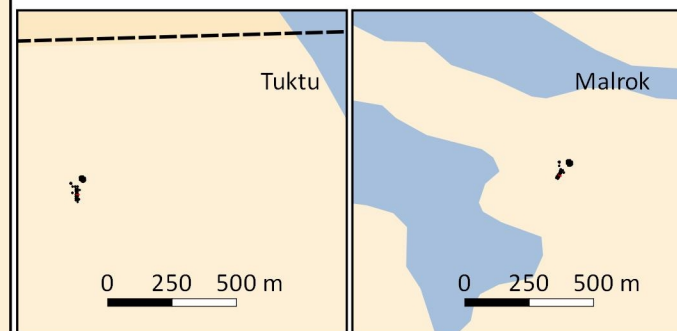


*Proposed Fly Camp layout  
for Malrok site. Tuktu site  
will have identical layout.*



## Legend

- |                        |                       |
|------------------------|-----------------------|
| Airstrip               | Generator Tent        |
| Dewar Lakes Camp       | Utility Tent          |
| Proposed Fly Camp      | Helicopter Pad        |
| <b>Fly Camp Layout</b> |                       |
| Kitchen                | Fuel Berm             |
| Dry                    | Toilet Facility       |
| Office                 | Existing Core Storage |
| Sleeper                | Spill Kits            |



**KIVALLIQ ENERGY CORP.**

## BAFFIN GOLD PROPERTY Figure 4: Proposed Fly Camp Layout

Nunavut Territory

May 2017 UTM NAD83 Zone 18 1 : 500

0 Metres 30



# ABANDONMENT & RESTORATION PLAN BAFFIN GOLD PROPERTY KIVALLIQ ENERGY CORPORATION

---

Prepared By: Andrew Berry, Chief Operating Officer

Effective Date: June 1, 2017



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## 1. Introduction

This Abandonment and Restoration Plan (ARP) applies specifically to Kivalliq Energy Corporations (Kivalliq Energy) Baffin Gold Property and will come into effect as of June 1, 2017. The Baffin Gold Property is located 360 kilometres northwest of Qikiqtarjuaq and 260 kilometres southwest of Clyde River in the Qikiqtani Region of Nunavut.

The purpose of this Abandonment and Restoration Plan is to provide guidelines for seasonal shutdowns and final closure and reclamation of the Baffin Gold Property. A copy of this plan will be kept in the office at site and at the head office in Vancouver. Copies of this plan may be obtained from Kivalliq Energy Corporation.

Kivalliq Energy is an exploration company with a Nunavut focus. The company 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.

This Abandonment and Restoration Plan should be used in conjunction with other property plans and best management practices. Other plans at the Baffin Gold Property include:

- Waste Management Plan
- Emergency Response Plan
- Environmental and Wildlife Management Plan
- Field Safety Manual
- Fuel Management Plan
- Spill Contingency Plan

### 1.1. Corporate Details

Kivalliq Energy Corporation  
Suite 1020- 800 West Pender Street  
Vancouver, British Columbia, V6C 2V6  
Tel: (604) 646-4527  
Fax: (604) 646-4526  
[www.kivalliqenergy.com](http://www.kivalliqenergy.com)

### 1.2. Project Description

The Baffin Gold Property on Baffin Island in the Qikiqtani Region of Nunavut consists of 15 prospecting permits, 6 mineral claims and two Mineral Exploration Agreements (MEA's) with Nunavut Tunngavik Inc. (NTI) on Inuit Owned Land Parcel BI-35. The property is located 260 kilometres southwest of Clyde River and 360 kilometres northwest of Qikiqtarjuaq, measures approximately 160 kilometres in an east-west direction by approximately 30 kilometres north-south and comprises a total area of 408,981.6 hectares (Appendix A)

All prospecting permits, mineral claims and the MEA's are contiguous and the property extends north, south, east and west between latitudes 68.375° and 68.75° North and longitudes 70.5° and 74.5° West in NTS map areas 027 B/05, 027 B/12, 027 B/11, 037 A/06, 037 A/07, 037 A/08, 037 A/09 and 037 A/10 (UTM coordinates:

7,584,000mN to 7,615,000mN and 520,500mE to 622,500mE, NAD83, Zone 18 and 7,586,000mN to 7,628,500mN and 377,500mE to 439,500mE Zone 19).

The work proposed for this 2017 exploration program consists of prospecting, geological mapping, rock and soil/till sampling, airborne and ground geophysical surveying, drone surveying, and fuel transport (fixed wing). No buildings, equipment or waste will remain once the project is complete. Kivalliq Energy will carry out progressive reclamation of any components of the project no longer required for operations.

The Baffin Gold Property consists of both Crown and Inuit Owned Lands (IOL) in the Qikiqtani Region of Nunavut. Applications for land use permits and water use licence have been submitted to the Qikiqtani Inuit Association (QIA) 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.

## **2. Schedule**

The proposed 2017 exploration program for the Baffin Gold Property will be conducted from June through to September. Mobilization of crews and equipment will commence in June 2017. A seasonal shutdown will take place at the completion of exploration activities for the year, September 2017.

The final abandonment and restoration of the camp sites will begin once the program is complete and no further work is warranted. Subject to periodic renewals, all work described in this plan will be completed prior to the date of expiry of the land use permits and water licences authorizing work. 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. Commander Resources Ltd. Dewar Lakes Camp**

Kivalliq Energy intends to utilize Commander Resources Ltd.'s existing Dewar Lakes Camp (Permits Pending) on Crown lands administered by INAC to facilitate the program. The camp is located at 68°37'59" N Lat., 71°06'38" W Long. and was operated seasonally from 2001 to 2011 but has been unoccupied since 2012. In June 2017, Commander will mobilize a crew to rehabilitate the camp and prepare it to accommodate field personnel. As the permittee, Commander Resources Ltd. has a separate ARP in place for the Dewar Lakes Camp. This document is consistent with the Commander ARP.

### **3.2. Kivalliq Energy Corp. Temporary Field Camps**

Due to the size of the property Kivalliq Energy is permitting two temporary fly camps to accommodate workers and provide effective daily access to and from priority target areas that are remote from the Dewar Lakes camp location. The proposed Malrok Fly Camp will be located adjacent to Malrok Lake on IOL BI-35 on Inuit Owned Lands administered by QIA at 68° 30' 06" N Lat., 72° 27' 08" W Long. The proposed Tuktu Fly Camp will be

located on Crown lands proximal to the Fox-B Airstrip and adjacent to Nadluardjuk Lake at 68° 37' 10" N Lat., 73° 12' 45" W Long.

The temporary fly camps will accommodate up to 15 people and will be comprised of:

- 1- Kitchen Tent
- 1- Office Tent
- 1- Dry Tent
- 1- Utility Tent
- 1- Toilet Facility (Pactos or Latrines)
- 5- Crew Accommodations (1 tent will house the First Aid Attendant and First Aid Equipment)
- 1- Generator Shack
- 1- Portable fuel-fired incinerator

The structures will consist of a combination of WeatherPort vinyl tents, canvas prospectors' tents and small plywood sheds. The field camps will be fully closed and dismantled completely once exploration activities cease. The sites will then be reclaimed and restored to their original state.

### 3.3. Fuel Caches

To support operations at Kivalliq's temporary fly camp facilities, limited capacity fuel caches (up to 60 drums) are required. These fuel caches will be established and operated in accordance with Kivalliq Energy's Fuel Management and Spill Contingency Plans.

- All fuel drums will be stored in secondary containment berms.
- All secondary containment berms will be capable of holding 110 percent of the volume of the largest fuel reservoir that is housed within the secondary containment.
- All secondary containment will be of sufficient height and depth to hold any potential spill or failure.
- Secondary containment berms will be made of material (Arctic Grade) that is sufficiently durable to withstand Nunavut's climate and the natural terrain.
- Secondary containment berms will be equipped with hydrocarbon filtration systems (rain drains) to safely remove water that is collected inside the berms.
- Secondary containment berms will be inspected daily during operations.
- Within the secondary containment berms fuel drums will be stored in rows on their sides with bungs facing at the 3:00 and 9:00 position.
- Propane cylinders will be stored standing up and away from any potential sources of ignition.
- All drums, tanks and hoses will be regularly inspected for leaks.
- All fuel storage sites will be located a minimum of 31 metres from the normal high-water mark of any water body and will be inspected regularly.
- Spill Kits will be placed and will be easily identifiable with clear signage at each fuel storage site.
- "NO SMOKING" signs will be erected at each fuel storage area.
- Smoking, open flame and any potential sources of ignition are prohibited within 31 metres of any fuel storage site.
- Empty fuel drums will be removed from site regularly.

Small temporary fuel caches of 3 to 9 drums may be established for daily use to support remote exploration activities such as airborne surveying or reconnaissance rock or soil sampling programs. Spill kits are located at every fuel cache.

Kivalliq Energy has applied for a permit to cache 60 drums of fuel on site at a time.

This will include:

- 23 - 205 L drums of diesel
- 25- 205 L drums of Jet fuel
- 2 - 205 L drums of gasoline
- 10 - 100 lb. cylinders of propane

Kivalliq endeavors to consume all cached fuel by the end of each season. Please refer to the Fuel Management Plan and Spill Contingency Plan for more information.

### 3.4. Existing Sites

The North Warning System Fox-3 Site Airstrip is located at 68°39'02"N 071°13'58"W near Dewar Lakes on the Baffin Gold Property. The gravel airstrip will be utilized to transport people from Iqaluit or Qikiqtarjuaq to the property. The Department of National Defense contracts management of the Fox-3 Airstrip to Biogenie Ltd. Kivalliq Energy will obtain consent from Biogenie Ltd. to utilize the airstrip prior to the commencement of any air traffic.

Another North Warning System airstrip is located at 68°37'10" North 073°12'45" West on the west side of the Baffin Gold Property. The Fox-B Airstrip near Nadluardjuk Lake will be utilized to transport personnel and equipment to the proposed Tuktu Fly Camp.

From 2004 to 2011 Commander Resources Ltd. had a camp located on BI-35 adjacent to Malrok Lake at 68°30'06" N Lat., 72°27'08" W Long. The Commander Camp was decommissioned and cleaned up in 2011. A drill core storage area remains on site. The site is administered by QIA. Kivalliq Energy has proposed to use the same location for its Malrok Fly Camp. Before any new camp structures are installed by Kivalliq, the site will be checked by a QIA Land Use Inspector to ascertain that there are no legacy concerns.

## 4. Seasonal Shutdowns

### 4.1. Buildings and Contents

At Kivalliq's temporary fly camps where work is anticipated for the subsequent year, wood structures and wood floors will be kept secured. The canvas tents will be removed from site for drying and storage. Vinyl Weatherhaven sleeping tents and the incinerator 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. Water system pumps, tanks, pipes and hoses will be drained and stored inside to protect them over winter. Gas pumps may be removed from site for servicing and storage. All fuel lines between diesel stoves and their corresponding fuel tanks will be

disconnected. Fuel tanks will be removed from their stands, valves turned off, bungs secured and then placed in secondary containment for storage.

## 4.2. 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 partial fuel drums. In the event that any partial fuel drums remain at the end of work season 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 for the winter.

## 4.3. Waste

Combustible Waste: All combustible waste will be incinerated in accordance with the Nunavut Environmental Guideline for the Burning and Incineration 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. Ash generated from the on-going incineration will be stored in sealed metal 205L drums and removed from site via regularly scheduled backhaul for property disposal.

Grey Water Sumps: Grey water sumps will be inspected and covered securely for the winter. A grease trap installed on kitchen drains ensures food grease and solids do not enter the sump. 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.

Black water: The fly camps will use either Pacto toilets or outhouse latrine facilities. If Pacto toilets are used, bags containing waste will be incinerated. Ash generated from black water incineration will be stored in designated, sealed metal 205L drums and removed from site for proper disposal. During seasonal shutdown, the Pacto toilets will be cleaned and the building secured for the winter. In the event outhouses are used, outhouse holes will be infilled with the soil originating from the site. Outhouses will be located at least 31 metres away from a water body.

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

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

## 4.4. Contamination Clean Up

Any soil that has become contaminated 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. Depending on the location of the spill these photos will make up part of the final report to be submitted to the Water Resource Inspector at QIA or NWB. All documentation associated with any spill and will also be attached as part of the Annual Report submitted to NWB, QIA, INAC and NIRB.

#### 4.5. Bioremediation

At the advice, discretion and approval of land use inspectors and the appropriate 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.

#### 4.6. Inspection and Documentation

An inspection will be conducted of all areas prior to seasonal closure. Photographs will be taken to document the conditions prior to leaving the site. All appropriate agencies (QIA, INAC, NIRB, NWB, and WSCC) will be contacted and notified that exploration operations have ceased for the year.

### 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 and Supplies

All equipment and supplies, including all scrap metals 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 Incineration 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. The drum 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, Pacho toilets will be cleaned and removed from camp. Outhouse pits will be treated with lime to encourage decomposition and infilled with the soil originating from the site. The plywood structure housing the latrine facilities will be burned in a controlled open burn in compliance with the Municipal Solid Wastes Suitable for Open Burning Guidelines.

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

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

### **5.5. Contamination Clean Up**

Any contamination 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 Qikiqtani Inuit Association following any spill and will also be attached as part of the Annual Report submitted to the Nunavut Water Board, Qikiqtani Inuit Association and the Nunavut Impact Review Board.

### **5.6. Inspection and Documentation**

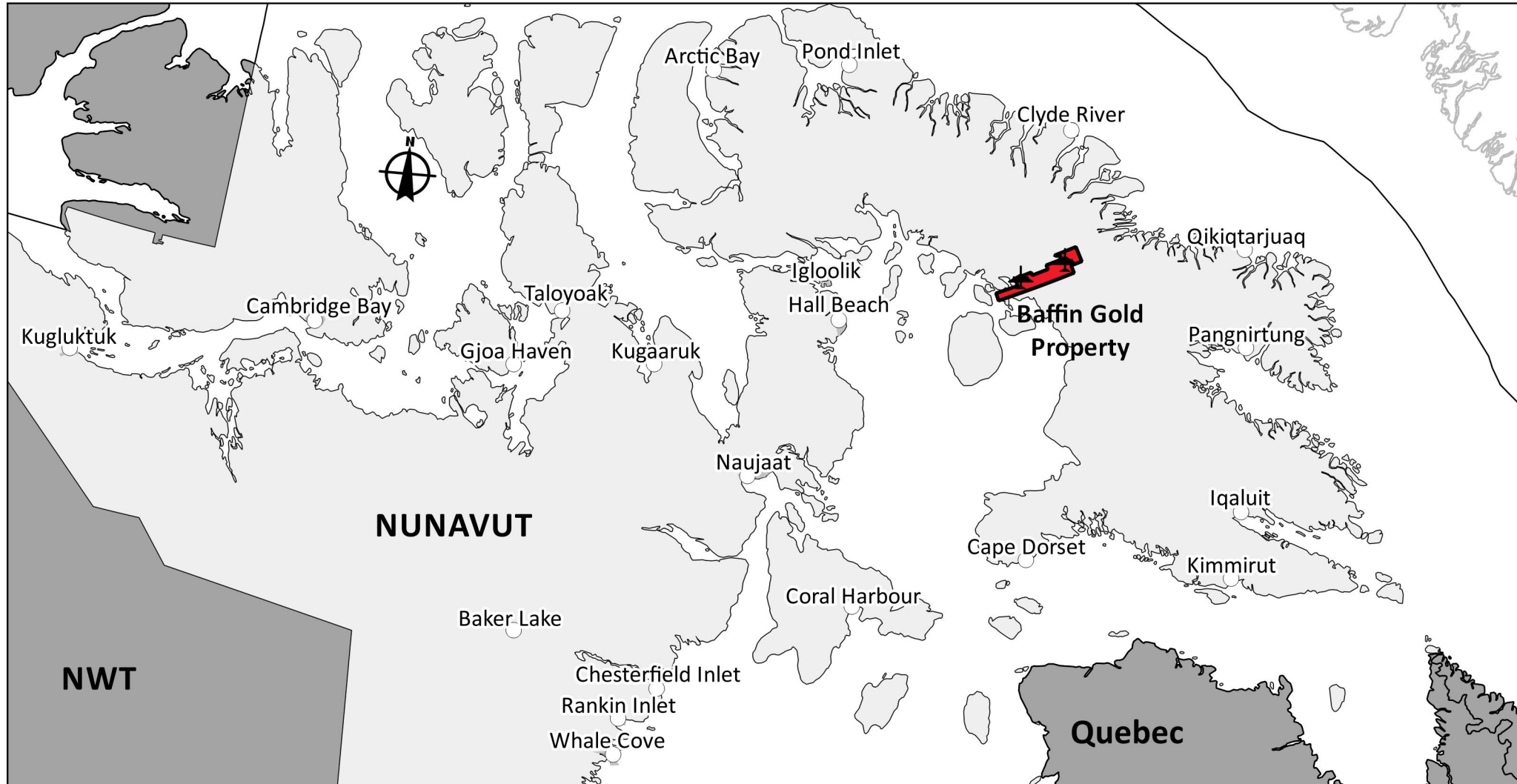
A complete inspection will be conducted of all areas prior to closure. Photos will be taken to document the conditions prior to leaving the site for use in the final plan. All appropriate agencies will be contacted and notified once the final clean-up has been conducted. The photos will make up part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






## 6. Emergency Contact Information

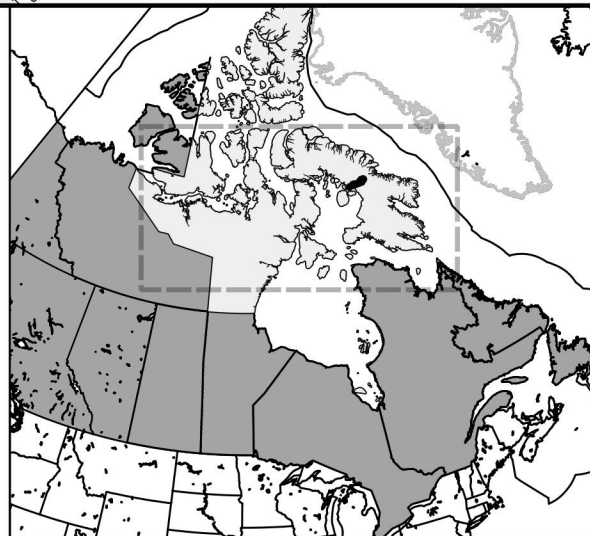
CONTACT	TELEPHONE NUMBER
24 Hour Spill Report Line - Environment Canada	(867) 920 8130
Andrew Berry, COO, Kivalliq Energy Corp.	(604) 646-4529 (office) (604) 765-1892 (cell)
Jeff Ward, President, Kivalliq Energy Corp.	(604) 646-4538 (office) (604) 763-8723 (cell)
Emily McNie, Project Geologist, Kivalliq Energy Corp.	(604) 646-8352 (office) (604) 603-0260 (cell)
Robert Cameron, President/CEO, Commander Resources Ltd.	(601) 685-2814 (office) (778) 989-1501 (cell)
INAC Field Operations Manager, Iqaluit	(867) 975-4295
INAC Water Resources Manager, Iqaluit	(867) 975-4550
INAC Resource Management Officers (Qikiqtani)	(867) 975-4296
INAC Water Resource Officers (Qikiqtani)	(867) 975-4289
Qikiqtani Inuit Association	(867) 975-8400
Department of Environment, GN, Iqaluit	(867)-975-7700
Department of Fisheries and Oceans (Central/Arctic Region), Iqaluit	(867) 979-8000
RCMP	(867) 924-0123 (Clyde River) (867) 928-0123 (Hall Beach)
Qikiqtani General Hospital, Iqaluit	(867) 975-8600
Stanton Regional Hospital, Yellowknife	(867) 669-4111
Discovery Mining Services, Yellowknife	(867) 920-4600
Kivalliq Air – 24/7 Air Medical Line (Qikiqtani Office)	(867) 979-3970 (Iqaluit) (877) 440-8244 (Toll Free)
Air Tindi, Yellowknife	(867) 669-8212

## **APPENDIX A: MAPS**



## Legend

-  Baffin Gold Property
-  Nunavut Communities
-  Airstrip




**KIVALLIQ ENERGY CORP.**

## BAFFIN GOLD PROPERTY Figure 1: Property Location

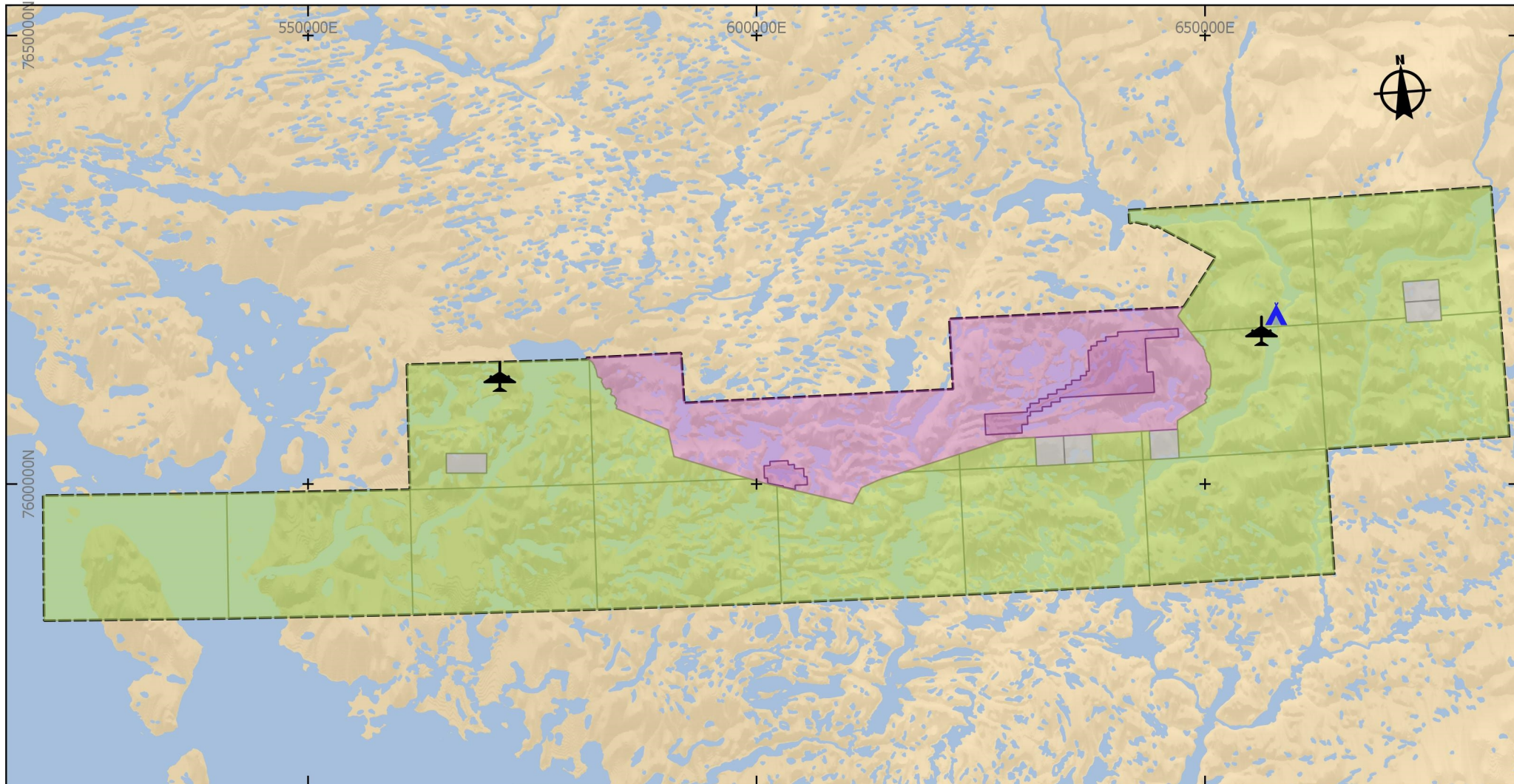
Nunavut Territory

April 2017 UTM NAD83 Zone 18 1:10,000,000

0 Kilometres 800

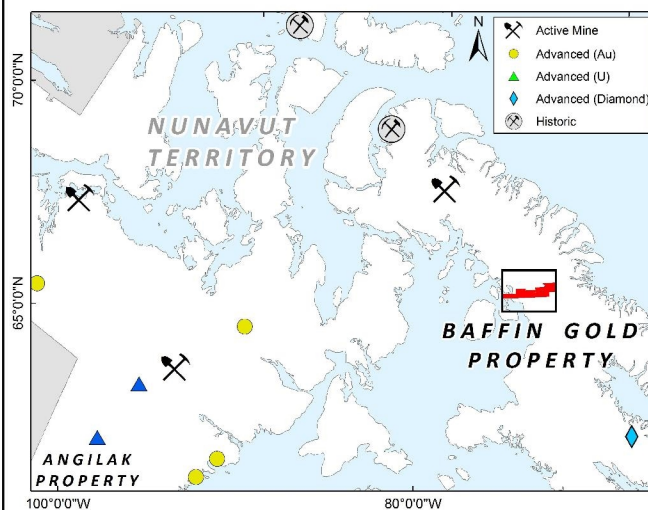






## Legend

- Baffin Gold Property
- IOL BI-35 MEA -Kivalliq
- Prospecting Permits - Kivalliq
- IOL BI-35 MEA - CMD Option
- Mineral Claims - CMD Option
- ✈ Airstrip
- ▲ Dewar Lakes Camp



**KIVALLIQ ENERGY CORP.**

## BAFFIN GOLD PROPERTY

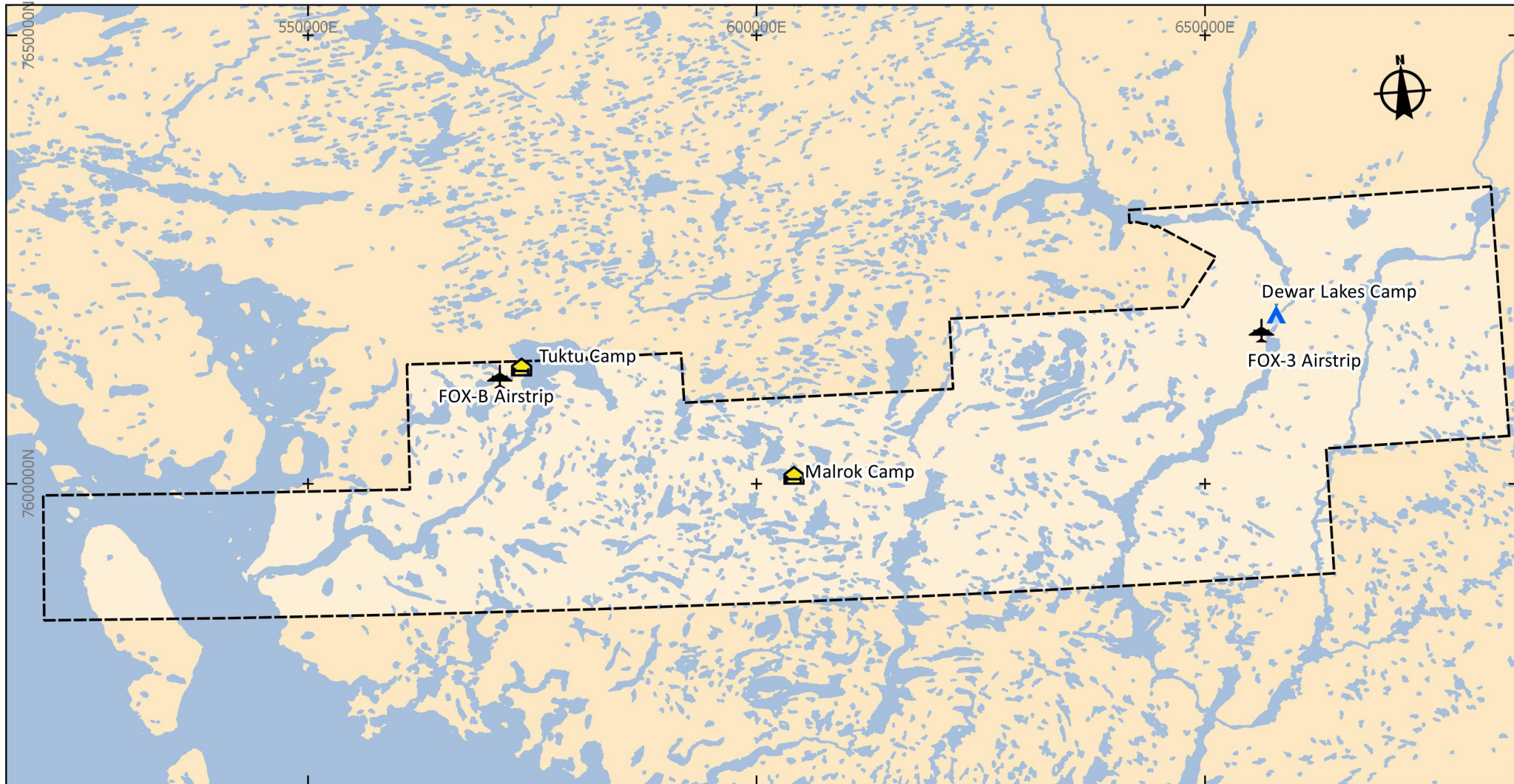
### Figure 2: Land Tenure

Nunavut Territory

April 2017 UTM NAD83 Zone 18 1:625,000

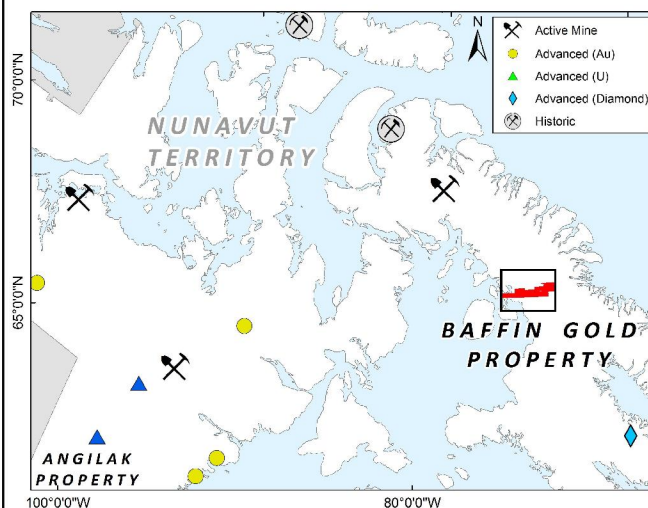






## Legend

- Baffin Gold Property
- ▲ Dewar Lakes Camp (existing)
- 🏠 Fly Camp (Proposed)
- ✈ Airstrip



**KIVALLIQ ENERGY CORP.**

## BAFFIN GOLD PROPERTY Figure 3: Proposed Fly Camps

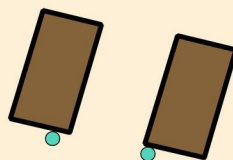
Nunavut Territory

May 2017 UTM NAD83 Zone 18 1:625,000





Existing Core Storage  
(Malrok Only)



Helipad

Utility  
Tent



Generator Tent

Office



Dry



Toilet Facility



Kitchen



Sleepers



First Aid



*Proposed Fly Camp layout  
for Malrok site. Tuktu site  
will have identical layout.*



## Legend



Airstrip



Dewar Lakes Camp



Proposed Fly Camp

### Fly Camp Layout



Kitchen



Dry



Office



Sleeper



Generator Tent



Utility Tent



Helicopter Pad



First Aid



Fuel Berm



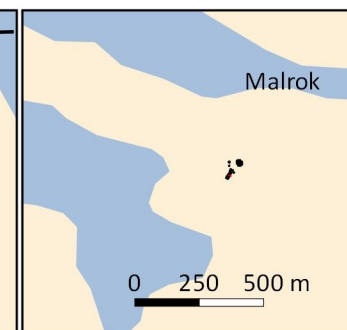
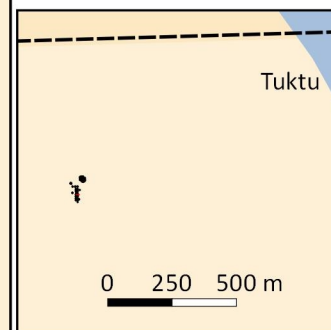
Toilet Facility



Existing Core Storage



Spill Kits



**KIVALLIQ ENERGY CORP.**

## BAFFIN GOLD PROPERTY Figure 4: Proposed Fly Camp Layout

Nunavut Territory

May 2017 UTM NAD83 Zone 18 1 : 500

0

Metres

30





# Emergency Response Plan

(Place visibly at all work stations)

---

The procedures herein are intended to provide personnel on the **BAFFIN GOLD PROPERTY** with a clear stepwise approach to respond to human health and safety emergencies.

This document provides important contact information for a range of community, medical and transportation services that may be mobilized in the event of an incident. A copy of this plan will be kept in the office at site and at the head office in Vancouver. Copies of this plan may be obtained from Kivalliq Energy Corporation.

## **2017 Exploration Program**

The **DEWAR LAKES CAMP** is the name of Baffin Gold Property field basecamp. The **Dewar Lakes Camp** has a Level 3 First Aid Attendant on site and is equipped with a Level 2 First Aid Facility. For emergency purposes the Dewar Lake Camp site is equipped with an office based HSE Internet + Voice telephone, an Iridium hand held satellite telephone and a VHF radio base station. All work crews carry a VHF hand held radio and a GPS.

A Bell 206 L3 Long Ranger helicopter (or similar) is based on site and is equipped with VHF radio for communication with ground crews that also carry an Iridium satellite phone for emergency communications.

## **In the event OF AN EMERGENCY:**

### **1. Immediately contact the Dewar Lakes Camp Office by satellite phone or by radio.**

#### **DEWAR LAKES CAMP: TBD**

- **Identify yourself and your location**
- **Give patient location**
- **The nature of the incident and the injuries**
  - **Nature of the Injury**
  - **What happened?**
  - **When did it happen?**
  - **Condition: Conscious/Unconscious**
- **Number of people involved and any other important details.**
  - **Age of Patient**
  - **Medical History**

Emily McNie, is the Project Manager and is the Responsible Person on site.

Kivalliq Energy Corp	C.O.O	Andrew Berry	604-765-1892
Kivalliq Energy Corp	President	Jeff Ward	604-763-8723
Discovery Mining	Responsible Person	Malcolm McLean	867-920-4600
Great Slave Helicopters	Responsible Person	24 Hour Dispatch	867-873-2081

Once notified, the Responsible Person (or Alternate) will be responsible to determine what further actions are necessary.

### **2. Determine if medical evacuation is required.**

Considerations: Nature/seriousness of injury, weather, daylight, helicopter access.

- **Contact the HOSPITAL or HEALTH CENTER to obtain instructions from a Nurse or First Aid Attendant as to the need for a Medevac. Provide information acquired during initial evaluation.**

#### **HOSPITAL/HEALTH CENTER CONTACT INFORMATION**

**Qikiqtani General Hospital – 1 (867) 975-8600 (Iqaluit)**



1st Alternate Health Center – 1 (867) 924-6377 (Clyde River)

2nd Alternate Health Center – 1 (867) 927-8916 (Qikiqtarjuaq)

- **If Medevac is required, contact Medevac service provider. Ask for Estimated Time of Arrival (ETA) to camp.**

### **24 HOUR MEDEVAC SERVICES**

**Kivalliq Air (Qikiqtani Office)**                      **1 (867) 979-3970 (Iqaluit)**  
- 24/7 Air Medical Line                              **1 (877) 440-8244 (Toll Free)**

**Air Nunavut**    **1 (289) 222-2471 (Iqaluit)**  
- 24-hour dispatch and emergency

**Kenn Borek Air**    **1 (867) 979-0040 (Iqaluit)**

- **Transport sick or injured personnel to Iqaluit or Clyde River by, either fixed wing or helicopter if required.**
- **Liaise with Iqaluit or Clyde River medical / emergency personnel and mobilize other emergency services, as required.**
- **In the event of a serious injury or incident that involves an employee of firms under contract to Kivalliq Energy Corporation, the senior manager at the contracting firm must be notified immediately.**

### **3. Emergency Service Contacts**

<b>CONTACT</b>	<b>LOCATION</b>	<b>TELEPHONE</b>
Kivalliq Energy Corporation, Andrew Berry	Vancouver	(604) 646-4529
Clyde River RCMP	Clyde River	(867) 924-0123
Clyde River Health Center	Clyde River	(867) 924-6377
Iqaluit General Hospital	Iqaluit	(867) 975-8600
Ookpik Air Service	Baker Lake	(867) 793-4720
Great Slave Helicopters	Yellowknife	867-873-2081
Discovery Mining Services (24 Hr)	Yellowknife	867-920-4600
WSCC	Emergency Number	(867) 979-8527
Environmental Protection (Spill Response)	Nunavut	(867) 920-8130

#### 4. Baffin Gold Property Locations

LOCATION	Latitude (North)	Longitude (West)	Easting	Northing	NAD 83 Zone
DEWAR LAKES CAMP	68° 37' 59"	71° 06' 38"	414199	7614919	19
Fox-3 Airstrip	68° 37' 23"	71° 07' 50"	413347	7613833	19
Malrok Fly Camp	68° 30' 06"	72° 27' 08"	604174	7600953	18
Tuktu Fly Camp	68° 37' 10"	73° 12' 45"	572715	7612986	18

#### 5. Distance to nearest communities

Fox-3 Airstrip to:	Distance
Clyde River, NU	230 Km
Qikiqtarjuaq, NU	320 Km
Pangnirtung, NU	360 Km
Hall Beach, NU	410 Km
Iqaluit, NU	560 Km
Yellowknife, NT	2060 Km

#### 6. Nearest Hospitals and Health Centres:

The closest general hospital is the Qikiqtani General Hospital located in Iqaluit and the nearest health centers are in Clyde River and Qikiqtarjuaq.

**Qikiqtani General Hospital – 1 (867) 975-8600 (Iqaluit)**

**1<sup>st</sup> Alternate Health Center – 1 (867) 924-6377 (Clyde River)**

**2<sup>nd</sup> Alternate Health Center – 1 (867) 927-8916 (Qikiqtarjuaq)**

#### 7. Other Important Contacts

Field Numbers	Phone
Camp – Logistics Line	TBA
Camp – Fax Line	TBA
Field Satellite Phone #1	TBA
Field Satellite Phone #2	TBA
Helicopter Satellite Phone	TBA

<b>RCMP</b>		
RCMP – Clyde River	(Emergency)	1-867-924-1111
	(Non-Emergency)	1-867-924-0123
RCMP – Qikiqtarjuaq	(Emergency)	1-867-927-1111
	(Non-Emergency)	1-867-927-0123
RCMP – Iqaluit	(Emergency)	1-867-975-1111
	(Non-Emergency)	1-867-979-0123

<b>Kivalliq Energy Corp.</b>			
Emily McNie, Project Supervisor	Vancouver	1-604-646-8352	Office
		1-604-603-0260	Cell
Jeff Ward, President	Vancouver	1-604-646-4538	Office
		1-604-763-8723	Cell
Andrew Berry, COO	Vancouver	1-604-646-4529	Office
		1-604-765-1892	Cell
<b>Commander Resources Ltd.</b>			
Robert Cameron , President/CEO	Vancouver	1-604-685-5254	Office
		1-778-389-7274	Cell

<b>Expeditors</b>		
Discovery Mining Services	Yellowknife	1-867-920-4600
<b>Helicopters</b>		
Helicopter Company TBA		TBA

<b>WSCC</b>		
Iqaluit		1-867-979-8500
Toll Free		1-877-404-4407
Fax		1-867-979-8501
Toll Free Fax		1-866-979-8501
Incident & Injury Reporting		1-800-661-0792
Incident & Injury Reporting Fax		1-867-873-0262
Chief Mine Inspector, Fred Bailey	Yellowknife	1-867-669-4430
Mining Engineer/Inspector, Martin Van Rooy	Iqaluit	1-867-979-8527
Emergency Spill Report		1-867-920-8130
Public Health Office	Yellowknife	1-867-920-8646
Poison Control Center (Toll Free)		1-800-268-9017
Poison Control Center	Iqaluit	1-867-979-7350



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# WASTE MANAGEMENT PLAN BAFFIN GOLD PROPERTY KIVALLIQ ENERGY CORPORATION

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Prepared by: Andrew Berry, Chief Operating Officer

Effective Date: June 1, 2017

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## 1. Introduction

This Waste Management Plan (WMP) shall be in effect from June 1, 2017 and has been specifically prepared for the Baffin Gold Property. The Baffin Gold Property is located 260 kilometres southwest of Clyde River and 360 kilometres northwest of Qikiqtarjuaq in the Qikiqtani Region of Nunavut. Kivalliq Energy Corporation's Nunavut Waste Generator Number is NUG 10036.

The purpose of this Waste Management Plan is to provide procedures for the collection, storage, transportation and disposal of wastes while minimizing adverse effects on the environment. A copy of this plan will be kept in the office at site and at the head office in Vancouver. Copies of this plan may be obtained from Kivalliq Energy Corporation.

This Waste Management Plan should be used in conjunction with other property plans and best management practices. Other plans at the Baffin Gold Property include:

- Abandonment and Restoration Plan
- Emergency Response Plan
- Environmental and Wildlife Management Plan
- Field Safety Manual
- Fuel Management Plan
- Spill Contingency Plan

### 1.1. Corporate Details

Kivalliq Energy Corporation  
Suite 1020- 800 West Pender Street  
Vancouver, British Columbia, V6C 2V6  
Tel: (604) 646-4527  
Fax: (604) 646-4526  
[www.kivalliqenergy.com](http://www.kivalliqenergy.com)

### 1.2. Project Description

The Baffin Gold Property on Baffin Island in the Qikiqtani Region of Nunavut consists of 15 prospecting permits, 6 mineral claims and two Mineral Exploration Agreements (MEA's) with Nunavut Tunngavik Inc. (NTI) on Inuit Owned Land Parcel BI-35. The property is located 260 kilometres southwest of Clyde River and 360 kilometres northwest of Qikiqtarjuaq, measures 160 kilometres in an east-west direction by approximately 30 kilometres north-south and comprises a total area of 408,981.6 hectares.

All prospecting permits, mineral claims and the MEA's are contiguous and the property extends north, south, east and west between latitudes 68.375° and 68.75° North and longitudes 70.5° and 74.5° West in NTS map areas 027 B/05, 027 B/12, 027 B/11, 037 A/06, 037 A/07, 037 A/08, 037 A/09 and 037 A/10 (UTM coordinates: 7,584,000mN to 7,615,000mN and 520,500mE to 622,500mE, NAD83, Zone 18 and 7,586,000mN to 7,628,500mN and 377,500mE to 439,500mE Zone 19).

The work proposed for the 2017 exploration program consists of low-impact activities including: prospecting, geological mapping, rock and soil/till sampling, airborne geophysics, ground geophysics, and fuel transport (fixed wing).

Kivalliq Energy intends to utilize Commander Resources Ltd.'s (Commander) existing Dewar Lakes Camp (Permits Pending) on Crown lands administered by INAC to facilitate the program. The camp is located at 68°37'59" N Lat., 71°06'38" W Long. and operated seasonally from 2003 to 2011 but has been unoccupied since 2013. In June 2017, Commander will mobilize a crew to rehabilitate the camp and prepare it to accommodate field personnel. As the permittee, Commander has a separate WMP in place for the Dewar Lakes Camp. This document is consistent with the Commander WMP.

Due to the size of the property Kivalliq Energy is permitting two temporary fly camps to accommodate workers and provide effective daily access to and from priority target areas that are remote from the Dewar Lakes Camp location. The proposed Malrok Fly Camp will be located adjacent to Malrok Lake on IOL BI-35 on Inuit Owned Lands administered by QIA at 68° 30' 06" N Lat., 72° 27' 08" W Long. The proposed Tuktu Fly Camp will be located on Crown lands proximal to the Fox-B Airstrip and adjacent to Nadluardjuk Lake at 68° 37' 10" N Lat., 73° 12' 45" W Long.

The temporary fly camps will accommodate up to 15 people and will be comprised of: 1 kitchen tent, 1 office tent, 1 dry tent, 1 utility tent, 5 supplementary sleep tents, a Pacto or outhouse latrine facility, a portable fuel-fired incinerator and a small generator shed. The structures will consist of a combination of WeatherPort vinyl tents, canvas prospectors' tents and small plywood structures. These camps will be fully closed and dismantled completely once exploration activities cease. The sites will then be reclaimed and restored to their original state.

Full details regarding the temporary fly camps can be found in the Baffin Gold Property Project Description and Work Plan.

### **1.3. Applicable Legislation and Guidelines**

Waste management at the Baffin Gold Property will be conducted in accordance with Federal and Territorial Acts, Regulations, Guidelines and Recommendations including, but not limited to:

#### **1.3.1. Federal**

- CCME Environmental Codes of Practice for Aboveground and Underground Storage Tank Systems Containing Petroleum and Allied Petroleum Products
- Canada-Wide Standards for Dioxins and Furans (Canadian Council of Ministers of the Environment)
- Canadian Centre for Occupational Health and Safety Act
- Canadian Environmental Protection Act
- Fisheries Act
- Guidelines for Spill Contingency Planning (INAC)
- International Air Transport Association (IATA) Regulations
- National Fire Code of Canada



- Northern Land Use Guidelines
- Storage Tank Systems for Petroleum Products and Allied Petroleum Products Regulations
- Territorial Lands Act
- Transportation of Dangerous Goods Act
- Workplace Hazardous Materials Information System (WHMIS)

### 1.3.2. Territorial

- Environmental Guideline for the Management of Contaminated Sites
- Environmental Guideline for the General Management of Hazardous Waste
- Environmental Protection Act
- Nunavut Environmental Guidelines for the Burning and Incineration of Solid Wastes
- Municipal Solid Wastes Suitable for Open Burning Guidelines
- Fire Prevention Act
- Mine Health and Safety Act and Regulations
- Nunavut Occupational Health and Safety Regulations
- Nunavut Waters Act and Nunavut Surface Rights Tribunal Act
- Public Health Act
- Safety Act

## 2. Waste Management

### 2.1. Definition of Wastes

At the Baffin Gold Property, waste is a term used to describe materials that are no longer wanted or are unusable for their original intended purpose. Hazardous waste is defined as “a contaminant which is a dangerous good that is no longer used for its original purpose and is intended for recycling, treatment, disposal or storage” (Guideline for the General Management of Hazardous Waste, 2010). Hazardous wastes often require specific management measures to ensure the health and safety of the workers and environment.

### 2.2. Waste Sources

A summary of the predicted types of wastes (hazardous and non-hazardous) to be generated on the Baffin Gold Property from exploration activities and fly camp operations is provided in the tables below.

**Table 1: Non-Hazardous (Inert) Wastes**

Waste Type	Examples	Estimated Quantity Generated
Sewage	Human waste	~ 0.05 m <sup>3</sup> /day
Camp greywater	Water from kitchen and sinks, showers	<3 m <sup>3</sup> /day
Combustible solid waste	Food wastes, paper, untreated wood (sent to incinerator daily)	~ 0.05 m <sup>3</sup> /day

Waste Type	Examples	Estimated Quantity Generated
Incinerator ash	Ash from the incinerator	Negligible
Non-combustible solid waste - Scrap Metal	Empty drums nails/screws	~5 empty drums/day
Non-combustible solid waste – Plastics/Glass	Bags, bottles, packaging, Bottles, jars	~ 0.05 m <sup>3</sup> /day
Non-combustible solid waste - Equipment	Pumps, motors, fans, heaters, screens	Unknown/ Negligible
Non-combustible solid waste - Rubber Products	Tires, floor mats	Unknown/ Negligible
Waste oil	Used oil – hydraulic and motor oil	~ 0.001 m <sup>3</sup> /day
Contaminated soils	Contaminated soil/snow/water	Unknown

**Table 2: Hazardous Wastes**

Waste Type	Examples	Uses	Estimated Quantity Used
Petrochemicals - Diesel		Generators, Tent heating	~2 drums/day
Petrochemicals - Jet Fuel	Jet A or Jet B	Helicopter	~2-3 drums/day
Petrochemicals - Gasoline		Skidoos	
Petrochemicals - Oil	Hydraulic, motor	Generators, skidoos	~ 0.001 m <sup>3</sup> /day
Solvents	Cleaning products	Cleaning	Negligible
Electronics	Computers, transformers	Camp operations	Negligible
Light bulbs	Regular bulbs, compact fluorescent tubes	Lighting	Unknown
Batteries	Dry cell batteries, lead-acid based batteries	GPS, computers, satellite phones, generators	Unknown

### 2.3. Waste Management Activities

The Waste Management Plan for the Baffin Gold Property is designed to ensure the proper handling, storage, transportation, recycling, treatment and disposal of hazardous wastes to reduce the potential impacts waste could have on the environment and workers health and safety (Guideline for the General Management of Hazardous Waste, 2010). To reduce the amount of waste generated, materials will be used efficiently. Wastes created will be sorted and classified according to its specific characteristics and handled appropriately.

These waste management practices have been used on Kivalliq Energy's Angilak Property in Nunavut and have been proven in cold climates.

## **2.4. Waste Reuse and Recycling**

To reduce the amount of waste generated, Kivalliq Energy will engage in reusing and recycling materials whenever possible. Metal and wood will be repurposed to its full extent. Scrap metal will be removed from the property regularly and shipped south to an authorized metals recycling facility. Recyclable glass and plastics will be segregated accordingly and will be removed from the property regularly and shipped south to an authorized recycling facility.

## **3. Waste Classification and Disposal Plan**

### **3.1. Hazardous Wastes**

All hazardous waste materials will be collected in sealed and appropriately labeled containers and stored in secondary containment. All hazardous wastes will be removed from the property regularly for recycling or authorized disposal. Hazardous wastes will be transported in accordance with the Transportation of Dangerous Goods (TDG) and International Air Transport Association (IATA) regulations. Refer to the “Fuel Management Plan” for policies and procedures dictating the safe transport, storage and handling of fuels and other hazardous materials. Refer to the “Spill Contingency Plan” for the policies and response procedures to be followed in the event of a spill.

#### **3.1.1. Used Oil**

Waste oil from generators, pumps, vehicles or other equipment will be collected and stored in sealed and labeled 205L drums. All waste oils will be removed from the property regularly and will be transported south to an authorized hazardous waste disposal facility.

#### **3.1.2. Hydraulic Fluid**

Waste hydraulic fluids will be collected and stored in sealed and labeled 205L drums. Waste hydraulic fluids drums will be removed from the property regularly and will be transported south to an authorized hazardous waste disposal facility.

#### **3.1.3. Contaminated Fuels**

Contaminated and waste fuels will be collected and stored in sealed and labeled 205L drums. All contaminated and waste fuels will be removed from the property regularly and will be transported south to an authorized waste disposal facility.

All drummed fuels will be stored in secondary containment berms, in organized horizontal rows, with bungs tightly secured and oriented at 3:00 and 9:00 o'clock positions to mitigate moisture inflow. All drummed fuels will be clearly labeled in accordance with the Workplace Hazardous Materials Information System (WHMIS) which includes the name of the fuel provider, the date the drum was filled and the type of fuel contained within. Drummed jet fuel has a limited drum life of two years after which it must be retested to confirm that it remains compliant with the requirements of the Canadian General Standards Board specified for Aviation Turbine Fuel. All efforts will be made to use jet fuel prior to the expiry date specified on the individual drums. In the event that the drum is not use prior to the expiry date the fuel will be tested and recertified so as to avoid designation as waste fuel.

#### **3.1.4. Solvents**

Whenever possible, non-toxic alternatives will be used in place of petroleum based solvents. Waste solvents will be sealed in their original containers and stored in the hazardous waste storage area. Those containers will be removed from the property regularly and transported to an approved disposal facility.

#### **3.1.5. Contaminated Snow and Ice**

All contaminated water, ice and snow will be cleaned up immediately and contained in sealed and appropriately labelled 205L drums and stored in secondary containment berms. Drums containing contaminated water ice or snow will be removed from site regularly and transported to an approved disposal facility. Please refer to the “Spill Contingency Plan” for additional procedures for spills resulting with contaminated water, snow and ice.

#### **3.1.6. Contaminated Soils**

All contaminated soils will be cleaned up immediately and contained in sealed and appropriately labelled 205L drums and stored in secondary containment berms. Drums containing contaminated soils will be removed from site regularly and transported to an approved disposal facility or pending the appropriate authorizations, contaminated soils may be remediated by soil farming. Please refer to the “Contingency Plan” for additional procedures for spills resulting with contaminated soils.

#### **3.1.7. Used Rags and Sorbents**

Used rags and sorbent pads will be incinerated on site in a dual chamber, forced-air incinerator. Granular sorbents will be placed in sealed and labeled containers and stored in the hazardous waste storage area and will be removed from regularly and transported to an authorized disposal facility.

#### **3.1.8. Empty Drums and Hazardous Materials Containers**

After use, all fuel drums will be drained of residual contents and aggregated into 205L waste fuel drums. All empty drums and hazardous materials containers will be stored in a designated area. Empty drums will be removed from site regularly and transported south to be returned to the supplier for recycling or to an authorized facility for disposal.

#### **3.1.9. Waste Batteries**

Dry cell batteries (AAA to D cell, 6 or 9 volt) will be collected in a designated container and backhauled to an approved recycling facility.

Waste lead acid batteries will be packaged in accordance with TDG Regulations and will be removed from site regularly. All waste lead acid batteries will be transported south for disposal at an authorized facility.

#### **3.1.10. Aerosol Cans**

Empty aerosol cans will be stored in a designated and appropriately labelled container and will be backhauled for proper disposal.

#### **3.1.11. Fluorescent Bulbs and Tubes**

If possible, waste fluorescent bulbs and tubes are packaged in their original container and backhauled to an accredited facility. Fluorescent bulbs and tubes are considered hazardous if broken. Broken bulbs/tubes are: collected in a sealed drum; labeled and shipped to a registered hazardous waste receiver.

### **3.2. Inert Non-Combustible Solid Wastes**

#### **3.2.1. Tires and Other Rubber Materials**

Tires and other rubber materials that cannot be patched or repurposed will be backhauled for proper recycling/disposal.

#### **3.2.2. Scrap Metal**

Scrap metal will be repurposed as much as possible. Scrap metal will be removed from the property regularly and shipped south to an authorized metals recycling facility.

#### **3.2.3. Glass**

All waste glass will be stored in a sealed and clearly marked container. Waste glass will be removed from site regularly and shipped south for recycling at an authorized facility.

#### **3.2.4. Electronics**

Electronics and electrical equipment will be collected in a container. Waste electrical equipment will be removed from site regularly and shipped south for disposal or recycling at an authorized facility.

#### **3.2.5. Vehicles and Other Mechanical Equipment**

Broken vehicles and mechanical equipment that is unserviceable and no longer functioning will be removed from site and transported south for refurbishing or disposal at an authorized facility.

### **3.3. Inert Combustible Solid Wastes**

All Inert Combustible Solid Wastes will be incinerated in a dual chamber, fuel fired, forced-air incinerator in accordance with the Nunavut Environmental Guidelines for the Burning and Incineration of Solid Waste and Canada-Wide Standards for Dioxins and Furans. Ash generated from the on-going incineration will be stored in sealed 205 L drums. Ash drums will be removed from site regularly and transported south for disposal at an authorized facility.

#### **3.3.1. Food Waste and Packaging**

Food waste and packaging will be incinerated in accordance with the Nunavut Environmental Guidelines for the Burning and Incineration of Solid Wastes. Ash generated from the on-going incineration of food waste and packaging will be stored in sealed 205 L drums. Ash drums will be removed from site regularly and transported south for disposal at an authorized facility.

#### **3.3.2. Paper and Cardboard**

Paper and cardboard will be incinerated in accordance with the Nunavut Environmental Guidelines for the Burning and Incineration of Solid Wastes. Ash generated from the on-going incineration of paper and

cardboard will be stored in sealed 205 L drums. Ash drums will be removed from site regularly and transported south for disposal at an authorized facility.

### **3.3.3. Waste Lumber**

Unusable waste lumber will be incinerated in accordance with the Nunavut Environmental Guidelines for the Burning and Incineration of Solid Wastes. Ash generated from the on-going incineration of waste lumber will be stored in sealed 205 L drums. Ash drums will be removed from site regularly and transported south for disposal at an authorized facility. Untreated, larger pieces of lumber will be burned in a controlled open burn in compliance with the Municipal Solid Wastes Suitable for Open Burning Guidelines.

### **3.4. Sewage**

The fly camps will use either Pacto toilets or outhouse latrine facilities. If Pacto toilets are used, bags containing black water waste will be incinerated in accordance with the Nunavut Environmental Guidelines for the Burning and Incineration of Solid Wastes. Ash generated from the incineration of Pacto wastes will be sealed in designated 205 L drums and labelled accordingly. Ash drums will be removed from site regularly and transported south for disposal at an authorized facility. In the event outhouses are used, outhouse holes will be treated with lime and infilled with the soil originating from the site.

## **4. Site Facilities**

### **4.1. Hazardous Waste Storage Area**

All hazardous waste materials will be stored in secondary containment adjacent to the main fuel cache at the temporary fly camps. The hazardous waste storage area will be a minimum of 31 metres from the normal high water mark of any water body and such that there is no possibility of a potential spill entering any water body. All hazardous wastes will be sealed and labelled in containers and stored in the hazardous waste storage area until they can be backhauled for recycling or authorized disposal.

Secondary containment berms will be equipped with Spilfyter RailMat 3 ply hydrocarbon absorbent fabric (or similar) and Rain Drain hydrocarbon filters for water drainage. Secondary containment structures will be capable of holding 110 percent of the volume of the largest fuel reservoir that is housed within the secondary containment. These structures will be of sufficient height and depth to hold any potential spill or failure and will be made of material that is sufficiently durable to withstand Nunavut's climate and the natural terrain. Secondary containment structures will comply with all applicable federal and territorial laws, regulations and guidelines.

### **4.2. Incinerator**

Fly camps proposed for the Baffin Gold Property will utilize a portable, fuel fired, dual chamber, forced-air incinerator for the disposal of combustible solid wastes. All combustible waste will be incinerated in accordance with the Nunavut Environmental Guideline for the Burning and Incineration of Solid Waste and Canada-Wide Standards for Dioxins and Furans. Ash generated from the on-going incineration will

be stored in sealed metal 205 L drums and removed from site regularly to be transported south for recycling or disposal at an authorized facility

#### **4.3. Sump**

Waste water from fly camps will be discharged to a grey water sump. A grease trap and screens will be installed on the kitchen drain to ensure grease and food solids do not enter the sump. The discharge pipe into the sump will be inaccessible to wildlife. The grey water sump will be located at least 31 metres away from a water body.

### **5. Training**

Site and job-specific training will be provided to all personnel who are required to handle waste materials. Kivalliq will have a Level 3 First Aid Attendant on site during operations. The Camp Manager is required to oversee the handling of hazardous wastes and must have valid First Aid and WHMIS. On site management are responsible for the transportation of hazardous wastes and have Transportation of Dangerous Goods (TDG) certification. All employees and contractors will receive training in Fuel and Waste Management and Spill Response, as outlined in the Baffin Gold Property Fuel Management Plan, Waste Management Plan and Spill Contingency Plan.

Personnel responsible for operating or maintaining the incinerator will receive hands on training to ensure the equipment is operated safely and efficiently in accordance with the Nunavut Environmental Guidelines for the Burning and Incineration of Solid Wastes.

### **6. Inspection and Monitoring**

Inspections of the hazardous waste storage area and other waste storage facilities to ensure the hazardous waste inventory is up to date, secondary containment is in place and in good condition, and that spill kits are fully stocked will be conducted weekly. Daily monitoring of the hazardous waste storage area and the contained wastes will include an assessment of the condition of waste receptacles and storage containers, checking for any damaged or leaking containers or berms, and ensuring that waste is collected and stored in the correct containers and safely placed in the storage area. Waste inspections will be completed in conjunction with the fuel storage inspections outlined in the Baffin Gold Property “Fuel Management Plan.” Any leaks or spills will be treated as outlined in the Baffin Gold Property “Spill Contingency Plan.”

The Project Supervisor is responsible for supervising the monitoring and inspection program, and keeping a detailed inventory of all hazardous wastes on site.



## Community Consultation Log - Baffin Gold Property

Last Updated: May 11, 2017 15:15 PST

### Acronyms:

NTI	Nunavut Tunngavik Incorp.
CLO	Community Liason Officer
SAO	Settlement Administrative Officer
GN	Government of Nunavut
HTO	Hunters and Trappers Association
MLA	Member of the Legislative Assembly
CEDO	Community Economic Development Officer
QIA	Qikiqtani Inuit Association
INAC	Indigenouse and Northern Affairs Canada
NWB	Nunavut Water Board
NIRB	Nunavut Impact Review Board
NPC	Nunavut Planning Commission
IOL	Inuit Owned Land

Date	Time	Contact	Details
30-Nov-16		Carson Gillis, Director of Lands, NTI Joel Fortier, Acting Director of Lands and Resources, QIA	Expression of Interest sent from Kivalliq Energy to NTI on IOL parcel BI-35 on Baffin Island in the Qikiqtani region. Subsequent letter was sent from NTI to QIA for a declaration that the lands of interest are open to exploration and mining.
06-Mar-17		Joel Fortier, Acting Director of Lands and Resources, QIA (Iqaluit) Bruce J. McRae, QIA General Counsel	Two introductory meetings with QIA to discuss Expression of Interest to NTI on IOL BI-35, possible work programs, and regional/community concerns
23-Mar-17		Joel Fortier, Acting Director of Lands and Resources, QIA (Iqaluit)	Emails and phone calls re: NTI Expression of Interest on IOL BI-35. Provided QIA with NTI Assignment Approval, company and 2017 program summary and presentation for a CLARC meeting in Qikiqtarjuaq.
27-Mar-17		Joel Fortier, Acting Director of Lands and Resources, QIA (Iqaluit)	Emails re QIA CLARC meeting in Qikiqtarjuaq. QIA notice that approval was sent to NTI (Carson Gillis) that CLARC has indicated an openness to the project.
23-Apr-17		Joel Fortier, Acting Director of Lands and Resources, QIA (Iqaluit)	Update to QIA on status of MEA application, request for consent letter and initial plans for community visits, permitting and summer 2017 program.
01-May-17		Joel Fortier, Acting Director of Lands and Resources, QIA (Iqaluit) Navarana Beveridge, Executive Director, QIA	Phone calls, emails and receipt of QIA letter of consent from Navarana Beveridge Executive Director to NTI (Carson Gillis and James Arreak) to issue Kivalliq Energy a MEA for parcel BI-35.
04-May-17		Carson Gillis, Director of Lands, NTI	Signed Mineral Exploration Agreement BI-16-001 FOXE with NTI on BI-35, payment of annual fees, bonus payment and commitment to annual exploration expenditures on IOL BI-35. Local communities to benefit and which will be visited prior to 2017 program: Clyde River, Qikiqtarjuaq, Pangnirtung, Iqaluit.