- Train personnel, especially those who will be operators, in proper fuel handling and spill response procedures. This training is to include a “mock” spill, review of spill kit contents and their use and reporting.

3.2.1 Spill of Fuel from Metal Drums on Tundra

Should drums be used, the metal drums are stored in such a manner that they are not susceptible to tipping over, rolling or otherwise being unstable. Care is exercised so that nothing can cause damage to metal fuel drums by falling or rolling onto or into them. The use of a ramp or a cushion (e.g. automotive tire) while unloading metal fuel drums from aircrafts lessens the possibility of damage.

3.2.2 Spill of Fuel from Fuel Tank Storage System

To prevent spillage during the filling of the fuel tank storage system the following items will be in place:

- Visible and audible high level alarm
- Automatic high liquid shut off device
- Manual dips are conducted in conjunction with the inventory and reconciliation procedures by fuel delivery personnel and site personnel. Site personnel log all deliveries and fuel dips to coordinate the filling of the Envirotanks with the contractor delivery personnel.
- All tanks are double-walled
- Spill/Overfill protection – catch basins around the fill pipe will collect any liquid spilled during connecting or disconnecting of the fill hose
- Corrosion Protection – provided by painting of the tanks
- Where drums are used, the drums will be placed in appropriated lined structures for fuel transfer from tank to drum

Personnel conducting fuel transfers are to be adequately trained in the procedure and spill contingency. Most releases at a fuel tank storage system are due to piping and line failure. This system of tanks are independent of each other and do not require any piping. Spills or leaks are known to occur due to improper management of tanks prior to installation. All tanks located at the Kiggavik Sisson site have been inspected by a qualified person prior to filling and again prior to initial use.

3.2.3 Winter Fuel Hauling

Refer to Winter Road Plan for further details regarding transport, safety and training requirements used to minimize hazards generated during the winter haul.

3.2.4 Leak of Liquid Fuel from Distribution Lines

Stability of all storage tanks and distribution assemblies is of utmost importance to ensure that the risk of damage is minimized. All stands for reservoir tanks and fuel tanks are constructed to strength

standards beyond those required. Distribution lines from reservoir tanks and fuel tanks are fitted with appropriate shut-off valves immediately downstream from the tank. All valves are closed when the tank is not in use. All associated distribution lines are installed in such a way to prevent being chafed in the wind, chewed on by animals or tripped on by humans. This is done by securing it to rigid structures, encasing it in armour or any other effective manner. These measures apply broadly to oil, jet fuel, gasoline, and propane set-ups.

3.2.5 Spill of Liquid Fuel into Lake Water

Fuel must be at a minimum of 31 m from ordinary high water mark on stable and level ground unless approved by regulatory agencies. Refuelling must not take place below the high water mark of any water body under any circumstance.

3.2.6 Release of Propane

Propane is stored in certified containers and is inspected and monitored on a regular basis for any signs of deterioration or corrosion. Containers are secured and fastened in an upright position to ensure there is no risk of damage to the regulator in the event of a fall.

Only qualified gas fitters will connect or disconnect piping to any bulk propane storage system. In the event that larger propane tanks are introduced on site, only qualified gas fitters will connect or disconnect the piping.

3.2.7 Spill of Battery Acid

Acquisition of non-spillable batteries reduces the risk of a spill of this type. These batteries can be shipped by air as they are exempt from UN2800 classification. All batteries are protected from damage by fastening them into the space designed for them within various types of equipment and stored safely when not in use.

3.2.8 Fire at the Fuel Tank Storage System

Grounding cables are used for all transfers of bulk gasoline or jet fuel to minimize to potential of a static discharge and potential fire.

3.2.9 Crash at Fuel Storage Tanks

The following measures will be followed to minimize the risk of a crash at the fuel storage areas:

- Clear communication between aircraft (fixed wing and helicopters)
- Use of wind socks

- In the event that the use of vehicles is introduced in the operation, crash protection will be put in place

3.2.10 Spill of Radiologically Contaminated Drill Cuttings

During drilling activities, drill mud solids or cuttings in non-mineralized zones are deposited on the ground in low-lying areas. When mineralized core is intercepted, all drill mud and cuttings are collected in appropriate containers and categorized as radioactive through appropriate radiation measurements in accordance with work instructions. A gamma survey is also conducted before and after drilling activities at each hole to ensure there is no radiologically contaminated material at the site.

3.2.11 Spill of Potentially Contaminated Drill Return Water

Return water from drilling activities, including general drainage from the drill footprint, are diverted into low-lying areas to keep these waters from directly entering lakes and streams. Low lying depressions where non-mineralized drill cuttings and drill return water are deposited are monitored while in use.

4 SPILL RESPONSE

4.1 RESPONSE TO A SPILL – CONTAINMENT AND CLEAN-UP

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.

The basic steps of the response plan are as follows:

Ensure the safety of all persons at all times

The safety of yourself and others is the most important consideration when responding to a spill. As such, all actions that you perform as part of your spill response must only be undertaken if they can be undertaken in a safe manner. If an action can not be undertaken in a safe manner or if you do not feel that you are adequately trained or equipped to respond to a spill, the only appropriate thing to do is to safely evacuate all personnel in the area to a safe area away from the spill. Once everyone is safe you will then need to request assistance from trained emergency responders with the appropriate resources to manage the spill safely and effectively.

KEY POINTS TO CONSIDER WHEN RESPONDING TO A SPILL

- *It is your responsibility to act safely, using appropriate personal protective equipment and work practice.*
- *It is your responsibility to respect the safety of others in the area.*
- *It is your responsibility to refuse to perform activities that you feel are unsafe.*
- *It is your responsibility to inform those involved or in the area if you believe that their actions, or proposed actions, are unsafe. This includes colleagues, first responders, contractors, members of the public, etc.*

Identify and find the spill substance and its source.

Individual discovering the spill shall:

- Move upwind of the material
- Call for help – contact the Facility Supervisor or designate
- Attempt to stop leak – only if safe to do so
- Attempt to contain spilled material – only if safe to do so

Facility Supervisor (or designate) shall:

- Designate responders and proceed to the scene of the spill.
- The responders (including the Facility Supervisor if necessary) shall attempt to stop further spillage and contain the spilled material if safe to do so.
- Ensure documentation of the spill is completed using the Spill Report Form, the NT-NU 24-Hour Spill Report Line to be contacted immediately (see Section 5 for Spill Reporting requirements) and the appropriate regulatory agencies have been contacted.

SHEQ Supervisor shall:

- Provide assistance and expertise in the response to a spill
- Once under control, shall interview the individual who discovered the spill. Noting name, time discovered, and details on how the spill occurred, any actions taken by the individual to stop the spill.
- Submit Spill Report required regulatory agencies within seven calendar days of the incident (see Section 5)
- Within 30 days ensure a written detailed report is prepared for submittal to required regulatory agencies (see Section 5).

Responders shall:

- Position themselves upwind of the spill.
- Determine what has been spilled.
- Consult the Material Safety Data Sheet (MSDS) for the product in order to determine the appropriate personal protective equipment and to understand the physical properties of what was spilled.
- If the spilled substance is flammable (Gasoline or Jet Fuel), eliminate all ignition sources and shut off machinery in the area.
- If safe to do so, take actions to ensure that the leak or spill has been stopped at the source (i.e.: shut off valves, reconnect hoses, etc.).
- Contain spill with appropriate material and equipment (i.e.: spill response kit, etc.). Refer to the MSDS if this is a controlled substance. Pump large spills into barrels or other suitable container as available. **Ensure that grounding or bonding cables are used for all flammable product transfers.**
- Control access to the spill area and keep all bystanders away. If necessary, barricade the spill area. Do not use flares unless you are certain the spilled material and its vapours are not flammable or explosive.
- If safe to do, keep spilled material out of waterways. Use aluminium/non-sparking shovels to dig trenches or make soil and sand barriers or utilize the placement of socks as barriers
- If a fuel or oil spill, place contaminated absorbent and associated materials into steel pails or drums for storage in a sea container prior to removal from site to an approved facility.
- If radioactive material, place material into appropriate container (i.e. cuttings bag or IP3 pail) to be stored in radioactive storage compound.
- If a spill has entered flowing water, take a water sample immediately upstream of the spill and downstream (e.g., 50 m, 150 m and 500 m from spill)

The following table demonstrates the spill supplies that may be utilized during the response to a spill on site (items not stored in spill kits and kit replacement items are stored in the generator building):

Table 4-1 Spill Response Supplies

Incident	Spill Supplies	Use
Wet Spill	Drums with removable lids that contain bailers	For manual removal of large liquid spills Empty drums
	Folded sweeps and white rolls	Skimming of gas or diesel from water body
	Socks, peat moss	Containment of wet spill on land
	Pads, rolls, bags of dry absorbent	Cleanup of wet spills
Punctured Drum	Overpack (plastic drum) Plug 'n Dyke	Either: 1. Place overpack overtop of leaking drum, lay overpack and drum on its side, then flip upright, or 2. Use Plug 'n Dyke or other plugging compounds to seal and stop leak
Dry Spill	Plastic sheet (roll), mallet, spikes, knife	Covering dry spills to protect from wind and rain

If necessary ask for help and wait for others with the appropriate training and/or equipment to arrive. Acting inappropriately can often be dangerous to you, to others, and to the environment.

Implement any necessary cleanup and/or remedial action in a safe manner; *this may be coordinated and or conducted by a third party consultant, if necessary.*

Report the spill *as per Section 5 of this Plan once it is safe to do so. Do not delay reporting as there are legal requirements in this regard.*

4.2 EXAMPLES OF SPILL SCENARIOS

4.2.1 Spill of Fuel from Metal Drums, 10,000 L Fuel Bladders, or Fuel Tanks on Tundra

A puncture or rupture of containers containing liquid fuels should initially be assessed for risk of ignition. Sources of ignition will be extinguished or isolated from the spill area if safe to do so. While using appropriate personal protective equipment as described in the MSDS, efforts should be undertaken to plug punctures with appropriate material from the spill kit (plugging compound or other improvised materials). Ruptures or holes should be high-centered to stop further spillage of fuel.

Absorbent materials should be used to absorb spilled fuel. A containment berm should be built using available materials such as soil, snow, absorbent socks, portable berms and/or tarps to contain a large spill.

Report the spill to the Facility and SHEQ Supervisor or designates immediately.

Remove the spilled products using absorbent material or soil, gravel or snow, placing all recovered spilled fuel and spent absorbents into appropriate containers (metal cans, pails or drums in good condition). Again, all fuel skimmed or wicked off of the ground is to be disposed of, in appropriate steel containers. All containers will be stored in a sea container until the material can be transported to an approved facility. High-centered ruptures will be used as a point of entry for manually-operated fuel transfer pump suction tubes, and remaining fuel is removed to a sound drum. Small amounts of contaminated soil, vegetation or gravel is removed and placed into sealable steel drums or pail and then disposed of appropriately. Large areas of spilled product on the ground are only to be remediated after consultation with ARC SHEQ personnel, regulators, etc. to avoid unnecessary damage to the environment.

Before commencing removal of soil or vegetation regulatory agencies will be contacted.

If spill of significant volume occurs at one of the fuel storage tanks or from a 10,000 L fuel bladder attempt to prevent the spread of the fuel if safe to do so and immediately contact ARC personnel to provide assistance with the spill response and clean-up.

4.2.2 Leak of Liquid Fuel from Distribution Lines

A detected leak from a distribution line assembly is to be initially assessed for risk of ignition. Sources of ignition are to be extinguished or isolated from the leak if safe to do so. If safe to do so, the shut-off valve on the tank and/or distribution line is to be turned off. Report the spill to the Facility and SHEQ Supervisors or designates immediately. Absorbent material is placed on the spilled fuel; if spilled onto snow or ice it is scooped up with an aluminium (non-sparking) shovel and stored in an appropriate sealable steel container. Ultimate disposal of these materials is only to be done after consultation with the SHEQ group and the appropriate regulatory agencies.

4.2.3 Spill of Liquid Fuel into Lake Water

If safe to do so, identify the source of the spill and prevent further release of fuel. Report the spill to the Facility and SHEQ Supervisor or designates immediately. Never attempt to contain or clean up a spill of gasoline on water, the risk of fire is simply too high. Confinement needs to occur as close to the release point as possible. The collection of liquid diesel or lubricating oil in lake water is attempted with floating booms of petroleum absorbent material, after vapours have dissipated. For larger spills of diesel or lubricating oil, raw liquid can often be removed by skimming while absorbent pads can be used to collect small spills.

Prior to attempting any clean up on water, a site specific safety plan needs to be developed that factors in water safety aspects.

All fuel skimmed or wicked off of the water surface as well as spent absorbent materials must be disposed of, in appropriate sealable steel containers. Ultimate disposal of these materials shall only be done after consultation with the SHEQ Group and the appropriate regulatory agencies.

4.2.4 Fire at Fuel Storage Tanks

In the event that a fire occurs at the fuel storage tanks, it is ARC's primary intentions to ensure the safety of the site personnel by allowing the fire to burn. Report the spill to the Facility and SHEQ Supervisors or designates immediately. Appropriate third party personnel will be contacted to ensure proper response and clean-up occurs.

4.2.5 Release of Propane

Report the spill to the Facility and SHEQ Supervisors or designates immediately.

- No attempt should be made to contain a propane release.
- Water spray can be used to knock down vapours and to reduce the risk of ignition.
- Small fires can be extinguished with dry chemical or CO_2.

Personnel shall withdraw from the area immediately upon identifying a leak and shall not return until the leak is stopped and all the vapours have diffused. Contact will be made with the proper agency for disposal instructions of a defective container.

4.2.6 Spill of Radiologically Contaminated Drill Cuttings

Report the spill to the Facility and SHEQ Supervisors or designates immediately. In the event of a spill of any amount of radioactive materials, the material will be collected into appropriate storage containers (i.e. cuttings bag or IP3 pail). The site will be remediated as much as practical, meeting/exceeding the minimum necessary abandonment criteria of less than 1 μSv/h above background at a height of 1 m.

4.2.7 Spill of Potentially Contaminated/Drill Return Water into a Water Body

Report the spill to the Facility and SHEQ Supervisors or designates immediately. In the event of a spill of any amount of potentially contaminated/drill return water into a water body, any activities which are the possible cause will cease until a review of the incident has taken place. Water and sediment samples will be taken and a gamma survey conducted on the effected area. Activities will continue once the District Geologist, Nunavut or designate is satisfied with the corrective measures taken.

5 SPILL REPORTING REQUIREMENTS

This Plan is initiated by the Project Geologist or designate, this includes initiating response, documenting associated activities and reporting the spill, within 24 hours to the NT-NU 24-HOUR SPILL REPORT LINE. All emergency contact phone numbers are located in Appendix I Contact List.

Based on Environment Canada's recommendation, all releases of harmful substances, regardless of quantity are immediately reportable where the release is:

- Near or into a water body;
- Near or into a designated sensitive environment or sensitive wildlife habitat;
- Poses an imminent threat to human health or safety;
- Poses an imminent threat to listed species at risk or its critical habitat.

Based on Nunavut's regulation R-068-93, Spill Contingency Planning and Reporting Regulations impose a legal requirement to report any spill of flammable liquids greater than 100 L in quantity. In addition, ANY quantity of spilled radioactive material is reportable. The following table (Schedule B) is a reference from regulation R-068-93 and indicates quantities of spilled product that requires reporting to the Department of Environment-Government of Nunavut (DoE-GN).

SCHEDULE B

(Section 9)

Item No.	*TDGA Class*	*Description of Contaminant*	*Amount Spoiled*
1.	1	Explosives	Any amount
2.	2.1	Compressed gas (flammable)	Any amount of gas from containers with a capacity greater than 100 l.
3.	2.2	Compressed gas (non-corrosive, non flammable)	Any amount of gas from containers with a capacity greater than 100 l.
4.	2.3	Compressed gas (toxic)	Any amount
5.	2.4	Compressed gas (corrosive)	Any amount
6.	3.1, 3.2, 3.3	Flammable liquid	100 l
7.	4.1	Flammable solid	25 kg
8.	4.2	Spontaneously combustible solids	25 kg
9.	4.3	Water reactant solids	25 kg
10.	5.1	Oxidizing substances	50 l or 50 kg
11.	5.2	Organic Peroxides	1 l or 1 kg
12.	6.1	Poisonous substances	5 l or 5 kg
13.	6.2	Infectious substances	Any amount
14.	7	Radioactive	Any amount
15.	8	Corrosive substances	5 l or 5 kg
16.	9.1 (in part)	Miscellaneous products or substances, excluding PCB mixtures	50 l or 50 kg
17.	9.2	Environmentally hazardous	1 l or 1 kg
18.	9.3	Dangerous wastes	5 l or 5 kg
19.	9.1 (in part)	PCB mixtures of 5 or more parts per million	0.5 l or 0.5 kg
20.	None	Other contaminants	100 l or 100 kg

If you are in doubt as to whether or not a spill is reportable, it is best to report the spill.

5.1 SPILL RESPONSE CONTACT LIST

The most recent *Exploration Emergency Contacts* list is available in drill rigs and field offices. It can be found in the Appendix I of this Plan.

5.2 REPORTING REQUIREMENTS

1. Collect Required Information

During spill response and once safe to do so the following information should be generated and reported to appropriate personnel and agencies (refer to and complete the Spill Report Form found in Appendix II):

- Date and time of spill
- Location of spill
- Direction the spill is moving
- Name of contact person at location of spill, and phone number where applicable
- Type and quantity of contaminant
- Cause of spill
- Whether spill is contained or stopped
- Description of the existing contaminant
- Action taken to contain, recover, clean-up and dispose of spilled material

2. Report

NOTE: It is the responsibility of the senior AREVA staff on site to report spills to regulatory agencies. Contractors are asked to report all spills to the Project Geologist or designates immediately.

Once safe to do so, immediately notify the following agencies/people of the spill (phone numbers can be found in the *Emergency Contacts List* of this Plan):

- Project Geologist or designate (if not on site during incident)
- District Geologist, Nunavut
- Facility Supervisor
- SHEQ Supervisor (if not on site during incident)
- NT-NU 24-Hour Spill Report Line (within 24hours) by phone; utilize the information collected for the spill report form
- Coordinator, SHEQ Exploration
- Vice President, Exploration
- Manager, Nunavut Affairs and Baker Lake office
- The Nunavut Water Board (NWB) and AANDC request verbal notification as soon as possible, however they will also be notified by the spill report line

- A copy of the written Spill Report Form must be submitted to the DoE-GN, AANDC (Water Resources Office and Manager of Field Operations), NWB and Environment Canada (EC) within seven calendar days of the incident
- A detailed report must be submitted to the DoE-GN, AANDC, NWB and EC within 30 days
- Submit a copy of the Spill Report Form and detailed report to Kivalliq Inuit Association (KIA).

6 TRAINING AND PRACTICE DRILLS

All employees and contractors are to be familiar with the spill response resources at hand which include this Plan, MSDS sheets, and training for spill response. Involvement of other employees or third parties may be required, from time to time. Annual refreshers are conducted to review the procedures within this plan. At least one practice drill per season is conducted to allow field-personnel the opportunity to practice emergency response skills using response equipment, and to familiarize themselves with potential product hazards.

7 REFERENCES

Canadian Council of Ministers of the Environment (CCME) Environmental Code of Practice for Aboveground and Underground Storage Tank Systems Containing Petroleum and Allied Petroleum Products, 2003

CCME Environmental Code of Practice for Aboveground and Underground Storage Tank Systems Containing Petroleum and Allied Petroleum Products, 2003

Contingency Planning and Spill Reporting in Nunavut. Environmental Protection Service Department of Sustainable Development.

Fire Marshal, Tim Hinds with the Government of Nunavut-Community and Government Services via email (Trevor Carlson, AREVA) on November 20, 2007.

Guidelines for Spill Contingency Planning. Indian and Northern Affairs Canada (INAC). April 2007.

Environmental Code of Practice (ECOP)

Kiggavik Project Winter Road Plan

Nunavut *Environmental Protection Act. March, 2010*

Nunavut R-068-93. *Spill Contingency Planning and Reporting Regulations*. September, 2007.

Northwest Territories-Nunavut Spill Report Form. Available at: http://env.gov.nu.ca/sites/default/files/NT%20NU%20Spill%20Report%20Form.pdf

Storage Tank Systems for Petroleum Products and Allied Petroleum Products Regulations, *Canadian Environmental Protection Act, 1999* (CEPA 1999)

APPENDICES

Appendix I Exploration Emergency Contacts

Available at:

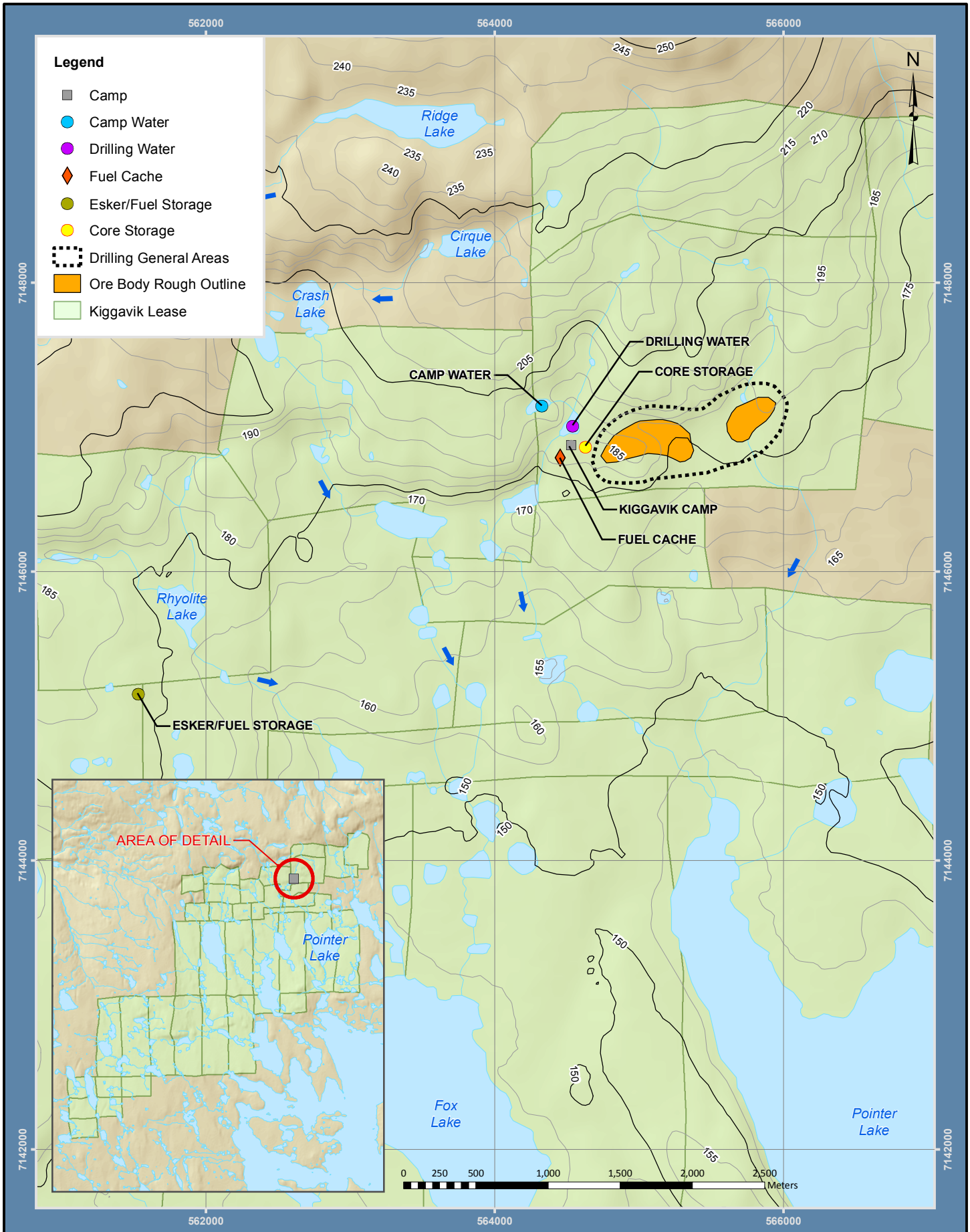
Q:\Exploration\IMS\006_Contacts

Appendix II Spill Report Form

Available at:

http://env.gov.nu.ca/programareas/environmentprotection/forms-applications
http://env.gov.nu.ca/sites/default/files/NT%20NU%20Spill%20Report%20Form.pdf

Appendix III Maps



Projection: NAD 1983 UTM Zone 14N
Creator: CDC
Date: 05/18/2011 Scale: 1:35,000
File: KI09A020
Data Sources: *Natural Resources Canada, Geobase®, Nation Topographic Database, AREVA Resources Canada Inc.*

FIGURE 1.0-1
KIGGAVIK MAIN AREA COMPONENTS

SPILL CONTIGENCY PLAN
APPENDIX III

Kiggavik Project

AREVA

AREVA Resources Canada Inc - P.O. Box 9204 - 817 - 45th Street West - Saskatoon, SK - S7K 3X5