

MV2017C0022

DOMINION DIAMOND HOLDINGS LTD

GLOWWORM LAKE PROJECT

SOUTH MACKENZIE DISTRICT, NWT

(NTS SHEETS 76C & 76D)

64°30'00"N to 65°00'00"N

-108°45'00"W to -110°25'00"W

Spill Contingency Plan

May 2017

(Updated: June 20, 2017)

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Purpose and Scope

This spill contingency plan (Plan) has been developed with the purpose of minimizing potential hazards to the environment, people and communities. This plan outlines the proper protocols to follow in order to minimize health & safety hazards, environmental effects and clean-up costs. It also serves as a guide to the duties of responders. All employees and contractors working at the Glowworm Lake Project are required to familiarize themselves with this Plan.

The Dominion Diamond Holdings Ltd. (DDHL) Glowworm Lake exploration project is located near Glowworm Lake, Northwest Territories. The Glowworm Lake Project (the Project) will be operated from the Ekati mine site. A temporary fly camp may also be required from time to time, and in those cases would be located on an extensive glaciofluvial complex located at coordinates of approximately 64°42'N latitude and 109°18'W longitude. There are no roads in the area. The Project location can be only be accessed by float or ski equipped aircraft or helicopter.

This Plan describes the spill contingency measures to be employed at the Glowworm Lake Project.

Introduction

This Plan has been developed in order to formalize the actions taken in the event of a spill of hydrocarbon product or hazardous material. The responsibilities of key personnel are defined, along with procedures for spill response that will minimize hazards to health & safety, damage to the environment and clean-up costs. This plan has been prepared in order to provide easy access to the required information needed for spill response.

Equipment and machinery that may be used in the Glowworm Lake area include snow machines, ATV's, helicopters and various fixed-wing aircraft on floats or ski-wheels as well as small powered equipment such as electric generators, water pumps, ice augers and power tools. There are also cook stoves, heating stoves and water heaters. Fuel types used by these items include Jet A, Jet-B, gasoline, diesel and propane. Other materials used will include lubricants and hydraulic fluids.

Spill Management

Spill occurrence and potential impacts will be minimized by the following:

- a) Daily inspections of fuel caches and transfer points.
- b) The use of drip pans and/or absorbent materials at transfer points and under stationary equipment.
- c) Ensuring personnel are trained in proper fuel handling and spill response procedures.
- d) Regular inspections of fuel slinging gear by helicopter crew.
- e) Placement of spill kits near potential spill sources.

Spill Procedure

Initial Response

When a potential spill has been identified, the following steps will be followed:

- a) Assess personal safety and identify material spilled.
- b) Refer to MSDS sheets.
- c) Determine immediate hazards.
- d) Communicate to all on-site personnel.
- e) Secure the site.
- f) Remove potential ignition sources (if safe to do so).
- g) Determine if the spill can be controlled or stopped.

Minor Spill

- a) Stop or contain spill (if safe to do so).
- b) Ensure spill does not enter any water bodies.
- c) Document spill date, type and outcomes.
- d) Notify Operations Manager.

Major Spill

- a) Stop or contain spill (if safe to do so).
- b) Ensure spill does not enter any water bodies.
- c) Remove potential ignition sources (if safe to do so).
- d) Document the situation:
 - i. Identifier's name
 - ii. Date, time and location
 - iii. Material type and spill quantity
 - iv. Cause of spill (if possible)
 - v. Weather conditions
 - vi. Immediate hazards (human or environmental)
 - vii. Safety issues to be dealt with prior to action (safety, PPE, ignition sources)
- e) Contact Operations Manager, identify location and request assistance.
- f) Operations Manager contacts NWT Spill Report Line and completes Spill Report Form.
- g) All responders will act to contain or stop the spill and clean up any contaminants.

Personnel & Responsibilities

- Pilots – Report any spills or leaks associated with aircraft operations directly to Operations Manager. Regularly inspect fuel slinging gear.
- Site Maintenance Personnel – Check & document fuel storage containers for leaks or damage on a daily basis. Make sure spill kits are properly supplied and up to date. Report any leaks or spills directly to Operations Manager.
- Operations Manager – When spills or leaks are detected, ensure safety of humans and the environment, and assess the situation. Communicate to other personnel (if necessary), call in emergency personnel (if necessary), and document and report spill to relevant authorities.

Action Plan

The most likely locations for a spill to occur are:

- a) Storage areas.
- b) Aircraft refueling stations.
- c) Drill sites.
- d) Equipment using fuel.

Preventative measures include daily checks and documentation of fuel storage areas. Regular inspection and maintenance of fuel transfer equipment. Personnel training in spill response. Review and critique of any spill response events.

Spills on Land (rock, soil, gravel and vegetation)

Equipment required may include absorbent material, tarps, pumps and hoses. Containment and clean-up may consist of the following activities:

- a) Identify the source.
- b) If possible and safe, contain the spill at the source.
- c) Stop any filling operations if the receiving container is leaking.
- d) Check valves and seals. Stop using valves if leaking.
- e) Transfer fuels out of leaking containers.
- f) Place impermeable material and absorbent material below the leak to minimize seepage.
- g) Land spills can be contained and cleaned up using the following methods:
 - i. Create a soil berm down slope of leaking material. In winter a snow berm and impermeable liner may be used.
 - ii. Place impermeable material at the foot of and over top of the berm to allow pooling of leaked material.
 - iii. Use appropriate absorbent material to soak up the fuel. It may also be used to transfer fuel into drums or pails for re-use of the pads. Larger quantities of fuel may be pumped into empty drums.
 - iv. Use a light covering of absorbent material to remove films of petroleum products.
 - v. In winter, contaminated snow or ice should be moved into drums or on impermeable material.
 - vi. Material must be transported to an approved disposal/recovery site.
 - vii. Where safe and with regulatory approval, in situ combustion may be used as a disposal method.
 - viii. Disposal on land is only to occur with the explicit approval of the appropriate authorities.
- h) Snow spills can be contained and cleaned up using the following methods:
 - i. Construct a trench or ditch to channel and control the flow of spilled product.
 - ii. Compact any snow lying along the outside perimeter of the control ditch.
 - iii. Construct a snow dike or dam.
 - iv. Use impermeable lining material to create an impervious barrier.
 - v. Locate the topographic lowest point of the spill area and create snow channels to direct unabsorbed material away from water courses.
 - vi. Collect the spilled material for disposal.
 - vii. Where safe and with regulatory approval, in situ combustion may be used as a disposal method.
 - viii. Residues left from controlled combustion of spilled material must be packaged and properly disposed.

- i) Ice spills can be contained and cleaned up using the following methods:
 - i. Contain the spill using the methods mentioned above for snow.
 - ii. Prevent spilled material from penetrating ice and entering water.
 - iii. Remove any contaminated material quickly.
 - iv. Containment is challenging if material gets under the ice.
 - v. Use an auger to locate material that has seeped under ice.
 - vi. Cut slots with chain saws and remove blocks.
 - vii. Use suction hose if available to clean up spill.
 - viii. Disposal by in situ combustion is allowed with approval from relevant regulatory authority.

Spills on Water

Containment and clean-up may consist of the following:

- a) Use of specialized absorbent pads for containing spills on water.
- b) Liquids lighter than water may be contained with booms or absorbent material then removed with a skimmer.
- c) Containment booms will minimize area affected by spill.
- d) Absorbent booms should be used to encircle and absorb spilled material.
- e) Contact the appropriate government agency prior to the use of chemical treatments.
- f) Document the incident.
- g) Contact the Operations Manager who will call the NWT Spill Report Line.
- h) Complete remediation as advised by government authorities.

Chemical Spills

Containment and clean-up may consist of the following:

- a) Assess the hazard of the spilled material using MSDS.
- b) Emergency responders susceptible to certain situations should be replaced.
- c) Assemble the appropriate PPE & safety equipment before response.
- d) Apply absorbent pads to soak up any liquids.
- e) Place impermeable sheeting over dry chemicals to prevent wind dispersion and wildlife interaction.
- f) Neutralize acids or caustics then package clean up materials in an empty fuel drum for disposal.
- g) Contact the 24 Hour Spill Report Line (867) 920-8130 for additional instructions on disposal methods and locations.

Disposal

Disposal of contaminated materials associated with the containment and clean-up of spills may consist of the following:

- a) Contaminated absorbent pads should be placed in a container for later burning. All fuel soaked material must be incinerated in a timely manner.
- b) Contaminated soil or vegetation will be placed on impermeable liners and burned (if appropriate) or packaged and backhauled.

Training Programs

All personnel will be trained in spill response, spill response resources on site and this contingency plan as follows:

- a) Upon hiring and once per season thereafter.
- b) Reviewed and updated after an incident.
- c) Upon renewal of equipment.
- d) An emergency drill will be conducted and fully documented once per season.

Resources

Spill Kits

Spill kits will be located at each remote drill location, as well as near any fuel cache and refueling station, and within the temporary camp if constructed. Spill kits will generally include the following:

- a) Tyvek splash suit(s)
- b) Chemical resistant gloves (min. = 2 pair)
- c) 10 large garbage bags with ties
- d) Oil only booms (5"x 10') (min. = 1)
- e) Oil only mats (16"x 20") (min. = 25)
- f) Sorbent socks (min. = 2)
- g) Sorbent pads (min. = 5)
- h) 2 Large Tarps
- i) 1 roll Duct or Tuck tape
- j) 1 utility knife
- k) Notebook and pencil
- l) Copy of these guidelines
- m) Aluminum scoop shovels (min. = 2)

Site Resources

In addition to spill kits, equipment that may be available on site for use during a spill may include:

- a) Hand tools
- b) Wheel barrow
- c) Absorbent pads
- d) Water
- e) PPE
- f) First Aid
- g) Satellite Telephone

- h) Helicopter
- i) Fixed Wing aircraft
- j) Snow Machines
- k) Boat

Off-site Resources

Dominion Diamond (Head Office)	(403) 910-1933
KBL Environmental Ltd.	(867) 873-5263
NWT Spill Report Line (24 Hour)	(867) 920-8130
(Fax)	(867) 873-6924
GNWT – Dept of Lands Inspector	(867) 767-9188
	(867) 446-0769
GNWT Environmental Protection	(867) 873-7654
GNWT Environmental Health	(867) 669-8979
RCMP – Yellowknife	(867) 669-1111
Medevac – Yellowknife	(867) 669-4115
Air Tindi – Yellowknife	(867) 669-8218
Acasta Helicopters	(867) 873-3306
Stanton Territorial Hospital	(867) 669-4100

Hazardous Material Information

The following is a list of potentially hazardous materials used for field operations. See labels on containers and/or MSDS for details, spill response and safety advice.

Chemical	Supplier	Container	Hazards
Diesel fuel, P50, P40 with additives	Bassett Petroleum, Matonabee Petroleum	205 litre steel drum, usually black	Fire, explosion, environment
Jet A/B fuel	Bassett Petroleum, Matonabee Petroleum	205 litre steel drum usually blue/yellow	Fire, explosion, environment
Unleaded Gasoline	Bassett Petroleum, Matonabee Petroleum	205 litre steel drum, usually red; 10-25 litre jerry cans	Fire, explosion, environment
Liquefied Propane	Superior Propane	45 kg pressurized cylinder	Fire, explosion
Hydraulic oil	Mobil Oil	1 litre container	Fire, environment
Lubricants	Various	1 litre container	Fire, environment
Battery acid	Various	Batteries	Burn, corrosion, environment
Kerosene	Canadian Tire	5 litre container	Fire, explosion, environment

Hazardous Materials, Potential Discharge Events/Volumes & Direction

(from Guidelines for Spill Contingency Planning – I Water Resources)

Material	Discharge Event	Discharge Volume (Worst Case)	Direction of Discharge
DIESEL (oil stoves, generator, drill)	<ol style="list-style-type: none"> 1. Minor leak from fuel drum 2. Large puncture, fast leaking drum 3. Leaking connection from drum to equipment 4. All drums punctured at once (highly unlikely) 5. Leak from generator 6. Leak from hose during refilling 	<205 l (Max. 30,750 litres = 150 drums)	Fuel cache or camp structures with potential ground infiltration to drainage network
JET Fuel (helicopter, fixed-wing turbine aircraft)	<ol style="list-style-type: none"> 1. Fuel transfer overfill 2. Drum or hose leak during fuel transfer 3. Minor leak from fuel drum 4. Large puncture, fast leaking drum 5. All drums punctured at once (highly unlikely) 	<205 l (Max. 24,600 litres = 120 drums)	Fuel cache or refuel area with potential ground infiltration to drainage network
GASOLINE (ATV's, snow machines, small generators)	<ol style="list-style-type: none"> 1. Fuel transfer overfill 2. Drum or hose leak during fuel transfer 3. Minor leak from fuel drum 4. Large puncture, fast leaking drum 5. All drums punctured at once (highly unlikely) 	<205 l (Max. 2,050 litres = 10 drums)	Fuel cache or refuel area with potential ground infiltration to drainage network
PROPANE (kitchen stove, water heater)	<ol style="list-style-type: none"> 1. Leak during connect or disconnect. 2. Minor cylinder leak. 3. Large puncture, fast leaking cylinder. 4. All cylinders punctured (highly unlikely) 	<45 kg (Max. 900 kg = 10 cylinders)	Heavier than air settlement to low areas in camp with potential ground infiltration to drainage network

Please familiarize yourself with these possible scenarios and act appropriately if detected.

Immediately Reportable Quantities for NWT Spills

Note: L = litre; kg = kilogram; PCB = Polychlorinated Biphenyls; ppm = parts per million

Substance	Immediately Reportable Quantity	TDG Class
Explosives	Any amount	1.0
Compressed gas (toxic/corrosive)		2.3/2.4
Infectious substances		6.2
Sewage and Wastewater (unless otherwise authorized)		6.2
Radioactive materials		7.0
Unknown substance		None
Compressed gas (Flammable)	Any amount of gas from containers with a capacity greater than 100L	2.1
Compressed gas (Non-corrosive, non-flammable)		2.2
Flammable liquid	≥100 L	3.1/3.2/3.3
Flammable solid	≥ 25 kg	4.1
Substances liable to spontaneous combustion		4.2
Water reactant substances		4.3
Oxidizing substances	≥ 50 L or 50 kg	5.1
Organic peroxides	≥1 L or 1 kg	5.2
Environmentally hazardous substances intended for disposal		9.0
Toxic substances	≥ 5 L or 5 kg	6.1
Corrosive substances		8.0
Miscellaneous products, substances or organisms		9.0

Substance	Immediately Reportable Quantity	TDG Class
PCB mixtures of 5 or more ppm	≥ 0.5 L or 0.5 kg	9.0
Other contaminants--for example, crude oil, drilling fluid, produced water, waste or spent chemicals, used or waste oil, vehicle fluids, wastewater.	≥ 100 L or 100 kg	None
Sour natural gas (i.e., contains H ₂ S) Sweet natural gas	Uncontrolled release or sustained flow of 10 minutes or more	None
Flammable liquid Vehicle fluid	≥ 20 L When released on a frozen water body that is being used as a working surface	3.1/3.2/3.3 None
Reported releases or potential releases of any size that: are near or in an open water body; are near or in a designated sensitive environment or habitat; Pose an imminent threat to human health or safety; or Pose an imminent threat to a listed species at risk or its critical habitat	Any amount	None