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HAZCO ENVIRONMENTAL SERVICES



Unipkat I-22

Waste Management Plan 2011

Kevin Erickson

3/01/2011

Revision 3

Waste Management plan for waste generated from the remediation of Unipkat I-22.

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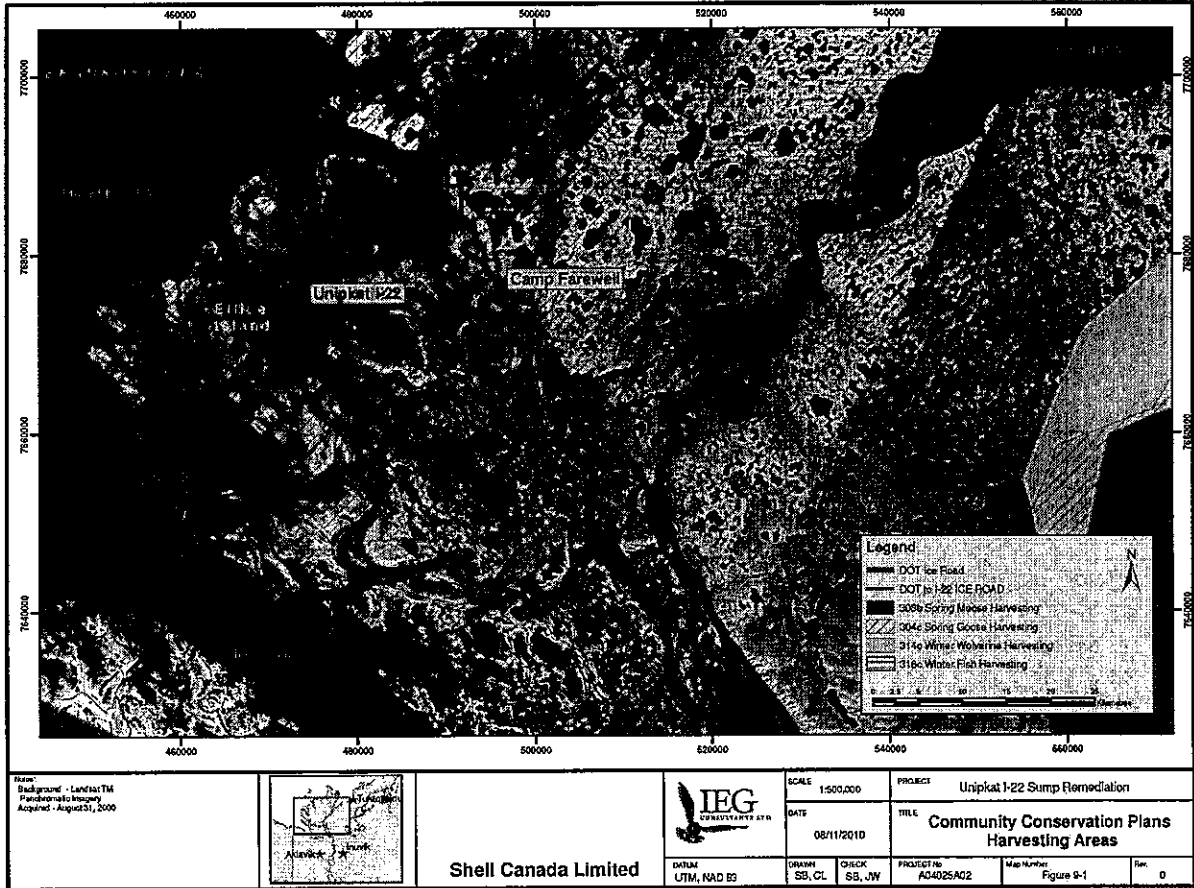
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TITLE: 2011 WASTE MANAGEMENT PLAN FOR UNIPKAT I-22



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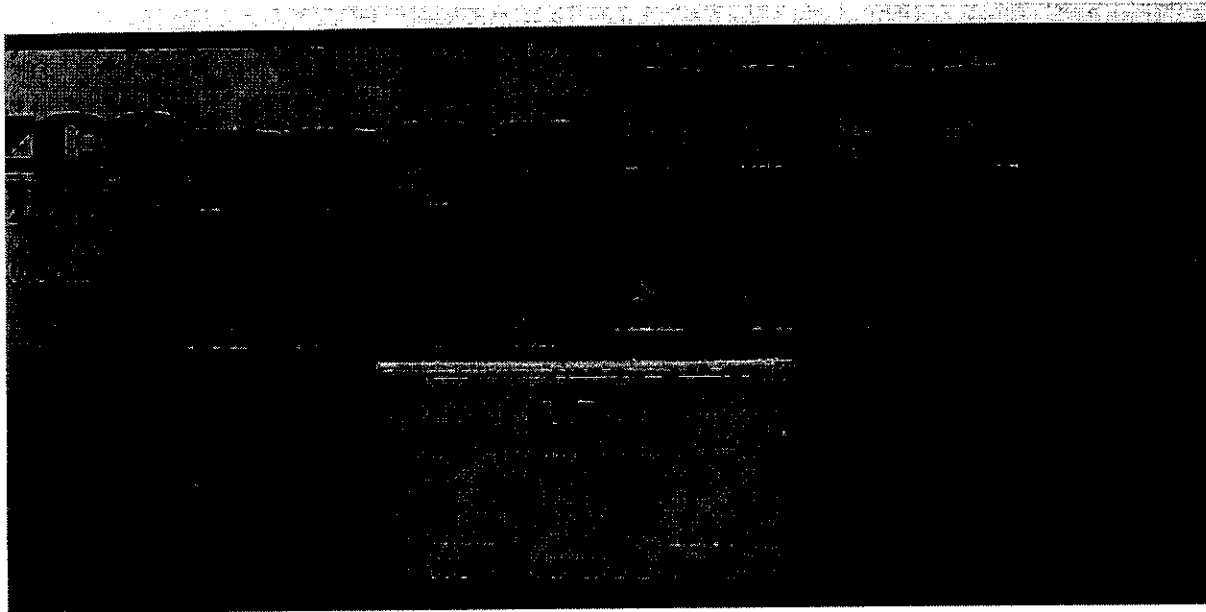
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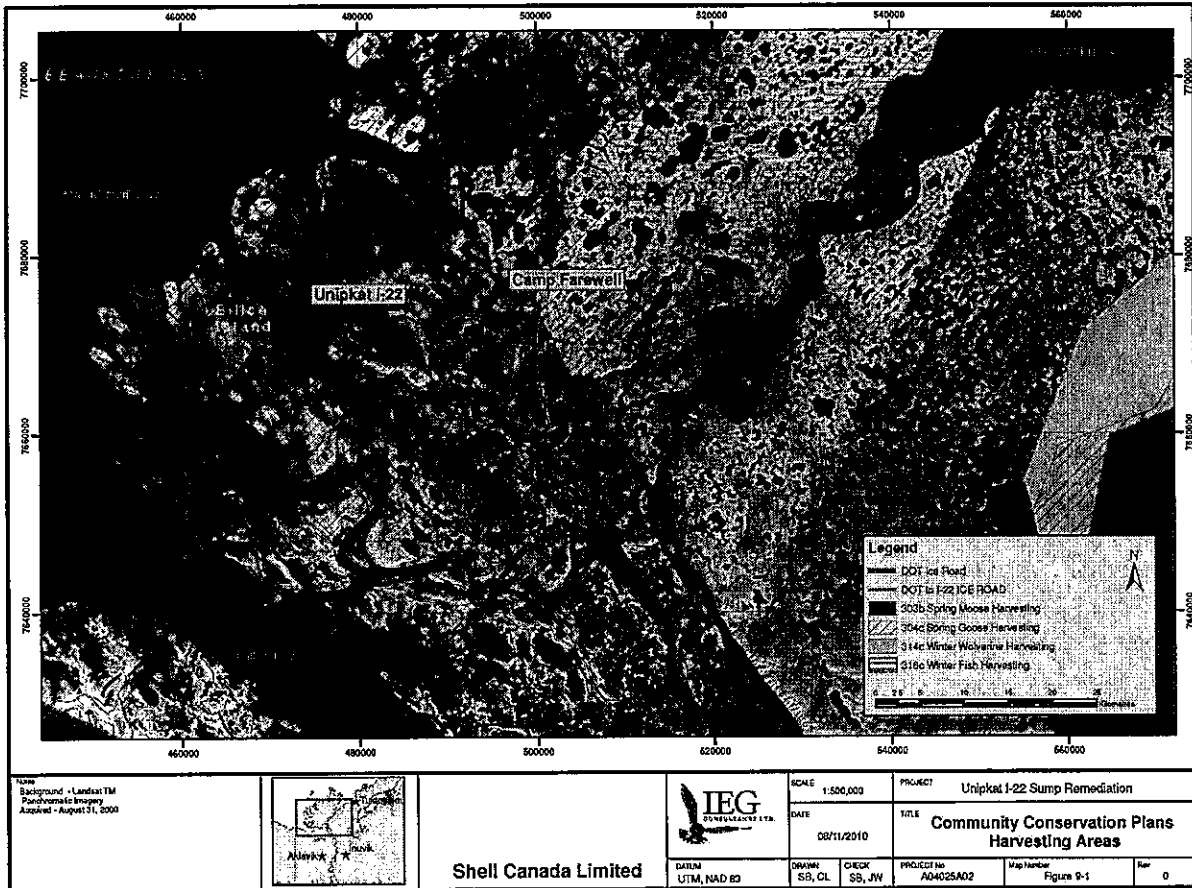
DISPOSAL AND REGULATORY APPROVAL

- i. HAZCO to manage all necessary landfill waste approval applications for Shell.
- ii. HAZCO will manage all transportation, manifesting and document distribution on behalf of Shell.
- iii. All information gathered to be transmitted to IEG for final inclusion in summary report.



LOCATION

- i. The Shell Unipkat I-22 site is located within the Inuvialuit Settlement Region (ISR) along the eastern bank of the Arvoknar Channel in the Mackenzie Delta, Northwest Territories. Site location coordinates are latitude 69° 11' 36.07" N and longitude 135° 20' 33.88" W, (UTM 0486531.5 E, 7675777.0 N NAD 83 (zone 8)). It is approximately 115 km Northwest of Inuvik and approximately 95 km south west of Tuktoyaktuk.



PROJECT SUMMARY

Shell proposes to conduct a sump remediation program at the former well site between January 2011 and April 2011. The Primary goal of the remediation program is to remove approximately 3000 m³ of the main drilling sump and surrounding petroleum hydrocarbon affected soil from the site.

In brief, the sump remediation will involve the following activities:

- Building approximately 50 km of ice road from the Department of Transport road at BAR-C to the Unipkat I-22 site;
- Mobilizing heavy machinery, fuel, and sleigh camp to the site;
- Supply and operation of approximately 25 person sleigh camp;
- Stripping and stockpiling clean soil on the site;
- Excavation of approximately 3000 m³ of frozen sump material and hydrocarbon affected soil using an Ironwolf grinding attachment on a D-8 bulldozer.
- Loading and trucking sump material and PHC affected soil from the site to Inuvik;
- Temporary stockpiling of affected soil in a treatment cell in Inuvik;
- Confirmatory soil testing;
- Re-contouring of excavation with local topography
- Demobilization from site of all infrastructure and generated waste;
- Transport and disposal (at southern landfill) of the drilling waste; and,
- Treatment by Allu-bucket of soil remaining in the Inuvik treatment cell and allowing for periodic testing for compliance.

Trucking via ice road will be used to transport all infrastructure and personnel. It is anticipated that air transport will not be required. Camp accommodations will be provided onsite. Water for the camp will be supplied from Inuvik and all domestic waste will be collected and transported to Inuvik for disposal.

The transport of soil from Inuvik to a southern landfill will occur during the summer of 2011 and will be completed prior to 180 days in the temporary storage cell. All activities at the site will occur during the winter months.

HAZCO ENVIRONMENTAL POLICIES

Hazco is committed to providing our customers with the best environmentally and economically responsible solutions for the recycle reuse reduction, stabilization, disposal and project service options available.

We will:

- ◆ Respond quickly and effectively to incidents resulting from client and/or our own operations, cooperating at all times with the client, industry organizations and authorized government agencies.
- ◆ Emphasize individual responsibility and require everyone throughout the organization to adhere to clearly defined environmental and safety practices and procedures.
- ◆ Responsibly manage all aspects of our business to ensure that all recognized environmental and legal standards are met and surpassed.
- ◆ Take all reasonable steps to communicate environmental practices and options to employees, customers and others.
- ◆ Ensure that environmental hazards with company activities are identified, assessed and managed.
- ◆ Adopt company standards and practices that meet and/or exceed regulations, apply continuous improvement to identify and improve options and performance.
- ◆ Manage our business with the goal of preventing incidents and controlling emissions and wastes by designing, operating and maintaining effective procedures, equipment and facilities.
- ◆ Integrate all environmental considerations in business planning, facilities design, product design, R & D, operating practices and training programs.
- ◆ Work with clients, industry associations, governments and others to interpret and develop regulations, practices, procedures and other relevant standards to the benefit of our service and operations and thus to the benefit of our clients.
- ◆ Conduct research and development to improve recycle, reuse, reduction, disposal, and project service options available.
- ◆ Undertake appropriate reviews, evaluations and performance measurements of our operations to ensure compliance with this environmental policy.

OVERVIEW

The company will ensure all hazardous products offered for transport or accepted from a carrier are transported safely. The requirements of the Clear Language Transportation of Dangerous Goods Act and associated regulations are to be complied with at all times by Hazco personnel.

1 Completion of Waste Manifest Forms for Sump Material

The Hazco on-site Supervisor with the assistance of Hazco's Regulatory affairs department will be responsible for completing waste manifest forms. Manifests for each load will be completed immediately prior to loading of any sump material into transportation vehicles. All loads leaving the site will have a manifest completed by Hazco, and reviewed and signed by Shell Canada's on-site representative (IEG).

1.1 Clear Language Transportation of Dangerous Goods (TDG)

Dangerous goods are potentially hazardous materials such as explosives, compressed and liquefied gases, flammable liquids and solids, oxidizing materials, and other substances that are poisonous, infectious, radioactive or corrosive.

The Clear Language Transportation of Dangerous Goods Act exists to protect people, the environment, or property, when these goods are being transported by road, rail, sea or air. Each party involved with the handling of dangerous goods (shippers, transporters, supervisors, and receivers) must be trained in the transport of dangerous goods and are responsible for ensuring that the shipment of dangerous goods complies with federal, provincial, and municipal by-laws. Any fines or lawsuits are the responsibility of those failing to comply.

1.2 Waste Handling Procedures

1.21 On-site Supervisors shall ensure that;

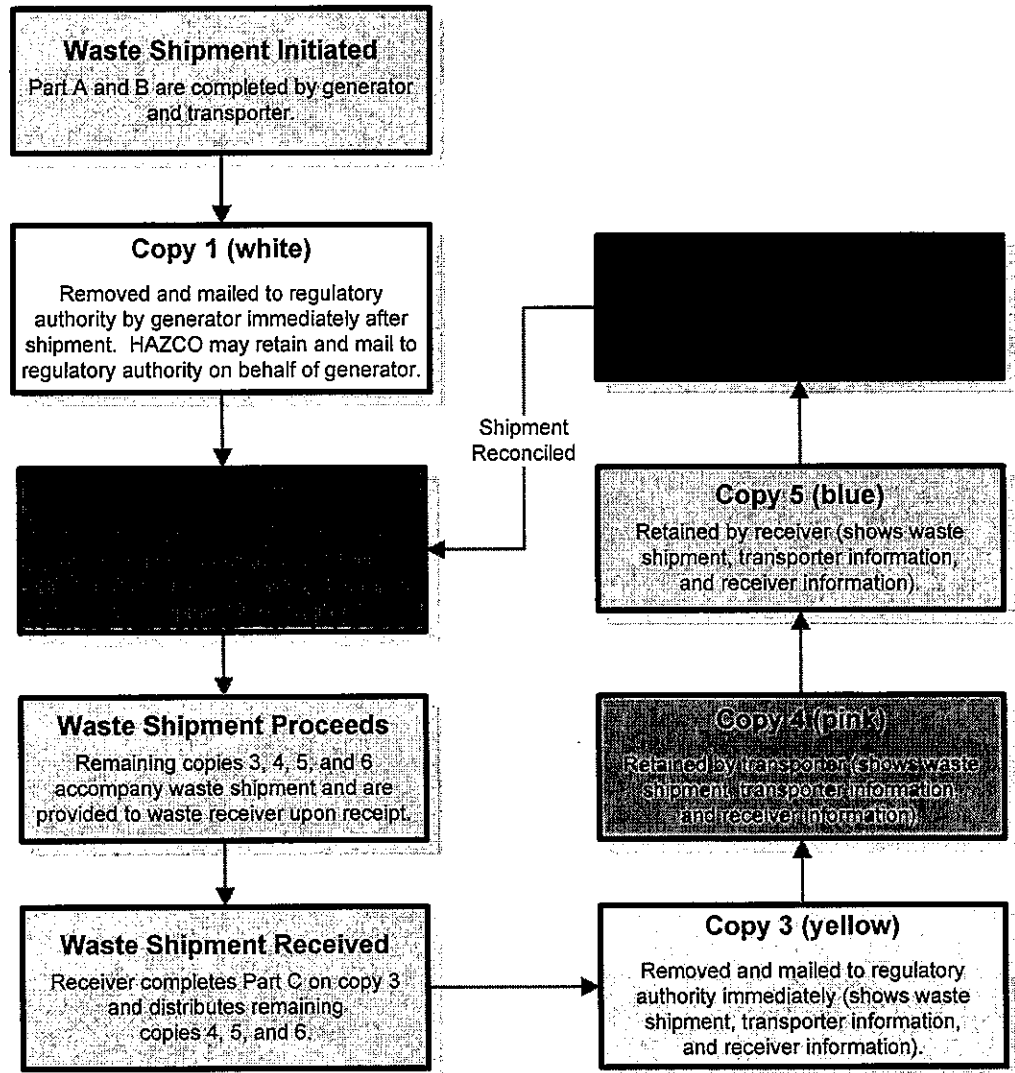
- ◆ All personnel transporting hazardous materials are trained in TDG and have received their TDG Training Certification;
- ◆ All required manifests are completed for all shipments of waste and/or dangerous goods; and
- ◆ All Waste Manifests are completed when transporting sump material.

1.22 Personnel shall ensure that;

- ☑ They are always in possession of their TDG Training Certificate.
- ☑ Their training is current.
- ☑ In accordance with Transportation of Dangerous Goods Regulations, all Dangerous Goods that are transported will be documented with a Federal TDG manifest.
- ☑ Each trailer carrying Dangerous Goods will clearly identify the load as a Dangerous Goods, and display the appropriate UN placards on all four (4) sides of the trailer.
- ☑ Hazco completes the manifest on behalf of Shell, and a Shell representative WILL review and sign the document. HAZCO's copies of shipping documents are stored at HAZCO's main office in Calgary, and are retained for a minimum of five (5) years. All original federal manifest copies (2 and 6) are retained by Shell Canada Energy.
- ☑ Once the transported load is delivered to the end disposal facility, the Federal TDG Manifest will have Part C completed. All incoming load documents are signed and distributed. The carrier copy is filed with the driver's load sheet and the consignee copies are kept in the main document file in chronological order.
- ◆ Hazco will distribute the appropriate copies of documents to all regulatory agencies on behalf of Shell Canada Energy. This service ensures that all paperwork is handled and distributed properly and that Shell does not have to set up and manage an administrative procedure for each field location.

- ◆ Flow chart of **HAZARDOUS WASTE MANIFEST/MOVEMENT DOCUMENT DISTRIBUTION**

HAZARDOUS WASTE MANIFEST/MOVEMENT DOCUMENT DISTRIBUTION



- ◆ **Note:** For movement of hazardous waste from one province to another BOTH the originating province and receiving province require a copy of Copy 1 and Copy 3.

1.3 Loading and Securing

A person must load and secure dangerous goods in a means of containment and must load and secure the means of containment on a means of transport in such a way as to prevent, under normal conditions of transport, damage to the means of containment or to the means of transport that could lead to an accidental release of the dangerous goods.

2.0 Methods Used to Ensure Compliance with Federal and Provincial Laws & Regulations

Hazco has full-time regulatory affairs specialists whose responsibilities include familiarizing employees and customers with the relevant regulations associated with waste management, and ensuring that Hazco stays abreast of the constantly changing regulatory environment. This expertise is provided to our customers free of charge.

The regulations and documents which are used to manage wastes for storage, transportation, recycling, treatment and disposal, include the following:

- Canadian Transportation of Dangerous Goods Act and Regulations
- Environment Canada Regulations
- Canadian Provincial Regulations
- United States Department of Transportation Regulations
- United States EPA Regulations
- United States, State Regulations
- All other regulations or codes of practice that are relevant to the nature of the waste material or the proposed jurisdiction of process/treatment/disposal (i.e.: CEPA, CFR 40, SWANA Code of Practice for Landfills, OSHA, Draft Guidelines for Landfills in Alberta, etc.)

3.0 WASTE MANAGEMENT PLAN

3.1 Construction of Ice Road

- No waste is expected to be generated from the construction of the ice road. In the event of an oil leak, the spill will be contained and the material will be scraped up and put into an approved container for disposal at an appropriate location. The spill will be reported, if applicable, to the appropriate regulators as soon as possible (Northwest Territories Spill Control Regulations 1-867-920-8130) and personnel indicated in the REPORTING Section.

3.2 Mobilization of Heavy equipment, fuel and camp

In the event of a spill or leak during the mobilization of equipment, fuel and camp. Material in question will be contained and material scrapped up, put into an approved container and disposed of at an appropriate location. Spill will be

reported to the appropriate regulators as soon as possible (Northwest Territories Spill Control Regulations 1-867-920-8130) and personnel indicated in the REPORTING Section.

3.3 Camp Waste and Debris from Operations

3.3.1 Material generated from the operations of the 25 man camp for the Unipkat I-22 project are as follows:

3.3.2 Grey water/sewage from washrooms and kitchen. Grey water and sewage will be stored on site in a 3000 gallon storage tank. Estimated daily volumes will be approximately 750 gallons per day and will have a capacity of 4 days. Sewage and grey water will be transported by Vac truck from the Unipkat I-22 site to the Town of Inuvik sewage lagoon where it will be disposed. HAZCO waste docket will be utilized to track volumes of waste hauled to the Town of Inuvik sewage lagoon. In the event that conditions prevent a Vac truck from removing material from the site, a water management plan will be initiated to reduce the amount of grey water produced from camp operations.

3.3.3 Kitchen waste and general refuse. Kitchen waste and general refuse will be stored on site in a badger bin to prevent odors from attracting wildlife from getting into garbage. The wildlife monitor will ensure that animals in the area are observed and deterred from entering the camp. Badger bin will be loaded out at the end of the project and the garbage will be disposed of at the Inuvik landfill. HAZCO waste docket will be utilized to track material hauled to the Inuvik landfill. There will be no Hazardous waste expected to be generated from the camp operations. If a hazardous waste is identified at the camp it would be packaged in the appropriate container for the waste and disposed of at an approved facility (i.e.: HAZCO transfer station, Edmonton, Alberta).

3.4 Trucking Sump Material from Unipkat I-22 to Inuvik

3.4.1 Sump material will be loaded onto end dump trucks which will be tarped and end gates bolted shut. Material will be shipped from the Unipkat I-22 site and transported to the Temporary storage cell in Inuvik. Each truck will be manifested with HAZCO Waste docket, to track material being transported from Unipkat I-22 to the Temporary Storage Cell in Inuvik. Trucks will scale to determine an average weight for each truck hauling sump material. Random checks will be done during the course of hauling to ensure the accuracy of weights is acceptable to Shell Canada. After hauling is complete, the total volume of sump material will be documented and forwarded to Shell Canada for its records. In the event of a spill the Transport emergency response plan will be activated by the Transportation Emergency Response Manager (as per attached, schedule A).

3.5 Storage Cell in Inuvik

3.5.1 Sump material will be contained in the Temporary storage Cell in Inuvik. Material will be dewatered over the course of the summer by the use of an excavator which will mix

the sump material to evaporate off water. The cell will be monitored on a daily basis to ensure that no water accumulates to excessive levels due to a rain storm or warm conditions that may increase the melting of permafrost in the sump material. Water collecting in the temporary storage cell will be transferred by a 2" pump to a storage tank located next to the treatment cell where it will be treated by an activated carbon system designed to remove hydrocarbons. Once the water has been treated it will be analyzed to ensure that it passes CCME discharge criteria. If the treated water passes all CCME guidelines it will be ran through an evaporator and remaining sediment will be hauled to the Class II landfill in BC. Under no circumstances will water be discharged into the Town of Inuvik's Water treatment system or Lagoons.

3.5.2 Once Sump material is capable of passing a paint filter test it will be transported to a secure landfill located in BC (CCS Ft. Nelson). Trucks will have proper manifests according to the classification of material and be weighed to determine actual volumes of sump material disposed of at the BC secure landfill. Once hauling is completed a summary will be provided to Shell Canada for their records. The Transportation Emergency Response Plan will be utilized if there is an incident or spill during the transport of material from Inuvik to the BC landfill.

3.5.3 Berm material from Temporary Storage Cell. All material that made up the temporary storage cell will be analyzed and disposed of at an appropriate facility. The sand barrier that covers the Arctic Liner will be sampled and disposed of at the Inuvik Landfill as daily cover if below CCME guidelines or taken to a landfill in BC if above criteria. Arctic Liner will be disposed of at the Inuvik landfill and clean material from the temporary storage cell that made up the berm will be utilized by MDIOS to re-grade their yard.

REPORTING

- Spills will be reported to Environmental Spill Control 1-867-920-8130, HAZCO Transportation Emergency response Manager (Marc St. Pierre) 1-403-998-8014, HAZCO Project Manager (Kevin Erickson) 1-587-888-0761, Shell Canada Energy Manager DAR group (Randall Warren) 1-403-813-0408.
- Unipkat I-22 sump volume removed and transported to temporary storage cell in Inuvik will be reported to Shell Canada and IEG.
- Waste generated from the camp facilities at Unipkat I-22 will be reported to Shell Canada and IEG.
- Water treated from temporary storage cell in Inuvik will be reported to Shell Canada and IEG.
- Sump volume transported to CCS Ft. Nelson class II landfill from Inuvik temporary storage cell will be reported to Shell Canada and IEG.

Schedule A

TRANSPORT EMERGENCY RESPONSE PLAN

Unipkat I-22 – INUVIK HAUL

Project	Unipkat I-22 SHELL CANADA LTD
Proposed Haul Route	Unipkat I-22 to Inuvik (Arvoknar Channel)
Ambulance	1-867-777-4444
Police	1-867-777-1111
Fire Department	1-867-777-2222
Client / Owner	Shell Canada Ltd. Randall Warren, 1-403-691-2521(office),1-403-813-0408 (cell), 1-403-284-2662 (home)
Client / Owner Supervisor	Shell Supervisor: Randy Ambler 1-780-645-1499 (cell)
Hazco Site Supervisor	Norm Watwood 1-403-850-0540 Satellite Phone:
Transportation Emergency Response Manager	Marc St Pierre 1-403-998-8014 (C)
Hazco Regional Safety	Robert Watt 1-403-828-0912 (C) 1-403-273-8591 (H)
Hazco Field Health & Safety	Marc St Pierre 1-403-998-8014 (C)
Hazco Project Manager	Kevin Erickson 1-587-888-0761(C)
Environmental Spill Control	1-867-920-8130
Hazco Emergency Contact	1-800-667-0444
MDIOS CONTACT	KURT WAINMANN 1-867-678-0777

A. TRANSPORTATION EMERGENCY RESPONSE

- In the event of a trucking accident or spill:
- Check for injured persons and lend assistance where required.
- Contact site Supervisor as soon as possible (site EMT may be dispatched if accident is closer than Emergency Medical Services)
- Two spill response barrels will be available one at site and one in Inuvik upon receiving call the one nearest the spill will respond.
- **Phone Emergency Medical Services (1-867-777-4444) and/or Police (1-867-777-1111) Fire (1-867-777-2222) as required.**
- **Call, Hazco Transportation Emergency Response Manager; 1-403-998-8014 or (Satellite) Hazco Emergency number 1-800-667-0444.**
- Emergency Response Manager will report the spill as per the Northwest Territories Spill Control Regulations **1-867-920-8130.**
- Be prepared to provide;
 - Name and Company (and who you are hauling for)
 - Location and time of release
 - A description of the circumstances leading to the release
 - The type and quantity of the material released
 - The details of any action proposed or taken at the release site
 - A description of the immediate surrounding area
 - Site from which you left
 - Description of accident
 - Phone number
- Remove manifest from truck and retain to give to the attending emergency authorities.
- Keep unauthorized people away from area.
- Set up traffic warning devices.
- Drip trays will be used on all vehicles & equipment if parked for longer than 30 minutes.
- Attempt to contain the material until Unipkat personnel can arrive at site with spill response equipment supplied in the Nuisance spill container #3 from Delta spill response at site. Await Police and emergency spill response personnel arrival.
- After site securement and investigation, make arrangements to move the vehicle to safe area.
- Await further instructions from Hazco Management.
- Perform a thorough incident investigation as soon as possible, with corrective recommendations implemented immediately.

- Review incident findings with workers at the next Safety Meeting or right away and update Hazco Project Manager on closure of follow up actions.

FLAT TIRE EMERGENCY RESPONSE PLAN

Unipkat I-22 – INUVIK HAUL

Project	Unipkat I-22 SHELL CANADA LTD
Proposed haul route	Unipkat I-22 to Inuvik
Ambulance	1-867-777-4444 and or 1-867-777-8000
Police	1-867-777-1111
Fire Department	1-867-777-2222
Client / Owner	Shell Canada Ltd. 1-403-813-0408
Hazco Site Supervisor	Norm Watwood 1-403-850-0540 Satellite Phone:
Transportation Emergency Response Manager	Marc St Pierre 1-403-998-8014 (C)
Hazco Regional Safety	Robert Watt 1-403-828-0912 (C) 1-403-273-8591 (H)
Hazco Field Health & Safety	Marc St Pierre 1-403-998-8014
Hazco Project Manager	Kevin Erickson 1-587-888-0761
Environmental Spill Control	1-867-920-8130
Hazco Emergency Contact	1-800-667-0444
MDIOS CONTACT	KURT WAINMANN 1-867-678-0777 or 1-867-777-2426

A. FLAT TIRE EMERGENCY RESPONSE

- In the event of a flat tire:
- Radio all vehicles and inform everyone of location,
- **Pull off to the side of the road to a safe area**
- **Call, Hazco Transportation Emergency Response Manager; 1-403-998-8014 or (Satellite) Hazco Emergency number 1-800-997-0444 or radio on Journey Management system (Northwind Industries Channels, depending on location).**
- Emergency Response Manager will phone Tire Repair company if required (Northwind Tire- Kurt Wainman)
- Put out reflective triangles
- Secure vehicle by applying parking brake or blocking tires
- Drip trays will be used on all vehicles & equipment if parked for longer than 30 minutes.
- Ensure lifting device is on stable ground
- Never put feet or hands in a pinch position
- Drip tray is required under vehicle, place only if conditions allow
- Do not leave vehicle if visibility is less than 10 feet
- Radio in every 1 hour to update status
- Review incident findings with workers at the next Safety Meeting or right away and update Hazco Project Manager on follow up actions.

Spill Contingency Plan (Unipkat I-22)

Project	Unipkat I-22 SHELL CANADA LTD
Proposed haul route	Unipkat I-22 to Inuvik
Ambulance	1-867-777-4444 and or 1-867-777-8000
Police	1-867-777-1111
Fire Department	1-867-777-2222
Client / Owner	Shell Canada Ltd. 1-403-813-0408
Hazco Site Supervisor	Norm Watwood 1-403-850-0540 Satellite Phone:
Transportation Emergency Response Manager	Marc St Pierre 1-403-998-8014 (C)
Hazco Regional Safety	Robert Watt 1-403-828-0912 (C) 1-403-273-8591 (H)
Hazco Field Health & Safety	Marc St Pierre 1-403-998-8014
Hazco Project Manager	Kevin Erickson 1-587-888-0761
Environmental Spill Control	1-867-920-8130
Hazco Emergency Contact	1-800-667-0444
MDIOS CONTACT	KURT WAINMANN 1-867-678-0777 or 1-867-777-2426

SPILL RESPONSE PLAN

- Nuisance spill container #3 from Delta spill response will be hauled to site in case of a spill.
- Drip trays will be used on all vehicles & equipment if parked for longer than 30 minutes.
- Vehicle & equipment inspection checklists will be conducted daily to check for drips or spills.
- Fuel storage tanks on site will be double walled construction.
- In the event of a spill:
- Contact site Supervisor as soon as possible.
- **Call, Hazco Transportation Emergency Response Manager; 1-403-998-8014 or (Satellite) Hazco Emergency number 1-800-667-0444.**
- Emergency Response Manager will report the spill as per the Northwest Territories Spill Control Regulations **1-867-920-8130**
- Be prepared to provide;
 - Name and Company
 - Location and time of release
 - A description of the circumstances leading to the release
 - The type and quantity of the material released
 - The details of any action proposed or taken at the release site
 - A description of the immediate surrounding area
 - Phone number
- Keep unauthorized people away from area.
- Contain the material with spill response equipment supplied in the Nuisance spill container #3 from Delta spill response seacan located at site.
- Clean up spill and remove all affected material from area.
- Await further instructions from Hazco Management.
- Perform a thorough incident investigation as soon as possible, with corrective recommendations implemented immediately.
- Review incident findings with workers at the next Safety Meeting or right away and update Hazco Project Manager on closure of follow up actions.

The purpose of this plan is to outline response actions for potential spills of any size, including a worst case scenario for the Shell site Unipkat I-22. The plan identifies key response personnel and their roles and responsibilities in the event of a spill, as well as the equipment and other

resources available to respond to a spill. It details spill response procedures that will minimize potential health and safety hazards, environmental damage, and clean-up efforts. The plan has been prepared to ensure quick access to all the information required in responding to a spill.
 Effective date of spill contingency plan: February 16th, 2011.
 Last revisions to spill contingency plan: February 28th, 2011.

Distribution List

The plan and the most recent revisions have been distributed to:
 Hazco Environmental – Project Manager, Site Supervisor, HSE Field Supervisor
 Shell Canada – Project Manager, Site Supervisor
 IEG Consultants – Environmental Scientist
 MDIOS – Construction Supervisors (2)
 Northwest Territories Water Board

Additional Copies

5 copies of the plan are kept on-site at all times at the Supervisors room and in the common room where the safety meetings will be conducted. A copy will also be provided to the NWT Water board. Additional copies can be obtained by contacting the company directly at the phone number listed in the spill response plan.

Hazco Environmental Policy: Refer to front of waste management Document.

Project and Site Description: Refer to previous pages

Site Location Map: Review included map

Diagram of camp set up: Review included diagram.

List of hazardous material on site:

Material	Storage Container	Normally Onsite	Maximum Storage Onsite	Location and Uses
Diesel fuel				generator and Equipment fuel

Existing preventative measures:

There will be one fueling area that will be located 30m away from any water body. The fuel truck will be stored a minimum of 30m away from the camp and water body and will be parked in a lined berm area. There will be a spill kit containing absorbent pads, socks, absorbent material, shovel, drip trays, as well as a 20lb fire extinguisher.

On site safety coordinator and/or site supervisor will be doing daily inspections for evidence of leaks, damage to container, liner. Minor spills, discolored snow etc. Drip trays will be used on all vehicles and equipment, daily visual inspections will be done on all equipment and vehicles on site.

Gray water and sewage will be pumped and contained in a storage tank which will be disposed of at the Town of Inuvik lagoon. Pre approval from the Town has been received by IEG Consultants.

Media and public Inquiries:

All inquiries will be directed to the project manager (Kevin Erickson) any onsite visits by media or public will be directed to site supervisor (Norm Watwood) or the safety coordinator (Marc St Pierre).

Response Organization:

In the event of a minor spill (under guideline levels) these procedures will be followed.

- Assess personal safety and safety of other
- Identify spill
- Contact site supervisor and/or site safety coordinator
- Stop spill if safe to do so
- Ensure spill does not enter water bodies
- Document spills on near miss or incident report
- Review incident at next tail gate
- Implement corrective actions to prevent reoccurrence.

In the event of a major spill (over guideline levels) these procedures will be followed.

- Assess personal safety and safety of other
- Identify spill
- Contact site supervisor and/or site safety coordinator
- Stop spill if safe to do so
- Ensure spill does not enter water bodies
- **Notify NWT 24 hour Spill Report line at 867-920-8130**
- Notify Hazco Emergency Contact At 1-800-667-0444
- Contact Project Manager
- Contact Shell Project Manager
- Document an Incident report
- Document an Incident Investigation with corrective actions.

All spill reports will be filled out by on site safety coordinator and forwarded to all appropriate governing bodies and management.

Specific Spill Containment methods:

Containment of Spills on Ice

Spills on ice are generally the easiest spills to contain due to the predominantly impermeable nature of the ice. For small spills, sorbent materials are used to soak up spilled fuel. Remaining contaminated ice/slush can be scraped and shoveled into a plastic bag or barrel. However, all

possible attempts should be made to prevent spills from entering ice covered waters as no easy method exists for containment and recovery of spills if they seep under ice.

Dykes

Dykes can be used to contain fuel spills on ice. By collecting surrounding snow, compacting it and mounding it to form a dyke down slope of the spill, a barrier is created thus helping to contain the spill. If the quantity of spill is fairly large, a plastic tarp can be placed over the dyke such that the spill pools at the base of the dyke. The collected fuel can then be pumped into barrels or collected with sorbent materials.

Trenches

For significant spills on ice, trenches can be cut into the ice surrounding and/or down slope of the spill such that fuel is allowed to pool in the trench. It can then be removed via pump into barrels, collected with sorbent materials, or mixed with snow and shoveled into barrels or bags. Burning should only be considered if other approaches are not feasible, and is only to be undertaken with the permission of the INAC or lead agency Inspector.

Containment of Spills on Snow

Snow is a natural sorbent, thus as with spills on soil, spilled fuel can be more easily recovered. Generally, small spills on snow can be easily cleaned up by raking and shoveling the contaminated snow into plastic bags or empty barrels, and storing these at an approved location.

Dykes

Dykes can be used to contain fuel spills on snow. By compacting snow down slope from the spill, and mounding it to form a dyke, a barrier or berm is created thus helping to contain the spill. If the quantity of spill is fairly large, a plastic tarp can be placed over the dyke such that the spill pools at the base of the dyke. The collected fuel/snow mixture can then be shoveled into barrels or bags, or collected with sorbent materials.

Worst Case Scenarios

Dealing with spilled fuel which exceeds the freeboard of a dyke or barrier would present a possible worst case scenario for the Shell Unipkat site. To contain the overflow a trench or collection pit would have to be created downstream of the spill to contain the overflow. Another worst case scenario would be an excessive spill on water may be difficult to contain with the booms present at the site. In this case, an emergency response mobile unit would have to be called in to deal with the spill using appropriate equipment.

Procedures for transferring, storing, and managing spill related wastes.

In most cases, spill cleanups are initiated at the far end of the spill and contained moving toward the centre of the spill. Sorbent socks and pads are generally used for small spill cleanup. A pump with attached fuel transfer hose can suction spills from leaking containers or large accumulations on land or ice, and direct these larger quantities into empty drums. Hand tools such as cans, shovels, and rakes are also very effective for small spills or hard to reach areas. Heavy equipment can be used if deemed necessary, and given space and time constraints. Used sorbent materials are to be placed in plastic bags for future disposal. All materials mentioned in this section are available in the spill kits located at Camp Unknown. Following clean up, any tools or equipment used will be properly washed and decontaminated, or replaced if this is not possible. For most of the containment procedures outlined in, spilled petroleum products and materials used for containment will be placed into empty waste oil containers and sealed for proper disposal at an approved disposal facility.

ELECTRICAL EQUIPMENT & GENERATORS		
EXTENSION CORDS		
	50'	3
	100'	1
GENERATORS (Gasoline)	Honda Gas Mod. EB3800X	1
LIGHT STAND	Portable, c/w light	2
LIGHTS, HAND	Portable, 500W Halogen	1
	Spare 500W Halogen bulbs	4
FUEL, GAS, OIL, LUBES & ADDITIVES		
ANTI - FREEZE	Gas Line 150 ml	1
DIESEL	5 gall. Jerry Can	1
ENGINE STARTING FLUID	Aerosol	1
GASOLINE	5 gall. Jerry Can	1
GASOLINE (5L)/CHAIN OIL (1.5L) Combi Container		1
MISCELLANEOUS		
ALLEN KEY	Set	1
AXES	Fire, Long Handled	2
BOOSTER CABLES	Pr.	1
BRUSH	Floor, Long Handled	1
CAMERA	Disposable	1
See also Chain Saws in Ice Equipment	Husquvarna Model 340 c/w bar sleeve	1

CHAIN SAW CHAPS		1
CLIPBOARD		2
CONES, TRAFFIC		11
CORD	Sash on reel	1
DECON	Brushes	2
	Trays	3
DELINEATION KIT TUB		1
DETERGENT	20L pail	1
DRUM, 45 gall, steel	45 Gall. c/w removeable lid	3
DRUM, 45 gall, plastic	45 Gall. c/w removeable lid	5
EMERGENCY RESPONSE GUIDE 2008		1
FENCE	Snow, Orange	1
FILES		2
FUNNELS	Large	1
	Small	1
GARBAGE BAGS	Box	1
HACKSAW	c/w spare blades	1
HAMMER	Ball Peen	1
	Claw	1
	Sledge 8 lb.	1
	Sledge 14 lb	1
HEATER	"Reddy", Electric powered, Diesel fuel	1
KIT, GROUNDING & BONDING	Rubbermaid Tub c/w Lid	1
	Steel Spikes	2
	15' Yellow Coated Cable c/w BLACK clamp each end	2

	25' Yellow Coated Cable c/w RED clamp on each end Instruction Card for use of	1
KNIFE	Utility, c/w spare blades	1
LAB SPILL KIT (in 20L Pail c/w Lid)		1
LANTERNS	Hand	6
NAILS	Assorted, In One Gallon Paint can	1
PADLOCKS	Installed on units. Combination type, Programmable, Master Locks on doors. True Value locks on FCP trailer spare tires. Same Combination	2
PAILS	Galv. 2.5 gall, aluminium Plastic, 20L c/w lid	1 1
PAINT	Aerosol Orange	3
PICK		1
PITCH FORKS	"D" Grip	2
PLIERS	Regular Needlenose	1 1
PRY BAR	5'	2
RAKES	Long Handled	3
SCRAPER	Ice	2
SCREWDRIVER	Flat Blade, Large Multi tip	1 1
SHOVELS	Long Handled Scoop, Aluminum, "D" grip Snow	2 4 2

"SMART ASH" BURNER	c/w oil injector pump & manual	1
"SMART ASH" BURNER BASE		
"SMART ASH" FILTERS	Spares	Y
SQUEEGEE	Long Handled	2
TAPE	CAUTION	1
	DANGER	1
	DUCT	2
	ELECTRICAL (ROLLS)	1
TAPE MEASURE	25'	1
	150'	1
TARPAULINS		2
TIN SNIPS		3
TOOL BOX	"Greenlees", fixed in container. Contents listed separately in this inventory	1
TOOL BOX	Portable	1
WIRE	Mechanics (roll)	1
WIRE FLAGS	Bundles	1
WRENCH	Crescent 8"	
	10"	1
	PIPE - 12"	1
	14"	
	18"	1
	24"	1
	Combination Open End Set	
	11, metric	1
	Sparkplug	1
	20 pce 3/8" SAE	1
	17 pce 3/8" Metric Socket	1
SAFETY EQUIPMENT		
GENERAL		

AIR HORN		1
AIR HORN REFILL		1
EMERGENCY KIT	Roadside	2
FIRST AID KIT	10 man #3	1
FIRE EXTINGUISHER	20lb ABC N2 Refillable	2
N2 FIRE EXTINGUISHER BRACKET	N2 Type	2
NITROGEN CARTRIDGES	Fire Extinguishers Spares	2
POWDER, FIRE EXTINGUISHER	Purple K - 50lb Pails	1
SAFETY EQUIPMENT PERSONNEL		
BLANKETS		2
BOOTS, WINTER	Baffin -Size 9 Baffin -Size 11	1 1
COVERALLS, INSULATED	Size XL	5
GOGGLES	Safety	4
GLOVES	Latex 12" Monkey Grip Nitrile, Disposable (Box of 100)	4 12 1
HARDHATS		2
ICE SANDALS	"Korkeez", pr	4
INSECT REPELLANT	"Deep Woods Off", Aerosol	2
RAINWEAR	Extra Large	4
SUNSCREEN	Tubes	2
VESTS	Road, c/w reflective tape	5
SORBENTS		

BOOMS, Oil Only (White)	Sorbent, Bags of 4 (8" x 10')	1
BOOMS, Universal (Gray)	Sorbent, Bags of 4 (8" x 10')	1
GRANULAR		8
OIL SNARES, LOOSE	Pom Poms 30 per bag	2
OIL SNARES ON ROPE	Pom Poms 1 rope per bag	1
PADS	100 Bale, Oil Only (White)	22
	200 Bale, Oil Only (White)	2
	100 Bale, Universal (Gray)	5
ROLLS	Sorbent, Oil Only	3
SOCKS	Bags	2
SAWDUST	Bags	8
TANKS & RELATED EQUIPMENT		
TOTES c/w Lids & Drain Assemblies		
Tote Tank Drain Assemblies	c/w 1.5" drain plug adapter, "O" Ring, 2" DC Kamlock, 2" ball valve, 2" x 1.5" reducer nipple	

Off Site Resources:

All the contacts listed below could reach the site in 2 hours at a minimum. However, realistically government officials may not be able to reach the site until the next business day, depending on the severity of the spill.

Hazco, 24-hour emergency line

1-800-667-0444

NWT 24-Hour spill line

(867) 920-8130

Indian and Northern Affairs Canada Inspector

(867) 669-2761

Environment Canada (Emergency) Yellowknife

(867) 669-4725

GNWT Environmental Protection Division

(867) 873-7654

GNWT Environmental Health Office

(867) 669-8979

RCMP (Inuvik)

(867) 777-1111

Canadian Helicopters Ltd / Inuvialuit Projects Inc

Inuvik, NWT

(867) 777-2424

Training Program

All individuals arriving on-site are required to participate in an orientation session and will receive a copy of the spill response plan. All employees will have obtained certification in Transportation of Dangerous Goods (TDG).



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) 873-5924
 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	REPORT NUMBER _____
	B	OCCURRENCE DATE: MONTH - DAY - YEAR		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 EQUIPMENT	
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"/> COG <input type="checkbox"/> GNWT <input type="checkbox"/> EN <input type="checkbox"/> LA <input type="checkbox"/> INAC <input type="checkbox"/> NES <input type="checkbox"/> DTC				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						

Immediately Reportable Spill Quantities

TDG Class	Substance for NWT 24 Hour Spill Line	Immediately Reportable Quantities
1 2.3 2.4 6.2 7 None	Explosives Compressed gas (toxic) Compressed gas (corrosive) Infectious substances Radioactive Unknown substance	Any amount
2.1 2.2	Compressed gas (flammable) Compressed gas (non-corrosive, non-flammable)	Any amount of gas from containers with a capacity greater than 100 L
3.1 3.2 3.3	Flammable liquids	> 100 L
4.1 4.2 4.3	Flammable solids Spontaneously combustible solids Water reactant	> 25 kg
5.1 9.1	Oxidizing substances Miscellaneous products or substances excluding PCB mixtures	> 50 L or 50 kg
5.2 9.2	Organic peroxides Environmentally hazardous	> 1 L or 1 kg
6.1 8 9.3	Poisonous substances Corrosive substances Dangerous wastes	> 5 L or 5 kg
9.1	PCB mixtures of 5 or more ppm	> 0.5 L or 0.5 kg
None	Other contaminants (e.g. crude oil, drilling fluid, produced water, waste or spent chemicals, used or waste oil, vehicle fluids, waste water, etc.)	> 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

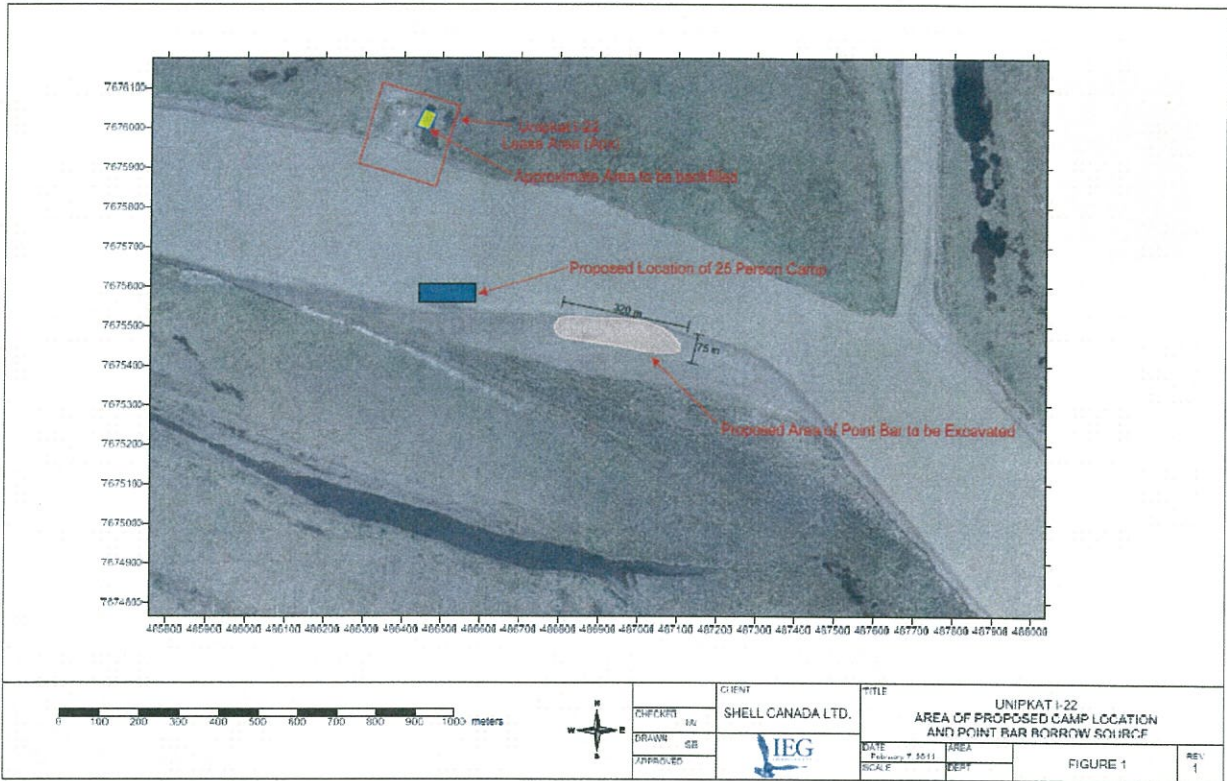
In addition, all releases of harmful substances, regardless of quantity, are to be reported to the NWT spill line if the release is near or into a water body, is near or into a designated sensitive environment or sensitive wildlife habitat, poses imminent threat to human health or safety, poses imminent threat to a listed species at risk or its critical habitat, or is uncontrollable.

Instructions for Completing the NT-NU Spill Report Form

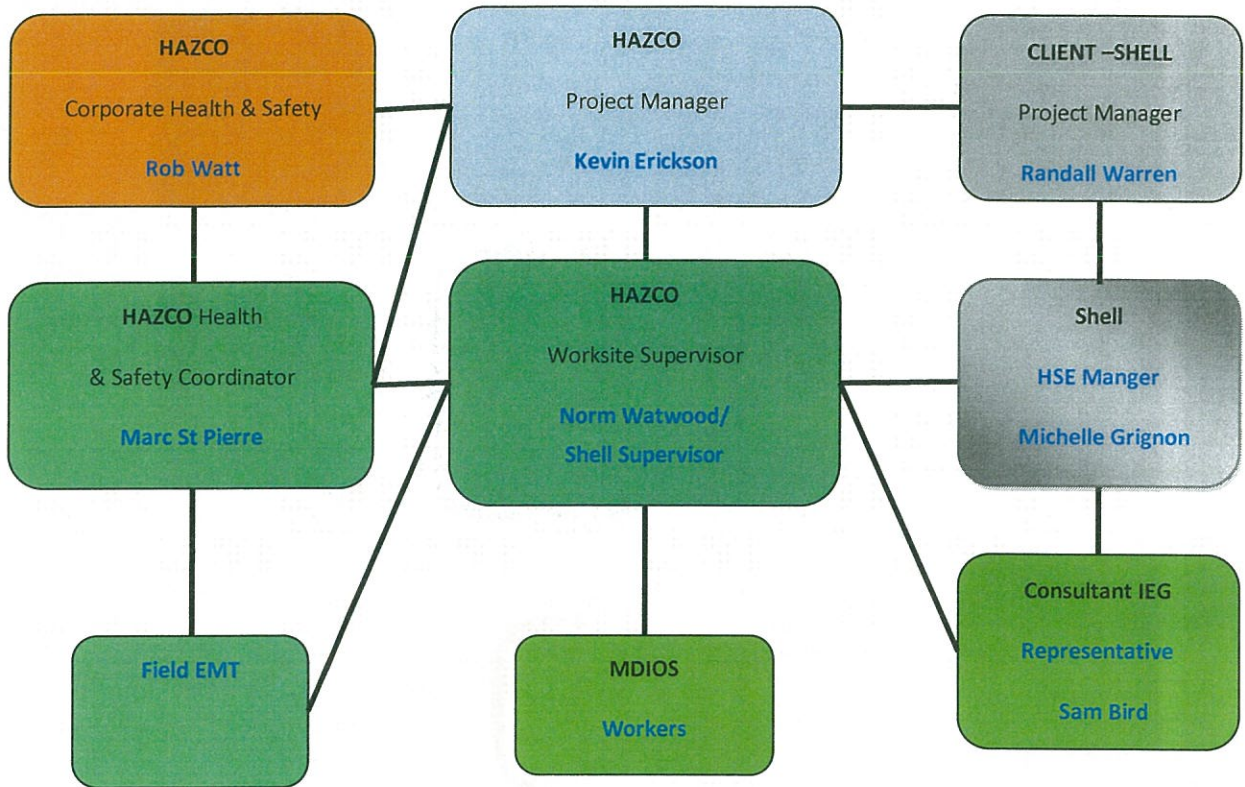
This form can be filled out electronically and faxed to the spill line at 867-873-6924. Commencing on January 2, 2007, the form can also be e-mailed as an attachment to spills@gov.nt.ca. Until further notice, please verify receipt of e-mail transmissions with a follow-up telephone call. Spills can still be phoned in by calling collect at 867-920-8130.

A. Report Date/Time	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. Please do not fill in the Report Number; the spill line will assign a number after the spill is reported.
B. Occurrence Date/Time	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).
C. Land Use Permit Number /Water Licence Number	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.
D. Geographic Place Name	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. You must include the geographic coordinates (Refer to Section E).
E. Geographic Coordinates	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.
F. Responsible Party Or Vessel Name	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. 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.
G. Contractor Involved?	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.
H. Product Spilled	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)
I. Spill Source	Identify the source of the spill: truck, ship, home heating fuel tank and, if known, the cause (eg: fuel tank overflow, leaking tank; ship ran aground; traffic accident; vandalism, storm, etc.). Provide an estimate of the extent of the contaminated/impacted area (eg: 10 m ²)
J. Factors Affecting Spill	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 equipment; for example, a gasoline spill beside a daycare centre would pose a safety hazard to children. Use box K if there is insufficient space.
K. Additional Information	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. Please number the pages to ensure that recipients can be certain that they received all pertinent documents. If only the spill report form was filled out, number the form as "Page 1 of 1".
L. Reported to Spill Line by	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.
M. Alternate Contact	Identify any alternate contacts. This information assists regulatory agencies to obtain additional information if they cannot reach the individual who reported the spill.
N. Report Line Use Only	Leave Blank. This box is for the Spill Line's use only.

Site Map



ORGANIZATION CHART



Worksite



HAZCO Regional



HAZCO Corporate



Client