

Contingency Plan for the Clean Up of the CAM-4, Pelly Bay DEW Line Site

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**Prepared for:
Nunavut Water Board**

**Prepared by:
UMA Engineering Ltd.**

February 2002

File: 0171-095-68-08



February 20, 2002

File: CAM-4 3.6

Ms. Rita Becker
Licensing Administrator
Nunavut Water Board
P.O. Box 119
Gjoa Haven, NU
X0B 1J0

Dear Ms. Becker:

RE: Contingency Plan for the Clean Up of the CAM-4, Pelly Bay DEW Line Site

On behalf of Defence Construction Canada (DCC), we are submitting a revised version of the Contingency Plan for the clean up of CAM-4, Pelly Bay. The Contingency Plan was completed as per the Northwest Territories Water Board, *Guidelines for Contingency Planning*, dated January 1987.

If there are any questions or concerns regarding the information presented in this report, please contact us at (403) 270-9200.

Sincerely,

UMA ENGINEERING LTD.

A handwritten signature in black ink, appearing to read 'Eva Schulz', is written over a large, stylized, light-colored graphic that resembles a large 'Y' or a stylized letter 'G'.

Eva Schulz, P.Ag.
Environmental Scientist

cc: Suzanne Fontaine, DCC

R317#

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1. INTRODUCTION

The following contingency plan presents the prescribed course of action to be taken in the case of unanticipated spill events during the clean up of the CAM-4 site. The plans will enable persons in a particular contingency situation to maximize the effectiveness of the environmental protection response and meet all regulatory requirements for reporting to the appropriate authorities. This plan is an integral part of the Environmental Protection Plan (EPP), which is a part of the formal contract documents with the Contractor(s).

1.1 Scope and Purpose

This plan applies to all activities and facilities pertaining to the clean up activities at the CAM-4 site.

The purpose of the plan is to:

- Provide a clear statement of the procedures to be followed in response to all spills;
- Minimize the potential environmental impact of spills by establishing pre-determined action plans;
- Establish a state of preparedness for personnel through a Training Program;
- Protect the health and ensure the safety of the personnel involved in the spill response activities, and the local communities;
- Provide a reporting network for spills;
- Ensure site restoration through appropriate remedial activities;
- Identify the roles and responsibilities of all parties involved in spill response activities; and,
- Identify sufficient personnel, materials and equipment needed to make an adequate response to a spill.

2. RESPONSE ORGANIZATION

2.1 Responsibilities

The Contractor and all sub-contractors will be involved in spill response activities in the event of a spill during the clean up at CAM-4. The responsibilities are described as follows:

- Ensure response crew members are appropriately trained;
- Practise spill prevention by performing regular maintenance on all fuel systems and by using proper methods for the handling of fuel products;
- Provide personnel, materials, and equipment necessary for adequate response to fuel and hazardous material spills.
- Establish communications and verbally report all spills to the Site Supervisor as soon as practical;
- Isolate and eliminate all ignition sources;
- Ensure safety and security at the spill site;
- Stop or reduce discharge, if safe to do so.
- Make every effort to contain the spill by dyking with earth or other barriers on land and containment booms on water;
- Assess potential for fuel/chemical recovery;
- Deploy on-site crews to mobilize pumps, empty 200 L drums, hand tools and absorbents to the spill site;

- Hire additional assistance, if required, from northern residents, local communities, and commercial spill response firms;
- Request assistance, if required, from Department of National Defence (DND) through the Site Supervisor and the Canadian Coast Guard;
- Follow all guidelines and regulations for disposal of spilled materials, associated debris, contaminated soil and water as established by appropriate government agencies;
- Assess potential terrain and wildlife disturbance, erosion and archaeological site disturbance in any areas to be affected by clean up operations and contact relevant authorities;
- Document all events/actions;
- Report the spill to the Spill Report Line and follow up with a written spill report. This report shall summarize the initial report information; confirmation of spill volume, actions taken, future remediation/monitoring requirements; and a sketch map and/or photographs of the spill area.
- For spills on water, immediately mobilize additional containment and clean up equipment in consultation with the Coast Guard, Environment Canada and Fisheries and Oceans Canada if on-site equipment is inadequate. Close isolation valves to stop fuel flow, if required. Deploy light-weight booms and oil absorbent materials to protect environmental resources along the coastline, as applicable. Track the progress of the spill, if of unknown origin.

Please see the organizational structure of the response team in Figure 1 following this section.

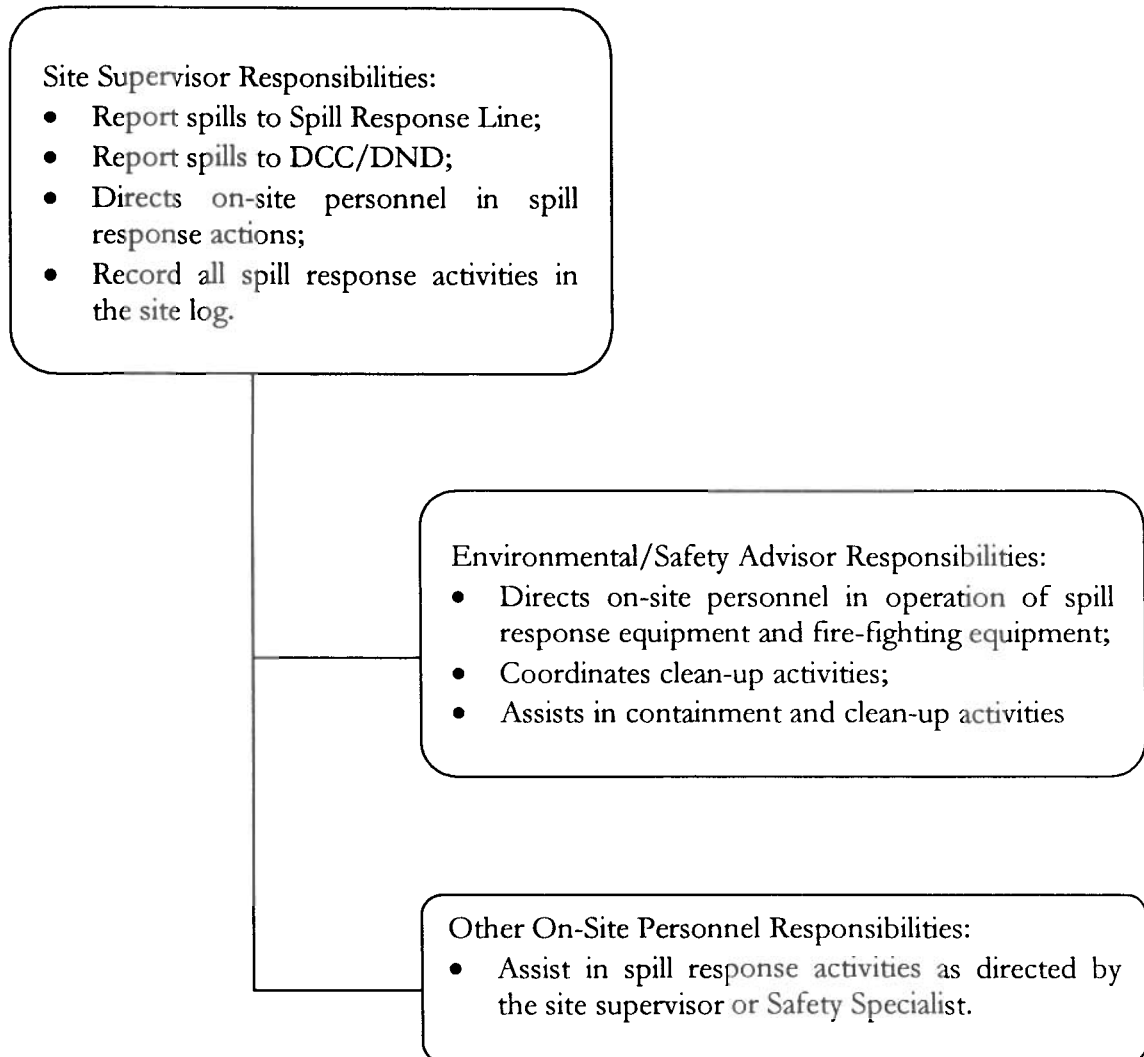
Telephone, facsimile machines and e-mail are provided to on-site personnel to maintain communications with off-site parties. All intra-site communications occur via two-way radios. All on-site personnel are provided with radios. Table 1 provides all other contacts.

NOTE: The telephone and facsimile numbers, and the e-mail addresses are not available at this time, as the contractor has suspended clean up activities until late spring 2002. Once the Contractor has re-established clean up activities, including communications, at the site, these numbers and addresses will be forwarded to the Nunavut Water Board.

Table 1: Contact List

Resource	Location	Phone No.
24 Hour Spill Line	NWT/Nunavut	867-920-8130
Iqaluit Fire Department	Nunavut	867-979-4422
Environment Canada, Environmental Protection Branch	Yellowknife Contact: Laura Johnson – Manager	867-669-4700
	Iqaluit Contact: Sid Bruinsma – Manager	867-975-4636
Indian and Northern Affairs Canada	Iqaluit Region District Manager – Dan Elliot	867-979-4405
Renewable Resources Officer Stations – Baffin Region	Iqaluit	867-979-5017
	Broughton Island	867-927-8966
	Hall Beach	867-928-8819
Renewable Resources Officer Stations - Keewatin and Inuvik	Regional Office (Kugluktuk)	867-982-7240
	Taloyoak	867-561-6231
	Gjoa Haven	867-360-7605
	Cambridge Bay	867-983-7314
GN Environmental Protection	Iqaluit; contact Earle Baddalo	867-975-5910
Contractor Company Officials (Nunatta Environmental Services Inc.)	Mario Mercer	514-352-2565
	Luc Paquet	450-778-9397
	Richard Phanuef	514-524-2670
	Pierre Duquet	450-652-0465
Department of National Defence through the contracting agency Defence Construction Canada	Environmental Officer – Suzanne Fontaine	613-991-9358
	Contract Manager – Shawn Helmerson	613-998-4511
	Deputy Project Manager – Scott Munn	613-990-9641
	Project Manager – Pete Quinn	613-998-9523

Figure 1: Emergency Response Team Organization



3. INITIAL ACTION

In the event of a spill, protection of human health and safety is paramount. Contamination of personnel involved in a clean up is a real possibility as is contamination of the surrounding workplace and environment.

The individual discovering a spill shall:

1. Warn people in the immediate vicinity and evacuate the area if necessary.
2. Isolate or remove any ignition sources.
3. Identify the spilled material, if possible, and take all safety precautions before approaching it.
4. Locate the source of the spill;
5. Attempt to immediately stop the leakage and contain the spill, if safe to do so.
6. Assess the likely size, extent and condition of the spill.
7. Report to the Site Supervisor the spill location, type of material, volume and extent, status of spill (direction of movement), and prevailing meteorological conditions.
8. In the event of a shoreline spill, provide information about beach location, contaminated area, beach characteristics, presence of wildlife and archaeological sites which might be threatened.

Once the Site Supervisor has been contacted and arrives at the spill site, the following actions are to be taken:

1. Assess the severity of the spill via direct observation and/or information from communications;

2. Deploy equipment and personnel to initiate containment and clean up;
3. Prepare the Government of the Northwest Territories Spill Report Form;
4. Notify all other pertinent parties, including the Owner of the site, and other Government agencies.

Please see Figure 2, which outlines the initial response actions to be followed in the event of a spill. Figures 3 and 4 outline the specific response procedures to be followed in the event of spills on land and water, respectively.

Figure 2: Initial Response Actions

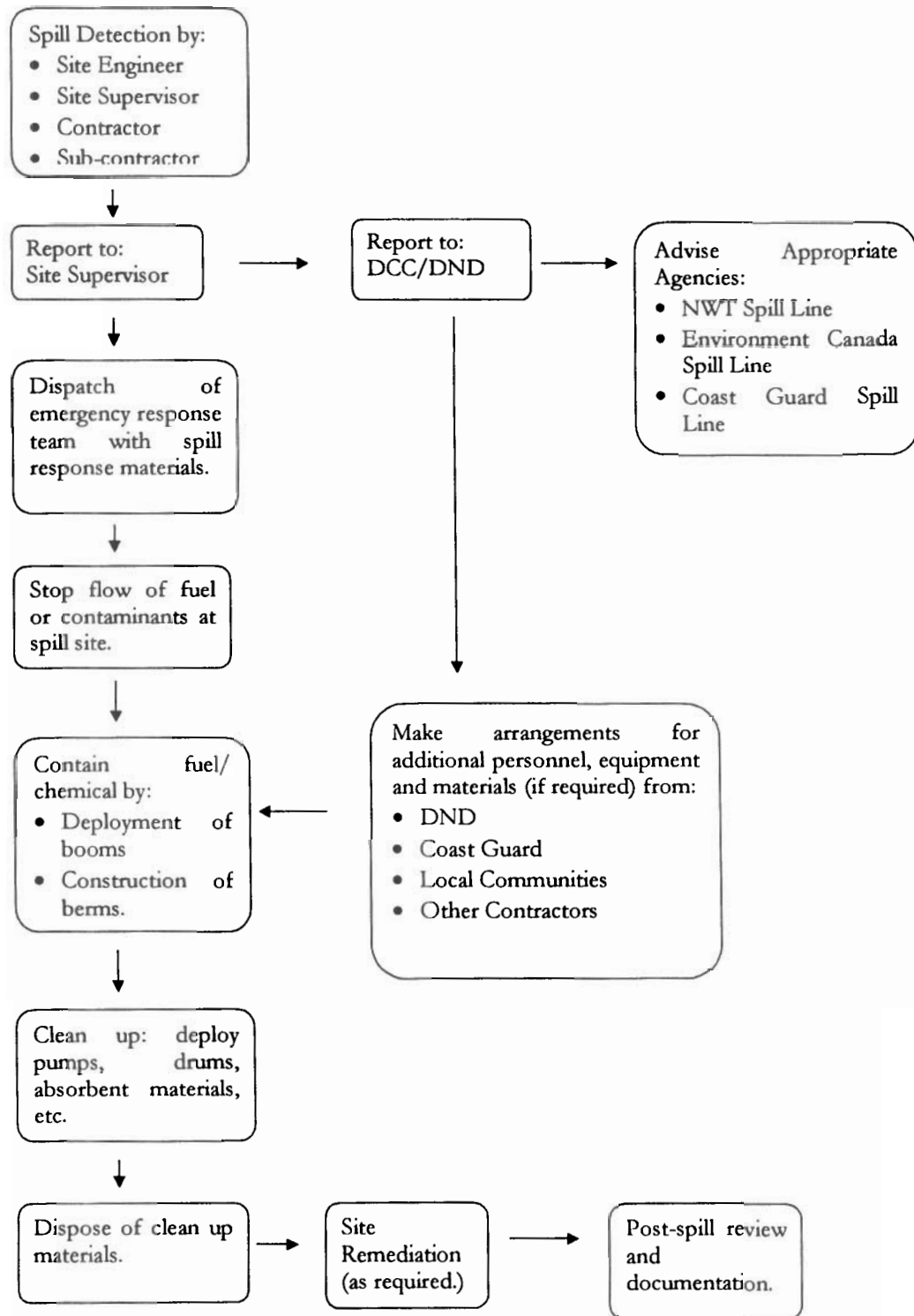


Figure 3: Procedures for Land Spill Response

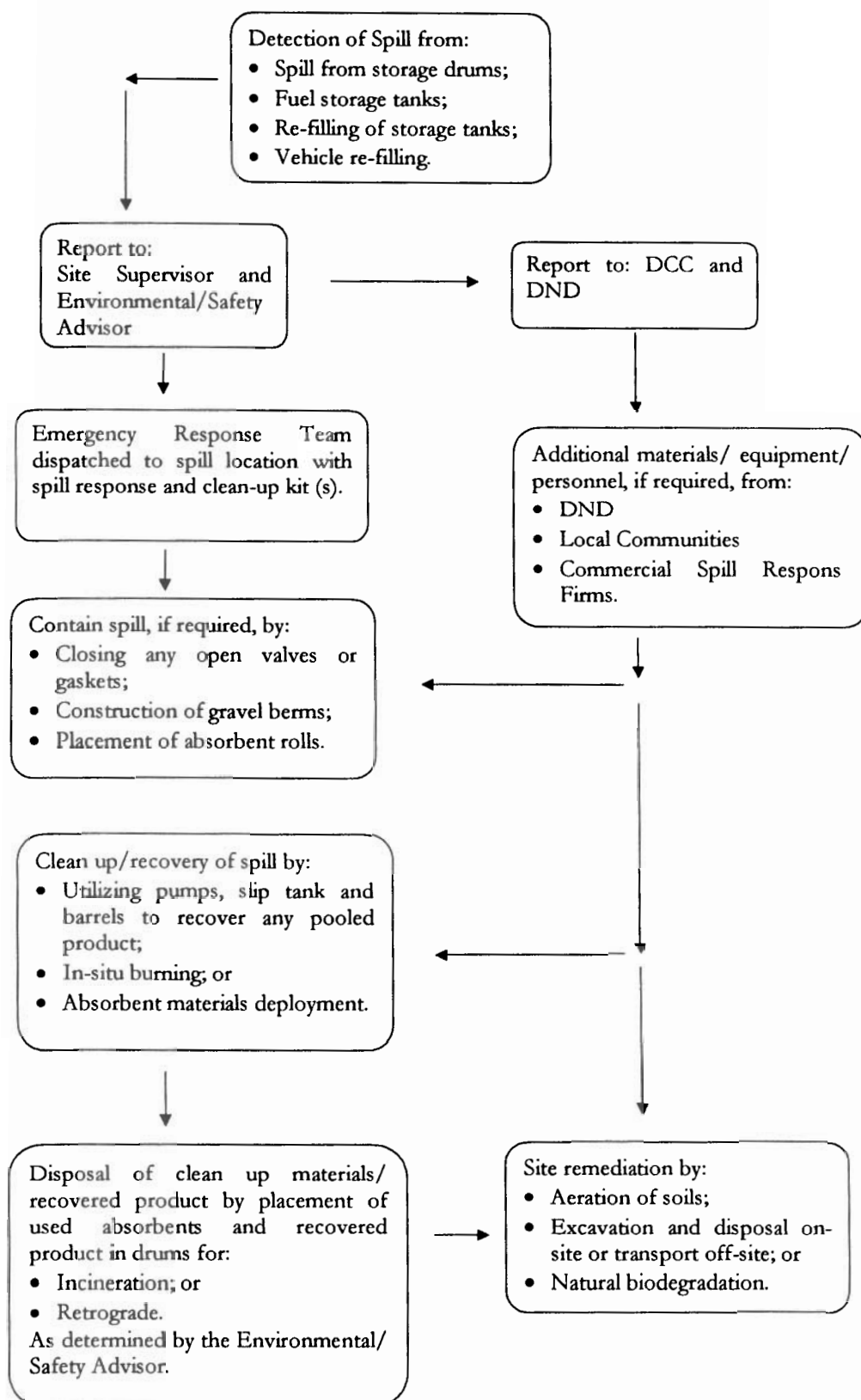
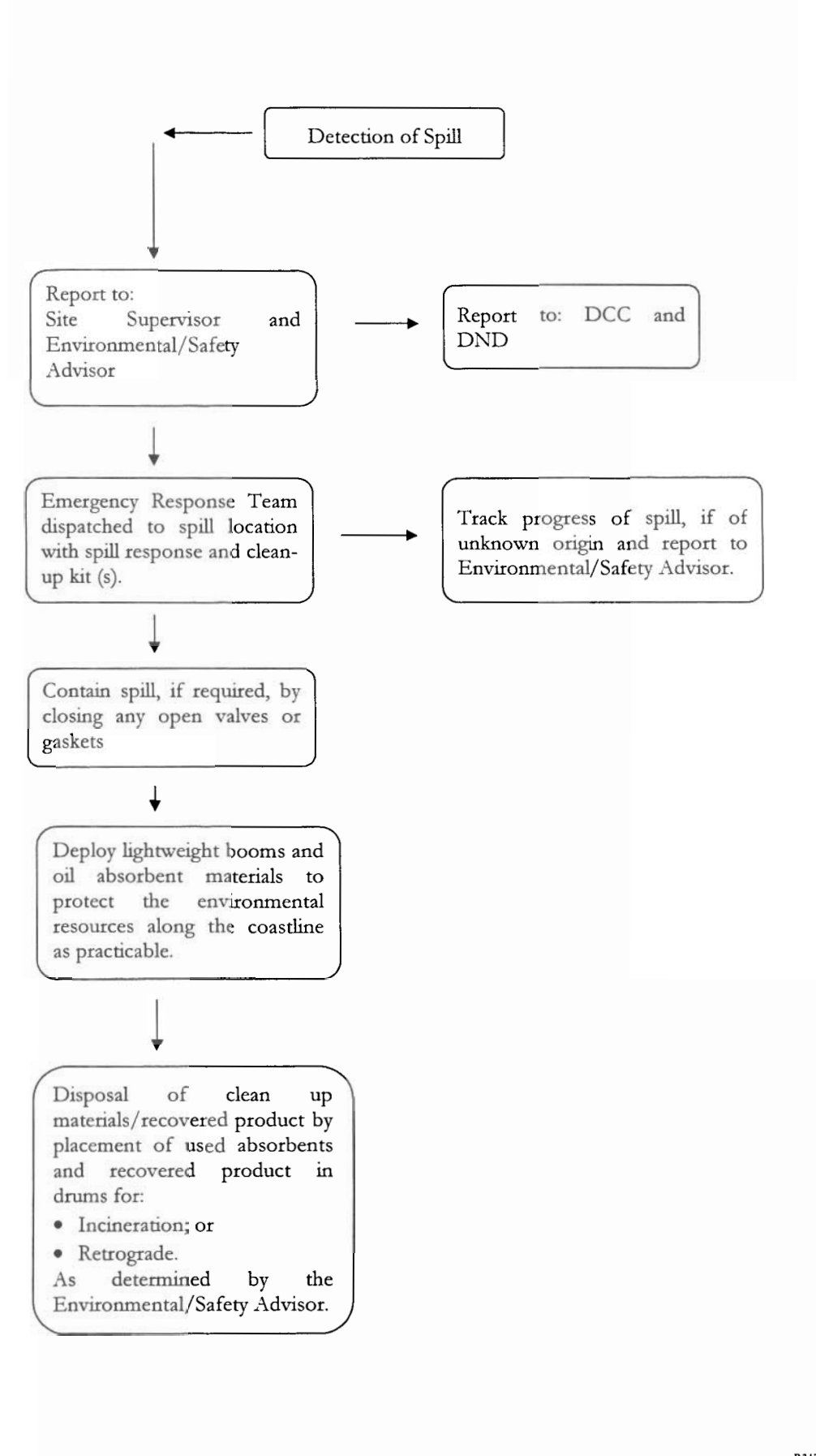


Figure 4: Response Procedures for Freshwater and Marine Spill Response



4. REPORTING PROCEDURE

When reporting a spill to the 24 Hour Spill Report Line and completing the Spill Report Form, the following information shall be included:

- Date and time of spill;
- Location of spill;
- Direction the spill may be moving;
- Name and phone number of a contact person close to the location of the spill;
- Type of contaminant spilled and quantity spilled;
- Cause of spill;
- Whether spill is continuing or has stopped;
- Description of existing containment;
- Action taken to contain, recover, clean up and dispose of spilled contaminant;
- Name, address and phone number of person reporting the spill; and,
- Name of owner or person in charge, management or control of contaminants at the time of the spill.

Government of the Northwest Territories SPILL REPORT (Phone: 867-920-8130)		
A	Report Date:	Date and Time of Spill, if Known:
B	Location and Map Coordinates (if known) and Direction if Moving	
C	Party Responsible	
D	Product Spilled and Estimated Quantities (Provide Metric Volumes/Weights if possible)	
E	Cause of Spill	
F	Is Spill Terminated or Continuing	
G	Extent of Contaminated Area	
H	Factors Affecting Spill or Recovery – Temperature, Wind, Snow, Ice, Terrain, Buildings, etc.	
I	Containment – Natural, Booms, Dykes, or Other. No Containment.	
J	Action, if any, Taken or Proposed to Contain, Recover, Clean-up or Dispose	
K	Do You Require Assistance?	If so, What Form?
L	Hazard to Persons or Property or Environment – Fire, Drinking Water	
M	Comments or Recommendations	
Reported by:	Position, Employer, Location	Telephone:
Reported to:	Position, Employer, Location	Telephone:

5. ACTION PLAN

The following substances could potentially be spilled at the CAM-4 site:

- Fuel tank bottom sludges;
- Solvents;
- Fuels and lubricating oils;
- Alcohols and glycols;
- PCB containing liquids; and
- Heavy metal containing liquids.

5.1 Environmental Protection Measures

The environmental protection measures outlined in the following sections are to be taken by all workers on-site to reduce the chance of environmental impairment due to a spill, release or other accident.

5.1.1 General Procedures

The following general clean up procedures shall apply for all spill areas:

- Wear protective clothing as required for handling spills.
- Contain spills on soil or rock by constructing earthen dykes using available material. If soil is not available, place sorbent material or boom in path of spill. As the sorbent barrier becomes saturated, continually replace it. Fuel or other liquids lying in pools, trenches or in specially constructed troughs are to be removed with pumps, buckets or skimmers.

- If ground is snow covered, create snow dykes and line with a chemically compatible liner for containment and recovery of liquid.
- For fuel spills on water, deploy containment booms and recover as much fuel as possible with a boat and skimmer if the area has less than 1/10 ice cover. If the area is ice infested, burn any fuel spills using igniters.
- Apply sorbents, if necessary.
- Assess potential for disturbance of wildlife, fish, and archaeological sites by spill or clean up operations and notify the relevant authorities.
- Notify environmental authorities to discuss disposal and clean up options.
- Conduct required clean up operations.
- Assess and appropriately treat any areas disturbed by clean up activities.
- Ensure the site has been completely restored and leave the site only when all work is finalized.

5.1.2 Fuel Storage Areas

- Avoid sites that slope towards waterways or other environmentally sensitive areas, exhibit ponding or flooding, or have high groundwater tables, excessive seepage or ice-rich (thaw sensitive) soils. Avoid archaeological resources.
- Conduct fuelling and lubrication of equipment in a manner that avoids spillage of fuels, oils, greases and coolants. When refuelling equipment, operators are to use leak-free containers and reinforced rip and puncture proof hoses and nozzles. Operators are to be in attendance for the duration of the refuelling operation and are to ensure that all storage container outlets are properly sealed after use.

- Store fuel in self-dyking containers, or position over an impervious liner and surround by an impervious dyke of sufficient height to contain not less than 110% of the capacity of the tank.
- Smoking is prohibited within 7.5 metres of the fuel storage facility. Provide appropriate signage.
- Inspect fuel storage facilities at least once each week for the duration of the project. Fire-fighting equipment is to be available for immediate access at each and every fuel storage facility.
- Store all barrels containing fuel and/or other hazardous materials in an elevated position either on their side with the bungs facing the 9 and 3 o'clock position or on pallets, upright, banded and encased in overpack containers.
- All barrels shall be individually identified. The label shall be to industry standards and shall provide all information necessary for health and safety, and environmental purposes. Make available, to all personnel, Material Safety Data Sheets for all materials maintained in the construction camp.
- Treat all waste petroleum products including used oil filters as hazardous material, and handle and dispose of following the requirements as specified in the appropriate regulations.
- Conduct regular inspections of all machinery hydraulic, fuel, and cooling systems. Repair leaks immediately.
- Pre-assemble and maintain emergency spill equipment including at least two fuel pumps, empty 200 litre barrels and absorbent material sufficient to clean up a 1000 litre spill at all permanent fuel storage sites and work camps.
- Remove all barrels, redundant fuel storage facilities and associated materials and equipment from the site at the conclusion of the work.

5.1.3 Hazardous Material Storage Areas

Hazardous waste materials are wastes or materials that are designated as "hazardous" under Northwest Territories or Federal legislation; or as "dangerous goods" under the *Transportation of Dangerous Goods Act* (TDGA). The *Canadian Environmental Protection Act* (CEPA) regulates material containing PCBs at greater than 50 parts per million (ppm).

Hazardous waste materials may be encountered during sorting of site and demolition debris and during the excavation of the landfills. Collect and sort hazardous materials using equipment suitable for the task.

- Locate the hazardous material processing area a minimum of 100 metres from the nearest archaeological site or water body, on ice poor, well drained soil, and as close to the location of work as possible.
- Control movement of vehicles and equipment between the hazardous material processing area and work site to prevent the spread of potentially hazardous material along roadways.
- Store hazardous materials so that each storage area is separated from the nearest water body by a 30 metre buffer zone.
- The *Transportation of Dangerous Goods Act* (TDGA) and the *International Air Transport Association* (IATA) Dangerous Goods Regulations govern the packaging and shipment of hazardous goods within Canada. If shipping out of Canada, Canadian regulations and regulations of the destination country both apply. Requirements of the International Marine Dangerous Goods Code (IMDGC) must be addressed in international waters (e.g. near Greenland).
- Any material classified as hazardous by the TDGA must be accompanied by the appropriate TDG shipping documents. The documents are to state the shipper, the receiver and all

carriers involved in the transport of the shipment. Non-hazardous materials are also to be accompanied by a document indicating ownership and responsibility of the receiver.

- Package all hazardous material in accordance with the Transportation of Dangerous Goods Regulations.

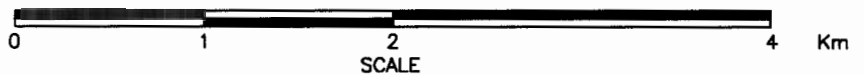
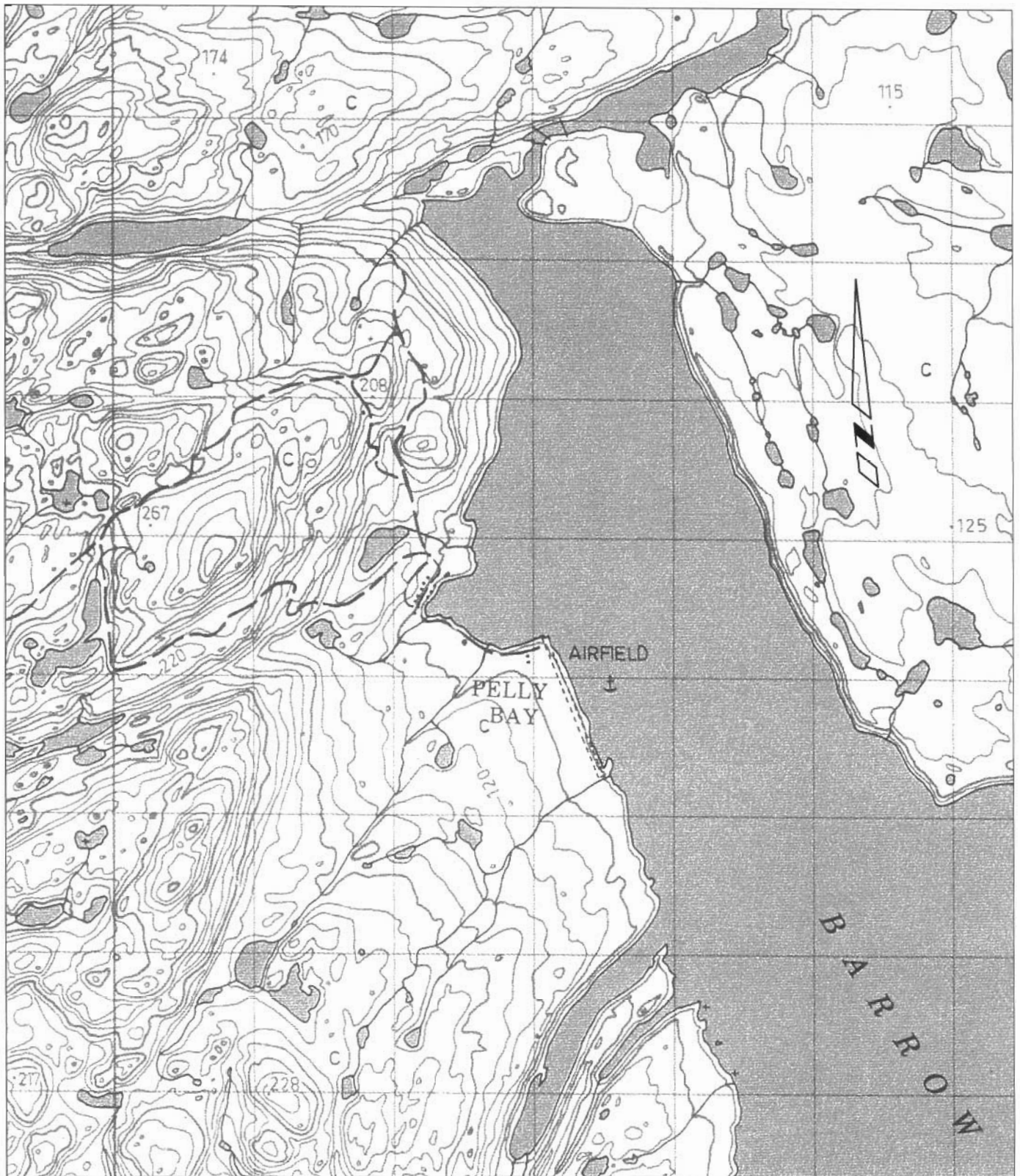
NOTE: Material Safety Data Sheets for all fuels and chemicals stored on-site are to be made available by the Contractor at the start of the 2002 construction season, likely in June 2002. Once this information has been received from the Contractor, it will be forwarded to the Nunavut Water Board.

5.2 Spill Recovery Success

In order to determine whether a spill has been successfully remediated, samples of soil and/or water are to be collected and tested for the chemical parameters contained in the spill material. If concentrations of the spill chemicals are not detected, or are at concentrations below the applicable Territorial or CCME criteria, the spill clean up will be determined a success.

6. ENVIRONMENTAL MAPPING

Figure 5 shows a topographic map segment of the site and Drawings 101, 102 and 103 include an overall site plan and the project layout showing the location of the site facilities and construction/clean up camp. Figure 5 and the drawings are included at the end of this section.



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REV	Y	M	D	ISSUE/REVISION DESCRIPTION	DRN	DES	CHK	ENG

UMA **UMA Engineering Ltd.**
 Engineers, Planners & Surveyors
 2540 Kensington Road N.W., Calgary, Alberta, Canada T2N 3S3

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 LAW, AND SHOULD NOT BE REPRODUCED IN ANY
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REFERENCE FROM 1980 MAP, BARROW LAKE 57A/7, EDITION 1
 DEPARTMENT OF ENERGY, MINES AND RESOURCES

NUNAVUT TERRITORY
CAM-4, PELLY BAY

MAP SHEET

UMA JOB No.
 0171-095-52-08

ACAD FILE No.
 EW-77

FIGURE No.
 5

ISS/REV
 0

General Notes:
1. CONDITION OF ACCESS ROADS TO BE
EVALUATED PRIOR TO TRUCK.

Legend:
BODY OF WATER

NO	DATE	REVISION	REVISION	DATE

UNCLASSIFIED
SCALE - DOUBLE 200 100 0 200 400 600m

PROJECT - PRODUCT
CAN-4 PELLY BAY

DEW LINE CLEAN UP
COPYRIGHT
HER MAJESTY THE QUEEN IN RIGHT OF
CANADA 2000, AS REPRESENTED BY THE
MINISTER OF NATIONAL DEFENCE.

TRUCK - AFTER STWING DATE
SUBJECT - SLEET 2000-09-01

OVERALL SITE PLAN

PRODUCTION	COORDINATOR - ASSISTANT	DESIGN OFF	DESIGN OFF
DESIGNED	DESIGNED	DESIGNED	DESIGNED
STUDY	STUDY	STUDY	STUDY
DESIGNED	DESIGNED	DESIGNED	DESIGNED
STUDY	STUDY	STUDY	STUDY
DESIGNED	DESIGNED	DESIGNED	DESIGNED
STUDY	STUDY	STUDY	STUDY
DESIGNED	DESIGNED	DESIGNED	DESIGNED
STUDY	STUDY	STUDY	STUDY

Headquarters Quarter Orders

1. ALL ELEVATIONS ARE REFERENCED TO MEAN SEA LEVEL. (REF. DOW AAP-2, DEPT. OF THE AIR FORCE, USAF).
2. ALL NON-HAZARDOUS DEBRIS WITHIN PLAY AREA TO BE PLACED IN NON-HAZARDOUS WASTE LANDFILL (STATION AREA).
3. HORIZONTAL CONTROL REFERENCED TO SURVEY CONTROL MONUMENTS.
4. ALL DIMENSIONS ARE IN METERS UNLESS NOTED OTHERWISE.
5. ALL SHORT RANGE RADAR (SRR) FACILITIES ARE CURRENTLY OPERATIONAL, AND ARE NOT TO BE DISTURBED.

SURVEY CONTROL MONUMENT

SURVEY CONTROL MONUMENT

CONTAMINATED AREA

TEST PIT LOCATION (1983)

BODY OF WATER

NAME	REASON	REASON	APPROVAL

Scale - Count 100 50 0 100 200 300

PROJECT - PROJECT
CAM-4 PELLY BAY

© COPYRIGHT

HER MAJESTY THE QUEEN IN RIGHT OF
CANADA 2009, AS REPRESENTED BY THE
MINISTER OF NATIONAL DEFENCE.

MADE - METEN	DATE
STING	2000-09-0

DATE	DESCRIPTION	AMOUNT	BALANCE
10/1/58	SALES	100.00	100.00
10/2/58	SALES	100.00	200.00
10/3/58	SALES	100.00	300.00
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10/8/58	SALES	100.00	800.00
10/9/58	SALES	100.00	900.00
10/10/58	SALES	100.00	1000.00
10/11/58	SALES	100.00	1100.00
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10/27/58	SALES	100.00	2700.00
10/28/58	SALES	100.00	2800.00
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12/10/58	SALES	100.00	7100.00
12/11/58	SALES	100.00	7200.00
12/12/58	SALES	100.00	7300.00
12/13/58	SALES	100.00	7400.00
12/14/58	SALES	100.00	7500.00
12/15/58	SALES	10	

PROJECT LAYOUT

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RECEIVED	DATE	BY
12/20/2009		ADMIT COM

Drawn	Sect No
01	1

BEARING	OD RECT
BEARING	OD RECT

CHURCH	17	ALL MEN
WOMEN		WEST COAST

REVENUES - ACTU	COORDINATION
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ON ORDER - 1000000

U.S. DEPT. OF JUSTICE
M-P 44/1-9101-102

General Notes:

1. ALL ELEVATIONS ARE REFERENCED TO MEAN SEA LEVEL.
2. HORIZONTAL CONTROL REFERENCE TO SURVEY CONTROL MONUMENTS.
3. ALL DIMENSIONS ARE IN METRES UNLESS NOTED OTHERWISE.

Legend:

- △ CANTON SURVEY CONTROL MONUMENT
- TBM105 SURVEY CONTROL MONUMENT
- CONTAMINATED AREA
- + TEST PIT LOCATION (1993)
- BODY OF WATER

NO.	DATE	REVISION	REVISION	APPROVED

UNMO	SEAL
SCALE - GRAPHIC	100 50 0 100 200 300m

PROJECT - PROJECT
CAM-4 PELLY BAY

DEW LINE CLEAN UP

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HER MAJESTY THE QUEEN IN RIGHT OF
CANADA 2000, AS REPRESENTED BY THE
MINISTER OF NATIONAL DEFENCE.

MADE - REVIEW	STWING	DATE	2000-09-01
DRAWN - SKETCH			

PROJECT LAYOUT SH. 2

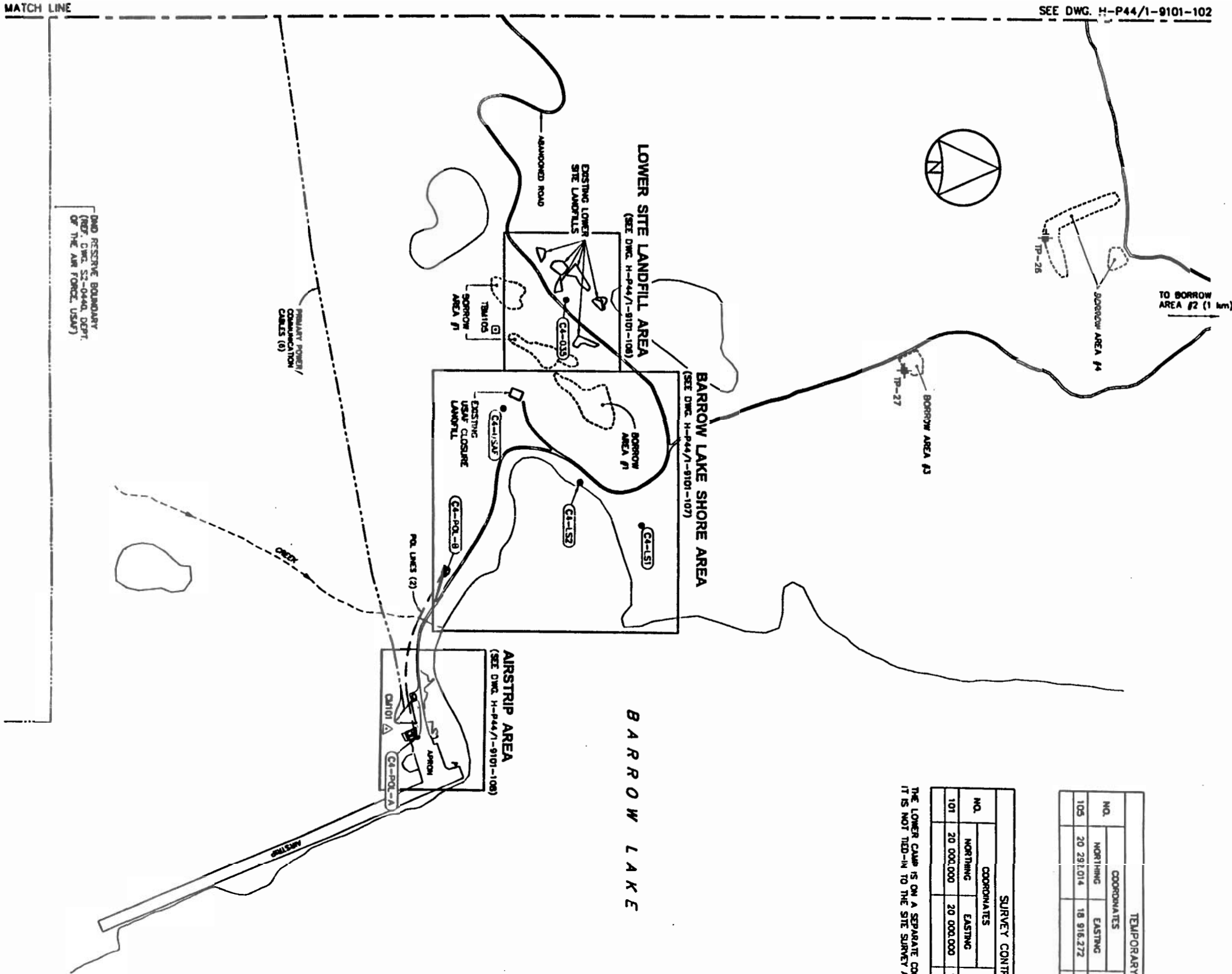
PRODUCTION CONFORMANCE - ASSEMBLY

DESIGNED	2000-09-01	DES OF	
STUDIED		ADAPT CONCEPT	
DRAWN	09	RECT NO	
DESIGNED	09	DEW SECT	
DESIGNED	09	DEW SECT	
VERIFIED	09	DEW SECT	
COORDINATION		REVIEWED - REVU	

TEMPORARY BENCHMARKS			
NO.	COORDINATES		ELEV.
	NORTHING	EASTING	
105	20 281.014	18 916.272	133.777
CUT CROSS IN ROCK			

SURVEY CONTROL MONUMENTS			
NO.	COORDINATES		ELEV.
	NORTHING	EASTING	
101	20 000.000	20 000.000	102.031
CANT. MON. 50590-23			

THE LOWER CAMP IS ON A SEPARATE COORDINATE SYSTEM.
IT IS NOT TIED-IN TO THE SITE SURVEY AT THE STATION AREA.



7. RESOURCE INVENTORY

The following equipment is typically found on-site during a clean up program. The exact type of equipment found at the CAM-4 site may vary slightly.

- 3 Cat 966 front-end loader or equivalent with buckets, snow plow and forks
- 2 Cat D7 bulldozer or equivalent with blade and ripper
- 1 Cat D3 bulldozer or equivalent with blade and backhoe
- 3-6 End-dump or body-job gravel trucks
- 1 Fuel truck
- 1 Platform/Flatbed truck
- 1 Crane
- 2 Hitachi 200 Excavator or equivalent
- 1 Cat C5563 compactor or equivalent
- 1 Tow behind packer (smooth drum or sheep foot)
- 1 Truck/track mounted drill rig (percussion or rotary)
- 5 All terrain vehicles
- 5 pick-up trucks (1 service truck)
- Generators
- 1 Water truck
- 1 Screening Plant
- 1 Crushing Plant (less common)

Other resources available in the event of a spill could be provided by Kugaruuk (formerly Pelly Bay), located 20 kilometres to the northwest of the CAM-4 site.

All equipment is generally stored at the construction camp/storage area where the camp personnel are stationed. Some equipment may be stored at the area in which the equipment is being used.

However, because of the relatively compact size of the CAM-4 site, deployment to a potential spill area would be immediate.

All vehicles are to be equipped with absorbent materials, drip trays, shovels and disposal bags.

8. TRAINING AND EXERCISES

Each employee is to go through a Worker Orientation Seminar prior to the start of each construction season, in addition to on-site training and other specific training requirements. Other training requirements include the 40 hour training course for Hazardous Waste Activities in compliance with OSHA 29 CFR 1910.120 and training in the Transportation of Dangerous Goods Act.

Specifically, the spill response training program is to include the following subjects:

- Spill Awareness and Prevention;
- Methods of Detection;
- Storage of Products on-site;
- Types of Spills and Seasonal Considerations;
- Reporting Procedures and Initial Responses;
- Spill Response Kit Familiarization;
- Clean up and Site Remediation Methods;
- Occupational Health and Safety; and,
- Post Spill Review Process and Documentation.

NOTE: Spill Response Training is to be conducted on-site by Qualified Personnel, and is to include simulated spill response procedures.

APPENDIX I

Information Sources

Information Sources

Northwest Territories Water Board. 1987. Guidelines for Contingency Planning. Prepared by the Northwest Territories Water Board Technical Advisory Committee. January 1987.

Nunatta Environmental Services Inc. 2001. Work Methodology Plan – Preliminary Version. Prepared by Nunatta Environmental Services Inc. July 2001.

UMA. 2001. Specifications for the Cleanup of CAM-4 Pelly Bay DEW Line Site. Prepared by UMA Engineering Ltd., in association with The SGE Group Inc. February 2001.