
TABLES

Table 1
Contents of Barrels with Recovered Liquids
Fuel Spill Remediation
WindyCamp, Nunavut

Barrel #	Total Liquid	Water
1	83	44
2	84	44
3	84	40
4	78	11
5	82	39
6	80	42
7	76	57
8	79	50
9	83	46
10	86	52
11	78	63
12	79	52
13	73	57
14	83	61
15	79	18
16	78	69
17	81	74
18	77	62
19	83	61
20	83	47
21	76	69
22	77	44
23	80	69
24	78	47
25	74	45
Subtotals:	1994	1263

Barrel #	Total Liquid	Water
26	81	48
27	80	38
28	79	69
29	79	49
30	77	66
31	86	7
32	82	23
33	82	0
34	82	0
35	81	57
36	79	64
37	83	51
38	80	35
39	82	52
40	80	26
41	80	0
42	84	0
43	82	48
44	87	56
45	86	85
46	76	66
47	83	75
48	82	0
49	0	0
50	80	0
	1953	915

Barrel #	Total Liquid	Water
51	22	0
52	59	0
53	0	0
54	59	0
55	10	0
56	9	0
57	9	0
58	50	0
59	83	0
60	78	0
61	80	15
62	80	2
63	80	0
64	83	0
65	82	0
66	82	7
67	83	0
68	84	0

1033	24
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Notes:

Liquid and Water measurements in cm

Calculations:

Total Liquid: 4980 cm

Total Water 2202 cm

Total Hydrocarbons: 2778 cm at 85 cm/barrel = 32.68 barrels

at 205 litres/barrel = 6700 Litres of Liquid Hydrocarbons



Table 2
Soil Analytical Results
Fuel Spill Remediation
WindyCamp, Nunavut

Parameters	Units	June 19, 2004					June 26, 2004					Guideline	
		Worst Case	A1	A2	B1	B2	B3	B4	B5	B6		Value	
Benzene	mg/kg	<0.06	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01		CCME	0.5
Toluene	mg/kg	<0.06	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01		CCME	0.1
Ethylbenzene	mg/kg	<0.06	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01		CCME	0.1
Total Xylenes (o,m & p)	mg/kg	<0.06	<0.01	0.03	<0.01	0.06	<0.01	<0.01	<0.01	<0.01		CCME	0.1
Fraction 1 (C ₆ -C ₁₀)(-BTEx)	mg/kg	<5	<5	<5	<5	<5	<5	<5	<5	<5		CWS	30
Fraction 2 (C ₁₀ -C ₁₆)	mg/kg	<5	<5	<5	<5	110	49	<5	12	<5		CWS	150
Fraction 3 (C ₁₆ -C ₃₄)	mg/kg	240	<5	13	<5	990	32	19	24	16		CWS	400
Fraction 4 (C ₃₄ +)	mg/kg	220	21	<5	11	430	<5	5	<5	<5		CWS	2800
Soil Moisture Content	%	73	20	20	16	21	19	17	19	18		NC	NC

Parameters	Units	June 30, 2004										Guideline	
		C1	C2	C3	C4	C5	C6	Worst Case2	Tank Area	Composite		Value	
Benzene	mg/kg	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	0.04	<0.01			CCME	0.5
Toluene	mg/kg	<0.01	<0.01	<0.01	<0.01	0.07	<0.01	0.1	<0.01			CCME	0.1
Ethylbenzene	mg/kg	<0.01	<0.01	<0.01	<0.01	0.1	<0.01	0.04	<0.01			CCME	0.1
Total Xylenes (o,m & p)	mg/kg	<0.01	<0.01	0.07	<0.01	1.1	<0.01	0.21	<0.01			CCME	0.1
Fraction 1 (C ₆ -C ₁₀)(-BTEx)	mg/kg	<5	<5	<5	<5	25	<5	37	<5			CWS	30
Fraction 2 (C ₁₀ -C ₁₆)	mg/kg	22	<5	<5	170	140	<5	190000	100			CWS	150
Fraction 3 (C ₁₆ -C ₃₄)	mg/kg	13	27	27	26	28	13	46000	160			CWS	400
Fraction 4 (C ₃₄ +)	mg/kg	8	10	10	11	10	5	5300	33			CWS	2800
Soil Moisture Content	%											NC	NC
Particle Size Analysis (hydrometer)													
MUST PSA D50 > 75 um	%									71		NC	NC

Notes:

Canadian Council of Ministers of the Environment (CCME). 2001. Canadian Environmental Quality Guidelines for the protection of Freshwater Aquatic Life (FAL).
 NC - No criteria established by Alberta Environment.

Blank - Not analyzed.

Bold - Greater than established criteria



Table 3
Water Analytical Results
Fuel Spill Remediation
WindyCamp, Nunavut

Parameters	Units	Lake Samples										Guideline	
		Tap		North		South		Spill		Inlet		Outlet	
		Kitchen 20-Jun-04	Kitchen 30-Jun-04	20-Jun-04	30-Jun-04	20-Jun-04	30-Jun-04	20-Jun-04	30-Jun-04	30-Jun-04	30-Jun-04	30-Jun-04	FAL Year Value
Benzene	mg/kg	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	2001 0.37
Toluene	mg/kg	<0.0005	<0.0005	<0.0005	<0.0005	0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	2001 0.002
Ethylbenzene	mg/kg	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	2001 0.09
Total Xylenes (o, m & p)	mg/kg	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	0.0019	<0.0005	<0.0005	<0.0005	0.0005	2001 0.18
Fraction 1 (C ₈ -C ₁₀)(-BTEx)	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	NG
Fraction 2 (C ₁₁ -C ₁₄)	mg/kg	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	0.85	0.09	<0.05	<0.05	<0.05	NG

Parameters	Units	Water Treatment										Guideline	
		4pm Before		2pm Before		2pm After		1pm Before		11am Before		11am After	
		22-Jun-04	22-Jun-04	23-Jun-04	23-Jun-04	23-Jun-04	23-Jun-04	24-Jun-04	24-Jun-04	25-Jun-04	27-Jun-04	27-Jun-04	FAL Year Value
Benzene	mg/kg	<0.0005	<0.0005	-	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	2001 0.37
Toluene	mg/kg	<0.0005	<0.0005	-	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	2001 0.002
Ethylbenzene	mg/kg	<0.0005	<0.0005	-	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	2001 0.09
Total Xylenes (o, m & p)	mg/kg	0.0040	<0.0005	-	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	0.0013	0.0017	<0.0005	2001 0.18
Fraction 1 (C ₈ -C ₁₀)(-BTEx)	mg/kg	<0.1	<0.1	-	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	NG
Fraction 2 (C ₁₁ -C ₁₄)	mg/kg	0.79	0.19	0.80	<0.05	<0.05	<0.05	4.6	0.06	2.0	0.98	<0.05	NG

Notes:

Results compared to Canadian Council of Ministers of the Environment (CCME), 2001. Canadian Environmental Quality Guidelines for the protection of Freshwater Aquatic Life (FAL).

NG - No Guidelines Established

Blank - Not analyzed

Bold - Greater than established criteria

FIGURES

**Figure 1**

Site Location

1740065003L02A.cdr



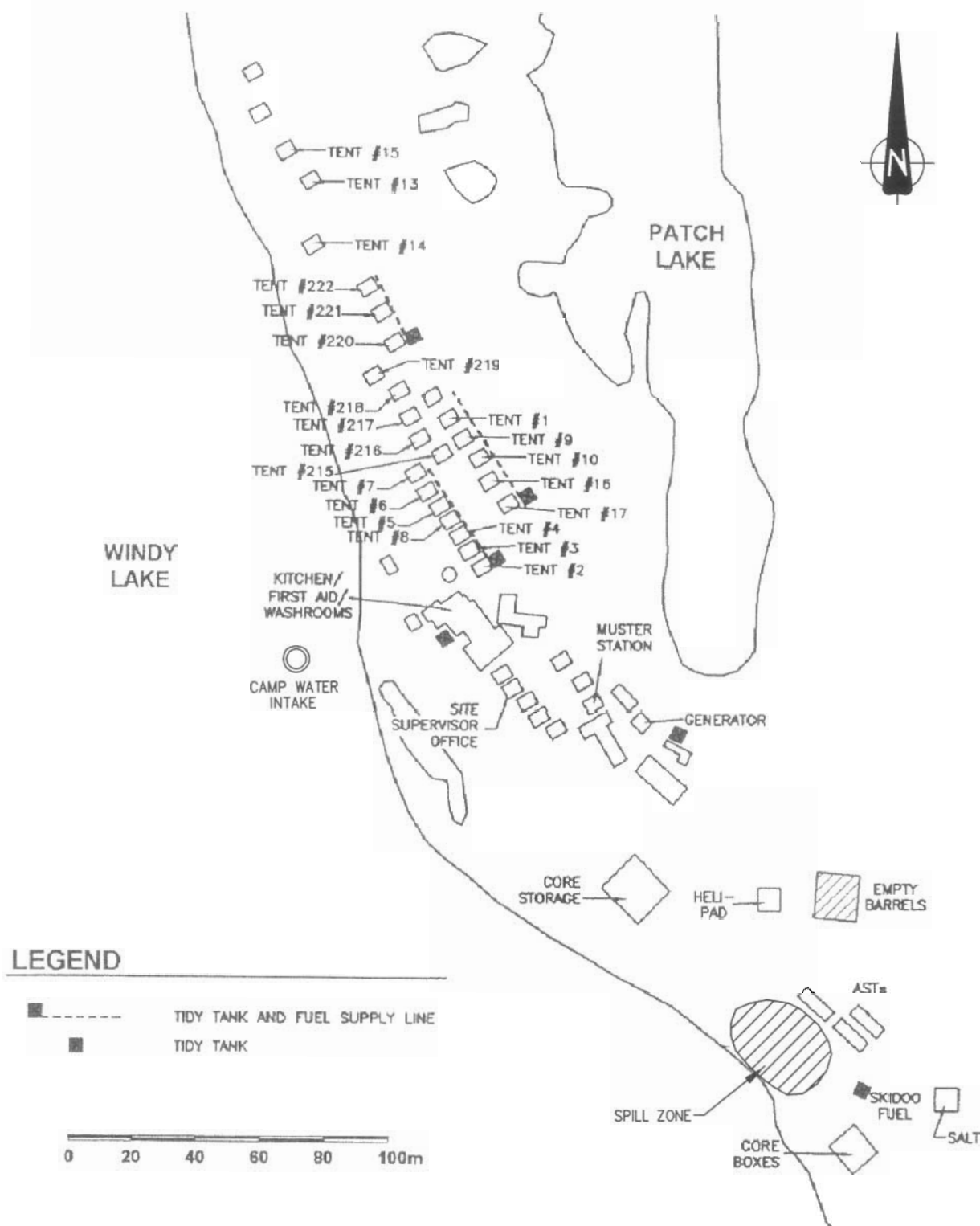


Figure 2
Site Plan
Windy Camp Site

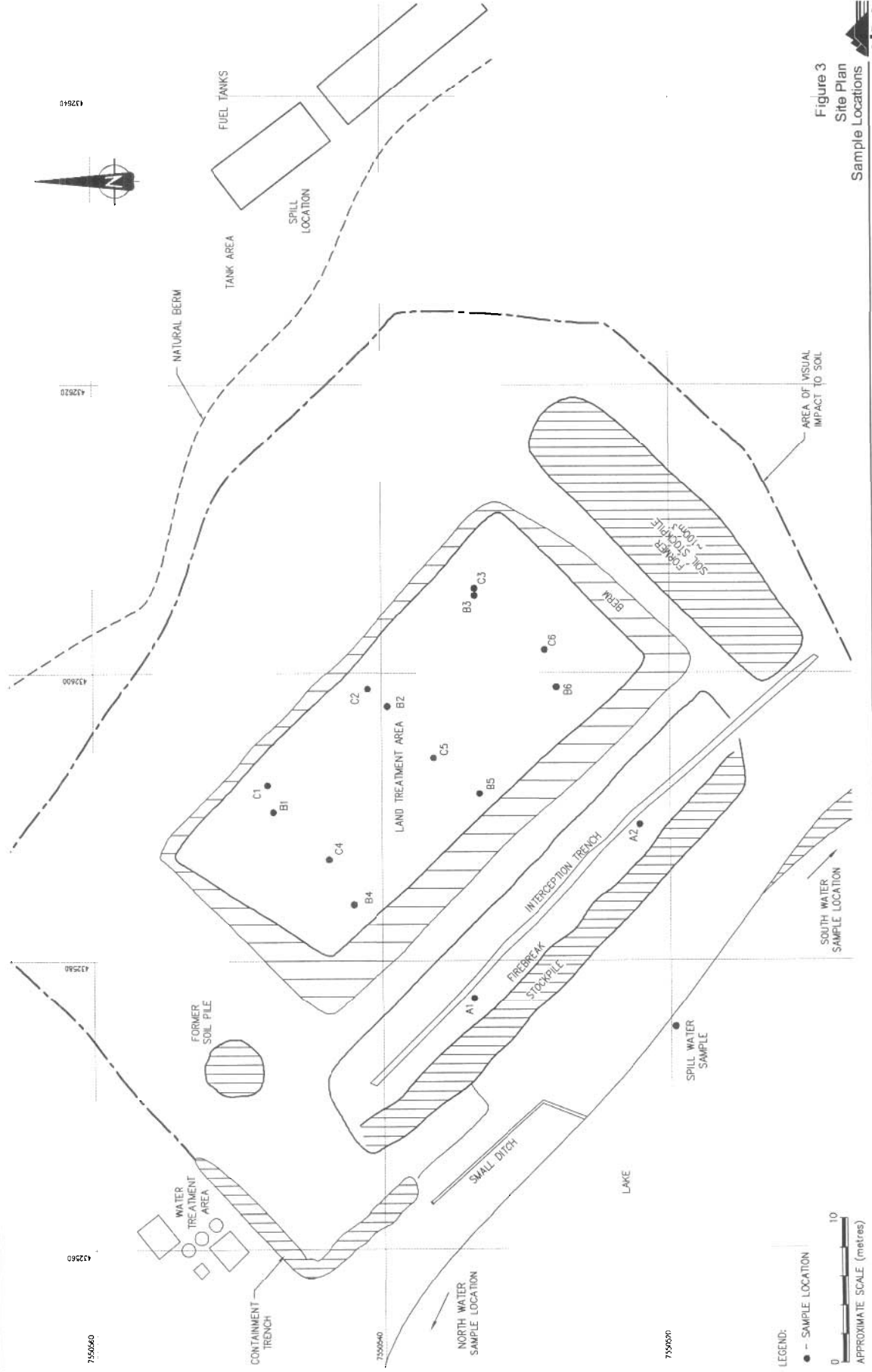
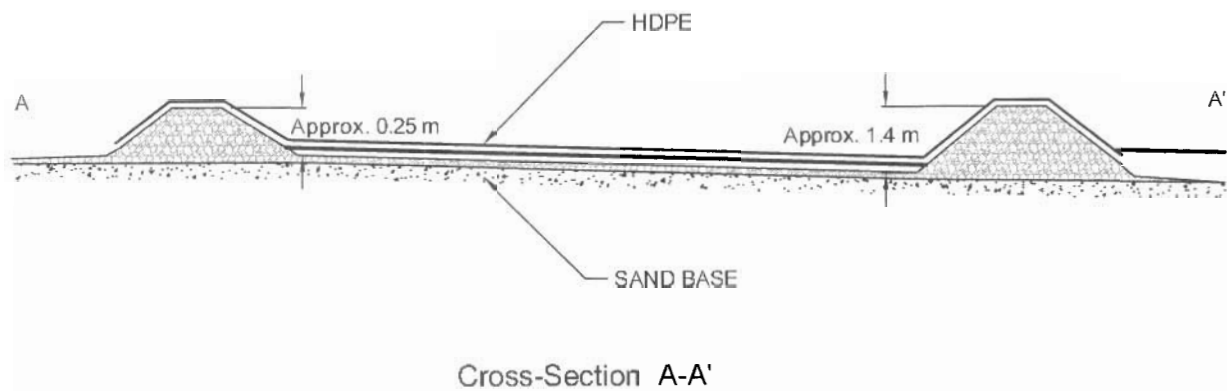
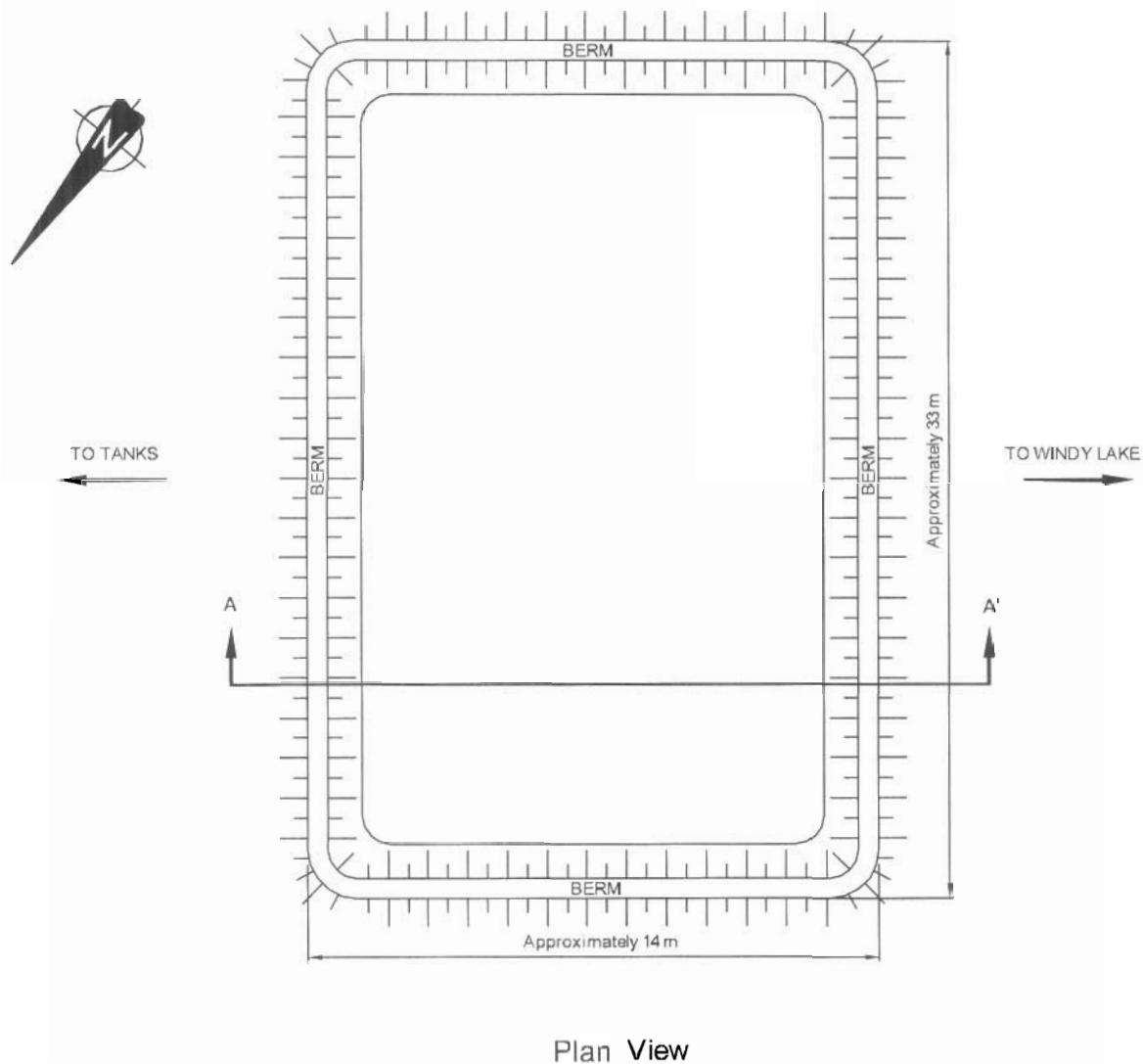


Figure 3
Site Plan
Sample Locations

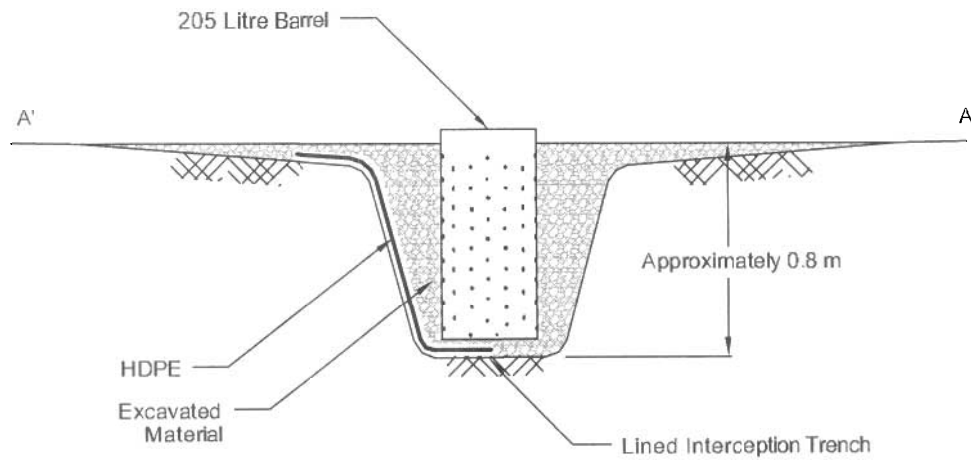
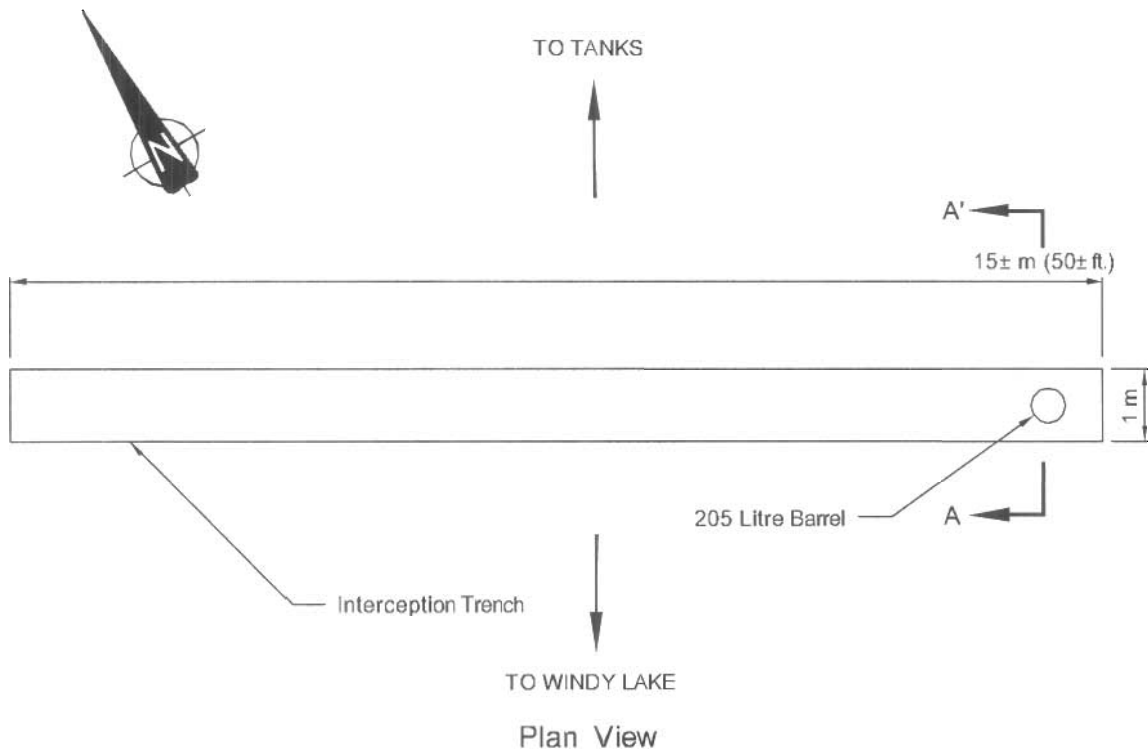


Not To Scale

Figure 4
As Built of
Land Treatment Area

1740065003002a.dwg





Cross-Section A-A'

Figure 5
Proposed As Built
Interception Trench

Not To Scale

PHOTOGRAPHS



Photo 1
Spill area at the time of EBA's arrival.



Photo 2
Spill area hours after EBA's arrival.



Photo 3
Water surface prior to in situ incineration.

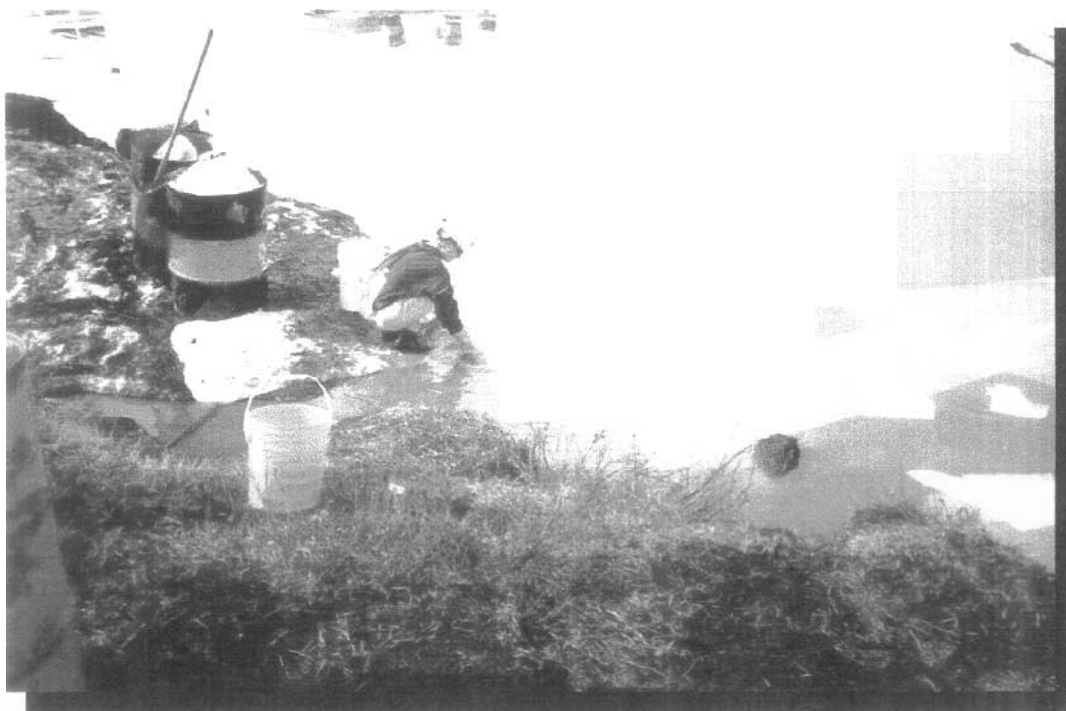


Photo 4
Removal of liquid hydrocarbon, using absorbent pads, prior to in situ incineration.



Photo 5
Incineration of used hydrocarbon-absorbent material.

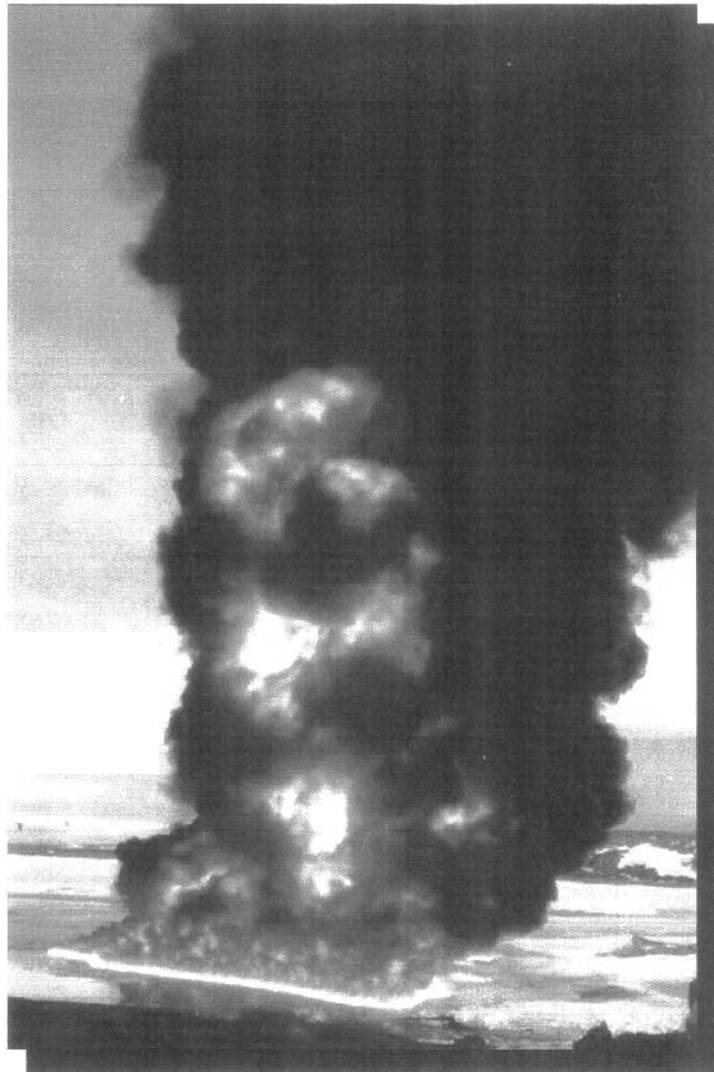


Photo 6

In situ incineration of liquid hydrocarbons on surface of water.



Photo 7
In situ incineration of liquid hydrocarbons on surface of water.



Photo 8
In situ incineration of liquid hydrocarbons on surface of water.

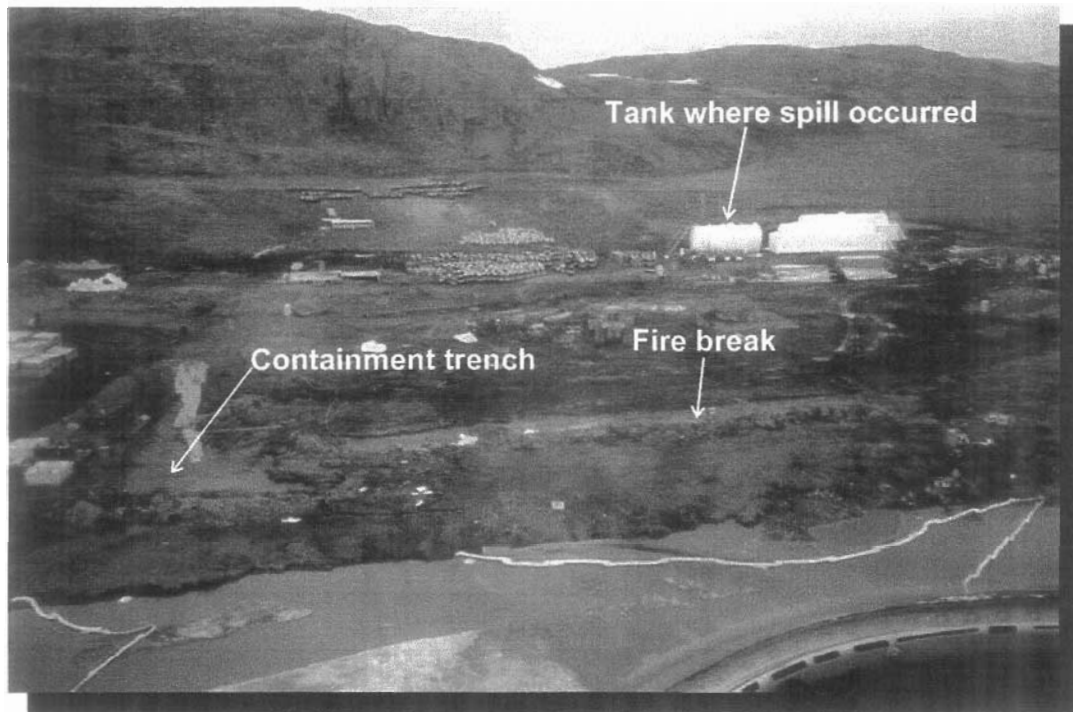


Photo 9
Aerial photo of spill area.



Photo 10
Aerial photo of spill area.



Photo 11
Removal of water within firebreak for treatment and disposal.

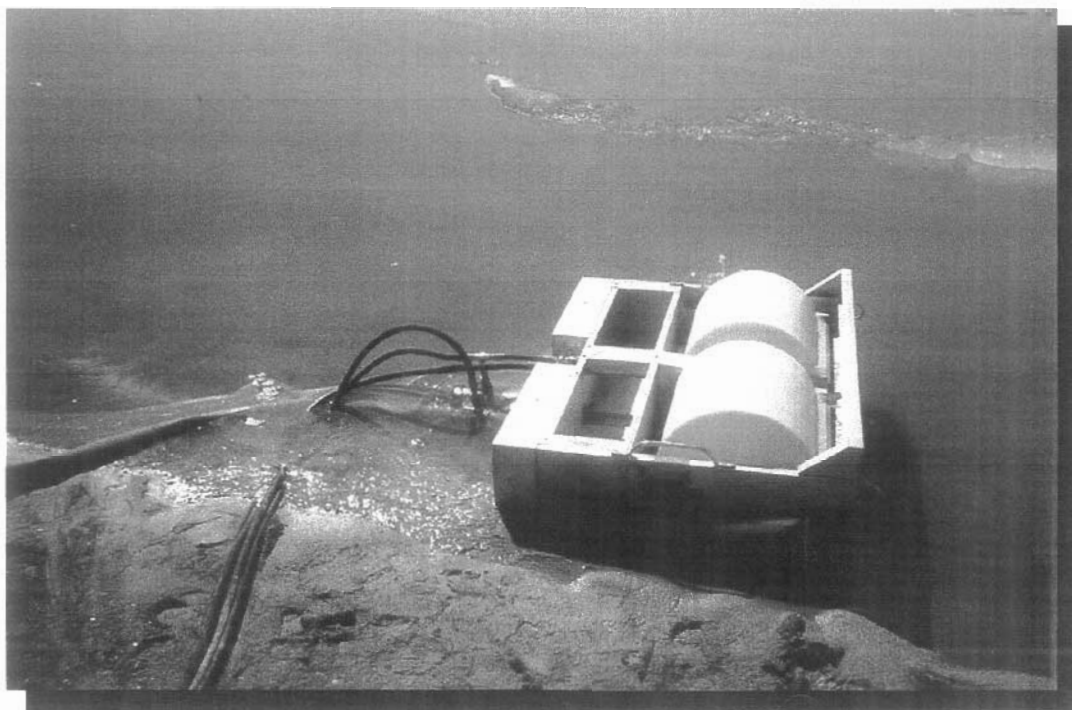


Photo 12
Skimmer used for attempted removal of liquid hydrocarbons on surface of water.

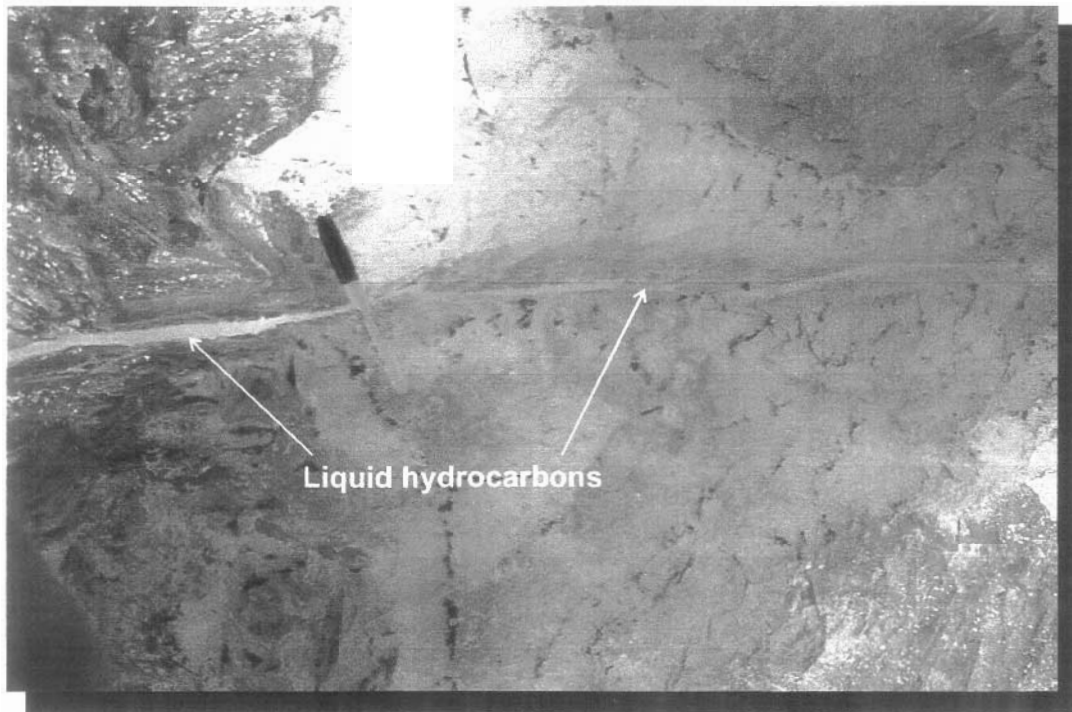


Photo 13
Liquid hydrocarbons within cracks of ice.

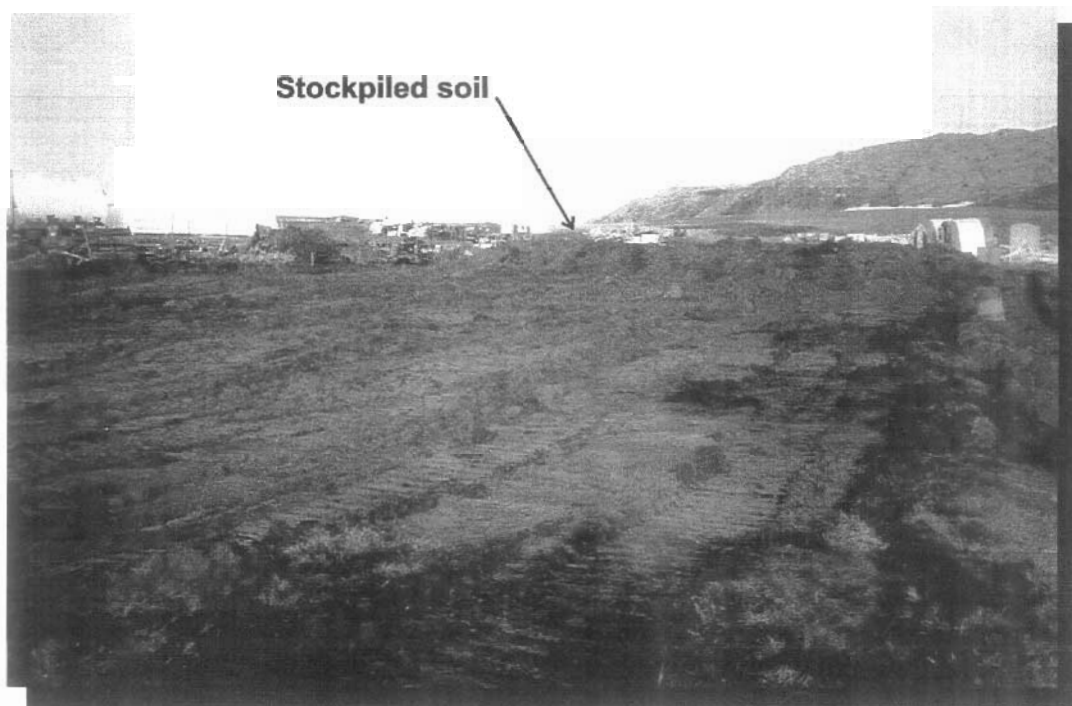


Photo 14
Spill area with impacted soil removed and stockpiled.



Photo 15
Land treatment area.



Photo 16
Placement of impacted soil within land treatment area.



Photo 17
Excavation of drainage trench around land treatment area.



Photo 18
Water treatment system.

APPENDIX B
NWT SPILL REPORT



NWT SPILL REPORT (Oil, Gas, Hazardous chemicals or other materials)

24 - Hour Report Line

Phone: (867) 920-8130

Fax: (867) 873-6924

 FAXED
 June-16-04

A Report Date and Time JUNE-16-04 5:00 PM		B Date and Time of Spill (if known) BETWEEN JUNE-15-04 9:00 AM AND JUNE-16-04 8:00 AM		C ☒ Original Report ☐ Update No.		Spill Number 04-388	
D Location and map coordinates (if known) and direction (if moving) WINDY CAMP							
E Party Responsible for Spill MIRAMAR HOPE BAY.							
F Product(s) spilled and estimated quantities (provide metric volumes/weights if possible) P-40 DIESEL FUEL - APPROXIMATELY 19,000 LITRES							
G Cause of spill FUEL LINE USED FOR DRAWING FUEL FROM THE TANK SEPARATED AT A CONNECTION IN THE LINE. THIS RESULTED IN A SYPHON EFFECT WHICH RESULTED IN A FUEL SPILL.							
H Is spill terminated? ☒ yes ☐ no		I If spill is continuing give estimated rate		J Is further spill possible? ☐ yes ☒ no		K extent of contaminated area in m ² 370 m ²	
L Factors affecting spill or recovery (weather conditions, terrain snow cover etc) HIGH WINDS CAUSED THE LINE TO SEPARATE						M Containment (natural depression, dyke etc) NATURAL DEPRESSIONS OIL BOOMS & ABSORBENT MATERIALS.	
N Action, if any, taken or proposed to contain, recover, clean up or dispose of product(s) and contaminated materials 1. LEAKING FUEL LINE WAS STOPPED IMMEDIATELY 2. OIL BOOMS PUT IN PLACE 3. ABSORBENT MATERIALS PLACED & CLEAN UP UNDERWAY							
O Do you require assistance? ☒ no ☐ yes		P Possible hazards to persons, property, or environment; eg: fire, drinking water, fish or wildlife. POSSIBLE HAZARD TO DRINKING WATER, FISH & WILDLIFE.					
Q Comments and/or recommendations EMERGENCY RESPONSE MEASURES WERE PUT IN PLACE IMMEDIATELY. CRABS PLACED OIL BOOMS OUTSIDE ICE TO CONTAIN OIL IN WATER & STARTED PUMPING THIS OIL INTO DRUMS. SHOVELLING OF CONTAMINATED SOIL INTO DRUMS IS PRESENTLY UNDERWAY AND A TRENCH HAS BEEN DUG TO CONTAIN THE REMAINING SEAPAGE. A FULL DETAIL REPORT TO FOLLOW. SCOTT STRICKER						FOR SPILL LINE USE ONLY	
						Lead Agency Spill Significance Lead Agency contact and time Is this file now closed? ☐ yes ☒ no	
Reported by: [Signature]		Position, Employer, Location SUPERINTENDENT HUMAN RESOURCES MIRAMAR HOPE BAY.				Telephone No:	
Reported to: [Signature]		Position, Employer, Location				Telephone No:	