FAREWELL CAMP & STOCKPILE SITE

OPERATIONS AND MAINTENANCE PLAN

Sewage and Solid Waste Treatment Facilities

November 2001
Amended August 2002
Amended May 2003
Amended July 2003
Tentative Updates May 2005

CAMP FAREWELL

OPERATIONS &
MAINTENANCE PLAN

Sewage & Solid Waste
Treatment Facilities

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OPERATIONAL PLAN

STP – GENERAL DESCRIPTION

STP – EQUIPMENT DRAWINGS

STP – OPERATIONS &
MAINTENANCE GUIDE

MODIFICATIONS

QA/QC PLAN

CONTINGENCY PLAN

LICENSE N7L1-1762

SOLIDS DISPOSAL PLAN

CORRESPONDANCE

SECTION 1

OPERATIONAL PLAN

Shell Canada Limited

Camp Farewell Operational Plan Summary

Start Up

- The Water License defines the regulatory requirement for the use of water and discharge of effluents. Maintain a copy of the License at the site at all times.
- Site manager will review Water License N7L1-1762 and "Water License Field Requirement Checklist" and ensure requirements are executed.
- Start up treatment plant as per manufacturer Start Up Procedures.
- The sewage lagoon at Camp Farewell will be used to store the effluent generated by the sewage treatment plant during the conditioning period of the extended aeration activated sludge unit.

Modifications

- The Board must be notified 45 days prior to beginning modifications. Notification for the upcoming mod was done May 24, 2002.
- Upgrade to Sewage Treatment Plant in July 2002 replaced the RBC unit with an extended aeration activated sludge plant. The plant includes an equalization tank, aeration tanks, aerated sludge digester, final clarifier and ultraviolet light disinfection.
- As-builts must be submitted to Water Board within 90 days of completion of upgrade.

Operating

- Inspector shall be notified 5 days before the start of any planned discharge.
- Inspector approval is required before discharge to the Mackenzie River. Four samples that average within the water license discharge criteria are required in order to receive approval from the Inspector.
- When discharging continuously from the extended aeration plant, directly to the river, samples and analyses are required every two weeks as per the "QA/QC Plan for Collecting Representative Water Samples".
- Maintain sewage treatment plant as per Sanitherm operation and maintenance manual.
- Monitor sediments in tanks and remove with vacuum truck as required and transport to the municipal sewage lagoon.
- Maintain sign identifying the sampling station of the "Surveillance Network Program.
- In the event of a spill, it is to be handled as per Spill Contingency Plan.
- Spill reporting procedures include GNWT Spill Reporting, within 24 hours of an occurrence.
- Ensure water truck has a screen on the suction hose that is compliant with the water license.

Camp Farewell Operational Plan Summary

- Maintain a record of water withdrawn from the Mackenzie River. Utilize daily “Water Withdrawal Volumes” form for tracking use.
- Maintain a record of water discharged to the Mackenzie River. Utilize daily “Waste Water Disposal Volumes” form for tracking use.
- Submit Monthly “Water License Field Requirement Checklist”, “Water Withdrawal Volumes” and “Waste Water Disposal Volumes” sheets as indicated on form.

Shut Down

- Shut down sewage treatment plant and facilities as per manufacturer procedures.
- Haul remaining effluent and sludge with vacuum truck to municipal sewage lagoon for disposal.

Camp Farewell

Water License Field Requirements

Check List

	Circle appropriate answer	**Date**	**Initials**
1. Copy on site: License	Yes / No		
Contingency Plan	Yes / No		
QA/QC Plan	Yes / No		
2. Five Day Notice to Inspector Prior to Discharge	Yes / No		
3. Screened Water Intake	Yes / No		
4. Discharge Sample Point Sign in place w/ "1762-1 Treated Effluent Discharge Sample Point"	Yes / No		
5. Volumes of Water withdrawn for the camp are recorded	Yes / No		
6. Treatment Facilities were modified. If yes: Describe: 45 Day Notice given. As-builts submitted within 90 days of completion	Yes / No Yes / No Yes / No		

Biweekly Discharge Samples

	Date Sampled	***Sampler***		***Date Sampled***	***Sampler***
1			14		
2			15		
3			16		
4			17		
5			18		
6			19		
7			20		
8			21		
9			22		
10			23		
11			24		
12			25		
13			26		

Fax to Shell Canada Limited, DAR/Construction Manager on the first of every month. Fax: (403) 269-7948

Camp Farewell **Year: _____**

Water Withdrawal Volumes

Water License Field Requirements

Fill in the Number of Loads for Camp Use Only Truck Volume: m3 per load.

Date	January	February	March	April	May	June	July	August	September	October	November	December
1												
2												
3												
4												
5												
6												
7												
8												
9												
10												
11												
12												
13												
14												
15												
16												
17												
18												
19												
20												
21												
22												
23												
24												
25												
26												
27												
28												
29												
30												
31												
Total Loads												
Total M3												

Fax to: Shell Canada Limited, DAR/Construction Manager on the first of every month @ (403) 269-7948

Waste Water Disposal Volumes **Camp Farewell** **Year:**_____

Water License Field Requirements

For Reporting Requirements, only Monthly Volume Required.
Daily Tracking is only for Operational Monitoring

Date	January	February	March	April	May	June	July	August	September	October	November	December
1												
2												
3												
4												
5												
6												
7												
8												
9												
10												
11												
12												
13												
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20												
21												
22												
23												
24												
25												
26												
27												
28												
29												
30												
31												
Total M3												

Fax to: Shell Canada Limited, DAR/Construction Manager on the first of every month @ (430) 269-7948

SECTION 2

SEWAGE TREATMENT PLANT
GENERAL DESCRIPTION

Extended Aeration Activated Sludge Unit

Waste Water Treatment System

General Description

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The Extended Aeration Activated Sludge Process

Aerobic digestion of organic based contaminants is employed as the main treatment process within the treatment plant. Sludge settling, recycling of sludge and final effluent disinfection complete the treatment process operations.

In aerobic digestion, microorganisms use the dissolved and suspended organic matter in sewage as food. They also eat dead microorganisms. In addition to food the microorganisms need oxygen. The oxygen is added in aeration tanks where air is bubbled through the water, organic matter and microorganisms to provide oxygen to the microorganisms and to ensure that the microorganisms contact the organic material. In the extended aeration activated sludge process, the microorganisms eat each other as well as sewage. This cannibalism results in a biologically inert sludge with very few microorganisms in it. This is achieved by a retention time in the aeration tanks of 24 hours and having more microorganisms than necessary to eat the sewage. The products of the aeration tanks are water, carbon dioxide, more microorganisms and a biologically inert residue.

The mixture of treated water and microorganisms is settled out in settling tanks (called clarifiers). The settled out alive and active microorganisms (called activated sludge) are returned to the aeration tanks. As there are more microorganisms in the activated sludge than needed to eat the incoming sewage, some of the microorganisms along with the inert sludge are wasted.

With the microorganisms settled out, clean and clear water flows out over the top of the settling tanks. Passing it through banks of ultraviolet lights disinfects this water. After disinfection, the water is discharged to the Mackenzie River

The treatment plant is contained within two 39’ 5” long by 7’ 8 ½” wide by 8- 9 ½” high containers. The two containers are located parallel to one another and are connected by pipes and electrical cables. One container contains a flow equalization chamber, four settling tanks, a sludge holding tank, a chlorine contact chamber, two banks of ultraviolet disinfection lights, pumps, air blowers electrical panels and instrumentation controls. The second container has aeration tanks. Power to operate the plants pumps, heating and control system is supplied by the camp generating facility

The flow of sewage through the treatment facility is as follows:

The camp wastewater outfall line discharges to a lift station placed below grade to accept this flow under gravity. The lift station is equipped with a level activated submersible lifting and grinding pump, which pumps the sewage to the sewage treatment plant.

The pumped sewage flows into a flow equalization chamber. This chamber smoothes out the peaks and valleys of sewage flow to the aeration tanks. It has a minimal amount of air bubbling through it to prevent it from becoming septic and very smelly. Overflow from the sludge holding tank and some wasted activated sludge are also pumped into this chamber. Grinder pumps pump sewage from the bottom of this tank to the aeration tanks.

In the aeration tanks the sewage from the flow equalization chamber has activated sludge (live microorganisms) added. Air is blown through this to add oxygen and mix the sewage and microorganisms into a uniform mixture. Retention time in this unit is around 24 hours. As sewage is pumped in at one end of an aeration tank, a mixture of water, inert sludge and microorganisms flows out the other end to the settling tanks.

After about four hours of settling the clear, treated discharge water runs over a weir to a holding tank. The settled sludge containing microorganisms is then pumped using airlifts to the aeration tanks. This is the 2 " PVC RAS (Returning Activated Sludge) line shown on the Saniterm P&ID drawing. Two valves allow some of this sludge to be wasted to either the sludge holding tank or the flow equalization chamber. These are the WAS (Waste Activated Sludge) lines shown on the Sanitherm P&ID drawing. Any inert material will be recycled through the system until it eventually ends up in the sludge holding tank where it stays.

Whilst the holding tank could be used as a chlorine contact chamber, it is not planned that chlorine be added to the water for disinfection. After flowing through the holding tank, the water enters into two banks of Ultraviolet lights for disinfection. Then the water leaves the building through a 2" male cam lock connection. If the discharged water does not meet quality specifications it can be diverted to the lagoon located immediately beside the plant for processing at a later time.

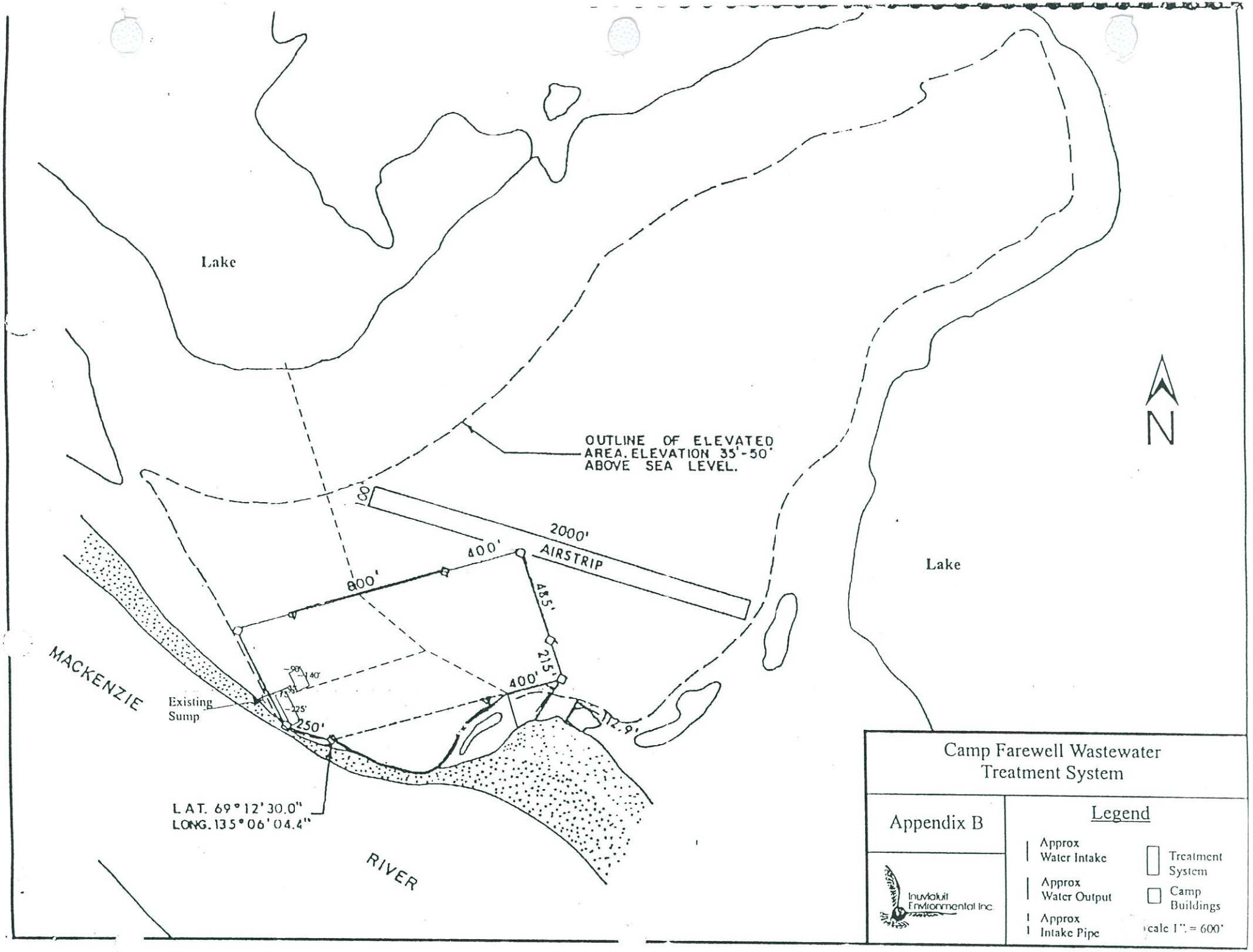
The discharge line is heated to prevent freezing. Sufficient discharge hose, dependent on yearly water levels will transport the treated water to a discharge point in the Mackenzie River channel directly adjacent to Camp Farewell. The discharged water flows from the pipe directly into the moving water, through a hole in the ice.

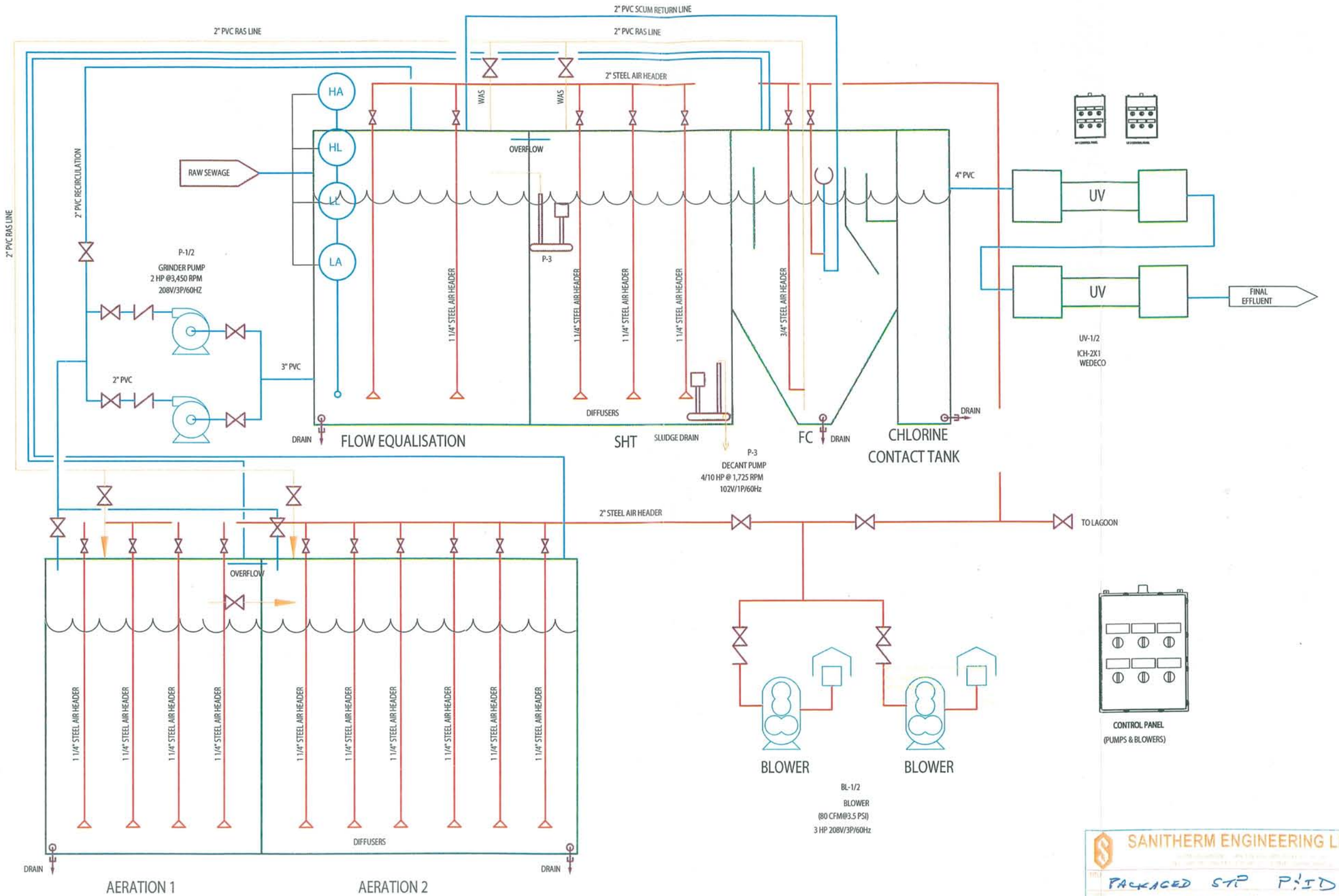
Float switches control the pumps that pump from the flow equalization tank to the aeration tanks. A timer in the control panel controls the aeration blowers. There are two flow equalization pumps and two aeration pumps so that there is 100% stand-by. These blowers provide air for the aeration, flow equalization and holding tanks and for the airlift pumps installed in the settling tanks. The airlift pumps have no other controls on them. They are on when the blowers are on and off when the blowers are off.

Samples of discharged water are taken after the disinfection point. This sample point is easily accessible for collection in a safe and hygienic manner. A small PVC bucket is used to collect approximately 2 liters of sample. The sample is then decanted into three separate sample bottles provided by a third party lab. Samples are shipped directly to the lab for analysis of pH, BOD, TSS, fecal coliform counts, oil and grease and free chlorine concentration. Samples are collected every two weeks during periods of discharge. An insulated cooler with ice packs is used to transport the samples to the lab, preventing them from warming and maintaining a constant sample temperature. Some of the analysis must be conducted within 24hrs of sampling, therefore sampling and expediting planning is of utmost importance. For full details on sampling and analysis, refer to License N7L1-1762 and the approved QA/QC Program.

SECTION 3

SEWAGE TREATMENT PLANT
EQUIPMENT DRAWINGS

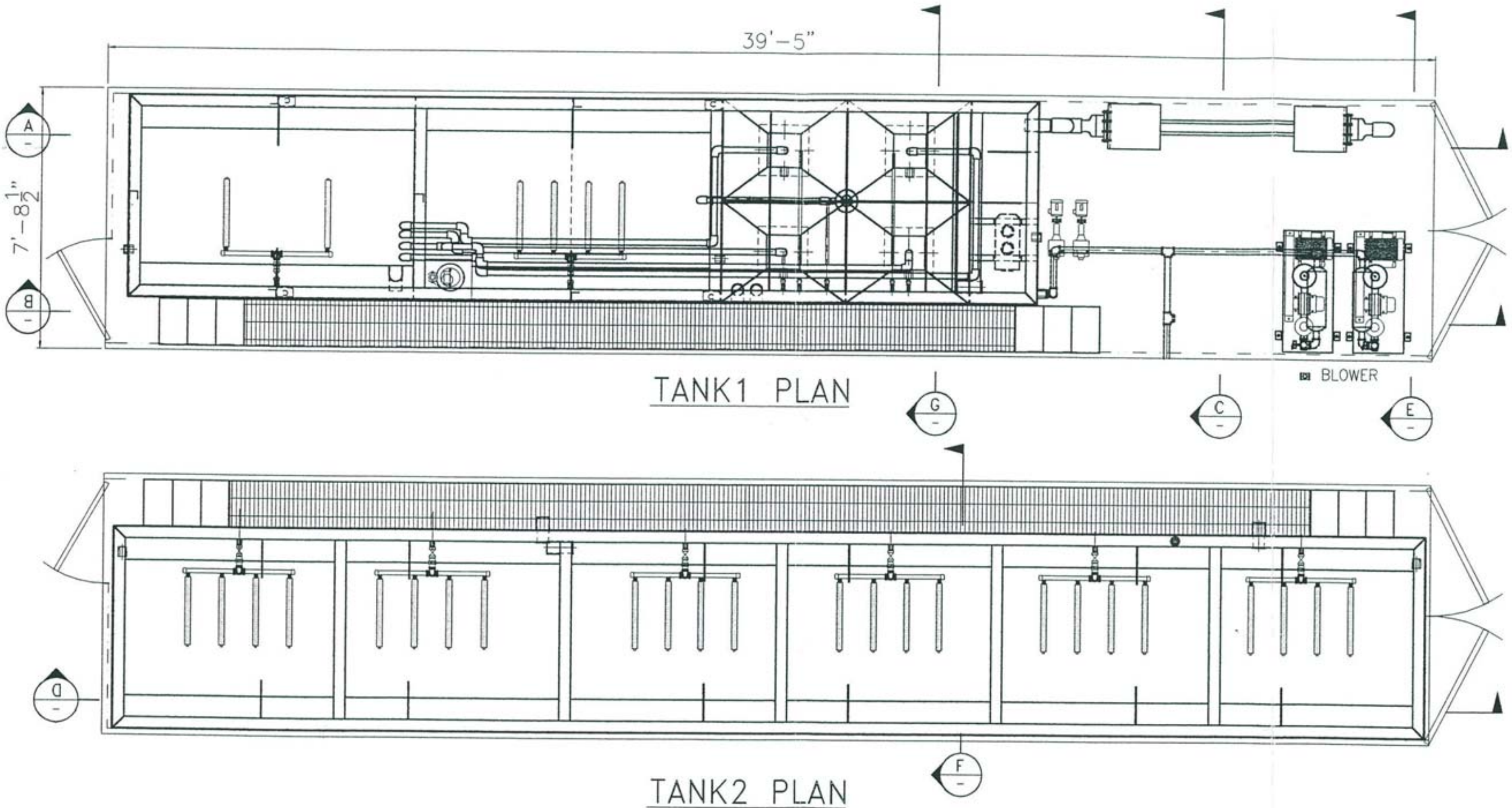

Lake
OUTLINE OF ELEVATED AREA. ELEVATION 35'-50' ABOVE SEA LEVEL.
2000'
AIRSTRIP
400'
800'
485'
215'
400'
MACKENZIE
Existing Sump
250'
LAT. 69°12'30.0"
LONG. 135°06'04.4"
RIVER
Lake
N
Camp Farewell Wastewater Treatment System
Appendix B
Inuvialuit Environmental Inc.
Legend
Approx Water Intake
Approx Water Output
Approx Intake Pipe
Treatment System
Camp Buildings
Scale 1" = 600'



SANITHERM ENGINEERING LIMITED

PACKAGED STP P&ID
SHELL CANADA LIMITED
CAMP FAREWELL 120 MAN STP

07/02	AS BUILT	



TANK1 PLAN

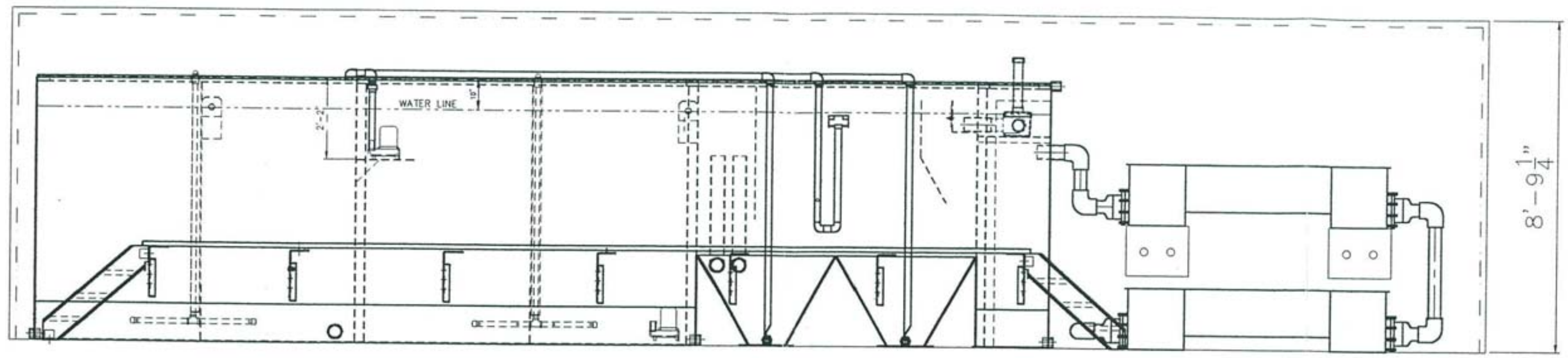
TANK2 PLAN

SANITHERM ENGINEERING LIMITED

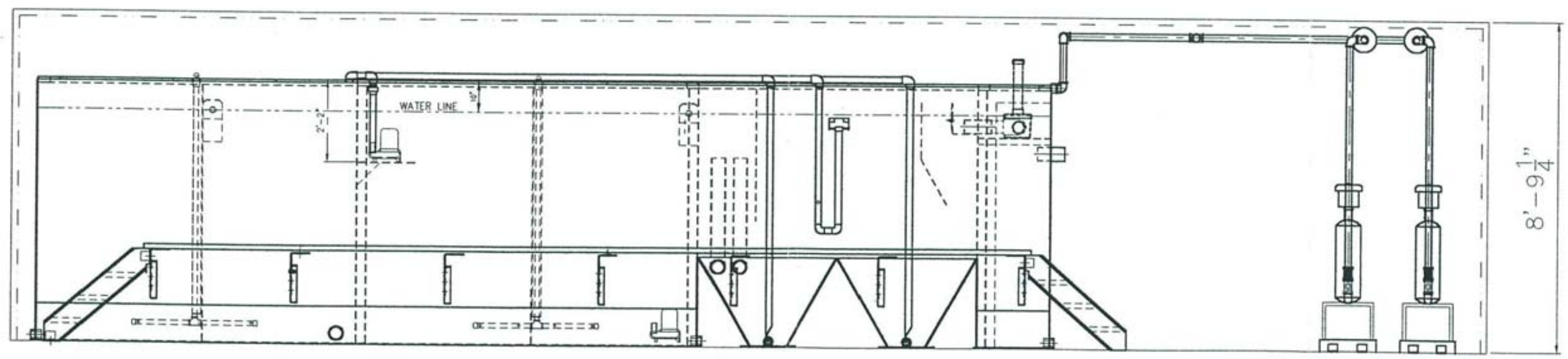
TITLE	PACKAGE SEWAGE TREATMENT PLANT GA
CLIENT	SHELL CANADA LTD.
PROJECT	CAMP FAREWELL 120 MAN STP

DRAWN BY: SC	A2565	SCALE: N.T.S.	17" X 11"		
CHECKED BY: DMB	DATE: 10-JUN-2002	SHEET 1 OF 3	DWG NO: SA-38-002		

REVISION	DATE	DESCRIPTION



SECTION A
NTS

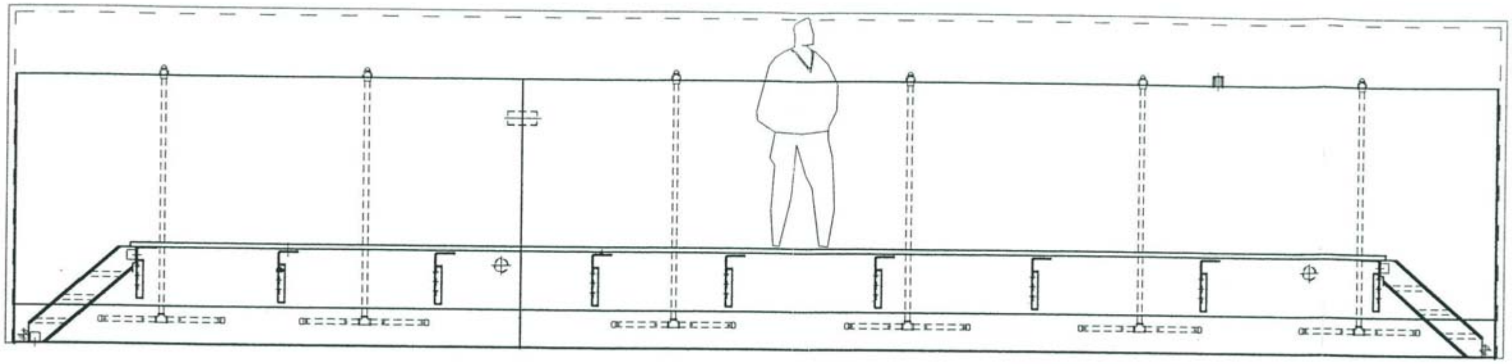


SECTION B
NTS

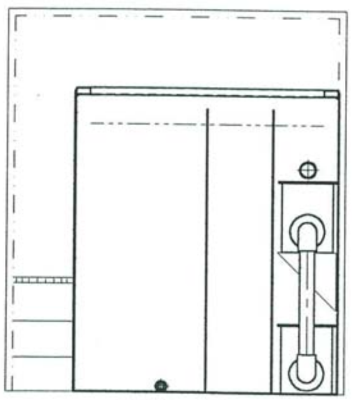
SANITHERM ENGINEERING LIMITED

TITLE	PACKAGE SEWAGE TREATMENT PLANT GA
CLIENT	SHELL CANADA LTD
PROJECT	CAMP FAREWELL 120 MAN STP

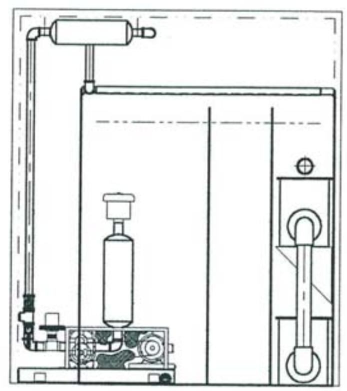
DRAWN BY SC	A2565	SCALE N.T.S.	PAPER SIZE 17" X 11"
CHECKED BY DMB	DATE 10-JUN-2002	SHEET 2 OF 3	DWG NO. SA-38-002



SECTION D
NTS



SECTION C
NTS



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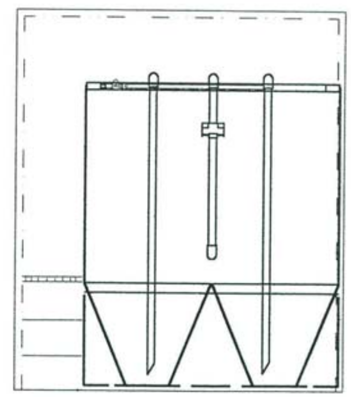

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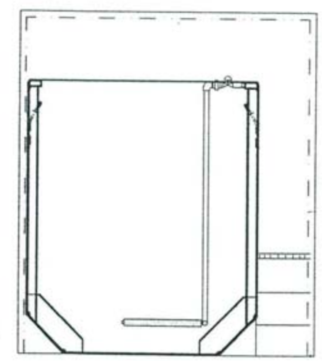
NTS



SECTION F
NTS

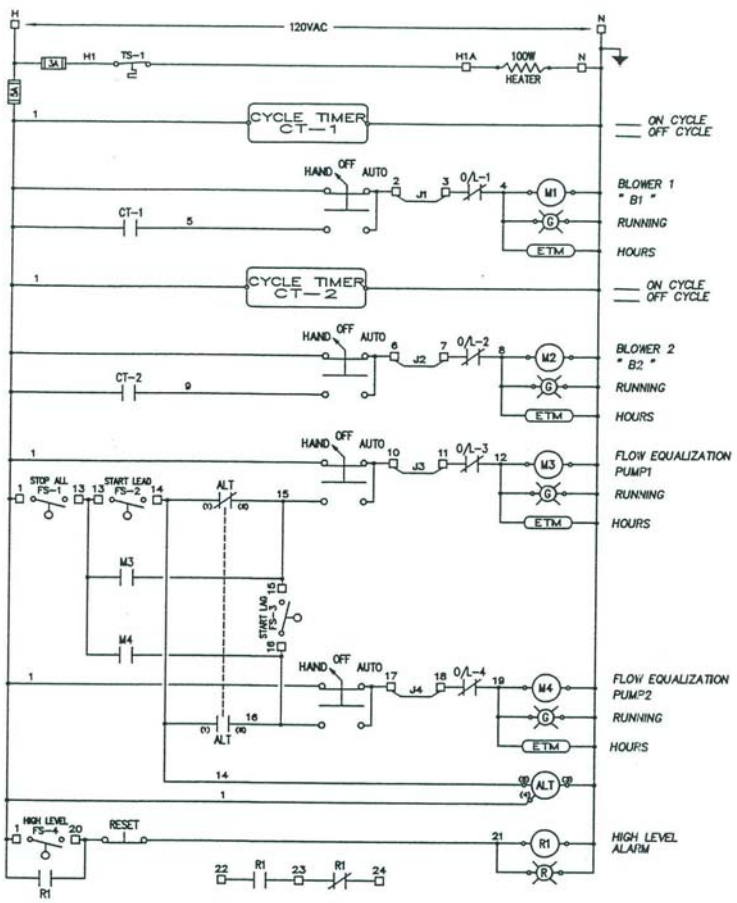
SANITHERM ENGINEERING LIMITED

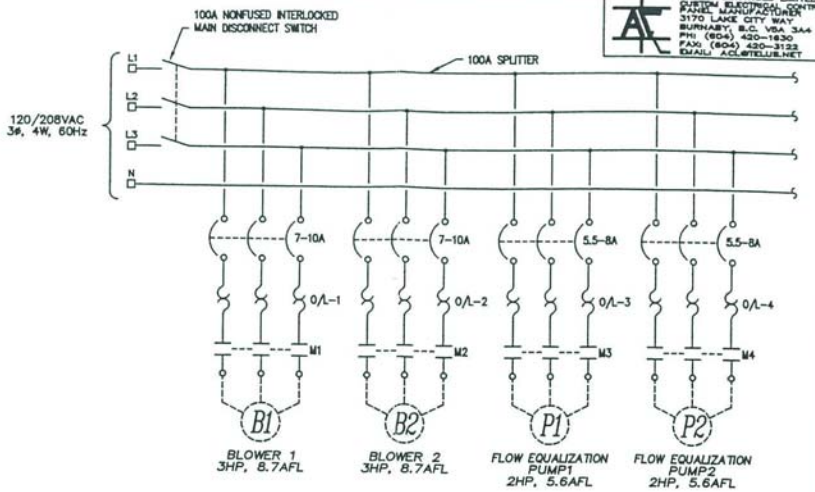
421 MOUNTAIN HWY., SUITE 4, NORTH VANCOUVER, B.C., V7J 3L1

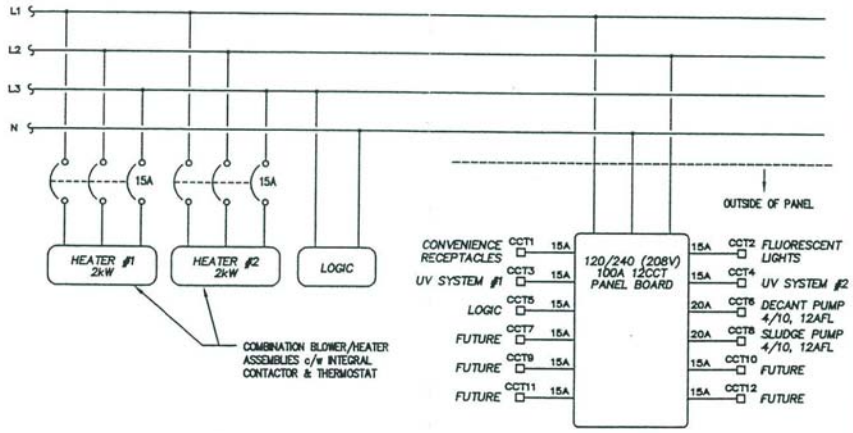
TITLE	PACKAGE SEWAGE TREATMENT PLANT GA
CLIENT	SHELL CANADA LTD
PROJECT	CAMP FAREWELL 120 MAN STP

DRAWN BY SC	FOR MP NO. A2565	SCALE N.T.S.	PAPER SIZE 17" X 11"	REVISION
CHECKED BY DMB	DATE 10-JUN-2002	SHEET 3 OF 3	DWG NO. SA-38-002	

REVISION ISSUE	DATE	DESCRIPTION







ALLIED CONTROLS LIMITED
ELECTRICAL CONTROL
PANEL MANUFACTURER
3170 LAKE CITY WAY
BURNABY, B.C. V5A 3A4
PH: (604) 420-1630
FAX: (604) 420-3122
EMAIL: ACL@TELUS.NET

NOTES:

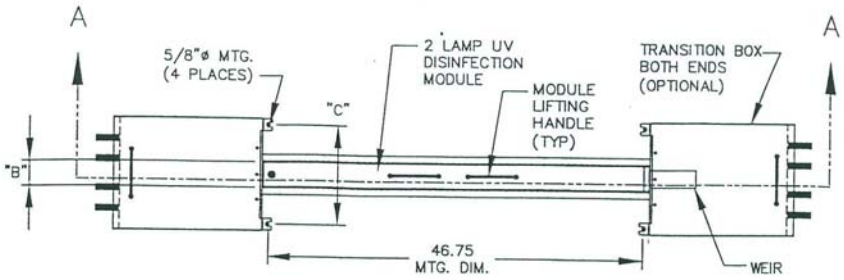
1) THE PANEL IS TO BE EEMAC 12.
2) THE MAIN DISCONNECT IS INTERLOCKED WITH THE DOOR.
3) FS-1 TO FS-4 CLOSE ON RISING LEVEL.
4) JUMPERS J1 TO J4 ARE FOR FUTURE SHUTDOWN CIRCUITS.
5) CT1 AND CT2 ARE LOCATED ON THE BACK PAN
6) THE PANELBOARD IS TO BE SUPPLIED LOOSE.

ALLIED CONTROLS LIMITED

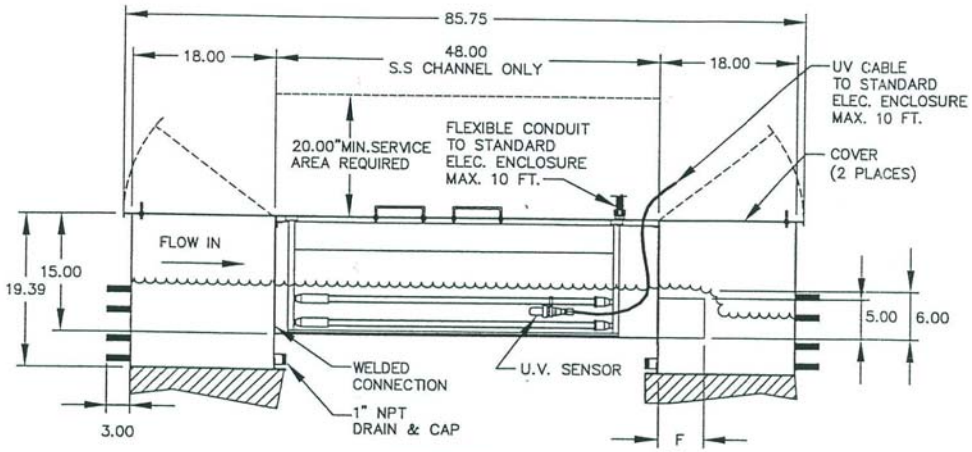
DATE DRAWN: 06/2002	APPROVED BY: G.A.V.	DRAWN BY: T.N.	
DRAWING SCALE: N.T.S.	WORK ORDER NUMBER: 3413	REV. NUM.: 0	REV. DATE:

SHELL RESOURCES/CAMP FAREWELL
TUKTOYAKTUK, N.W.T. WASTE WATER TREATMENT PLANT
POWER & SCHEMATIC DIAGRAM

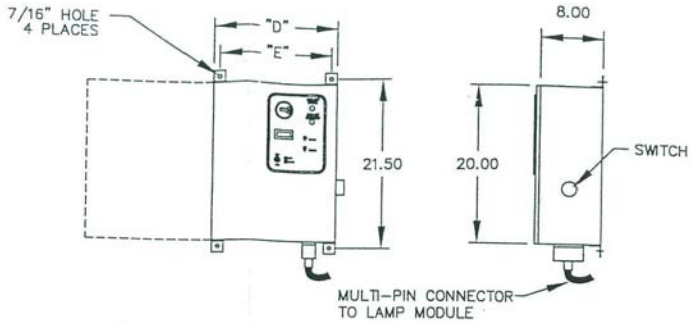
CUSTOMER:	DRAWING NUMBER:
SANITHERM ENGINEERING	02413-C1140



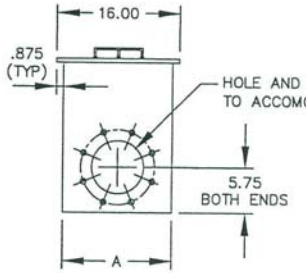
PLAN



SECTION A-A



SYSTEM CONTROL ENCLOSURE



NOTES:

1. ALL DIMENSIONS ARE IN INCHES & TOLERANCES AS PER WEDECO IDEAL HORIZONS' ENGINEERING STANDARDS
2. MODEL ICH-2X1-S SHOWN

SPECIFICATIONS :

1. WETTED PARTS, DISINFECTION CHANNEL MAT'L-304 SS 11 GAGE MATERIAL
2. ELECTRICAL : 120V AC/60 HZ SINGLE PHASE
   OPTIONAL : 220V AC/50 HZ SINGLE PHASE
3. ELECTRICAL ENCLOSURE : 304 SS NEMA 4X MODIFIED

MODEL	# OF LAMPS	# OF RACKS	"A"	"B"	"C"	"D"	"E"	"F"
ICH-2X1-S	2	1	14.00	3.125	12.50	16.00	14.50	2
ICH-2X2-S	4	2	14.00	6.125	12.50	20.00	18.50	4
ICH-2X3-S	6	3	14.00	9.125	12.50	20.00	18.50	6

LTR	DESCRIPTION	DATE	APPROVAL
REVISIONS			

FOR DISCUSSION PURPOSES ONLY
NOT FOR CONSTRUCTION

PROJECT

LOCATION

ENGINEER

Drawn by	VOV	11/08/01
Checked by		
Approved by		
Proj. Engr.		

WEDECO
Ideal Horizons

WEDECO-Ideal Horizons, Inc.
212 Ideal Way
Poultney, VT 05764 USA
(802) 287-4488
Fax (802) 287-4486
www.wedecouv.com

MODEL: ICH-S

UV DISINFECTION SYSTEM ICH-S SERIES

Size	Drawing #	Rev.
B	ICH-S SERIES	
Scale NTS	WT.	Sheet

SECTION 4

SEWAGE TREATMENT PLANT
OPERATIONS & MAINTENANCE GUIDE

Extended Aeration Activated Sludge Unit

Waste Water Treatment System

Operations and Maintenance Guide

Table of Contents

Section 1.0: Quick Start Procedure

This procedure is used when the plant is being restarted after being shut down

1. Check that electrical is still connected. Energize all breakers within the plant panel. Turn on heaters to warm building up.

2. Check that all drains have been closed. Check that pipes are not cracked or broken. Check that all pipes are connected.

3. Ensure weight loaded relief valve on air blower is operational.

4. Check out the air blower as outlined in section 2 item 7 (System Start-up Procedure)

5. Energize breakers within electrical panel after equipment has been checked for operability and required maintenance has been done.

6. If UV bulbs and quartz sleeves were removed reinstall them per section 2 item 8. Clean quartz sleeves as outlined in section 6 item 1.

7. Check that heat tracing on pipe to river is working.

8. Check oil level in Barnes submersible pumps. Check oil levels in air blowers. Grease air blowers.

9. Start up lift station and fill flow equalization chamber. Start up blower and start filling up aeration tanks and then settling tanks.

10. Check submersible pumps for operability. Do not run until they are submerged.

11. It is not recommended that the UV bulbs be energized unless they are at room temperature. Pre warming of the bulbs may be required. Check that UV works electrically. Do not run full time until there is water covering the UV lights in the UV troughs.

12. Divert discharge from plant to lagoon until such time as four samples have an average within the license discharge criteria.

13. Inform Inspector that samples are within criteria and obtain his approval to discharge to the MacKenzie River.

NOTE: Sanitherm have technicians that can come to the camp to provide start-up assistance. If unsure of any part of the start up phone Sanitherm. Telephone number is 1 604 986-9168 (Dave Botwright).

Section 2.0: System Start-Up Procedure

1. Ensure the packaged treatment plant is set on level secure ground.

2. Connect the piping and electrical from the aeration container to the container containing the settling, flow equalization and holding tanks.

3. Follow the quick start-up procedure outlined above plus the following:

4. Energize the Control Panel.

5. Check rotation of all three phase powered equipment within the plant. Energize all circuits within the breaker panel.

6. As the building is warming, all control circuitry within the plant should be tested. Turn the selector switch to the blower and pumps quickly on then off to ensure their operation.

7. Checkout the air blowers. Steps in checking out them are as follows.

    a) Check the unit and all piping for foreign material and clean if required.
    b) Check the flatness of the feet and the alignment of the drive. Feet that are bolted down in a bind can cause case distortion and internal rubbing. Misaligned V-drives can cause the impellers to rub against the headplates and cause a reduction in the volumetric efficiency of the unit. Misaligned couplings can ruin bearings.
    c) If blower is V-belt driven, check the belt tension and alignment. Overtensioned belts create heavy bearing loads which leads to premature failure.
    d) Be sure adequate drive guards are in place to protect the operator from severe personal injury from incidental contact.
    e) Check the unit for proper lubrication. Proper oil level cannot be overemphasized. Too little oil will ruin bearings and gears. Too much oil will cause overheating and can ruin gears and cause other damage. Insure drive end bearings are greased.
    f) With motor locked out, turn the drive shaft by hand to be certain the impellers do not bind.
    g) "Jog" the unit with the motor a few times to check rotation and to be certain it turns freely and smoothly.
    h) The internal surfaces of all Sutorbilt units are mist sprayed with rust preventive to protect the machine during the shipping and installation period. This film should be removed upon initial start-up.
    i) Start the unit and operate 15 minutes at no load. During this time, check for hot spots and other indications of interference.
    j) Apply the load and observe the operation of the unit for one hour. Check frequently during the first day of operation.

8. Insert the UV bulb(s). Procedure for UV installation is as follows:

a) Slide lamp into the domed quartz sleeve by inserting the non-connector end of the lamp into the open end of the quartz sleeve. If quartz dome touched or if it is dirty clean with alcohol.
b) Slide a compression nut over the end of the quartz sleeve.
c) Place an O-ring over the end of the quartz sleeve.
d) Insert the domed end of quartz sleeve into the receiver of the lamp rack. An O-ring should be in the receiver end of the lamp rack assembly.
e) Bring the connector end of the lamp up to the connector in the nipple of the lamp rack and connect them together.
f) Move the open end of the quartz sleeve forward from the receiver and insert into the nipple on the lamp rack.
g) Move the o-ring and compression nut up to the nipple. Engage the threads .of compression nut and nipple.
h) Tighten the compression nut be hand until it cannot be turned any further. Then tighten nut by a 1/4 turn with a wrench. **DO NOT OVERTIGHTEN.** This will create a waterproof seal.
i) After all lamps have been connected, install the lamp racks on the UV bank supports in the channel.
j) Connect multipin connectors with their receptacles mounted on sides of the wireway.
k) Install UV sensor on lamp number 1 of the lamp rack assembly and position between lamp 1 and 2. Direct sensor eye towards the number 2 lamp.
l) The 3-pin connector for the sensor is connected to the outside of the wireway.
m) It is not recommended that the UV bulbs be energized unless they are at room temperature. Pre warming of the bulbs maybe required. Spare bulbs should be stored in a warm environment.
n) The ICH UV horizontal disinfection system is designed to operate with the effluent flowing parallel and between the horizontal lamp racks. `A dry channel condition may cause the system's lamps to overheat, resulting in a decrease in lamp life and damage to other system components.

   ALWAYS MAINTAIN PROPER EFFLUENT LEVELS WHEN OPERATING THIS SYSTEM. ALL LAMPS SHOULD BE SUBMERSED IN THE EFFLUENT AT ALL TIMES.

   WATER LEVEL SHOULD BE 1 in. MAX. ABOVE THE TOP OF THE PROTECTIVE QUARTZ SLEEVE OF THE TOP NO.1 LAMP.

8. Start-up UV system. Procedure is as follows.

   a) Turn ON the GFIs located in Ballast Power Enclosure.
   b) Turn ON the MAIN POWER FEED.
   c) Turn the OFF switch to the ON position on the side of the Ballast Power Enclosure.
   d) Verify that the UV lamps are ON in the first lamp rack assembly by viewing the LED array located behind the display window of the Ballast Power Enclosure.

9. Calibrate UV meter

The ultraviolet meter for each bank of lamps can only be calibrated when the power is "**on**" and the ultraviolet lamps are operational. Allow the lamps to warm up for 2 minutes prior to any calibrations. This should only be done with new lamps that have been in operation for approximately 100 hrs.
Note*:* The UV Sensor is located between lamp no.1 and lamp no.2 the sensor eye should be pointed directly at lamp no.2.

a) To set the low ultraviolet intensity alarms, find the test switches located near the intensity meter on the front inside display panel of the **ballast power enclosure**. Flip the **run/set** switch to the **set** position. The meter will go to approximately 60%.
b) Adjust the set point by turning the potentiometer marked **set**, located near the test switches.
c) Turn right (clockwise) for up scale.
d) Turn left (counter clockwise) for down scale.
e) Return **run/set** switch to **run** position.
f) To test for low ultraviolet intensity, turn scale potentiometer, adjusting 0-100% meter scale, down below 60% level. The low UV intensity light will come on. When turning the meter back up, the light/alarm will stay on for 30 seconds.
g) Set meter at l00%.

Section 3.0: Equipment Shut Down Procedure

1. Flush all discharge lines within the camp with water. The lift station will fill sending the flush water into the sewage treatment plant.

2. Once the camp lines have been flushed disconnect the camp discharge line from the lift station(s). Loosen the lift station(s) lid bolts and slide to on side so the pump and level switch are visible.

3. Disconnect the 2" discharge line at the lift station and plant inlet. Roll line up and store within the plant building.

4. Pump out the sludge holding tank and haul the sludge to the local municipality or alternate site approved by Inspector.

5 Drain the remaining tanks and ship the contents to local sewage treatment plant for further treatment. Wash tanks and piping to remove all solids. A vacuum truck is required to remove all remaining fluid from the tank system.

6 Put tray under valving at grinder pump discharges. Disconnect piping before check valve and drain pipe into tray.

7. Put tray under valving at grinder pump inlets. Disconnect inlet line to grinder pumps and drain piping. Disconnect the submersible sewage pumps and drain their bowls.

8. Leave all drain valves open to prevent them from cracking due to freezing.

9. The fluid within the UV system must be removed. Open the small drains on the UV transition boxes. Drain fluid into bucket.

10. Disconnect piping from blower. Spray rust inhibiting aerosol into pump. Place few packets of silica gel desiccant. Cap of motor. If possible rotate shaft by hand every month.

11. Turn all breakers off.

Section 4.0: Trouble Shooting Guide

Problem	Cause	Possible Remedy
Lift station filling, pump not running	Level switch caught in down position.	Shake lift station tank to free switch Remove tank cover and re-position switch.
	Impeller requires service.	Replace impeller and seal.
	No power to pump.	Check breaker and electric connection.
Blower not turning	No power to blower.	Check breaker and selector.
	Motor starter tripped off	Reset motor contactor and ensure heater pack set points are properly set to full load amperage of the motor
Blower knocking	Unit out of time.	Retime impellers.
	Distortion due to improper	Check mounting alignment and relieve pipe strains.
	Excessive pressure	Reduce to manufacturer's recommended pressure. Examine relief valve, re-set if necessary.
	Worn gears.	Replace timing gears.
	Worn bearings	Replace bearings.
Excessive blower Temperature	Too much oil in gear case.	Reduce oil level.
	Too low operating speed.	Increase blower speed.
	Clogged filter or muffler.	Remove cause of obstruction.
	Excessive pressure differential.	Reduce pressure differential across the blower.
	Worn impeller clearances.	Replace impeller.
	Internal contact.	Correct clearances
Impeller end or tip drag.	Insufficient assembled clearances	Correct clearances.
	Case or frame distortion.	Check mounting and pipe strain.
	Excessive operating pressure.	Remove cause.
	Excessive operating temperature.	Remove cause.
Lack of volume	Slipping belts	Tighten belts
	Worn clearances	Re-establish proper clearances
Excessive bearing Or gear wear.	Improper lubrication	Correct lubrication level. Replace dirty oil.
Loss of oil.	Headplate, gear case or drive cover vents plugged.	Clean vents.
Low discharge pressure from	Blockage at intake line.	Remove and clean breather.

Problem	Cause	Possible Remedy
blower.		
High discharge pressure from blower	Blockage at discharge line.	Ensure valve(s) open.
Blower turning in wrong direction.	Incorrect three phase wiring.	Interchange two of the wiring phases. To be done only by licensed electrician.
Blower has intermittent operation.	Motor starter overload	Reset heater packs to proper full load settings. Faulty contactor or heater pack. Replace items.
Supernatant Pump not activating	Control timer in "OFF" mode	Wait for timer to time out.
	Level switch stuck in down position.	Reposition level switch for free movement.
	No power to pump	Check breaker and selector.
Sludge light brown instead of dark brown	Insufficient sludge return	Reduce amount of sludge being wasted
	Plant being started up	Reduce amount of sludge being wasted
Sludge not settling in settling tanks	Too low level of solids in system	Decrease amount of sludge being wasted (sludge too young)
	Too much grease	Cut down kitchen wasting of oils and grease
	Alkaline waste from laundry	Stagger laundry usage
		Use low phosphate detergent
Sludge building up in settling tank	Insufficient activated sludge being wasted	Increase amount of sludge being wasted.
High Coliform reading on discharge sample.	Limited UV radiation	Ensure UV bulbs are on Bulbs may need replacing. UV quartz sleeves require cleaning
	Cross contamination when obtaining sample	Follow proper sampling protocols for collection and handling sample.
High BOD reading on discharge sample	Limited aeration	Increase aeration time
	Contamination of influent.	Ensure cleaning products used are biodegradeable. Reduce volume of chlorine and ammonia based cleaning agents.
	Plant is "hydraulically overloaded	Ensure that water inlet rate is less than 70 gpd per person being serviced by plant.
	Cross contamination when	Follow proper sampling

Problem	Cause	Possible Remedy
	obtaining sample	protocols for collection and handling sample.
High TSS reading on discharge sample	Contamination of influent	Ensure cleaning products used are biodegradable. Reduce volume of chlorine and ammonia based cleaning agents.
	Cross contamination when obtaining sample	Follow proper sampling protocols for collection and handling sample
	Plant is "hydraulically overloaded	Ensure that water inlet rate is less than 70 gpd per person being serviced by plant.
Offensive odour from plant	Septic conditions in plant.	Increase aeration or ensure there are not blockages in aeration line. Ensure cleaning products used are biodegradable. Reduce volume of chlorine and ammonia based cleaning agents.
Gray or black biomass	Septic conditions in plant	Increase aeration or ensure there are not blockages in aeration line. Ensure cleaning products used are biodegradable. Reduce volume of chlorine and ammonia based cleaning agents
Clumps of black smelly solids on top of settling tanks	Solids too long in settling tanks	Increase sludge return rate
	Sludge lines plugged	Check and unplug lines
Reddish biomass	Over aeration	Reduce air to tanks
UV system not working	Quartz sleeve is cracked	Remove and replace quartz sleeve (see installation instructions).
	Compression nut seal is leaking	Reseat 0-ring and tighten compression nut.
	0-ring is damaged	Replace 0-ring and tighten compression nut.
	Liquid tight cable connection is loose or damaged	Contact Ideal Horizons Waste Water Sales Dept. and return the lamp rack assembly to the factory for repair. Attempts to repair the unit by unauthorized person(s) may void the warranty.
	Lamp out indicator is on	Check and verify the location of

Problem	Cause	Possible Remedy
		the lamp out condition. Turn **OFF** the lamp rack assembly that has the lamp out. Replace the defective lamp and turn the module **ON**.
	Defective ballast	Verify that the ballast is defective. NOTE: Each ballast controls two (2) lamps in sequence. Verify that two (2) lamps in sequence are out. Lamp numbers are on female 6-pin connector.
	Lamp wiring failure	Use multimeter to test system. Set the meter to the Ohm scale. Turn **OFF** power to the module. Check point to point from the lamp to its corresponding ballast, looking for an **OPEN** circuit. If the circuit is open, reseat the connection and retest the circuit. Turn **ON** module power.
	Lamp Status Board Failure	Locate the suspect lamp status board Turn **OFF** the corresponding module. Disconnect the **LED** array connector from the board and remove the board. Replace the suspect lamp status board with a known operational board and turn **ON** the module. It the problem persists (**LED's** will not light), follow the procedure outlined in **LAMP WIRING**.

Problem	Cause	Possible Remedy
	Defective Wiring	Obtain a mutimeter and set to the Ohm scale. Turn the **GFI** to **OFF**. Check point to point from the **GFI** to the power **ON** relay socket pin in the **Ballast Power Enclosure**. If a circuit is **OPEN**, reconnect the wire. If the problem persists, check the **ON/OFF/AUTO** switch.
	On/off/auto switch	Turn **OFF** the power to the suspect module at the **GFI's** in the control box. Module switch needs to be in the **ON** position. Obtain a multimeter and set to the Ohm scale. Read the resistance between the two contacts on the switch that corresponds to the module in question. If the meter reads **OPEN**, replace the switch.
	Ultraviolet meter circuit board failure	Turn **OFF** the power to the bank. Remove the suspect board, and replace it with a known operational board. Turn **ON** the power and read the ultraviolet intensity on the meter. If the meter reads above 60%, replace the defective board. If the meter continues to read low UV, contact the factory representative.

Problem	Cause	Possible Remedy
	Lamp bank failure	If there is a lamp bank failure, or partial bank fail check the following five (4) areas: 1. GFI breaker- SIB ON. 2. Multi- pin connectors should be plugged in 3. Wiring (see previous defective wiring) 4. **ON 0FF/AUTO** switch- select proper setting
		NOTE: If the GFI breaker has tripped reset the breaker and check the bank. If the breaker continues to trip, inspect the quartz sleeve for cracks or water intrusion. Check ballast assemblies or ground faults.

Section 5.0: Equipment and Flow Description

All the equipment is contained within two containers, which have connecting piping, and electrical cabling installed to tie them together. The electrical supply to these containers is three-phase 210 volt at 60 amps.

Camp sewage flows into a lift station. The lift station periodically pumps the sewage to a flow equalization tank in the first container. A float switch controls the pump. The purpose of the flow equalization tank is to smooth out flow to the aeration tanks. The flow equalization tank is aerated to prevent the sewage from going septic. Microorganisms from the settling tanks are also pumped into this tank. Because there is only a small amount of air being bubbled through the tank, there is not a lot of sewage treatment done in this tank.

Pumps remove sewage from the bottom of the flow equalization tank and grind and pump it to the aeration tanks. These tanks are located in the second container.

Here the sewage is mixed with active (living) microorganisms being returned from the bottom of the settling tanks. This mixture has air bubbled through it. The air mixes the contents and provides air for the microorganisms. A mixture of water and microorganisms overflow the aeration tanks and flows to settling tanks located in the first container.

In the settling tanks the microorganisms settle to the bottom of the holding tank. The water overflows the settling tanks to a holding tank. It then flows from the holding tank through Ultraviolet lights where the light kills any microorganisms left in the water.

Airlift pumps pump the settled sludge out of the bottom of the settling tanks. Some of the sludge is returned to the aeration tanks. The remainder is wasted to either the Solids Holding Tank or Flow Equalization Tank.

The Sludge Holding Tank is also aerated to prevent it from going septic. The air bubbling through the tank ensures that all organic material is consumed. Thus the sludge that settles out is biologically inert. This sludge is pumped out and hauled to the local municipal sewage treatment plant. A pump is located in the middle of this tank to pump the watery liquid left after settlement into the Flow Equalization tank for further treatment.

Section 6.0: Routine and Periodic Maintenance

1. The protective quartz sleeve that encompasses each **UV lamp** needs to be removed from the channel for cleaning on a routine basis. Any buildup of dirt or scaling on the sleeve must be removed. The cleanliness of the lamp and its protective quartz sleeve is instrumental in the UV systems performance. Cleaning of the lamp rack assemblies should occur every time the intensity drops below 65. Detailed cleaning procedure is as follows:

    a) Mix one (1) part citric acid to nine (9) parts water in a two-gallon bucket. Rubber gloves, face mask and apron must be worn while cleaning the ultraviolet (UV) lamp rack.
    b) Disconnect the UV light multi-pin connectors from the wireway to avoid high voltage electrical shock. Remove each rack from the channel for cleaning, one at a time. Make sure the multi-pin connector does not fall into the channel. If you have spare UV lamp racks, replace each rack to be cleaned with a spare to ensure that the bank of lamps are in operation during the cleaning process.
    c) Wipe down each lamp rack with the citric acid solution
    d) Rinse down the UV lamp rack and wipe each quartz sleeve with a soft, clean cloth to remove the cleaning solution residue.
    e) Return the UV lamp rack to its position in the channel and attach the multi-pin connectors to their appropriate connection points. After cleaning of the lamp rack assemblies be certain that the multi -pin connectors have been thoroughly dried before making the connection.
    f) Repeat the above process for each UV lamp rack.
    g) If the proper ultraviolet intensity levels cannot be obtained through repeated cleaning of the quartz sleeves of the lamp and the sensor, one of the following may be causing it.
        i. UV sensor location. - reposition or change the sensor unit located on the lamp rack assembly
        ii. Plant effluent transmissivity – check effluent for clearness. If not clear fix process problem.
        iii. Lamps produce less light as they age. The lamp may need to be replaced.
        iv. The protective quartz sleeve can also degrade due to long exposure to the UV. This exposure causes quartz tube to turn light brown and effect UV output. The quartz sleeve should be replaced.

2 Lift/Sludge/Discharge Pumps –the pumps should be checked daily to ensure they are functioning and that the level switches are able to freely float within their respective tanks. Amperage draw should be checked every month. Increasing amperage indicates water in motor housing and impeller seal should be replaced. Check impeller every 6 months for wear or breakage. Replace as required.

3 Air Blowers – clean inlet filters monthly. Replace as required.

- Check oil level daily. Add fresh oil as required
- Drain oil from gearbox and replace every 1500 hours (about 2 months)

- Grease bearings in drive end every 500 hours (about 3 weeks)
- Ensure vents on drive end are always open to prevent overpressure damaging seals

Precautionary Note:

The extended activated sludge wastewater treatment system is designed to employ aerobic digestion of organic based contaminants within the wastewater stream. Inorganic matter, that may impact the plants ability to digest and produce consistent quality of treated effluents, such as plastics, cigarette butts, sanitary napkins must be prevented from entering the camp wastewater outfall system.

Large volumes of disinfecting agents, oils, grease, high sudsing detergents, or discharge volume from water softening equipment should also be restricted from entering the camp wastewater outfall system.

SECTION 5

MODIFICATIONS

NORTHWEST TERRITORIES WATER BOARD

WATER REGISTER: N7L1-1762

June 11, 2002

Mr. Randy Hetman
DAR/Construction Manager
Shell Canada Limited
400 - 4 Avenue S.W.
CALGARY, AB T2P 2H5

Dear Mr. Hetman:

NOTIFICATION OF MODIFICATION

Thank you for your letter of May 24, 2002, and additional information provided on May 30, 2002 notifying the Northwest Territories Water Board of the proposed modifications to the sewage treatment facility. The Board has reviewed the notification and is satisfied that the modification is consistent with the current terms and conditions of your Water Licence.

Please note that as per Part E, Item 3 of your Water Licence, as-built plans and drawings of the new sewage treatment system must be submitted to the Board within ninety (90) days of completion. Please submit a revised Camp Farewell Operations and Maintenance Plan for the new sewage treatment system by September 1, 2002.

If you require further assistance, please contact this office. For enquiries of a technical nature, contact Ms Sarah Aho at (867) 669-2402 or Mr. David Milburn at (867) 669-2650 of the Water Resources Division.

Sincerely,

Gordon Wray
Chairman
N.W.T. Water Board

P.O. Box 1500, Yellowknife, NT, X1A 2R3, 2nd Floor Goga Cho Building
Phone: (867) 669-2772 Fax: (867) 669-2719

Shell Farewell – License N7L1-1762

Proposed
Wastewater Treatment Plant Modifications

Mod. 2002-1

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Background

A RBC system was installed at Camp Farewell in January, 2001 and operated until the end of April before being shutdown for the summer. It was again started up in December and operated until March 1, 2002. Difficulties were experienced in achieving License discharge criteria during both operating periods. The plant was also modified in an effort to improve its performance however insufficient time until camp shutdown did not allow for conclusive results.

Modification

The wastewater treating plant will be replaced with an "extended aeration system" which is a modified activated sludge system. The activated sludge process has been in existence for close to 100 years and presently represents the most widespread technology for wastewater purification. In general, the activated sludge process is a continuous or semi-continuous aerobic method for biological wastewater treatment.
The activated sludge process is based on:

- Waste water is aerated in a tank
- Bacteria are encouraged to grow by providing oxygen, Food(BOD), correct temperature and time
- As bacteria consume BOD, they grow and multiply
- Treated wastewater flows into a secondary clarifier
- Bacteria cells settle, and removed from clarifier as sludge
- Part of the sludge is recycled back to the activated sludge tank to maintain bacteria population
- Remainder of sludge is wasted

The attached P&ID shows the system design. The proposed process is:

- Raw sewage enters the equalization tank - purpose to smooth out the flows through the unit
- Wastewater is then pumped to the first aeration tank where complete mixing occurs and then flows to the second aeration tank.
- Water then flows to the aerated sludge digester(SHT). It can be recycled from this point for constant flow maintenance.
- Water then enters the final clarifier (FC) which has a sloped bottom for effective sludge removal and recycling.
- Water flows to the chlorine contact tank however this feature will not be utilized at this time.
- The effluent will be disinfected using a dual, oversized ultraviolet light system in series.

The plant has been designed for 120+ people as well as taking into consideration peak loading. It has a nominal treatment capacity of 9000 usgpd and/or a maximum of 37 lbs. BOD5/day. Total volume of the system is approximately 18000 USG.

Benefits of the System over Previous System

The system is conventional in nature, and all design parameters meet typical textbook requirements. Provided these requirements are met, there is extensive operation data available proving that the system can achieve the desired effluent results.

It is being designed and manufactured by Sanitherm Engineering who have 50 years experience in treatment design and a proven track record for camp style units.

The air blowers and the wastewater equalization pumps are duplexed for 100% standby.

This system is not as rate sensitive as the RBC system and has provision for recycling.

The design has taken peak flows into consideration, which the RBC did not.

The RBC had basic design flaws such as flat clarification tank bottom rather than sloped for effective sludge removal.

This system has dual, large ultraviolet lights for disinfection, which are designed for ease of cleaning. The RBC system had one unit, more suitable for potable water disinfection, and very difficult to clean.

Sanitherm will be supplying an extensive operation manual with procedures and tips for the Operator.

Sanitherm has experienced operational personnel on staff and available for process optimization and operator training.

Startup

Installation is anticipated for early July, 2002. Sanitherm personnel with operational expertise will be on site for start up and training of our camp operations personnel.

The Camp Farewell Operations and Maintenance Plan will be updated once the required information on the new treating plant becomes available.

SECTION 6

QA/QC PLAN

Indian and Northern Affairs Canada
Affaires indiennes et du Nord Canada

P. O. Box 1500
Yellowknife, NT X1A 2R3

Your file Votre référence

Our file Notre référence
License # N7L1-1762

May 2, 2001

Ms. Cynthia Pyc
Environmental Biologist
Inuvialuit Environmental & Geotechnical Inc.
1338 - 36th Avenue N.E. - Bay R
Calgary, AB T2E 6T6

Dear Ms. Pyc:

Re: Shell Canada - Camp Farewell
Quality Assurance and Quality Control Plan
for Collecting Representative Water Samples
Submitted: March 28, 2001

Thank-you for the submittal of your revised Quality Assurance and Quality Control Plan. Upon review, it has been found that the plan requires some revisions. However, since the changes involve information from the Taiga Environmental Laboratory, I am able to address the changes directly in this letter. Approval of the plan is hereby granted. Please make note of the following for future revisions to the plan:

1. Under Section 4.3, Table 2 Methods of Analysis and Detection Limits, please note that the detection limit for BOD5 is listed incorrectly. The correct value is 2 mg/L.
2. Ammonia and Oil & Grease are not listed in the current scope of testing for Taiga Environmental Laboratory. However, the laboratory intends to add these tests to their scope in their next laboratory assessment, scheduled to take place in September, 2001.

Should you require further information, please do not hesitate to contact me at (867) 669-2781.

Sincerely,

Kathleen Puznicki
Analyst Under the Northwest Territories Waters Act

cc: Northwest Territories Water Board
North Mackenzie District
Water Resources

Canada

QUALITY ASSURANCE AND QUALITY CONTROL PLAN

FOR

COLLECTING REPRESENTATIVE WATER SAMPLES

Prepared for

Shell Canada Ltd.
150 – 6th Avenue SW
Calgary, AB
T2P 3E3

Prepared by

Inuvialuit Environmental & Geotechnical Inc.
1338R – 36 Avenue NE
Calgary, Alberta
T2E 6T6

January 2001

Table of Contents

Tables

Appendix

1.0 INTRODUCTION

This proposal identifies: the types of sampling required; the location of sample collection; the frequency of sampling; proper sample handling methods and documentation; and the analytical parameters for laboratory analysis, to fulfill the requirements of Indian and Northern Affairs Canada Water Resources Division and the Northwest Territories Water Board Class B License N7L1-1762. This License is for Camp Farewell in the Mackenzie River Delta, located at Latitude 69° 12'30" N and Longitude 135° 06'04" W in the Northwest Territories.

Included in the Appendix are basic definitions for terms used for sampling in this proposal.

2.0 SAMPLE COLLECTION

2.1 Location

Water sample collection for laboratory analysis will occur at sampling station 1762-1 (Treated effluent discharge prior to entering the receiving environment). Sign posting will be used to identify the sampling location. Refer to Table 1.

2.2 Sampling Equipment

The collection of effluent at Station 1762-1 will require personal protective gear that should include: disposable latex or Nitrile gloves, rubber boots (waterproof), Tyvek or other protective clothing, and eye protection. For the protection and preservation of the collected water samples, equipment would include: labels for sample identification, laboratory cleaned sample containers (see Table 1), coolers, ice packs, bubble wrap for packing, chain of custody forms, and completed field notes (see section 3.1). Additional equipment that may be required includes a pH meter, electrical conductivity meter, and temperature probe.

TABLE 1

EFFLUENT WATER COLLECTION

PARAMETER	CONTAINER TYPE	SAMPLE SIZE (ml)	PRESERVATION	MAXIMUM STORAGE TIME	FREQUENCY AND LOCATION
BIWEEKLY SAMPLING					
BOD_5	Autoclaved (white tape) Polyethylene	500	Refrigerate 4 °C	24 Hours	Biweekly – Station # 1762-1
Total Suspended Solids	(green dot) Polyethylene	1000	Refrigerate 4 °C	24 Hours	Biweekly – Station # 1762-1
Faecal Coliforms	Autoclaved (white tape) Polyethylene	250	Refrigerate 4 °C	24 Hours	Biweekly – Station # 1762-1
Ammonia	(pink dot) Polyethylene	125	1 ml 10% H_2SO_4 – Refrigerate 4 ° C	28 Days	Biweekly – Station # 1762-1
Oil and Grease	(yellow dot) Wide mouth Brown Glass	1000	4 ml 1:1 H_2SO_4 – Refrigerate 4 °C	N/A	Biweekly – Station # 1762-1

Note: BOD_5 – Biological Oxygen Demand – 5 day incubation.

2.3 Sampling Methods

Two main categories of samples will be utilized for this program: Test Samples and Control Samples. The test sample method chosen to best characterize the site is Probability Sampling using the Simple Random Sampling method (see Appendix A). In addition to the test sampling, Quality Control (QC) sampling with field blanks, trip blanks, and duplicate samples should be performed periodically (monthly) to confirm the laboratory results.

All sampling, sample preservation, and analysis shall be conducted in accordance with method described in the current edition of "Standard Methods for the Examination of Water and Wastewater" (20th ed., 1998).

When sampling in lakes and ponds, the sample bottle is lowered to mid-depth and rinsed three times before collecting the sample on the forth submersion. Ensure the sample container contains adequate room for mixing, preservative addition and thermal expansion.

When sampling stream water, the sample bottle is plunged towards the current and rinsed three times before collecting the sample on the forth submersion. Ensure the sample container contains adequate room for mixing, preservative addition and thermal expansion.

Glass containers should be used when sampling for hydrocarbon (oil and grease) concentrations.

Deviating from the above sampling protocols, water collected for faecal coliforms and oil and grease analysis, the sample is collected during the first submersion and not rinsed three times first.

In general, the protocol for sampling is as follows:

- Acquire all necessary equipment, including; personal protective equipment, sample labels, writing tool (pencil should be used to avoid running), laboratory clean sample containers, sample documenting forms (field notes, field screening results (field pH, EC, and temp values, if required), chain of custody forms, weigh bill for transportation by commercial carrier), coolers and ice packs for sample refrigeration and transportation to the laboratory, bubble wrap for packing, clear packing tape to protect sample labels and seal cooler, camera to photo document sample collection, and any additional equipment required.
- Don personal protective equipment
- At sampling location, if required, perform field screening of pH, EC, Temperature, and observations of water quality of effluent and record values in field notes.
- Label sample containers with information described in Section 3.1.
- Place clear packing tape over label to protect information from "washing off".
- Open control sample bottles of laboratory deionised (DI) water, and pour into labelled sample containers, add analyte of known concentration (and preservative - if required) seal, and send with other samples for laboratory analysis. Note: Sample labels should not indicate that these are control samples. In addition, it is preferable to fill control sample container with DI water at the sample location.
- Rinse sample containers with water to be sampled if necessary, do not rinse sample containers for faecal coliforms and oil and grease analysis.
- Collect sample in laboratory cleaned sample container (note: it is imperative that the collected samples be representative of the whole population (i.e. the effluent stream)). Qualitative observations of the sample should also be noted in the field notes at this time (i.e. sample colour, odour, clear-opaque, presence of particulates, etc. Complete Chain of Custody form with required analysis listed for each collected sample.

- Carefully bubble wrap the sample containers and place in ice chilled cooler maintained at ~4 °C for transport directly to the laboratory for analysis. Note: this entire procedure, including the initial laboratory preparation must be completed within the allowable handling time (Table 1) from the time of sampling (e.g. 24 hours).
- Complete field notes and log samples. Retain paperwork for submission to the Board, if required.

Effluent water samples will be collected on a biweekly basis at Station 1762-1 and sent for laboratory analysis to determine the concentrations of Biological Oxygen Demand (BOD_5), Total Suspended Solids (TSS), Faecal Coliforms, Ammonia, and Oil and Grease. Refer to Table 1 for a summary of parameters to be analyzed, container size, preservation methods, and holding times.

The quality controlled blank and duplicate sample will be statistically compared to laboratory QA/QC samples. The "Quality" of the samples and sampling procedures are evaluated from the results of this comparison. If control samples fall out of the allowable statistical standard deviation, then the sample results are invalid, and the effluent must be sampled again. If upon re-sampling and re-submission to the laboratory, QC samples continue to be "out of range", then a complete review of the storage of containers prior to sampling, sampling procedures, and the storage and transport of the samples to the laboratory is warranted.

3.0 SAMPLE HANDLING

As sample-handling procedures are imperative to the integrity of the sample, lag times from the time of sample collection to the time of laboratory analysis must be kept to a minimum. Samples for Faecal Coliforms analysis, for example, have a holding time of 24 hours from the time of sample collection to the time of laboratory analysis. Beyond that time the analysis becomes Quantitative and not Qualitative.

3.1 Documentation

Documentation is an important part of a Quality Assurance Program and includes information on the sample labels as well as in the Field Notebook. The minimum documentation requirements (CCME 1993) for samples include:

- Sampling date
- Sampling time
- Identification number or code
- Sampler's name
- Sampling site (including coordinate/depth where relevant)
- Sampling conditions
- Sample type
- Sampling equipment
- Storage and preservation methods
- Time of storage and of preservation
- Auxiliary information (topography, distance from source, field screening values of pH, EC, and temperature, etc.)
- Deviations from the sampling protocols, if any, and
- Completion of the Chain of Custody (COC) for transport directly to the laboratory.

Additional information on the sample containers to aid in efficient handling includes:

- Analysis required (not just listed on the COC), and
- Label the sample container lid with sample identification number.

A Field Notebook should be retained on-site for future reference and should contain;

- Samplers name, position
- Sampling date
- Weather conditions
- Sampling location conditions
- Time sampling began and ended
- Observations of water (or sample) quality
- Volume of water purged (if applicable)
- Field measurements of pH, EC, and Temperature
- Field Notebook should be photocopied regularly and archived

3.2 Preservation

This procedure is used to ensure the integrity of the collected sample until it is laboratory analyzed. Preservation methods include; refrigeration (refrigerated storage or ice packs), the addition of chemicals (acids, other preservatives, etc), and filtration.

Preservation methods can be parameter specific, such as the addition of Sulphuric Acid (H_2SO_4) for Ammonia analysis, or can be a universal method, such as, refrigeration. Refer to Table 1 for the specific preservation method used for each parameter to be analyzed.

3.3 Transportation

The collected samples with complete documentation (sample identification and chain of custody form, as described in Section 3.1) are to be packed in bubble wrap and placed in coolers with ice packs or refrigerated. The packed samples are to be sent directly to the laboratory for analysis (Taiga Environmental Laboratory in Yellowknife, NWT) as soon as possible. Therefore, due to the remoteness of the site, sample collection times must be logistically organized with transportation schedules to the laboratory. This will ensure the samples arrive at the laboratory and are analyzed within the allowable holding time.

4.0 LAB ANALYSIS

4.1 Lab Accreditation

See Appendix B for Canadian Association for Environmental Analytical Laboratories (CAEAL) accreditation of Taiga Environmental Laboratory in Yellowknife.

4.2 Detection Limits

Refer to Table 2 in Section 4.3 for detection limits for each parameter.

4.3 Methodology

Refer to Table 2 in this section for laboratory methods for each parameter.

TABLE 2

METHODS OF ANALYSIS AND DETECTION LIMITS

PARAMETER	CODE	TEST METHOD[1]	DETECTION LIMIT
BIWEEKLY SAMPLING			
BOD_5	BOD-CL	APHA 5210-B 5 Day incubation - O_2 electrode	7
Total Suspended Solids	Solids-TOTSUS	APHA 2540-D Gravimetric	3 mg/L
Faecal Coliforms	FCC-MF	APHA 9221-E Faecal Coliforms Membrane Filter Procedure	1 colony/100 ml
Ammonia	NH4-CL	APHA 4500-NH3/H Colorimetric	0.005 mg/L
Oil and Grease	OGG-ED	APHA 5520-C Hexane METB Extraction/Gravimetric	0.2 mg/L

[1]Standard Methods for the Examination of Water and Wastewater, 20th ed., 1998

4.4 Reporting Requirements

As indicated in the "Surveillance Network Program" appended to Shell Canada's Class B Water License N7L1-1762;

"The Licensee Shall, within thirty (30) days following the month being reported, submit to the Board all data and information required by the "Surveillance Network Program" including the results of the approved Quality Assurance Plan."

In addition to the monthly reporting of effluent quality, Shell Canada shall file an Annual Report with the Board not later than March 31 of the year following the calendar year reported. This report shall contain:

- The total quantities in cubic metres of fresh water obtained from all sources,
- The total quantities in cubic metres of each and all waste discharged,
- The results of sampling carried out under the Surveillance Network Program,
- The frequency of field blanks, field replicate sample collection and reporting,
- A summary of any modifications carried out on the Water Supply and Waste Disposal Facilities, including all associated structures,
- A list of any spills and unauthorized discharges, and
- Any other details on water use or waste disposal requested by the Board within forty-five (45) days before the annual report is due.

APPENDIX A

Definition of Terms

Quality Assurance: is the system of activities designed to better ensure that quality control is done effectively.

Quality Control: is the use of established procedures to achieve standards of measurement for the three principal components of quality; precision; accuracy; and reliability.

There are two main categories of samples; Test Samples and Control Samples.

Test samples are basic samples used to characterize a site. The number of test samples depends on the degree of confidence required to characterize the site and on the number of samples needed for each analytical method. There are various approaches to collecting test samples:

- *Accessibility Sampling* - The sample is restricted to a part of a population that is readily accessible. It may be justified when resources of time, money or physical access, prevent any other type of sampling being taken, but there is little other justification.
- *Haphazard Sampling* - Taken when, although other samples may be accessible, there is no plan to control the probability of choosing a sample. It is really of value only if a very homogenous population over time and space is being sampled, which is generally unknown at the time of sampling (if it was known, samples would probably not be required). This is very difficult to justify and this method is not recommended.
- *Judgment (or Purposive) Sampling* - Taken when specific samples are selected for their unique value of interest, not for making inferences about the population. Judgment Samples may also be taken when the target population is well defined and homogenous, but the same concerns described for Hap-Hazard Sampling apply. Since you are generally sampling because you do not know the population, this is not recommended.
- *Probability or Representative Sampling (suggested for this project).* Probability or representative sampling is the most important type of sampling and is aimed at ensuring that valid conclusions can be drawn about a population from a sample. Various approaches to this include;
- *Random Sampling* – the sample is selected by chance mechanism with known probability of selection. This method of sampling is also divided into Simple Random Sampling and Stratified Random Sampling.
- *Simple Random Sampling* – When a population is large and homogeneous and every possible sample has an equal probability of being selected.
- *Stratified Random Sampling* – When a population is large and heterogeneous, it can be subdivided, the subdivisions sampled and, if necessary, the results combined.
- *Grid Sampling* – When systematic samples are taken in a specified pattern, usually a grid, with the samples collected at the grid nodes.
- *Stratified Sampling* – When a specified number of random samples are taken in a specified pattern or within a cell, usually a grid.

Control samples / Quality Control (QC) samples, which may be simulated samples, are used to control the analytical process. They are often regarded as synonymous with QC check samples. The term is also used to describe samples taken outside the target area, in order to provide a "background" reading.

Preservation is control methods used to ensure the integrity of the collected sample until it is laboratory analyzed. Preservation methods include; refrigeration (refrigerated storage or ice packs), the addition of chemicals (acid, base, preservatives, etc), and filtration.

Detection Limit refers to the minimum concentration of analyte that can be measured above the background noise of an instrument.

Analyte is a solution containing a parameter of interest in a known concentration.

APPENDIX B

APPENDIX C

SECTION 7

CONTINGENCY PLAN

400 - 4th Avenue SW
P.O. Box 100, Station M
Calgary, Alberta T2P 2H5
TEL (403) 691-3111

Camp Farewell Emergency Response Plan

December 2000

AMENDED OCTOBER, 2002
AMENDED MAY, 2003
AMENDED JULY, 2003
TENTATIVE UPDATES MAY 2005

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WELL CONSTRUCTION & GEOPHYSICAL OPERATIONS

GENERAL EMERGENCY RESPONSE PLAN, MAY 2003

This is a not controlled document.

This general emergency response plan includes spill contingency plans for liquid, sewage and solid materials. It is effective from September 1, 2002 to November 30, 2005. It applies to Camp Farewell which is located in the Northwest Territories along the east shore of the MacKenzie River – Middle Channel, 50 km downstream from Tununik Point at Longitude 69^{o}-12'-30" and Latitude 135^{o}-06'-04".

License number from Northwest Territories Water Board is N7L1-1762 License type B

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Table of Contents

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1. OVERVIEW & KEY PRINCIPLES

1.1 WC&GO General Emergency Response Plan : Purpose

WC&GO General Emergency Response Plan : Purpose

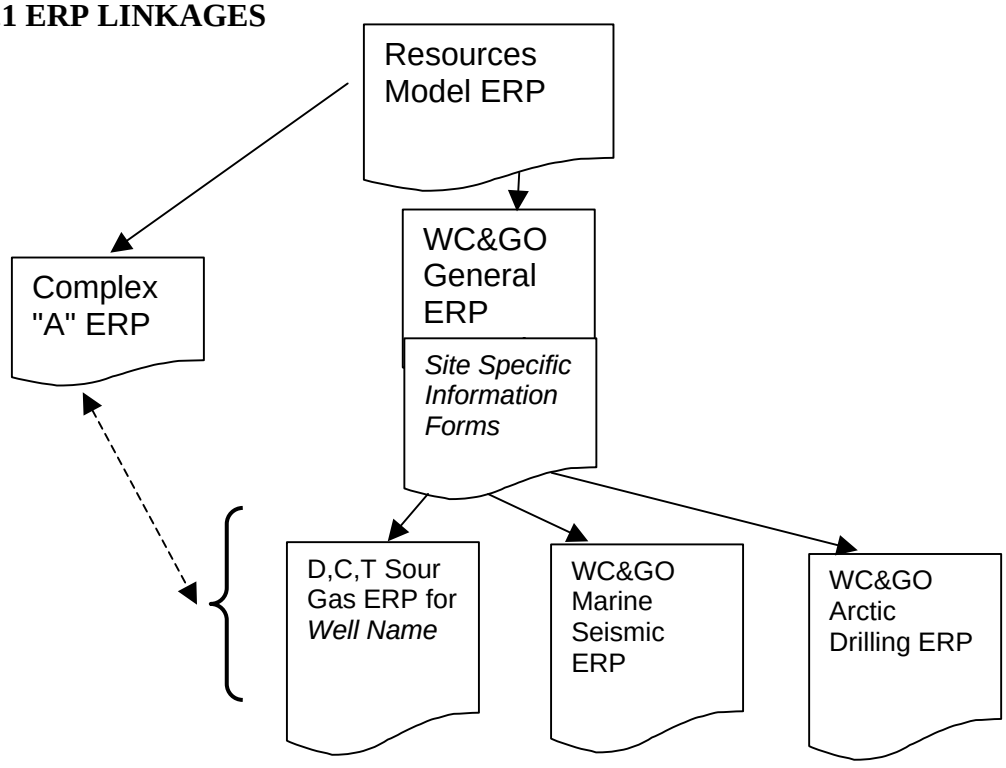
- The purpose of this manual is to describe and provide guidelines as to how **Well Construction & Geophysical Operations WC&GO** handles emergency preparedness and response using the **Incident Command System ICS**.
- It is a tool for WC&GO staff and consultants who have ICS training, it is not meant to be a complete training document.
- These guidelines complement the **Resources Model Emergency Response Plan ERP** and provide the link to site specific WC&GO ERP's and Complex (e.g. Waterton) ERP's.
- This document provides some brief descriptions of Shell Canada's ERP system; for full explanations refer to the Resources Model Emergency Response Plan.
- Emergencies related to sour gas are not addressed in this document. Refer to site-specific emergency response plans or applicable Complex-specific emergency response plans.

1.2 Different ERP's : Linkages

Different ERP's : Linkages

- Virtually all of WC&GO activities relate to projects.
- ALL PROJECTS general emergencies will be managed as per this WC&GO General Emergency ERP.
- ALL PROJECTS will have site specific information forms completed (refer to 2.4 WC&GO General ERP Site Specific Information Forms)
- In addition, many projects are more complex and have specific ERP's to cover specific emergencies :
  - **Drilling, Completing, Testing Sour Gas ERP:** drilling and completions projects involving sour gas H_2S. Focuses on response with the public off site (notification, evacuation, roadblocks, etc). These are often linked to Shell Operating Complex ERP's.
  - **Marine Seismic** : focuses on the specific vessel and location of the survey
  - **Arctic Drilling:** focuses on the cold weather issues, remoteness issues, and spill response issues.
- A project could have 2 ERP's, for example, for a sour gas drilling project, the WC&GO General ERP plus a site specific DC&T Sour Gas ERP.

FIGURE 1.1 ERP LINKAGES



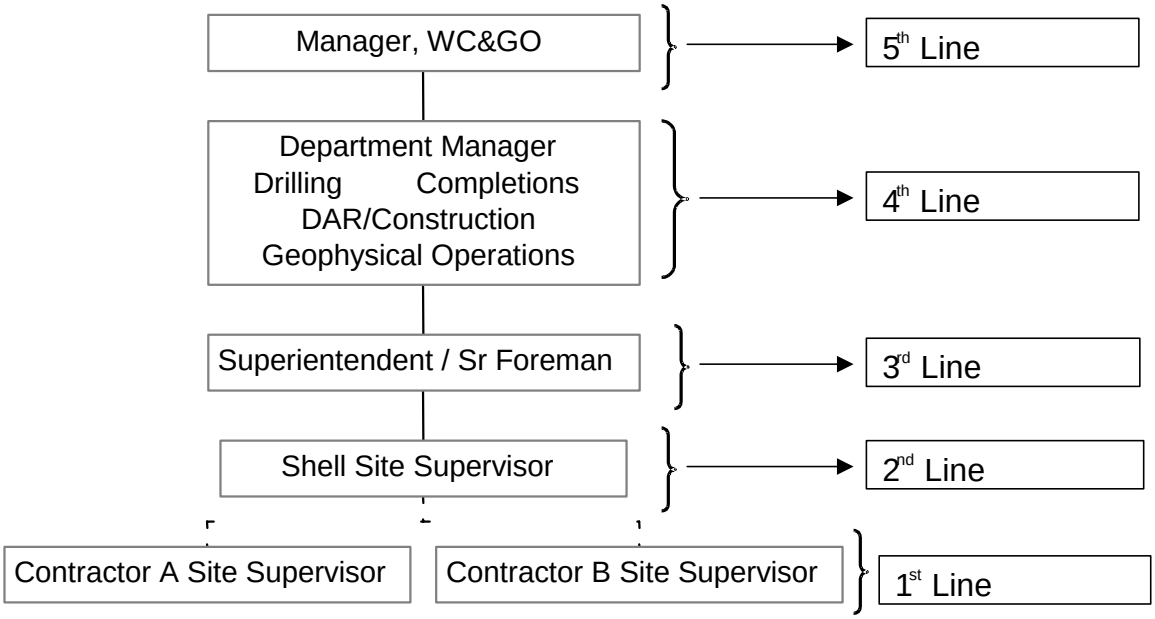
1.3 WC&GO : Projects & Worksite Management

WC&GO Activities : Projects	• The Well Construction and Geophysical Operations WC&GO is a Shell Canada Resources Business Unit that provides project design and execution capability in Drilling, Completions, DAR/Construction, Seismic Acquisition, and Geomatics • WC&GO provide this capability to the other Resources Business Units (Foothills, Frontier, and Peace River) as part of project teams. Overall project management by the project teams is under the framework of Sub Surface Project Management, Drilling the Limit, or general Project Management Principals. • The actual work is conducted by contractors at field locations remote from office locations. These worksites are managed by a WC&GO Site supervisor. • **WC&GO has full control of, responsibility for, and accountability for HSSD performance, including Emergency Response, on all its project worksites**. • On some worksites, an emergency could be managed using the contractor's ERP; however the WC&GO Site supervisor would still be responsible to ensure it is adequately implemented and addresses the emergency.
The following are WC&GO areas of activity	
Drilling : Land	• Deep, sour, wells : foothills and deep plains • Heavy oil wells (Peace River) • Arctic wells
Completions : Land	• Well completions, stimulation, testing, workovers, and downhole abandonment • Deep, sour, wells : foothills and deep plains • Heavy oil wells (Peace River) • Arctic wells
DAR/Construction	• Wellsite and access construction all Resources onshore activity areas • Decommissioning, Abandonment and Restoration of wellsites, access, and other facilities in all of Resources activity areas

Geophysical Operations	• Seismic Acquisition : Land
	  • Foothills low impact seismic
	  • Arctic
	• Seismic Acquisition : Marine
	  • Seismic vessels
	  • Support vessels
	• Geomatics (surveying and positioning) : land and marine

WC&GO Project Worksites : Management & Control	• All the actual hands on work on WC&GO projects is conducted by contractors and service companies. • All WC&GO worksites are managed by a Site Supervisor (Shell Staff or consultant). • Many of the contractors on site have there own HSSD Management Systems, which include Emergency Response. The WC&GO Site Supervisor may use and coordinate the contractor's site ERP, but the resultant ERP must follow the guidelines outlined in this document.

FIGURE 1.2 WC&GO PROJECT WORKSITE MANAGEMENT



1.4 WC&GO HSE Hazard Study, Safety Cases and HSSD Assessments

WC&GO Studies

- WC&GO has conducted Hazard Studies and Safety Cases on operations under its control.
- These studies have demonstrated that major hazards have been identified, assessed, and that the necessary barriers and recovery preparedness measures have been specified.
- In addition, ALL Resources Projects are required to have a HSSD Assessment conducted (Resources HSSD Standard 9 Risk Management) which would identify unique project issues and provide input into the applicable project site specific ERP

WC&GO HSE Hazard Study

- In 2001, WC&GO did a HSE Hazard Study in conjunction with Resources Safety and Environment.
- This study included a HSE Assessment, which was systematically applied to WC&GO operations and a listing of all significant HSE hazards.
- The following are the Major Hazards identified, and the corresponding ERP that addresses the hazard:
    - Loss of Well Control (Blowout) : Drilling or Completions > WC&GO Sour Gas ERP
    - Road Transport : vehicle accident > WC&GO General Emergency ERP
    - Air Transport : aircraft accident > WC&GO General Emergency ERP, Marine Seismic ERP, Arctic Drilling ERP
    - Camp Fire : fire, smoke, exposure (evacuation, winter) > WC&GO General Emergency ERP, Marine Seismic ERP, Arctic Drilling ERP
    - Emergency Response : exposure of emergency response personnel (HAZMAT) : fire, toxic effects WC&GO General Emergency ERP, WC&GO Sour Gas ERP, Marine Seismic ERP, Arctic Drilling ERP

Marine Seismic HSE Case

- All marine seismic projects will have a HSE Case (or equivalent) conducted similar to :

  "HSE Case : Shell Thrumcap 3D

  Vessel : Western Monarch, March 2000"

- A site specific ERP will be developed for each project.
- If a project is a continuation of a previous project, with no major changes in contractor/vessel, HSE Management Systems, or personnel, a review and confirmation of applicability of the pervious HSE Case is acceptable with 5th Line Management approval (Manager, WC&GO).
  - Note: this was done for the 2001 Thrumcap #D project based on the 2000 project.
  - The project site specific ERP will be updated as appropriate and re-issued.

Arctic Drilling HSE Case

- All arctic drilling projects will have a HSE Case (or equivalent) conducted.
- A site specific ERP will be developed for each project.
- If a project is a continuation of a previous project, with no major changes in contractor/vessel, HSE Management Systems, or personnel, a review and confirmation of applicability of the pervious HSE Case is acceptable with 5th Line Management approval (Manager, WC&GO).
  - The project site specific ERP will be updated as appropriate and re-issued.

2. WC&GO GENERAL EMERGENCY RESPONSE PLAN

2.1 General

General

- All worksites must be prepared to handle minor emergencies (General Emergency Level I: medical, fire, spill, etc), and have a response plan for them.
- They are typically handled by personnel on site, but could escalate to impact off-site.
- The following is the general Incident Command activation and response for typical WC&GO non sour gas emergencies, based on the Level of the emergency.
- This General Emergency ERP does **not apply to major Sour Gas Emergencies;** these are covered by site specific Drilling, Completing, Testing Sour Gas ERP's or Complex ERP's.
- For emergencies not listed, apply the appropriate Level of response as per the general level description.
- Each project will have **Site Specific Information Forms** (see section 2.4) to capture current information :
  - WC&GO General ERP : Emergency Contact List
  - WC&GO General ERP : Transportation Plan
  - WC&GO General ERP : Spill Plan
  - WC&GO Phone List
- It is the Shell Site Supervisor's responsibility to have on site :
  - WC&GO General Emergency ERP
  - current Site Specific Information Forms **(see 2.4)**
  - additional project specific ERP's as required (e.g., WC&GO Sour Gas ERP)
  - appropriate Shell Complex ERP if the project will call upon that ERP.

2.2 Incident Command System

Incident Command System

(exert from the Resources Model Emergency Response Plan)

- All WC&GO emergencies are handled using the Incident Command System
- The Incident Command System (ICS) is an all-risk system that is Flexible and Adaptable to all EMERGENCIES.
- The system consists of actions that command and control personnel, facilities, equipment and communications.
- It is designed to be activated for ALL EMERGENCIES regardless of the size, from the time an incident occurs until the requirement for Management and Operations no longer exists.
- The structure of the Incident Command System (ICS) can be expanded or contracted depending upon the changing conditions of the emergency incident.

.

Incident Command System : KEY OPERATIONAL FACTORS

- See Figure 2.2 TYPICAL WC&GO FIELD BASED COMMAND POST ORGANIZATION
- Assigns overall authority to one individual, the **Incident Commander.** For WC&GO Worksite emergencies, the initial Incident Commander is the **Shell Site Supervisor**
- Provides structured authority, roles and responsibilities during emergencies.
- Provides for manageable span of control.
- Co-ordinates all incident scene operations.
- Prevents freelancing during scene operations.
- System is simple and familiar and is used routinely at all incidents.
- Communications are structured.
- There is a structured system for response and assignment of resources.
- Provides for expansion, escalation and transfer/transition of roles and responsibilities.
- Emphasizes safety and health as operational priorities.

Incident Command System : COMPONENTS

- Incident Command System (ICS) has a number of components working together interactively to provide the basis for an effective concept of operation.
  - Common terminology.
  - Modular organization.
  - Integrated communications.
  - Unified command structure.
  - Consolidated action plans.
  - Manageable span of control.
  - Designated incident facilities.
  - Comprehensive resource management.

Incident Command System : ORGANIZATION AND OPERATIONS

- Incident Command System (ICS) has 5 major functional areas:

1. COMMAND

What are the Objectives?

2. OPERATIONS

What is being Done to Accomplish the Objectives?

3. PLANNING

What has Happened?

Is Happening;

Will Happen.

4. LOGISTICS

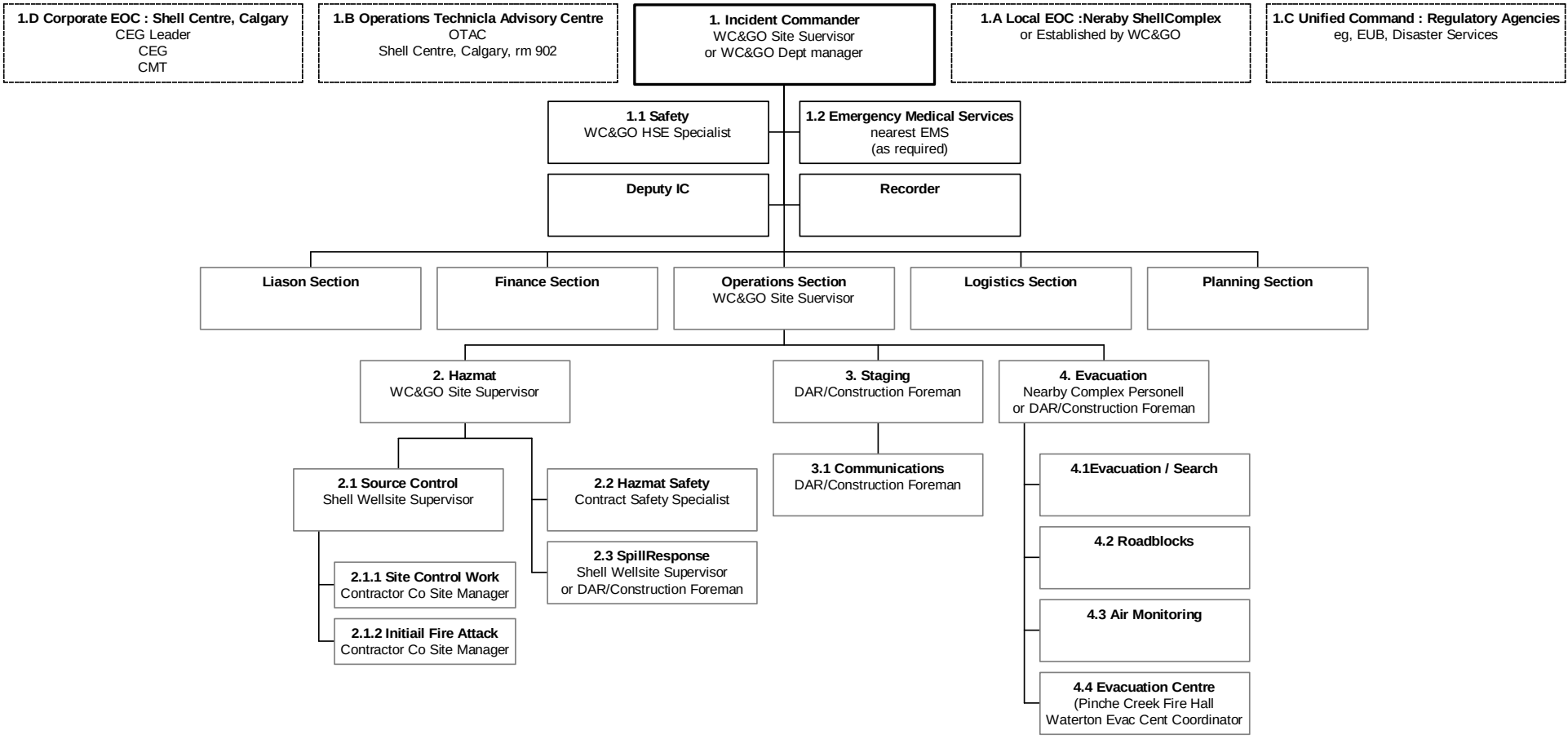
What is needed to Support Operations?

5. FINANCE

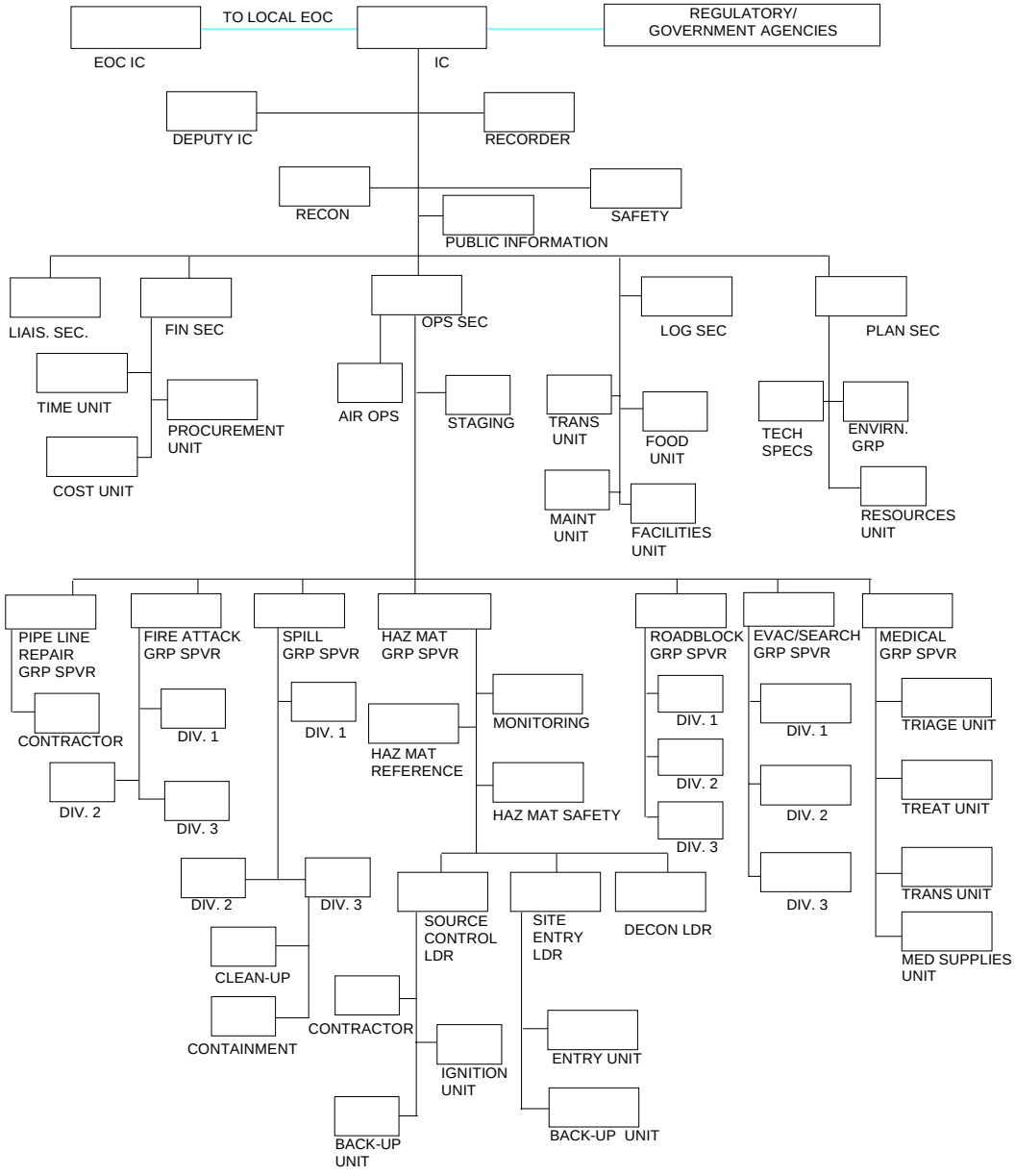
What are the Costs?

Incident Command System : KEY ICS POSITIONS	**INCIDENT COMMANDER** Person in Charge. NOTE: the Incident commander assumes the responsibilities of all the other Key Positions until they are assigned to someone else. **SAFETY** Overall Safety. **LIAISON** Works with Governmental Agencies. **PUBLIC INFORMATION OFFICER** Media. and Crisis Communication **LOGISTICS** Orders Resources. **OPERATIONS** Actual Working Operations of Incident. **STAGING** Pre-Deployment Area. **PLANNING (PLANS)** Incident Action Plan. 12 Hour Plan. Safety and Health Plans. **FINANCE** Financial Arrangements. Claims.

Figure 2.2 TYPICAL WC&GO FIELD BASED COMMAND POST ORGANIZATION



ORGANIZATION CHART - CP



KEY

- Dotted lines represent communications/support information
- Solid lines represent organizational authority

SEC = Section
GRP SPVR = Group Supervisor
LDR = Leader

Note:
- It is not mandatory to assign all positions.
- Assign positions only as necessary.
- Some positions may not require activation depending on the actual emergency.

2.3 WC&GO General ERP : Response & Notification

- The following outline the typical ICS Levels of emergency and corresponding response and notification.

2.3.1 General Emergency Level I : Low Immediate Impact

Typical General Level I Emergencies

- Small, contained, controllable fire / explosion
- Small, contained, controllable, hazardous materials spill on-site (see Figure 2.3 Environmental Release Reporting Process)
- Injury requiring medical evacuation.
- Minor vehicle accident
- Journey Management : failure to arrive to a remote location, especially during winter
- H_2S (Odor complaint or minor sour release that can be immediately contained)
  - most sour gas drilling and completions projects will have a site specific sour gas ERP, which would be implemented.
  - However, if there is no site specific sour gas ERP (e.g., a workover in an existing Shell field), this WC&GO General ERP , and/or the responsible Shell Complex ERP, would be initiated

Typical General Level I Emergencies :

Response & Notification

- **Incident Commander : Shell Site Supervisor**
- Make contacts as appropriate as per the site specific Information forms (see 2.4)
- Control regained / response action by onsite personnel or local EMS.
- Odor complaint or minor sour release : contact the Complex, active the **Complex ERP**
- Report ASAP, after the fact : to Superintendent/Sr. Foremen

2.3.2 General Emergency Level II : Significant Impact or Potential

Typical General Level II Emergencies

- Any Level I Emergency that escalates beyond the immediate worksite and impacts people outside Shell.
- Fire or explosion which has spread or cannot be brought under control
- Fire or explosion as a result of a hazardous material spill onsite
- Spill offsite or into a waterbody (see Figure 2.3 Environmental Release Reporting Process)
- Camp fire requiring evacuation
- Serious injury that could be life threatening (e.g., head injury)
- Vehicle accident with serious injury or spill
- Journey Management : failure to arrive to a remote location, escalating to major search and rescue operations
- H_2S (Minor sour release that can not be immediately contained or equipment malfunction that could potentially result in a major release)
    - As with Level I, implement the site specific sour gas ERP or Shell complex ERP

Typical General Level II Emergencies :

Response & Notification

- **Initial Incident Commander : Shell Site Supervisor**
  - Notify Immediately : Superintendent/Sr. Foremen
- **Superintendent/Sr. Foremen: mobilize to site, assume IC responsibilities.**
  - Notify immediately : Department Manager)
- **WC&GO Department Manager :**
  - Notify immediately : Manager, WC&GO
- **Manager, WC&GO**
  - Notify immediately : Crisis Evaluation Group **CEG** Leader
- **Local EOC :**
  - Activate Local Emergency Operations Centre (EOC), depending upon the emergency duration, OR potential impact to the public or government (may be Complex EOC).
  - Local EOC Incident Commander: complex personnel OR WC&GO Department Manager or WC&GO Manager.

2.3.3 General Emergency Level III : Major Impact or Hazard to Public

Typical General Level III Emergencies

- Any Level II Emergency that escalates beyond the immediate worksite and impacts the public.
- Major fire or explosion
- Serious injury / multiple injured / fatality
- Major uncontained spill offsite or into a waterbody (see Figure 2.3 Environmental Release Reporting Process)
- H_2S (Major uncontrolled or partially controlled sour release)
  - As with Level I, implement the site specific sour gas ERP or Shell complex ERP

Typical General Level II Emergencies :

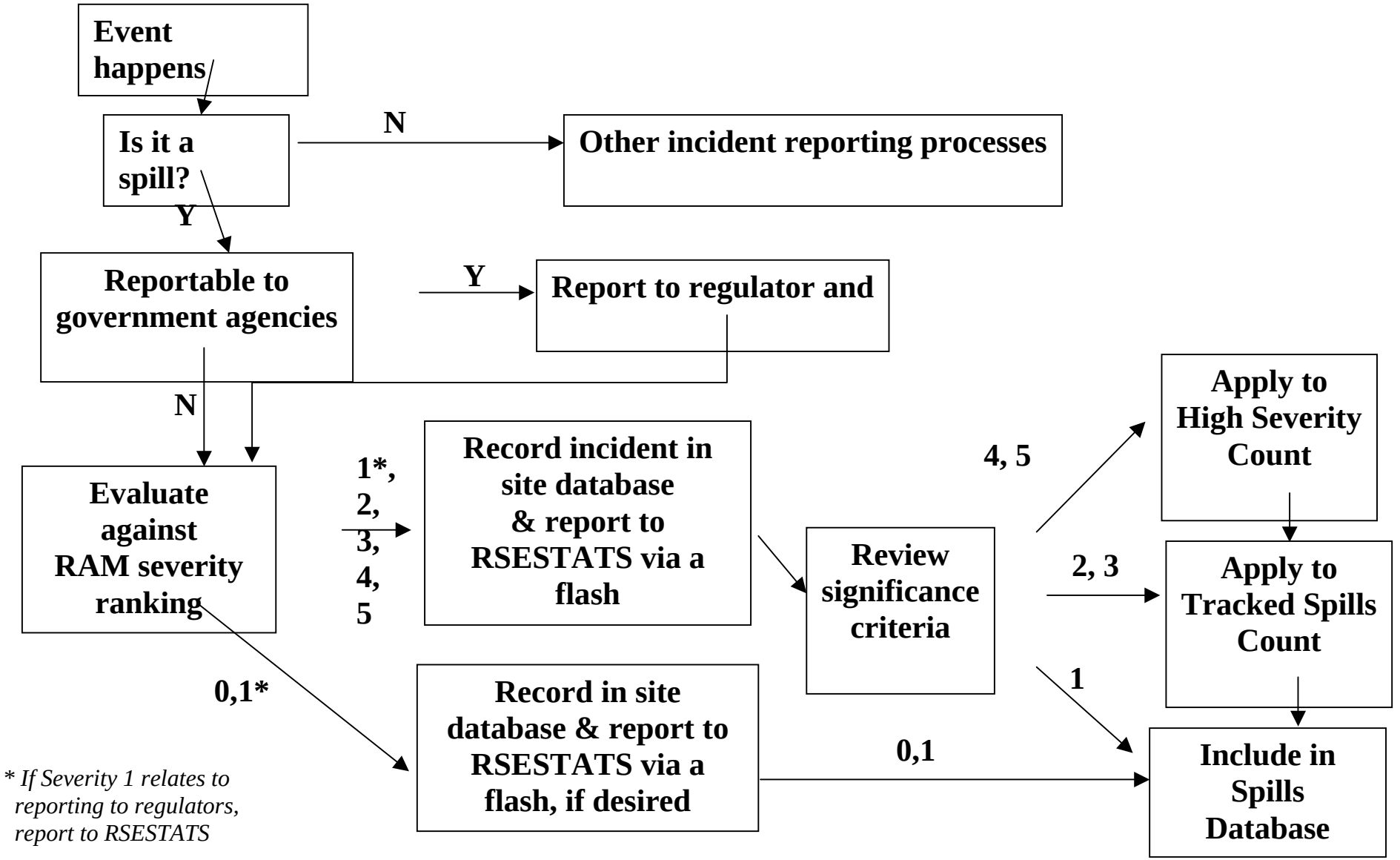
Response & Notification

- **Initial Incident Commander : Shell Site Supervisor**
  - Notify Immediately : Superintendent/Sr. Foremen
- **Superintendent/Sr. Foremen :**
  - Notify immediately : Department Manager)
- **WC&GO Department Manager :**
  - Notify immediately : Manager, WC&GO

Either Superintendent/Sr. Foremen or WC&GO Department Manager: mobilize to site, assume IC responsibilities.

- **Manager, WC&GO**
  - Notify immediately : Crisis Evaluation Group **CEG** Leader
  - Notify immediately : Resources Sr. Operating Officer SOO
  - Immediately mobilize to Local EOC, assume Local EOC IC responsibilities.
- **Local EOC :**
  - **Since a Level III emergency WILL have impact offsite during the emergency, and often after the site emergency is under control, a Local EOC should be established to deal with public and government issues.**
  - Local EOC Incident Commander : WC&GO Department Manager or WC&GO Manager
- **CEG Leader**
  - Activate Crisis Management Team CMT and Corporate EOC as appropriate
  - Contact SOO
  - Notify President and Chief Executive Officer CEO

Figure 2.3 Environmental Release Reporting Process
Flowchart For tracked Spills



2.4 WC&GO General ERP : Site Specific Information Forms

General

- The following are the Site Specific Information Forms that are required to be completed for all WC&GO projects.
  - WC&GO General ERP : Emergency Contact List
  - WC&GO General ERP : Transportation Plan
  - WC&GO General ERP : Spill Plan
  - WC&GO Phone List
- It is the Shell Site Supervisor's responsibility to ensure these forms are complete and current for the project.
- For new drilling locations, the DAR/Construction group often completes these forms for the site construction phase of the project.
- These would then form the basis for the drilling and completions phases, however the drilling and completions site supervisor still need to ensure the information is complete and current.
- The DAR/Construction foreman also typically completes the Spill Plan.
- Blank examples of these are included in this document; templates are (for access to the templates see the Sr. Admin Assistant, Drilling).
- The current WC&GO PHONE LIST is available on the WC&GO N drive (folder WC&GO Phone List) or from Admin Assistant, Drilling.

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2.4.1 WC&GO Project Emergency Response Plan – Emergency Contact List

PROJECT: Camp Farewell
LOCATION: 110 Km NW of Inuvik NWT
LAT: **69 12 35.09**
LONG: **135 06 17.286**
DIRECTIONS: BY AIR 110 KMS NW OF INUVIK OR BY BOAT USING EAST & MIDDLE CHANNELS OF THE MACKENZIE RIVER
RADIO FREQUENCIES: RECEIVE 157.47 TRANSMIT 168.15
NOTE: FAREWELL IS CURRENTLY SHUT DOWN AND NOT OCCUPIED – THEREFORE NO LOCAL PHONE NUMBERS

WORKSITE CONTACTS	NAME	PHONE	FAX
Shell Site Supervisor 1		867 777-	867 777-
Shell Site Supervisor 2		867 777-	867 777-
Camp Supervisor		867 777-	867 777-
Yard Supervisor		867 777-	867 777-
MEDIC		867 777-	867 777-
PRIMARY OFFICE CONTACTS			
Shell Canada Limited	800 661-7378		
DAR Construction Manager	Randall Warren Cellular Residence	403 691-2512 403 813-0408 403 284-2662	403 269-7948
HSSD	Jeff Oshust Cellular Residence	403 691-3949 403 651-1151 403 230-2342	403 269-7948
WG&CO Manager	David Todd Cellular Pager Residence	403 691-2700 403 660-6900 403 228-8000 Pager #44202 403 289-8802	403 269-7948
FOR OTHER WC&GO NUMBERS, SEE WC&GO PHONE LIST			
SHELL OPERATIONS TECHNICAL ADVISORY CENTRE			
SHELL CENTRE, CALGARY, ROOM 902			403-691-3104
SHELL EMERGENCY COMMUNICATIONS TRAILER			
CUSTODIAN: C&V - TRAILER YARD, CALGARY			
CONTACT:	DOUG DELORME	403-620-0442 24HR	403-279-7451 MESSAGE

WC&GO PROJECT EMERGENCY RESPONSE PLAN
EMERGENCY CONTACT LIST

GOVERNMENTAL AGENCIES			
RCMP: Local Detachment	**Inuvik**	**867 777-2935**	
Fire Emergency	**Inuvik 24hrs**	**867 777-3333 1-800-661-0800**	
Poison Control Centre		**800 332-1414**	
Safety & Public Services		**867 777-7399**	
NWT 24 hour Spill Report Line		**867 920-8130**	**867 873-6924**
NWT Environmental Protection Division		**867 873-7654**	**867 873-0221**
Regional Operations Center (ROC)		**800-265-0237**	
Indian & Northern Affairs	**Inuvik**	**867 777-3361**	
Environment Canada Yellowknife		**867 669-4725**	
CANUTEC		**613 996-6666**	
National Energy Board		**403 299-3926**	**403 292-5875**
	Rick Turner	**403 299-3868**	**403 292-5875**
	Cellular	**403 540 3754**	
NEB Staff	**John Korec (Office)**	**403 292-6614**	
	John Korec (Home)	**403 275-6526**	
	Laura Van Ham (Office)	**403 299-2769**	
	Laura Van Ham (Home)	**403 208-0267**	
	Andy Graw (Office)	**403 299-2790**	
	Andy Graw (Home)	**403 547-3073**	
	Terry Baker (Office)	**403 299-2792**	
	Terry Baker (Home)	**403 239-5032**	
Disaster Services / Transportation of Dangerous Goods		**1-800-272-9600 (24 HR)**	
Disaster Services: Regional Office			

GOVERNMENTAL AGENCIES			
Energy and Natural Resources (ENR)			
Fish and Wildlife area office		**867-777 -7230**	
Canadian Wildlife Service (CWS)			
Wildlife Officer		**867-669-4700 or**	
		867-669-4760	
NWT WCB		**867-902-3888**	
Rescue and Response		**867-874-5569**	

EMERGENCY MEDICAL SERVICES			
AMBULANCES			
INUVIK AMBULANCE SER.	**867 777-4444**		
LOCAL 2			
HOSPITALS			
INUVIK HOSPITAL	**867 777-2955**		
HEATH UNIT			
LOCAL 1			

WC&GO PROJECT EMERGENCY RESPONSE PLAN
EMERGENCY CONTACT LIST

EQUIPMENT / SPECIAL SERVICES			
NEW NORTH NETWORKS			
REPAIRS INUVIK		**867 777-2111**	
OPERATOR: clearing lines or line interruption		**0**	
GENERAL INQUIRIES			
SAFETY SERVICES			
United Resources Safety	**Emergency Line**	**1-800-432-1809**	**24 hr**
AIR MONITORING			
MOBILE DOWNWIND			
Monitrex	**Calgary**	**403-291-3590**	**24 hr**
Splash & Dore Safety Ltd.	**Calgary**	**1-800-264-5691**	**24 hr**
Key Safety Services	**Emergency Line**	**1-866-FIRE - 911**	**24 hr**
Continuous Stationary			
Maxxam Analytical	**Calgary**	**403-291-3077**	**Working hrs**
		403-651-2436	**After hrs/ emergency**

WC&GO PROJECT EMERGENCY RESPONSE PLAN
EMERGENCY CONTACT LIST

EQUIPMENT / SPECIAL SERVICES			
OILFIELD FIRE SERVICES			
Inuvialuit Business List	**See List**		
Splash & Dore Safety Ltd.	**Calgary**	**1-800-264-5691**	**24 hr**
Key Safety Services	**Emergency Line**	**1-866-FIRE - 911**	**24 hr**
Canadian Firemaster	**Red Deer**	**403-342-7500**	**24 hr**
Safety Boss	**Emergency Line**	**1-800-882-4967**	**24 hr**
WELL BLOWOUT			
Key Safety Services	**Emergency Line**	**1-866-FIRE - 911**	**24 hr**
Safety Boss	**Emergency Line**	**1-800-882-4967**	**24 hr**
WESTERN CANADA SPILL SERVICES			
WCSS Equipment: Envirotech	**Red Deer: Braidnor Construction Yard**		**780-387-3566 24 hr**
Local Area Co-Op			
MACKENZIE DELTA SPILL RESPONSE CORPORATION			
Spill Response Advisor	**Linda Manka**	**403 296-4014**	
AIRCRAFT			
HELICOPTERS			
Canadian Helicopters	**Inuvik**	**867 777-2424 or**	
		867-777-1012	
AKLAK AIR	**Inuvik**	**867-777-3777 or**	
		867 777-3555	

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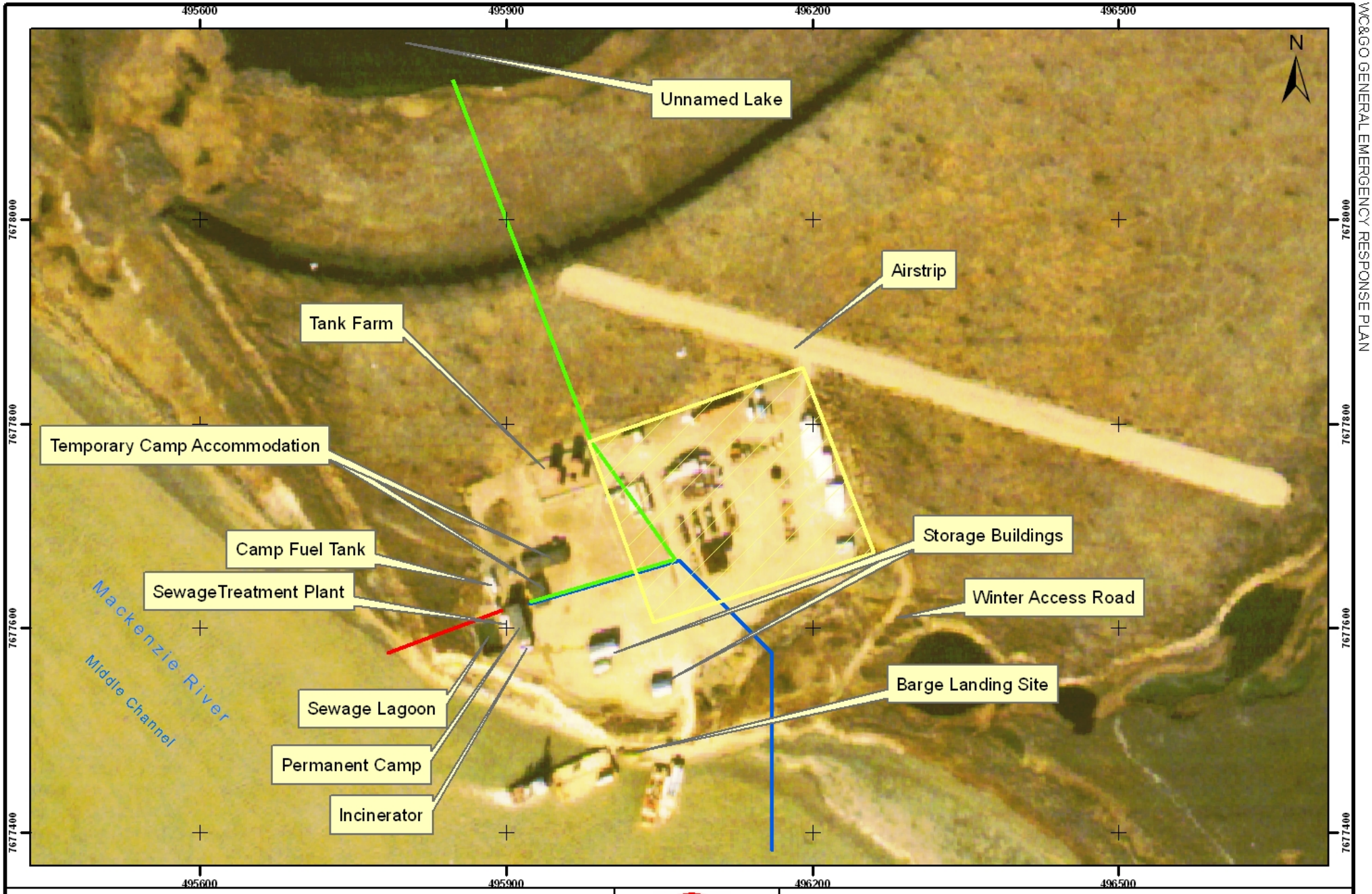

Legend

- Approximate Location of Unnamed Lake Water Intake
- Approximate Location of Mackenzie River Water Intake
- Approximate Location Wastewater Discharge
- Stockpile Site

0 40 80 160 240 320 Meters

CAMP FAREWELL SITE PLAN

PROJECTION	DATUM	CONTRACTOR NAME	NOTES
UTM 8	NAD 83	IEG ENVIRONMENTAL	Geotiff mosaic colour balanced, acquired on 25.09.2002

DRAWN	CHECK	DATE	SCALE	MAP FIGURE NUMBER	REV.
RR-B	KM	JUNE 15, 2005	1:5,000		0

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2.4.2 WC&GO Project Emergency Response: Transportation and Medevac Plan

PROJECT: Farewell

DATE: 21 August, 2002

EMERGENCY NUMBERS	Preferred hospital: **Inuvik Hospital** Number: (**867) 777- 2955** Preferred Ambulance: **Inuvik Ambulance Emergency** Number: (**867) 777-4444** Preferred Police: **RCMP** Number: (**867) 777-2935** Preferred Air :Evacuation **Canadian Helicopters** Number **867 777-2424** **867 777-4338** Alternate Air: **Aklak Air** Number **867 777-3777**
GENERAL INFORMATION **Note-** If travel distance to Health care facility is: **CLOSE** (< 20 min.) or **DISTANT** (20 min to 40 min) You may rely on ambulance service from that Health care facility, HOWEVER, if the travel distance of the worksite is greater then 40 min, then it is deemed: **ISOLATED (>40 min)** Therefore, you must have transportation that meets the following criteria: • Clean • Protects from weather • Equipped with communication • Accommodate a 200 cm stretcher **HELICOPTER RESPONSE TIME WILL QUALIFY**	Type of accident likely to occur: Lacerations, Slips/Trips/Falls Number of workers at site: 15 - 30 Distance from a Health Care Facility: greater than 40 min Availability of Ambulance Service: Air evacuation Ambulance emergency response time: Approximately 40min Time of day work is in progress: Day-time Type of transportation needed to get to the worksite: Helicopter or fixed wing Route to site: Flying 110km Northwest of Inuvik Does change in weather effect type of travel? Explain. Increase time by: Depends upon weather. Could be next day.
CONTACTS: ***LOCATION OF PHONES AND RADIOS***	• phones located in offices • hallway • radios on specific personnel • radios in office • specific personnel have cell phones
EMERGENCY CALL	Primary responsibility: Medic

RESPONSIBILITY	Secondary responsibility: Shell Site Supervisor Site phone number: **867 777-** **867 777-** Radio Frequency: **Receive: 157.47 Transmit: 168.15**
INFORMATION YOU NEED TO HAVE	**Call air evacuation charter** **Tell them** • Medivac required • Your location –Camp Farewell Lat: 69 12 35.09 Long: 135 06 17.286 • Landing (airstrip) condition include lighting, wind speed, wind direction and local weather conditions • Any obstructions or hazards to be aware of in landing • Phone numbers of camp • Radio frequencies of camp • Upon contact to charter, medical contact is mandatory to ensure that proper facilities and attention is given to patient(s). • Number of injured: • Extent of injuries: • What is being done (patient talking, seated, no response, etc): • Obtain confidential medical file to accompany patient **Call to Hospital and ambulance** If available and possible, medic shall call the local hospital and ambulance **Tell them** • Medivac in progress and that evacuation charter has been notified • Number of injured: • Extent of injuries: • What is being done (patient talking, seated, no response, etc) • Age, sex of patient • Brief description of accident • Description of injuries or illness • Medic position and qualifications • Type of medical aid already administered • Site phone number • Estimated time of arrival:
EXPECTATIONS	What the paramedic should expect when he arrives on site: OR What you can expect when the conveyance vehicle arrives:
COMMUNICATION OF PLAN	**First Aiders on site** **Bob Brennan** **Dennis Bonin** **Steve Miller** **All workers on site as part of orientation**

WELLS, APPROVALS & SEISMIC OPERATIONS

TELEPHONE NUMBERS

SHELL AVIATION:	295-4153	(Beckei, Shannon)
	231-9505	(After Hours)
SHELL PURCHASING:	691-2912	(Bennett, Jerry)
	691-3048	(Bohn, Janet)
	630-0621	(After Hours)
STF BUYER – WA&SO:	691-4837	(Bremner, Kevin)
PEARCE-LEAHEY CORE WAREHOUSE:	287-7702	(Schau, Darcy)

SHELL SECURITY:	206-6520	(24 Hours)
COMMUNICATIONS:	691-4143	(Lucas, Ian)
	243-0820	Global Link

Voice Mail Access: Long Distance **1-800-661-7826**, Local **691-4443**

FAX (9 Floor): **269-7948** - or - **269-7895**

Oxford Control Centre: **206-6520** Shell Reception: **3300**

	OFFICE/ OTHER	RESIDENCE/ CELL/ OTHER
ANDERSON, K. (Ken)	691-3101	547-4781
* AU-YEUNG, J. (Jennie)	691-4005	
BERRY, D. (Dan)	691-2797	226-6313
		[c] **403/ 850-9398**
BERRY, M. (Michael)	691-2590	243-6123
		[c] **850-0282**
BELBECK, G.R. (Glen)	691-3003	251-4274
		[c] **403/ 813-2879**
BENNETT, B. (Blair)	691-2660	948-3430
	[ms] **997-6168**	[c] **815-6240**
BEZANSON, J. (Jeff)	691-4212	245-8050
		[c] **660 9757**
BOOTH, J. (Judy)	691-2317	547-8988
BROWN, J.H. (John)	691-3502	[c] **861-1352**
BUJOLD, M. (Maurice)	691-4397	932-1411
		[c] **804-7525**
CALDER, L. (Lynn)	403/ 627-7282	403/ 627-5946
		[c] **403/ 627-6698**
CSAKY, A. (ALEX)	691-4247	
CHORNEY, M. (Mike)	691-3308	[c] **816-3435**
		295-0281
* CONLON, M.M. (Marilyn)	547-7594	[c] **860-4661**
		[f] 547-8590
COOK, C. (Cameron)	692-5061	[c] **651-8234**
CRAWFORD, D. (Del)*	691-3902	242-4481
		[c] **510-6127**
* CROMBIE, D. (Dave)	691-4411	[c] **860-7460**
* CRUZ, C. (Claire)	691-3661	
* **DALLAIRE**, J. (Jean-guy)	691-4191	257-4306
		[c] **403/ 803-7223**
DEREN, G.W. (Gary)	691-3697	285-2868
		[c] **860-0734**
* DIMITROFF, J. (Jeff) [MI Drilling Fluids]		[c] **403/ 990-0748**
	691-2869	[MI Office] 290-5300
* DIMITROV, N. (Nick)	691-2669	[c] **399-3990**
DOUSETT, J. (Jason)	691-4092	242-3949
		[c] **606-9937**
DYCK, W. (Walter)	691-3435	202-0160
EDMUNDS, L. (Linda)	691-3580	
ELLIOTT, C. (Carol)	691-2012	403/ 637-0088
		[c] **403/ 660-2825**
ERICKSON, N. (Neil)	691-3487	403/ 381-6703
		[ms] **620-4524**
* **FERGUSON**, L. (Larry)	691-3097	251-1629
		[c] **880-1018**
FOSTER, K. (Kent)	691-3164	[c] **807-1664**
FRIESEN, S. (Sheila)	691-4135	279-7192
GRAHAM, G. (Gail)	691-4192	
* GRAY, J. (John)	691-3749	249-5582
		[c] **850-0000**
REIG, V. (Van)	691-3770	403/ 646-2178
		[c] **660-3143**
** GROELLER, L. (Les)	691-2713	934-3252
	[ms] **403/ 997-5831**	[c] **651-3021**
* **HALLAM**, G. (Glen)	691-3471	274-2734
HAMMINK, S. (Sandy)	691-3174	
HISEY, M. (Mark)	691-3528	274-5680
HOPKINS, R. (Rick)	691-2240	403/ 912-5689
		[c] **815-5136**
* HUCULAK, J. (Jim)	691-2163	[c] **816-4667**
* HUCKERBY, B. (Brett)	691-2576	
HUESTIS, M. (Matthew)	691-4460	612-9099
		[c] **519-0407**
HURLBUT, M.E. (Murray)	691-3470	938-6202
	[ms] 403/ 997-2022	[c] **403/ 620-0655**
		[speaker ph] 691-2806
INGLEHART, S. (Shaun)	691-2791	230-4474
		[c] **403/ 828-8009**
ISENOR, B. (Brett)	691-3976	253-9139
		[c] **510-9555**
JAMIESON, J. (JoAnn)	691-3732	
JANZ, H. (Harold)	691-3384	403/ 345-3107
		[c] **874-9890**
KLASSEN, B. (Brandi)	691-3368	663-1232
LAMB, K (Kurt)	691-2599	
LANG, D.C. (Dennis)	691-2909	278-9046
		[ms] **403/ 620-7448**
LEADBEATER, R. (Roger)	691-3295	285-1923
		[c] **403/ 519-4138**
MACDONALD, J. (Jim)	691-2739	286-6006
	[m] 403/ 997-3257	[cabin] 250/ 342-6305
		[c] **815-1204**
MACKAY, D. (David)	691-2718	
MACLEAN, G. (Gordon)	691-4453	403/ 217-6388
	[ms] 997-4789	[c] **818-7091**
* MACLEOD, D. (Dan)	509-4352	[c] **403/ 660-5024**
MACKINNON, J. C. (John)	691-3275	245-8050
		[c] **703-1817**
MAAMARI, G. (Georges)	691-2937	
MCCONNELL, S. (Skye)	691-2606	[c] **403/ 828-0324**
MCGRATH, S.E.R. (Shaun)	691-2948	932-7019
	[ms] 403/ 997-9604	[c] **660-2932**
		[speaker ph] 691-2178
* MCEWAN, D. (Donna)	691-4390	252-62
MCINTOSH, A. (Anne)	691-3039	
MCKINNON, E. (Earl)	691-2636	815-5979
		[c] **620-1913**
MILLIGAN, M. (Mike)	691-3052	244-4592
MOGGERT, R. (Ron)	691-3032	[c] **710-8035**
MORGAN, K. (Kristine)	691-2448	[c] **880-0979**
* MORIN, D. (David)	692-5071	
* MUELLER, B. (Brad)	691-3677	257-5280
		[c] **403/ 660-0008**
** MURPHY, T. (Tom)	691-2980	[c] **403/ 804-1713**
		403/ 335-4483
NASH, P. (Phillip)	691-2050	246-7237
		[c] **585-6228**
* NECAS, E. (Eva)	691-4267	239-2866
NELSON, L. (Leonard)	691-2385	225-1799
NELSON, R. (Russ)	691-3030	547-0796

For changes/ updates to this list please contact Donna McEwan or Brandi Klassen

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*** CONSULTANT / ALLIANCE**
*** * DAVE TODD DELEGATE**

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TELEPHONE NUMBERS

SHELL AVIATION:	295-4153	(Beckei, Shannon)
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	691-3048	(Bohn, Janet)
	630-0621	(After Hours)
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Oxford Control Centre: **206-6520** Shell Reception: **3300**

	OFFICE/ OTHER	RESIDENCE/ CELL/ OTHER
*NG, S. (Sarah)	691-3630	
O'DONNELL, A. (Arlene)	691-2318	
OSHUST, J. (Jeff)	691-3949	230-2342
		[c] **651-1151**
* **PEACH**, S. (Steve) [SCHLUMBERGER]	691-2486	[c] **860-7359**
PLAMONDON, J. (Jason)	691- 4577	283-0391
		[c] **669 9114**
RACICOT, T. (Todd)	691-4805	[c] **403/ 650-6441**
ROCK, B. (Barry)	691-2453	637-0043
		[c] **815-7200**
** ROSS, B. (Brent)	691-2755	281-0210
		[c] **860-4872**
RUSHKA, B. (Blair)	691-2707	638-4981
		[c] **813-1804**
RYAN, D. (Darrin)	691-3591	209-0774
		[c] **650-2952**
SANDERS, N. (Natalie)	691-4489	
SCHAU, D. (Darcy)	691-3583	[c] **874-8374**
* SEKELLA, A.J. (Alex)	691-3698	948-6504
		[c] **540-3606**
SELBY, S.D. (Sylvia)	691-3121	201-5500
SIDDIQUI, M. (Mustafa)	691-3842	
MONDS, M. (Michelle)	691-3328	283-5381
SORKILMO, D. (Don)	691-3243	558-2187
[speaker ph]	691-3419	[c] **669-6463**
* SWARTZ, C. (Calvin)	691-3079	873-1760
		[c] **875-3746**
THIEM, C. (Colleen)	691-2913	252-0089
TODD, D. (David)	691-2700	289-8802
		[c] **660-6900**
***(PAGER for Dave Todd or his Delegate)*	[pg] *228-8800 (44202)*	
** TONG, J. (James)	691-3168	[c] **403/ 818-9428**
VAN SCHERPENSEEL, R. (Robert)		691-3821
		403/ 685-9797
VASSAUR, J. (John)	691-3861	[c] **403/ 620-4451**
WARREN, R (Randall)	691-2521	284-2662
		[c] **403/560-4340**
WATSON, C (Cameron)	691-2620	
* WEISS, D.R. (Doug)	691-3109	239-9112
		[c] **815-3778**
WHITE, D.W. (Dan)	691-4298	[c] **804-4833**
	[ms] 997-2643	249-0325
WILSON, S. (Stuart)	691-4020	
** **YATES**, M. (Morgan)	691-4387	244-8150

WELL SERVICES CONSULTANTS

ANDERSEN, B. (Barry)	403/ 346-8741	[c] **403/ 348-3761**
ANDERSON, K. (Keith)..	[res] 780/332-4921	[c] **780/618-7985**
BALL, D. (Dan)	[c] **403/ 860-7486**	250/ 788-2723
		[c] **250/ 788-5873** (BC)
CAIRNS, D. (Dave)	[res] 403/ 340-0495	[c] **403/ 350-5634**
HERT, C. (Cliff)	403/ 948-5577	[c] **403/ 816-3044**
		403/ 948-5505
EVANS, D. (Dave)	[res] 652-3439	[c] **652-9427**
HIRSCH, R. (Ron)	691-3062	236-7731
		[c] **803-3582**
ROSS, G. (Gord)	403/ 340-0822	[c] **403/ 318-5690**
SMITH, T. (Terry)	691-3076	938-5597
		[c] **681-0318**
STEFANIC, J. (John)	403/ 782-9973	403/ 318-4177
THOMAS, J. (Jamie)	403/ 271-7480	[c] **403/ 860-6415**
WILSON, A. (Al)	780/ 419-3715	[c] **403/ 318-4747**

GEOPHYSICAL OPERATIONS CONSULTANTS

BERRY, D. (Dave)		[c] **403/ 815-6995**
KOSTYK, F. (Floyd)		[c] **780/ 689-7686**
LUSIS, D. (Don)		[c] **780/ 719-7780**

DRILLING CONSULTANTS

Pajak Engineering, Victor LaPointe		*403/ 264-1197*
		[f] 403/ 264-1584
Fire Creek Resources, Barry Luft		*403/ 234-9309*
		[f] 403/ 234-9195
ACTON, P. (Phil)	[res] 780/ 436-6741	[c] **780/ 918-4087**
AUBIN, L. (Leo)	403/ 627-4397	[c] **403/ 627-7582**
BUSCH, B. (Bob)	[res] 780/ 986-6285	[c] **780 /919-8901**
FAULKNER, S. (Steve)..	[res] 403/ 885-2713	[c] **403/ 391-3802**
HOLMAN, D. (Dennis) ...	[res] 403/ 746-3004	
HOPE, Y. (Yugon)	[res] 780/ 957-3252	[c] **780/975-4658**
KLATT, D. (Darrell)	[res] 403/ 722-3945	[c] **403/ 358-1700**
MCLELLAN, K. (Ken)	[res] 780/ 417-8831	[c] **780/ 919-1378**
NEWBY, D. (Dan)	[res] 780/ 963-8964	[c] **780/499-2621**
PARADOWSKI, S. (Stan)		[c] **403/ 850-1154**
STEMO, L. (Larry)	[res] 780/ 372-2161	[c] **403/ 783-1460**
SULZ, S. (Steve)	[res] 403/ 340-0259	[c] **403/ 318-8966**
VARTY, D. (Don)	[res] 780/ 858-2185	[c] **403/ 793-5998**

DAR / CONSTRUCTION CONSULTANTS

BARTHOLOW, D. (Dennis)		[res] 403/ 638-4823
		[c] **403/ 638-4823**
CARTWRIGHT, F.A. (Fred)		288-4200
		[c] **650-4200**
COOK, D. (Don)	403/ 627-3459	[c] **403/ 627-7666**
DELLAIRE, K. (Kevin)	[c] **403/ 860-3511**	403/ 936-5061
ELTER, C. (Carl)	780/ 624-6802	780/ 624-2776
	[res] 403/ 580-5534	[c] **403/ 504-6910**
PENNIKET, R. (Roy)	[res] 403/ 687-3761	[c] **403/330-8250**
REBER, Shane	[res] 780/ 774-2139	[c] **780/ 831-7978**
TICE, R. (Rock)		780/ 624-8296
	[f] 780/ 624-9654	[c] **780/ 618-9606**

OFFICE COMPUTER

Landline or Satellite 691-2850 691-2338

Mobile or Cellular 691-2339

POOL VEHICLE (WA&SO)

[Grey Ford F150, License #CNE 471, Stall #19

Keys from RADALL WARREN, spare from GLEN HALLAM

POOL CELLULAR [c] **630-9926** [c] **560-6886**

[c] **630-6666** [c] **560-8152** [c] **606-9937**

LEGEND: C – Cellular / MS – MSAT / F – Fax / PG – Pager

For changes/ updates to this list please contact Donna McEwan or Brandi Klassen

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*** CONSULTANT / ALLIANCE**
*** * DAVE TODD DELEGATE**

2.5 Farewell Emergency Response Plans

2.5.1 Sewage Spill Emergency Response Plan

LOCATION: CAMP FAREWELL **REVISED**: MAY 2003

The campsite is located between a small lake and a channel of the Mackenzie River. The sewage treatment plant is self-contained. There is a bypass line from the lift station to an existing lagoon so that any overflow from the lift station goes to the lagoon. If treated water is not up to specification; it will be diverted to the lagoon. The water from the lagoon will then be treated through the sewage plant at a later date for completion to specification.

TRANSPORTATION

There will be transportation of sludge from the sewage treatment plant to the treatment plant in Inuvik

MAINTENANCE AND CONTROL

This contingency plan is project specific and will be reviewed:

- As changes to applicable environmental legislation come into effect
- To take into account changes in environmental factors and in facility characteristics and policy
- During any on-site training exercises
- After each and every sewage incident.

Changes to phone numbers and names of those individuals identified in this contingency plan will be made on an as required and when required basis.

1. **SAFETY**

Ensure personal safety

- Ensure your own personal safety from existing and potential hazards and fellow worker safety.

2. **ISOLATE AND DENY ENTRY**

Isolate the area and deny / restrict entry

- Utilize vehicles or barricades for temporary control.
- Establish / adjust control perimeters.

3. **NOTIFICATIONS**

Immediately notify the following

- Shell's on site supervisor

Notify the following as soon as practical

- DAR/Construction manager
- Northwest Territory Emergency Spill Response Line

- Regional Operations Center
- Indian Northern Affairs Canada
- NEB if spill exceeds .20 m^3 (200litres) and/or spill is not contained and could result in further safety property or environmental damage.

4. COMMAND / MANAGEMENT

Order depends on specific factors

- Assign Incident Command System roles as resources become available.
- Initiate response to incident, taking existing conditions into account.
- Ensure safety precautions and operating plans and conditions are reviewed with the crew.
- Determine a need for roadblocks.
- Ensure proper permits are executed.

5. IDENTIFICATION AND HAZARD ASSESSMENT

Identify the Hazards and Assess the Risks

- Determine chemical makeup of substance (i.e.: WHMIS, TDG Placards, PIN Nos).
- MSDS (Material Safety Data Sheets – Chemical).
- Placards and labels (colours, markings).
- Shipping papers (Bill of Lading, Way Bill, etc).
- Technical information (CANUTEC).
- Other (specialists, monitoring devices).

6. PROTECTIVE EQUIPMENT

Ensure proper personal protective equipment is utilized, and know the level of equipment available

- Visibility stripes, safety glasses, goggles, life jackets, gloves etc.

7. CONTAINMENT AND CONTROL

Safe defensive containment

- If safe to do so, and if possible, stop the flow of material.
- If spill frozen shovel snow sewage mixture into containers.
- Deploy absorbent pads, socks as required.
- See list of emergency spill cleanup equipment in equipment list
- Recover sorbents and place in steel drums
- Notify and request assistance if required from external NWT Emergency Spill Response Line.
- Consider what resources /materials are available within close proximity; i.e.: crawler tractor, loaders, bobcats, vacuum /water trucks, fuel bladders / fiberglass tanks.

8. DECONTAMINATION AND CLEANUP

Collect, cleanup, and sample

- Decontaminate personnel as required if exposed to the spill. Wash hands and face after clean up.
- Priority is to high environmentally sensitive areas (municipality water sources, waterfowl staging areas, domestic fishing areas).
- Store the spilled material in proper containers for disposal;
- Implement remediation program for the area as required;
- Monitor the progress of remediation as required.

9. DISPOSAL

Dispose of wastes, contaminated clothing and equipment if unable to decontaminate.

- Incinerate sorbents
- Warm up containers of snow and sewage mixture to room temperature and then over the time frame of a couple of weeks pour them into the flow equalization tank of the sewage plant. The reason for introducing the snow sewage mixture slowly and at room temperature is to avoid a large shock loading of the plant that will affect the microorganisms or ship containers to Inuvik Sewage Treatment Plant for disposal.

10. DOCUMENTATION

Document all actions and complete reports

- Assign a recorder to log activities
- Complete and submit a follow-up spill report to the Northwest Territories Spill Report line.

2.5.2 Bulk Material Emergency Response Plan

LOCATION: CAMP FAREWELL **REVISED: OCTOBER 2002**

The campsite is located between a small lake and a channel of the Mackenzie River. Bulk Materials are stored in seacans and various other containers.

TRANSPORTATION

There will be drilling products transported to and from the site.

MAINTENANCE AND CONTROL

This contingency plan is project specific and will be reviewed:

- As changes to applicable environmental legislation come into effect
- To take into account changes in environmental factors and in facility characteristics and policy
- During any on-site training exercises
- After each and every incident.

Changes to phone numbers and names of those individuals identified in this contingency plan will be made on an as required and when required basis.

1. **SAFETY**

Ensure personal safety

- Ensure your own personnel safety from existing and potential hazards and fellow worker safety.
- In addition to standard personal protective equipment, check MSDS sheets for additional requirements

2. **ISOLATE AND DENY ENTRY**

Isolate the area and deny / restrict entry

- Utilize vehicles or barricades for temporary control.
- Establish / adjust control perimeters.

3. **NOTIFICATIONS**

Immediately notify the following organizations.

- .Shell's onsite supervisor

Notify the following as soon as practical

- Shell's DAR/Construction manager
- Northwest Territory Emergency Spill Response Line
- Indian Northern Affairs Canada

- NEB if spill exceeds .20 m^3 (200litres) and/or spill is not contained and could result in further safety property or environmental damage.

4. COMMAND / MANAGEMENT

Order depends on specific factors

- Assign Incident Command System roles as resources become available.
- Develop the response plan.
- Ensure safety precautions and operating plans and conditions are reviewed with the crew.
- Determine a need for roadblocks.
- Ensure proper permits are executed.

5. IDENTIFICATION AND HAZARD ASSESSMENT

Identify the Hazards and Assess the Risks

- Determine chemical makeup of substance (i.e.: WHMIS, TDG Placards, PIN Nos.).
- MSDS (Material Safety Data Sheets – Chemical).
- Placards and labels (colours, markings).
- Shipping papers (Bill of Lading, Way Bill, etc).
- Technical information (CANUTEC).
- Other (specialists, monitoring devices).

6. PROTECTIVE EQUIPMENT

Ensure proper personal protective equipment is utilized, and know the level of equipment available

- Visibility stripes, safety glasses, goggles, life jackets, gloves etc.
- Check MSDS sheets for additional requirements

7. CONTAINMENT AND CONTROL

Safe defensive containment

- If safe to do so, and if possible, stop the flow of material.
- Ensure that flow is contained before starting the recovery procedure. Containment and recovery may take place at the same time
- See list of emergency spill cleanup equipment
- Shovel spilled material into plastic lined steel drums.
- If ground frozen, in spring excavate surface area to ensure all spilled material is collected
- Notify and request assistance if required from external NWT Emergency Spill Response Line.
- Consider what resources /materials are available within close proximity; i.e.: crawler tractor, loaders, bobcats, vacuum /water trucks, fuel bladders / fiberglass tanks, lost circulation material, straw bales, etc.

8. DECONTAMINATION AND CLEANUP

Collect, cleanup, and sample

- Decontaminate personnel as required if exposed to the spill
- Priority is to high environmentally sensitive areas (municipality water sources, waterfowl staging areas, domestic fishing areas).
- Store the spilled material in proper containers for disposal;
- Determine where the spilled material can be disposed off and ship material there.
- Develop remediation program for the area (if required)

- Undertake the remediation program:
- Monitor the progress of remediation as required.

9. DISPOSAL

Dispose of wastes, contaminated clothing and equipment if unable to decontaminate.

- Consider waste impacts in all decisions
- Remove the contaminated material and haul to an approved disposal site.

10. DOCUMENTATION

Document all actions and complete reports

- Assign a recorder to log activities
- Complete and submit a follow-up spill report to the Northwest Territories Spill Report line.

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2.5.3 Fuel/Spill Emergency Response Plan (Water)/Coast Guard Oil Pollution Emergency Plan

LOCATION: CAMP FAREWELL **REVISED: JULY 2003**

Camp Farewell is located between a small lake and the Middle Channel of the Mackenzie River. Camp Farewell is 50 km downstream from Tununik Point at Longitude 69°-12'-30" and Latitude 135°-06'-04". All fuel on site is stored in tanks within secondary containment. A spill could occur during unloading fuel from barges. To minimize the severity of such an event, spill control equipment will be deployed during the unloading. The deployment of the barge booms will also be requested as a precautionary measure to immediately contain any spill that may occur at the barge. If a land spill did occur it would be contained quickly and therefore minimize the potential for contamination of the waterway

There are no communities downstream of Camp Farewell.

TRANSPORTATION

Liquid fuels will be stored in closed systems during transportation. Access routes will be by barge through channels of the Mackenzie River. During the winter season, fuel will be delivered from Camp Farewell by fuel truck to project locations.

MAINTENANCE AND CONTROL

This contingency plan is project specific and will be 1) reviewed & 2) updated:

- As changes to applicable environmental legislation come into effect
- Annually, to take into account changes in environmental factors and in facility characteristics and policy
- After every oil pollution incident and exercise.

Changes to phone numbers and names of those individuals identified in this contingency plan will be made on an as required and when required basis. The numbers are to be verified when the camp is opened and/or on an annual basis.

ORGANIZATION

Shell Canada Limited utilizes the Incident Command System for all emergencies[1]. All incident responses are modeled after the Disciplined Approach. See Section 917 of Shell's Emergency Response Plan Model for detailed guidance on the Disciplined Approach and Prioritized Response Goals.

PRIORITIZED RESPONSE GOALS

The prioritized response goals are:

1. Protect Human Life (yours, fellow worker, & public)
2. Protect The Environment
3. Minimize Asset Loss
4. Regain Steady State Operations to minimize business impact (consider both revenue & reputation)

[1] ICS system description plus Roles & Responsibilities of all organizational positions are described in Shell's Emergency Response Manual - Model

DISCPLINED APPROACH TO THE SPILL

1. **SAFETY**

Ensure personal safety

- Ensure your own personal safety from existing and potential hazards and your fellow worker safety.

2. **ISOLATE AND DENY ENTRY**

Isolate the area and deny / restrict entry

- Establish / adjust control perimeters.

3. **NOTIFICATIONS**

Notify the following immediately.

- Shell's onsite supervisor
- Barge Captain

Notify the following as soon as practical.

- Shell's DAR/Construction manager
- Northwest Territory Emergency Spill Response Line
- Regional Operations Center (ROC)
- Indian Northern Affairs Canada
- NEB if spill exceeds .20 m^3 (200litres) and/or spill is not contained and could result in further safety property or environmental damage.

4. **COMMAND / MANAGEMENT**

Order depends on specific factors

- The Onsite Supervisor will assume the role of Incident Commander.
- Assign Incident Command System roles, as resources become available.
- Initiate response to incident, taking existing conditions into account.
- Ensure safety precautions and operating plans and conditions are reviewed with the crew.
- Ensure proper safe work permits are executed.

5. **IDENTIFICATION AND HAZARD ASSESSMENT**

Identify the Hazards and Assess the Risks

- Confirm product and determine chemical makeup of substance.
- MSDS (Material Safety Data Sheets – Chemical).
- Placards and labels (colors, markings).
- Shipping papers (Bill of Lading, waybill, etc).
- Technical information (CANUTEC).
- Other (specialists, monitoring devices).

6. **PROTECTIVE EQUIPMENT**

Ensure proper personal protective equipment is utilized, and know the level of equipment available

- Fire retardant clothing, safety glasses, goggles, life jackets, gloves etc.
- Check MSDS sheets for additional requirements

7. CONTAINMENT AND CONTROL

Safe defensive containment

- If safe to do so, and if possible, stop the flow of product.
- Deploy primary and secondary booms to contain or divert spill to recovery area, as identified in plan. (Control Point at Camp Farewell and Farewell Downstream Control Point #1). Ensure that the spill is contained before starting the recovery procedure.
- Deploy absorbent pads, socks as required. Recover oiled sorbents and place them in containers.
- Use the oil skimmer to recover spilled fuel if spill is too large to recover with sorbents.
- Store recovered small volumes of oil/water mixture in steel drums.
- Store recovered large volumes of oil/water mixture in empty fuel tank for disposal at a later time.
- Notify and request assistance, if required, from external NWT Emergency Response Line.
- Place all resources/materials on standby that are available within close proximity, i.e. crawler tractor, loaders, bobcats, vacuum trucks, fuel bladders/fiberglass tanks, lost circulation material, straw bales etc.

8. DECONTAMINATION AND CLEANUP

Collect, cleanup, and sample

- Decontaminate personnel as required if exposed to the spill
- Priority is to high environmentally sensitive areas (shore lines within the Kendall Island Migratory Bird Sanctuary)
- Store the spilled material in proper containers for disposal
- Implement remediation program for the area as required
- Monitor the progress of remediation as required.

9. DISPOSAL

Dispose of wastes, contaminated clothing and equipment if unable to decontaminate.

- Consider waste impacts in all decisions
- Consider onsite incineration, movement to approved disposal sites etc

10. DOCUMENTATION

Document all actions and complete reports

- Assign a recorder to log activities

Complete and submit a follow-up spill report to the Northwest Territories Spill Report line.

5. CONTINGENCY PLAN

Acknowledge role of federal, territorial and other bodies as identified in the National Contingency Plan

- Lead Agency for pollution incident (ship to shore) is the Canadian Coast Guard
- Resource Agency is considered to be the Canadian Coast Guard, who will request resources as required where available.
- Environment Canada services provided by REET (Regional Environmental Emergencies Team)
- Await distribution of the revised regional plan.

SCENARIO

Fisheries and Oceans Canada - Coast Guard require an Oil Pollution Emergency Plan and Oil Pollution Incident Procedures, Equipment and Resources Scenario as required by regulation SOR/95-405. The scenario

assumption is for a Level 1, category of Oil Handling Facility with a 150m^3/h maximum oil transfer rate and a Level 1 category of Oil Handling Facility with a minimum spill size of 1m^3. The maximum oil transfer rate at time of unloading will be 85m^3/h and therefore falls within Level 1 category.

a) Nature and amount of oil

Shell will be unloading approximately 2,000,000 liters of diesel fuel from barge. Aviation fuel is transported in drums. All equipment coming to site will be diesel powered so amount of gasoline on site is about 6 - 45-gallon drums. The most likely spill scenario is a hose leak. The volume used in this scenario for this type of spill is 2.0 m3.

b) Type of ship being unloaded

Series 1000 barges from NTCL will deliver the diesel fuel. The maximum pump rate is 85 m3/hour. The boat has a shut-off valve located on it for emergency shutdown of the fuel. The fill line is 150mm.

c) Tides and currents

There are no tides in this area. Current speed in this channel of the Mackenzie River is approximately 8 knots.

d) Meteorological conditions

Unloading of fuel will take place late fall at above or near freezing conditions. Some winds may be encountered (prevailing winds are from the northwest)

e) Environmental Sensitivities

There are no communities near Camp Farewell. The camp is located within a bird sanctuary. Whenever possible, unloading of fuel will take place in fall when most waterfowl have already left. Wildlife monitor is onsite at all times and is equipped with a firearm that can be discharged to scare away any waterfowl in vicinity if it is deemed necessary. Any requirement for long-term bird hazing will be accomplished by setting up automatic bird scare cannons as well as having the wildlife monitor patrol the channel with a boat to assist in scaring away any waterfowl.

There will be approximately 600 meters of fuel filling line. It will go from dock, across 200 meters of gradually rising ground to a hill. From there the line will go to the fuel tanks.

f) Measures to minimize spill

The measures taken to minimize the possibility of a spill are as follows:

- Four on site, supervisory people have received the two-day "Oil Spill Containment and Recovery Training (Open Water) "course and the two-day "*Response to Oil Spills in Ice conditions"* course. They are Blair Bennett, Shane Millard, Kevin Dellaire and John Russell.
- The Shell site supervisor for the unloading will become the Incident Commander if there is a spill.
- Hoses, connections and valves will be inspected on the Shell fill line prior to use
- Drip pans will be installed under each connection
- There will be quick shutting shut-off valves at each end.
- During diesel fuel filling operations, the fill line will be patrolled. There will be personnel at each shut-off valve. All personnel will be equipped with radios. In the event of a line break, the valves will be shut off immediately to minimize the spill.

g) Training

The two-day **"Oil Spill Containment and Recovery Training (Open Water)"** course held in 2002 included classroom instruction, dry land equipment deployments and a Conventional and BoomVane deployment in the Mackenzie River.

- Day 1
  - Formal classroom training using a PowerPoint presentation and covering strategies and tactics of oil spill response
  - Description of Response Management System used by Shell Canada, Camp Farewell
  - Description and illustration of equipment usage.
  - Safety briefing
  - Dry Land deployment of equipment which gave participants hands-on experience as to how the components fitted together and operated.
- Day 2
  - Briefings
    - Safety
    - Communications
    - Commander's (describing "spill" and deployments to be effected during the field deployment exercise
  - Organizational Structure to be used in the field
    - Assignment to crews
    - Crew responsibilities
  - Field Deployment
    - Conventional deployment of 400 feet of river boom
    - BoomVane deployment of 400 feet of river boom
  - Debriefing

Two, two-day training courses **"Response to Oil Spills in Ice Condition"** held in 2003 sponsored by the Mackenzie Delta Spill Response Corporation (MDSRC) and the Aurora College.

- Training attended by various staff from the MDSRC participants, local Contractors, Inuvik Fire Department and individuals from the General Public.
- The sessions include components on cold weather safety, material properties in cold climates, strategies and tactics for spill containment and recovery in winter conditions and waste management requirements.
- Day1
  - Safety
  - Material Properties
  - Environmental Awareness
  - Regulatory Requirements
  - Strategies, Tactics & Equipment Waste Management Considerations.
- Day 2
  - Introductions of Commander
  - Description of "Problem"
  - Safety Briefing

- Communications Briefing
- Assignment of Crews & duties
- Deployment Briefing
- Field Deployment
- Debriefing.

Training and Exercises

- Additional training and exercises are being planned by the MDSRC for subsequent years. Activity in the Mackenzie Delta will determine frequency of training required.
- Shell staff at the field location will support the trained supervisory staff in areas of labour, equipment operation and administrative duties in the event of an oil spill.
- If required, the trained MDSRC member companies and contractor staff will supplement Shell staff in a supervisory or other capacity when and where required.
- All personnel will be required to attend a Safety Briefing and Orientation prior to commencement of any activities associated with an oil spill response.
- Prior to unloading of fuel barges, a meeting will be held to review the Oil Pollution Emergency Plan.

Response Time Control and Containment

- Prior to start of unloading of diesel fuel, a boom will be, at the Captain's decision, set up around the unloading barge
- An oil spills containment and clean up boat will be on site. This boat is from Mutual Aid.
- Based on environmental regulations and the nature of the soil a berm cannot be installed along the shoreline.
- Prior to start of unloading of diesel fuel a line of 3 meter long booms will be constructed on shore ready for deployment as a primary containment. If required it will be immediately deployed.
- Prior to start of unloading of diesel fuel a line of 1.6 meter booms will be constructed on shore further downstream for deployment as a secondary containment. If required, it will be immediately deployed.
- Prior to start of unloading of diesel fuel, a meeting will be held of all participants to review the oil spill plan and their responsibilities and roles to both prevent a spill and contain and clean up a spill.
- Prior to start of unloading of diesel fuel Shell owned sorbents and skimmers will be set out and ready for use.
- Responsibility for the pre-transfer work will be the Shell "Site Supervisor".

h) Response Time Clean up

An onsite spill control boat will commence clean up operations as soon as the spill is controlled and contained. If additional resources are required they will be obtained from the trained MDSRC member companies. This group will have equipment, material and trained staff to assist in the event of any spills. Current participation in the Mackenzie Delta Spill Response Corporation includes, but is not limited to, Anadarko, BP Canada Energy, Chevron Canada Resources, Conoco Canada Resources, Devon Canada Corporation, EnCana, Petro-Canada and Shell Canada Ltd. If necessary, the trained contractor community will be requested to respond as well. At such a time that the Mackenzie Delta Spill Response Corporation is fully functional, the Oil Pollution Emergency Plan will be updated. Unless and until MDSRC is fully ready to repond to large operational spills, the Coast Guard is the default responder to be contacted in case of such a spill.

i) Scenario Details

The oil spill control boat will come complete with sorbents, boom, vane boom deployer and skimmers.

Time	Description	Person responsible
Pre Transfer	• Barge booms deployed • Spill Equipment readied • Product, hazards & controls identified • Prejob safety meeting held	Barge Captain Incident Commander Incident Commander Incident Commander
Zero	*Spill occurs & discovered* • Shut down pumps on barge • Radio order to shut valves on hoses	Barge Captain Incident commander
5 minutes	• Closing of valves on line	Source Control (Personnel located at each valve)
15 minutes	• Primary boom will be deployed. • First Aid (if required)	Spill Group Supervisor Medic
45 minutes	• If necessary, secondary boom will be deployed	Spill Group Supervisor
60 minutes	• Oil spill boat will start cleaning up spill • Land group will start cleaning up spill • Notifications	Spill Group Supervisor Spill Group Supervisor Incident Commander
Post Recovery	• Follow-up notifications • Decon & Cleanup • Disposal • Incident Debrief • Documentation	Incident Commander

j) Response Authorization

Response will be in accordance with Shell's Emergency Response plan for Camp Farewell. The on-site *Incident Commander* will be Blair Bennett (or alternate) with backup as required from Calgary. The on-site Spill Group Supervisor will be selected from the trained personnel available.

k) Restart of unloading

Unloading will not be restarted until the causes of the spill have been determined and remedies to prevent a similar incident are in place. The spill will either have been cleaned-up or there will be sufficient workers to clean up the spill and unload before unloading is restarted.

l) Oil Handling Facility Exercise Program

- The Shell Farewell Facility consists of a small camp, maintenance shop, airstrip, tank farm with a capacity of two million litres and a designated area for storage of drilling equipment and products. All fuel is stored in tanks within secondary containment. The bulk of the fuel is received by barge and transferred via pipeline from shore to the tank farm.
- Current plans include transfer of fuel from shore to tank farm on a per annum basis providing facility is in operation, and therefore any onsite training and exercise programs will only be conducted on an annual basis prior to receiving any vessels for the purpose of fuel transfer.
- Standard operating practices are to pre-boom all vessels delivering product prior to commencing transfer. Each boom deployment activity is considered an operational drill for the purpose of this exercise program.
- The Shell Farewell Facility is not open on a continuous basis. Staff may be temporarily assigned to other operating areas until such time as Camp Farewell commences operation again. Shell Canada will make every effort to ensure personnel familiar with the facility and who have participated in the training and onsite exercises are reassigned to their previous positions.
- Training will be comprised of a management tabletop session on-site on an annual basis with the second day being devoted to an operational drill and training exercise.
- An Internal Notification Exercise will be completed during the 1st Q after start up of the Camp Farewell Facility and on an annual basis thereafter.
- An External Notification Exercise will be done on an annual basis.
- Exercises with vessels delivering fuel to the Camp Farewell Facility are an integral part of this plan and are reflected in the exercise program matrix. The Canadian Coast Guard and other outside agencies will be invited to participate.
- All exercises will be evaluated and reported on a critique facilitation and incident assessment ICS Form # 115. All discrepancies will be noted and assigned as action items. Post-exercise critiques will be filed and available for audit if so required.
- This plan will be updated with amendments reflecting changes noted during exercises.
- Actual responses to spills of a product will be evaluated and reported, and will be considered as part of this program.
- The Oil Handling Facility Exercise Program will be conducted over a three-year period commencing on the date of compliance.
- Prior to unloading of any fuel barges, the Oil Pollution Emergency Plan will be reviewed.

Exercise Program Matrix

Activity Description	Year 1	Year 2	Year 3
Internal Notification Exercise	During 1st Q after start-up of facility	Annually*	Annually*
External Notification Exercise	Annually*	Annually*	Annually*
Operational Drill with Vessels and Contractors	Annually*	Annually*	Annually*
Management and Supervisory Table Top	Annually*	Annually*	Annually*
Full Scale Functional Exercise	One, over the three-year cycle		

*When the site is operational.

Control Point Identifier:	Control Point Name:	Issued: DRAFT #5
	Farewell (Shell Canada Camp)	**Lat. 69° 12.451 N** **Long. 135° 05.932' W**

Location: On the East bank of Richards Island on the middle channel of the Mackenzie River. Site is operated by Shell Canada Limited.

Land Owner/Tenant Contact: Crown/Shell Canada Limited

Distance to Confluence: 9.5 km* **Waterbody:** Mackenzie Bay, Beaufort Sea

- In this case, interpreted to be at the downstream Control Point

Next Downstream Control Point: Farewell Downstream Control Point #1 (9.5 km)

Waterway Details:

Width: 0.5 km

Bed Description: Sand and gravel

Bank Height/Slope: Steep bluffs behind beach. Vehicle ramp to camp plateau from Control Point beach.

Work Space Details:

Size & Location: Size will vary depending on river height. There will normally be sufficient workspace at most times of the year. August 2002 an area 10 m wide and 120 m long was available.

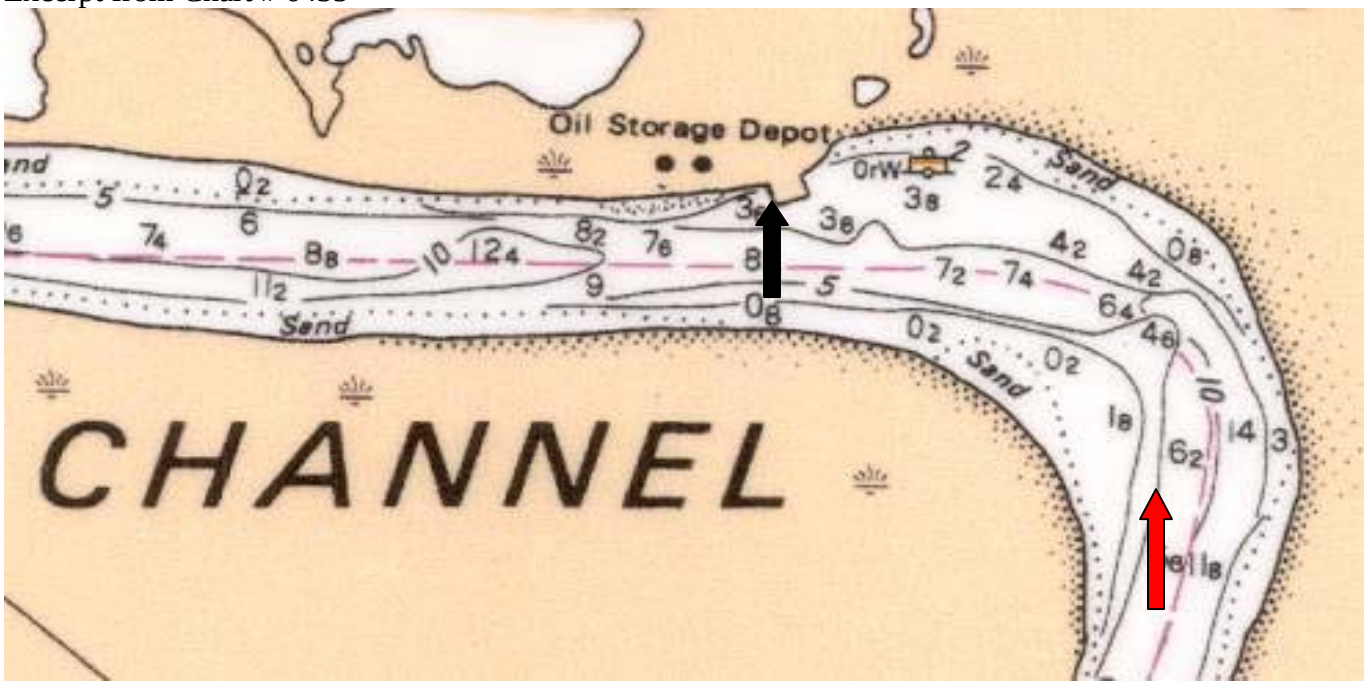
Helicopter Pad: Helicopter pad on camp plateau above site. Helicopter fuel is normally available at this site.

Recommended Deployment Strategy/Equipment Requirement: Boom to contain and recover at the downstream portion of the Control Point beach. 500' of boom can be deployed at most stages of river level. Deflection booms in a cascade can be deployed upstream of the site, if required. Permanent shore anchors are located at various points along the beach at this Control Point.

Other Comments: The river flow at the site is affected by tidal influences. There is a well maintained 700m gravel airstrip at this site. Survey conducted August 2002.

Control Point Identifier:	Control Point Name: Farewell (Shell Canada Camp)	Issued: DRAFT #5 Lat. 69° 12.451 N Long. 135° 05.932' W

Excerpt from Chart # 6435



Red arrow indicates flow.
Black arrow indicates position and direction of photograph (August 2002).
Photograph below shows orange river boom on the beach at the Control Point and ramp to camp plateau.

Control Point Identifier:	Control Point Name:	Issued: DRAFT #4
	Farewell Downstream Control Point #1	**Lat. 69° 16.138' N** **Long. 135° 12.331 W**

Location: On a prominent point on the east bank of Richards Island on the middle channel of the Mackenzie River where the river widens as it flows into Mackenzie Bay.

Land Owner/Tenant Contact: Crown/ILA

Distance to Confluence: 0* **Waterbody:** Mackenzie Bay, Beaufort Sea

- This Control Point is interpreted to be at the confluence.

Next Downstream Control Point: None. Open water containment and recovery or treatment would be required downstream of this location.

Waterway Details:

Width: 1 km

Bed Description: Sand and Gravel

Bank Height/Slope: Pebble and cobble beach with dense brush behind on a gently rising slope.

Work Space Details:

Si**ze & Location:** Size will vary depending on river height. There will normally be sufficient workspace at most times of the year. During August 2002 an area 10 m wide and 120 m long was available.

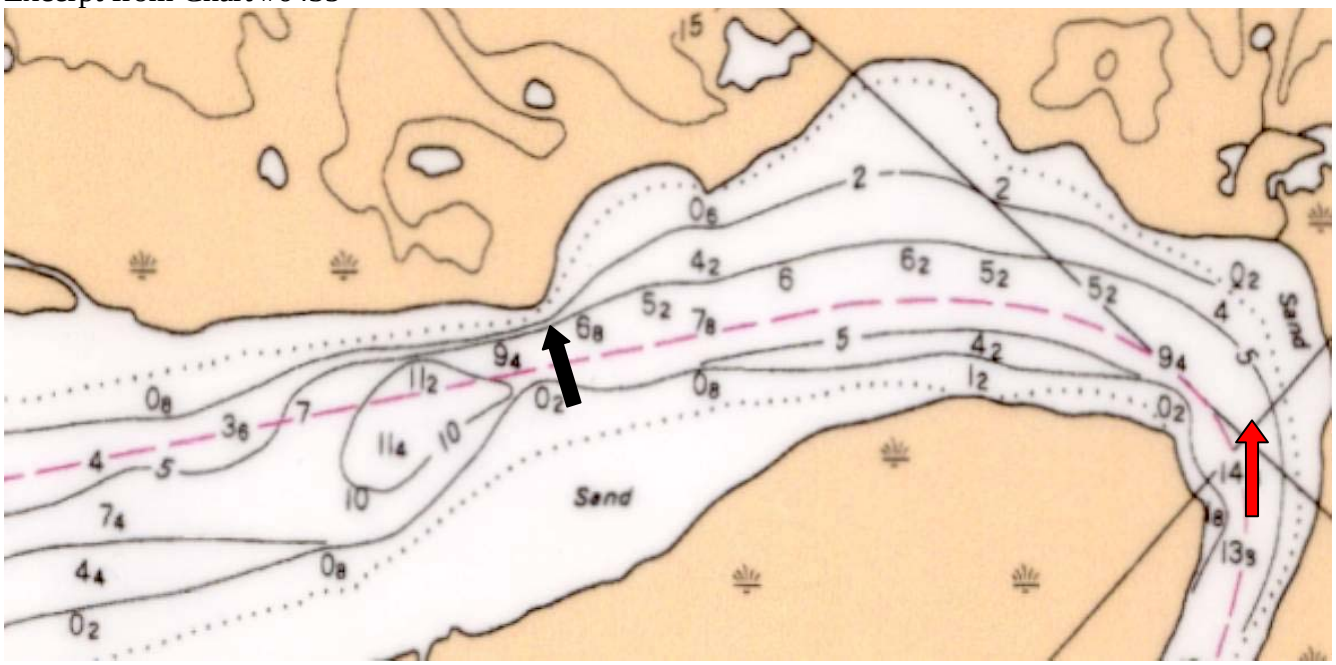
Helicopter Pad: A helicopter could operate from the beach, if required.

Recommended Deployment Strategy/Equipment Requirement: Boom to contain and recover spill at the point as it is swept round the upstream bay. A cascade of deflection booms could be placed to divert a spill from the main channel, if required. 500' containment boom will be required to guide spill from anchor point to beach for recovery.

Other Comments: This site is affected by tidal influences and is exposed to winds. The point on which the Control Point stands is difficult to differentiate from the one immediately upstream. This one has a 0.3 meter square white blank sign on a metal post in the bush at the back of the beach. It can be seen in the center of the photograph. This Control Point is 9.5 km downstream of Farewell, computed at river centerline. Survey conducted August 2002.

Control Point Identifier:	Control Point Name: Farewell Downstream Control Point #1	Issued: DRAFT #4 Lat. 69° 16.138' N Long. 135° 12.331' W

Excerpt from Chart #6435



Red arrow indicates flow.
Black arrow indicates position and direction of photograph (August 2002)
This Control Point is 9.5 km downstream of Farewell computed on the river's centerline.


Farewell
(Shell Canada
Camp)


Farewell
Downstream
Control Pt 1

2.5.4 Fuel Spill Emergency Response Plan (Land)

LOCATION: CAMP FAREWELL **REVISED: JULY, 2003**

The campsite is located between a small lake and a channel of the Mackenzie River. All fuel on site is stored in tanks within secondary containment. This ERP also applies to non-fuel spills (motor oil, hydraulic oil, cooking oil etc.). A minor spill to water could develop if a land spill is not contained immediately.

TRANSPORTATION

Liquid fuels will be stored in a closed system during transportation. Diesel fuel will be delivered from Camp Farewell by fuel truck. Aviation fuel will be transported in drums. All equipment coming on site will be diesel powered so amount of gasoline on site is minimal.

MAINTENANCE AND CONTROL

This contingency plan is project specific and will be 1) reviewed & 2) updated:

- As changes to applicable environmental legislation come into effect
- Annually, to take into account changes in environmental factors and in facility characteristics and policy
- After every oil pollution incident and exercise.

Changes to phone numbers and names of those individuals identified in this contingency plan will be made on an as required and when required basis. The numbers are to be verified when the camp is opened and/or on an annual basis.

ORGANIZATION

Shell Canada Limited utilizes the Incident Command System for all emergencies[2]. All incident responses are modeled after the Disciplined Approach. See Section 917 of Shell's Emergency Response Plan Model for detailed guidance on the Disciplined Approach and Prioritized Response Goals.

PRIORITIZED RESPONSE GOALS

The prioritized response goals are:

6. Protect Human Life (yours, fellow worker, & public)
7. Protect The Environment
8. Minimize Asset Loss
9. Regain Steady State Operations to minimize business impact (consider both revenue & reputation)

DISCPLINED APPROACH TO THE SPILL

1. **SAFETY**

Ensure personal safety

- ♦ Ensure your own personal safety from existing and potential hazards and fellow worker safety.

[2] ICS system description plus Roles & Responsibilities of all organizational positions are described in Shell's Emergency Response Manual - Model

2. ISOLATE AND DENY ENTRY

Isolate the area and deny / restrict entry

- Utilize vehicles or barricades for temporary control.
- Establish / adjust control perimeters.

3. NOTIFICATIONS

Immediately notify the following

- .Shell's onsite supervisor

Notify the following as soon as practical

- Shell's DAR/Construction manager
- Northwest Territory Emergency Spill Response Line
- Indian Northern Affairs Canada
- Regional Operations Center (ROC)
- NEB if spill exceeds .20 m^3 (200 litres) and/or spill is not contained and could result in further safety property or environmental damage.

4. COMMAND / MANAGEMENT

Order depends on specific factors

- Assign Incident Command System roles as resources become available.
- Initiate the response to incident, taking existing conditions into account.
- Ensure safety precautions and operating plans and conditions are reviewed with the crew.
- Determine a need for roadblocks.
- Ensure proper permits are executed.

5. IDENTIFICATION AND HAZARD ASSESSMENT

Identify the Hazards and Assess the Risks

- Determine chemical makeup of substance (i.e.: WHMIS, TDG Placards, PIN Nos.).
- MSDS (Material Safety Data Sheets – Chemical).
- Placards and labels (colors, markings).
- Shipping papers (Bill of Lading, Way Bill, etc).
- Technical information (CANUTEC).
- Other (specialists, monitoring devices).

6. PROTECTIVE EQUIPMENT

Ensure proper personal protective equipment is utilized, and know the level of equipment available

- Fire retardant clothing, safety glasses, goggles, life jackets, gloves etc.
- Check MSDS sheets for additional requirements

7. CONTAINMENT AND CONTROL

Safe defensive containment

- If safe to do so, and if possible, stop the flow of material.
- Ensure that flow is contained before starting the recovery procedure.
- Construct dikes, dams or drainage trenches to limit size of spill and prevent fuel from migrating. Contain as close to source as safe and practical to do

- In winter, areas are usually snow covered so spill areas are easily seen. Build dikes using plastic sheeting to line face of dike. Use mechanical and hand equipment to scrape up snow/liquid mixture and place it in containers.
- See list of emergency spill cleanup equipment for clean up materials
- Isolate (deny entry via keeping safe distance from spilled material.
- Divert, disperse, dilute cover
- Pump as much liquid product as possible into empty drums or tanks for disposal.
- Deploy absorbent pads, socks as required.
- Recover oiled sorbents and place them in steel drums for burning in on-site incinerator. Sorbents should be incinerated as soon as possible to avoid spontaneous combustion.
- Immediate burning may be required to prevent the spread of fuel into water courses. If burning done, pick up the residue after-burn.
- Notify and request assistance, if required, from external NWT Emergency Response Line.
- Place all resources/materials on standby that are available within close proximity, i.e. crawler tractor, loaders, bobcats, vacuum trucks, fuel bladders/fiberglass tanks, lost circulation material, straw bales etc.

8. DECONTAMINATION AND CLEANUP

Collect, cleanup, and sample

- Decontaminate personnel as required if exposed to the spill
- Priority is to high environmentally sensitive areas (municipality water sources, waterfowl staging areas, domestic fishing areas).
- Store the spilled material in proper containers for disposal;
- Implement remediation program for the area, as required
- Collect and analyze soil samples from the remaining spill area, if required
- Monitor the progress of remediation as required.

9. DISPOSAL

Dispose of wastes, contaminated clothing and equipment if unable to decontaminate.

- Consider waste impacts in all decisions
- Remove the contaminated material and haul to an approved disposal site.

10. DOCUMENTATION

Document all actions and complete reports

- Assign a recorder to log activities

2.5.5 Fire Procedure Emergency Response Plan

Muster area: BIG SHOP Southwest side of yard

All personnel

- Sound the fire alarm
- Assess the fire: if it is small enough, extinguish with fire extinguisher
- Shut door(s) and window(s) in the room you are evacuating
- If smoke builds up, stay low to the ground
- Remain calm, do not run
- Notify the incident commander immediately
- Remove your vehicle to the perimeter of the campsite
- Evacuate to and remain at the muster area until instructed to do otherwise by incident commander

Medic

- Evacuate to the muster area
- Take a radio for communication
- Treat any burns or related injuries
- If required, transport patients to hospital via ECV or helicopter, depending n nature of injury

Incident Commander

- Take a radio and satellite phone for communication. Ensure that fire alarm has been sounded throughout the camp
- Quickly go to the fire scene to assume command
- Meet with the emergency Support Team to assess action already taken and further action required

Emergency response team shall consist of

- Blair Bennett and/or trained alternates

- Ensure that each member has a radio for communication
- As first line of defense, shut the breakers to the trailer(s) off.
- Check each room to ensure that all camp personnel have vacated the trailers.
- Report to the incident commander for a head count and debriefing.
- Protect yourself and fellow workers
- If it is safe to do so, extinguish the fire. Only use the water supply (i.e. water truck, fire hose etc.) when informed that the generator is shut off.
- Take a head count of camp personnel.
- If required and safe to do so, locate missing personnel.

2.6 Roles of Regulatory Government Agencies

2.6.1 Role of Environment Canada

Environment Canada's Role in Environmental Emergencies includes the following:

- Maintenance of a national spill reporting and alerting system;
- On-scene response to spills of federal concern;
- Leadership for inland boundary spills;
- Leadership and guidance in development and exercise of contingency plans;
- Encouragement of sound spill prevention practices;
- Research to develop, test and demonstrate new emergency equipment;
- Advice on weather, ice, sea-state and air quality, including enhanced meteorological support during emergencies;
- Preparation and distribution of weather warnings;
- Modeling the movements of pollutants;
- Wildlife advice and monitoring;
- Emergency training programs for EC and others;
- Enforcement of legislation within mandate;
- Assessment of environmental damages;
- Provision of leadership, training and education to industry and other government and non-government players on Shoreline Cleanup Assessment Team (SCAT) process including wildlife protection;
- Documentation on natural resource damages.

2.6.2 Role of Regional Environmental Emergencies Team (REET)

REET's Role in the Event of a Major Oil Spill:

- Provision of environmental advice;
- Identification of environmentally sensitive areas;
- Spill behavior, fate and effects;
- Use and acceptability of dispersants;
- In-situ burning and other innovative technologies;
- Wildlife protection and rehabilitation strategies;
- Oily waste and disposal;

- Provision of assistance during spill response operations and planning;
- Environmental impact monitoring and evaluation of cleanup effectiveness;
- Oil spill sampling and monitoring of environmental aspects of cleanup operations;
- Up-to-date information on environmentally sensitive resources and sensitivity maps;
- Spill surveillance;
- Spill trajectory modeling; and
- Atmospheric and hydrologic data and weather forecasts.

2.6.3 Role of Response Operations Centre (ROC)

Role of the ROC is:

- 24/7 reporting centre
- Assess what Canadian Coast Guard involvement will be

2.6.4 Role of the Canadian Coast Guard (CCG)

Role of the Canadian Coast Guard:

- To monitor response that the polluter is taking (usually done by phone)
- If incident escalates to point where polluter is unable to respond properly, CCG will take over role of On Scene Commander
- Canadian Coast Guard takes on role of Lead Agency of all ship to shore incidents.

2.7 Definitions

2.7.1 Environmentally Sensitive Areas

Environmentally sensitive areas are defined as:

Areas containing natural, cultural or man made features which may be threatened during an oil spill. These features may represent socio-economic value (either through resource extraction or non-consumptive use of the resources) and/or life support value (e.g. productive habitat).

Examples of sensitive areas include:

- Threatened, vulnerable or endangered species or their habitat;
- Areas of concentration of species
- Areas of cultural significance (e.g. archaeological sites);
- Areas of socio-economic significance (e.g. marinas, recreation sites, water intakes); and,
- Shoreline habitats sensitive to oil (e.g. marshes)

2.8 Available Equipment List

Inventory - Oilspill Container Number 1 (MDSRC)

Quantity	U of M	Description	Category
4	pairs	Baffin Winter Boots (Sz 10 - 2, Sz 11 - 2)	Clothing
1	set	Chainsaw Chaps	Clothing
25	pairs	Disposable Coveralls	Clothing
5	pairs	Insulated Coveralls - XL	Clothing
20	pairs	Winter Monkey Grip Gloves	Clothing
6	sacks	Floor Dry	Consumable
9	sacks	Saw Dust	Consumable
9	bags	Sorbent - Loose	Consumable
20	bundles	Sorbent Pads	Consumable
11	boxes	Sorbent Socks	Consumable
2	each	24' x 48' Tarps	Containment
6	each	Aluminum Scoop Shovels	Containment
2	each	Brooms	Containment
12	each	Empty 45 Gallon Drums	Containment
2	each	Ice Scrapers	Containment
2	each	Long Handle Square Mouth Shovels	Containment
2	each	Pitch Forks	Containment
2	each	Rakes	Containment
2	each	Snow Shovels	Containment
1	each	6lb Clay Pick w/Handle	Containment
4	each	1" x 15' Tiedown Straps	Miscellaneous
2	each	2" x 15' Tiedown Straps	Miscellaneous
2	each	5 Ft Pry Bars	Miscellaneous
3	each	Bungy Cords	Miscellaneous
2	each	Clipboards	Miscellaneous
1	each	Disposable Camera	Miscellaneous
2	each	Funnels	Miscellaneous
2	each	Greenlee Tool Box	Miscellaneous
2	each	Padlocks	Miscellaneous
2	each	Pencils	Miscellaneous
3	each	Utility Brush - 20 inch	Miscellaneous
3	each	Plastic Pail 5 Gallon c/w Lid	Miscellaneous
1	each	5 Gallon Jug Simple Green Crystal	Miscellaneous
6	cans	Orange Spray Paint	Miscellaneous
6	rolls	Duct Tape	Miscellaneous
1	case	Garbage Bags	Miscellaneous
2	each	100 Ft Extension Cords - 15amp	Power
5	litres	2 Cycle Oil	Power
1	each	2 Gallon Jerry Can Oil/Gas Mix	Power
1	each	5 Gallon Jerry Can Diesel Fuel	Power
2	each	5 Gallon Jerry Can Gasoline	Power

2	each	50 Ft Extension Cords - 15amp	Power
2	each	50 Ft Extension Cords - 30amp	Power
1	each	Chain Saw - Makita DCS400	Power
12	litres	Engine Oil - Synthetic	Power
1	each	Generator - Kodiak - SGB5500HX	Power
6	each	Halogen Bulbs - Spare for Work Lights	Power
2	each	Halogen Lights with Stands	Power
4	each	Halogen Work Lights	Power
1	each	Herman Nelson	Power
12	each	6 Volt Batteries	Safety
6	each	Blankets	Safety
2	each	Fire Axes	Safety
2	each	Fire Extinguishers - 20lb ABC	Safety
1	each	First Aid Kit - 10 Man #3	Safety
8	each	Flashlights	Safety
10	each	Highway Cones	Safety
5	each	Highway Vests	Safety
5	each	Roadside Flares	Safety
1	each	Signal Horn	Safety
1	each	Signal Horn - Refill	Safety
2	rolls	Safety Fence 4' x 50'	Safety
1	each	Loudhailer	Safety
3	rolls	Tape "CAUTION - DO NOT ENTER"	Safety
3	rolls	Tape "DANGER"	Safety
1	each	Measuring Tape 1/2" x 100ft	Tools
1	each	100ft Chalk Line	Tools
3	each	8oz Powder Chalk for Chalk Line	Tools
1	each	10lb Sledge Hammer w/36" Handle	Tools
1	each	Tool Box	Tools
1	each	50' Tape Measure	Tools
1	set	Allen Key Set	Tools
1	each	Chainsaw File	Tools
1	each	Crescent Wrench - 10"	Tools
1	each	Crescent Wrench - 12"	Tools
1	roll	Duct Tape	Tools
1	roll	Electrical Tape	Tools
1	each	Flat File	Tools
1	each	Hacksaw	Tools
4	each	Hacksaw Blades	Tools
1	each	Hammer - Ball Peen 24 oz	Tools
1	each	Hammer - Claw 20 oz	Tools
1	roll	Mechanics Wire	Tools
1	each	Pipe Wrench - 18"	Tools
1	each	Pipe Wrench - 24"	Tools
1	each	Pipe Wrench - 36"	Tools
1	each	Pliers - Needle Nose	Tools
1	each	Pliers - Regular	Tools
1	each	Screwdriver - Large Flat Blade	Tools
1	each	Screwdriver - Multi Tip	Tools
1	set	Socket Set - 20 piece	Tools
1	each	Tin Snips - 3 piece	Tools

1	each	Utility Knife	Tools

Inventory - Oilspill Container Number 2 (MDSRC)

Quantity	U of M	Description	Category
4	pairs	Baffin Winter Boots (Sz 10 - 2, Sz 11 - 2)	Clothing
1	set	Chainsaw Chaps	Clothing
25	pairs	Disposable Coveralls	Clothing
5	pairs	Insulated Coveralls - XL	Clothing
20	pairs	Winter Monkey Grip Gloves	Clothing
15	sacks	Floor Dry	Consumable
10	sacks	Saw Dust	Consumable
20	bundles	Sorbent Pads	Consumable
4	boxes	Sorbent Socks	Consumable
2	each	24' x 48' Tarps	Containment
6	each	Aluminum Scoop Shovels	Containment
2	each	Brooms	Containment
12	each	Empty 45 Gallon Drums	Containment
2	each	Ice Scrapers	Containment
2	each	Long Handle Square Mouth Shovels	Containment
2	each	Pitch Forks	Containment
3	each	Rakes	Containment
2	each	Snow Shovels	Containment
1	each	6lb Clay Pick w/Handle	Containment
3	each	1" x 15' Tiedown Straps	Miscellaneous
2	each	2" x 15' Tiedown Straps	Miscellaneous
2	each	5 Ft Pry Bars	Miscellaneous
10	each	Bungy Cords	Miscellaneous
2	each	Clipboards	Miscellaneous
1	each	Disposable Camera	Miscellaneous
2	each	Funnels	Miscellaneous
1	each	Greenlee Tool Box	Miscellaneous
2	each	Pencils	Miscellaneous
3	each	Utility Brush - 20 inch	Miscellaneous
3	each	Plastic Pail 5 Gallon c/w Lid	Miscellaneous
1	each	5 Gallon Jug Simple Green Crystal	Miscellaneous
6	cans	Orange Spray Paint	Miscellaneous
6	rolls	Duct Tape	Miscellaneous
1	case	Garbage Bags	Miscellaneous
2	each	100 Ft Extension Cords - 15amp	Power
2	litres	2 Cycle Oil	Power
1	each	2 Gallon Jerry Can Oil/Gas Mix	Power
1	each	5 Gallon Jerry Can Diesel Fuel	Power
1	each	5 Gallon Jerry Can Gasoline	Power
3	each	50 Ft Extension Cords - 15amp	Power
2	each	50 Ft Extension Cords - 30amp	Power
1	each	Chain Saw - Makita DCS 400	Power
1	gallons	Engine Oil 0-30	Power
1	each	Generator - Kodiak - SGB5500HX	Power
6	each	Halogen Bulbs - Spare for Work Lights	Power

2	each	Halogen Lights with Stands	Power
4	each	Halogen Work Lights	Power
1	each	Herman Nelson	Power
12	each	6 Volt Batteries	Safety
5	each	Blankets	Safety
2	each	Fire Axes	Safety
2	each	Fire Extinguishers - 20lb ABC	Safety
1	each	First Aid Kit - 10 Man #3	Safety
8	each	Flashlights	Safety
10	each	Highway Cones	Safety
5	each	Highway Vests	Safety
2	each	Roadside Emergency Kits	Safety
1	each	Signal Horn	Safety
1	each	Signal Horn - Refill	Safety
2	rolls	Safety Fence 4' x 50'	Safety
1	each	Loudhailer	Safety
3	rolls	Tape "CAUTION - DO NOT ENTER"	Safety
3	rolls	Tape "DANGER"	Safety
1	each	Measuring Tape 1/2" x 100ft	Tools
1	each	100ft Chalk Line	Tools
3	each	8oz Powder Chalk for Chalk Line	Tools
1	each	10lb Sledge Hammer w/36" Handle	Tools
1	each	Tool Box	Tools
1	set	Allen Wrench Set - 25 piece	Tools
1	each	Chainsaw File	Tools
1	each	Crescent Wrench - 10"	Tools
1	each	Crescent Wrench - 8"	Tools
1	roll	Duct Tape	Tools
1	roll	Electrical Tape	Tools
1	each	Flat File	Tools
1	each	Hacksaw	Tools
10	each	Hacksaw Blades	Tools
1	each	Hammer - Ball Peen 24 oz	Tools
1	each	Hammer - Claw 20 oz	Tools
1	roll	Mechanics Wire	Tools
1	each	Pipe Wrench - 12"	Tools
1	each	Pipe Wrench - 18"	Tools
1	each	Pipe Wrench - 24"	Tools
1	each	Pliers - Needle Nose	Tools
1	each	Pliers - Regular	Tools
1	each	Screwdriver - Large Flat Blade	Tools
1	each	Screwdriver - Multi Tip	Tools
1	set	Socket Set - 20 piece	Tools
1	each	Tin Snips - 3 piece	Tools
1	each	Utility Knife	Tools
1	each	Wire Cutter	Tools

Inventory - Winter Kit Number 8 (MDSRC)

Quantity	U of M	Description
		Chemguard Terra Tank, 1500 Imp Gallons, 2" Fill/Drain, 2"
1	ea	Vent
1	ea	Repair Kit for Chemguard Terra Tank
1	ea	Stream Speed Meter
2	ea	Stihl 92cc Chainsaw Model 066 c/w 36" Bar and Chain
1	ea	Stihl 31cc Ice Auger w/10" Bit and 2ft Extension
1	ea	Tool Box w/Chainsaw and Auger Spares
4	ea	Body Harness - Parachute Type
4	ea	6ft Shock Absorber Lines w/Hook for Body Harness
2	ea	Chainsaw Rig
1	Box	Cloth Wipes
1	ea	12L Galvanized Pail
1	ea	Fibreglass Step Ladder, 6 ft
1	ea	Sash Cord, 1/8" x 250 ft
1	ea	Sash Cord, 1/4" x 250 ft
2	ea	Signs
1	box	Chainsaw Chains

Inventory - Oilspill Container Number 3 (PetroCanada)

Quantity	U of M	Description	Category
4	pairs	Baffin Winter Boots (Sz 10 - 2, Sz 11 - 2)	Clothing
1	set	Chainsaw Chaps	Clothing
4	pairs	Insulated Coveralls - XL	Clothing
20	pairs	Winter Monkey Grip Gloves	Clothing
15	sacks	Floor Dry	Consumable
10	sacks	Saw Dust	Consumable
20	bundles	Sorbent Pads	Consumable
4	boxes	Sorbent Socks	Consumable
2	each	24' x 48' Tarps	Containment
6	each	Aluminum Scoop Shovels	Containment
2	each	Brooms	Containment
12	each	Empty 45 Gallon Drums	Containment
2	each	Ice Scrapers	Containment
2	each	Long Handle Square Mouth Shovels	Containment
2	each	Pitch Forks	Containment
3	each	Rakes	Containment
2	each	Snow Shovels	Containment
4	each	1" x 15' Tiedown Straps	Miscellaneous
2	each	2" x 15' Tiedown Straps	Miscellaneous
2	each	5 Ft Pry Bars	Miscellaneous
2	each	Bungy Cords	Miscellaneous
2	each	Clipboards	Miscellaneous
1	each	Disposable Camera	Miscellaneous
2	each	Funnels	Miscellaneous
1	each	Greenlee Tool Box	Miscellaneous
2	each	Pencils	Miscellaneous
2	each	100 Ft Extension Cords - 15amp	Power
4	litres	2 Cycle Oil	Power
1	each	2 Gallon Jerry Can Oil/Gas Mix	Power
1	each	5 Gallon Jerry Can Diesel Fuel	Power
1	each	5 Gallon Jerry Can Gasoline	Power
3	each	50 Ft Extension Cords - 15amp	Power
2	each	50 Ft Extension Cords - 30amp	Power
1	each	Chain Saw - Makita DCS400	Power
1	gallons	Engine Oil 0-30	Power
1	each	Generator - Kodiak - SGB5500HXS	Power
6	each	Halogen Bulbs - Spare for Work Lights	Power
2	each	Halogen Lights with Stands	Power
4	each	Halogen Work Lights	Power
1	each	Herman Nelson	Power
12	each	6 Volt Batteries	Safety
5	each	Blankets	Safety
2	each	Fire Axes	Safety
2	each	Fire Extinguishers - 20lb ABC	Safety
1	each	First Aid Kit - 10 Man #3	Safety
8	each	Flashlights	Safety
10	each	Highway Cones	Safety

5	each	Highway Vests	Safety
2	each	Roadside Emergency Kits	Safety
1	set	Allen Wrench Set - 25 piece	Tools
1	each	Chainsaw File	Tools
1	each	Crescent Wrench - 12"	Tools
1	each	Crescent Wrench - 24"	Tools
1	each	Crescent Wrench - 8"	Tools
1	roll	Duct Tape	Tools
1	roll	Electrical Tape	Tools
1	each	Flat File	Tools
1	each	Hacksaw	Tools
10	each	Hacksaw Blades	Tools
1	each	Hammer - Ball Peen 24 oz	Tools
1	each	Hammer - Claw 20 oz	Tools
1	roll	Mechanics Wire	Tools
1	each	Pipe Wrench - 12"	Tools
1	each	Pipe Wrench - 18"	Tools
1	each	Pliers - Needle Nose	Tools
1	each	Pliers - Regular	Tools
1	each	Screwdriver - Large Flat Blade	Tools
1	each	Screwdriver - Multi Tip	Tools
1	set	Socket Set - 20 piece	Tools
1	each	Tin Snips - 3 piece	Tools
1	each	Utility Knife	Tools
1	each	Wire Cutter	Tools

Inventory - Oilspill Container Number 4 (PetroCanada)

Quantity	U of M	Description	Category
4	pairs	Baffin Winter Boots (Sz 9 - 1, Sz 10 - 2, Sz 11 - 1)	Clothing
12	Pairs	Disposable Coveralls	Clothing
5	pairs	Insulated Coveralls - XL	Clothing
20	pairs	Winter Monkey Grip Gloves	Clothing
15	sacks	Floor Dry	Consumable
10	sacks	Saw Dust	Consumable
6	Rolls	Sorbent	Consumable
17.5	bundles	Sorbent Pads	Consumable
4	boxes	Sorbent Socks	Consumable
2	each	24' x 48' Tarps	Containment
4	each	Aluminum Scoop Shovels	Containment
2	each	Brooms	Containment
10	each	Empty 45 Gallon Drums	Containment
2	each	Ice Scrapers	Containment
1	each	Long Handle Square Mouth Shovels	Containment
2	each	Pitch Forks	Containment
3	each	Rakes	Containment
2	each	Snow Shovels	Containment
2	each	1" x 15' Tiedown Straps	Miscellaneous
2	each	2" x 15' Tiedown Straps	Miscellaneous
2	each	5 Ft Pry Bars	Miscellaneous
4	each	Bungy Cords	Miscellaneous
2	each	Clipboards	Miscellaneous
1	each	Disposable Camera	Miscellaneous
2	each	Funnels	Miscellaneous
1	each	Greenlee Tool Box	Miscellaneous
2	each	Pencils	Miscellaneous
2	each	100 Ft Extension Cords - 15amp	Power
2	each	50 Ft Extension Cords - 15amp	Power
6	each	Halogen Bulbs - Spare for Work Lights	Power
2	each	Halogen Lights with Stands	Power
4	each	Halogen Work Lights	Power
12	each	6 Volt Batteries	Safety
2	each	Fire Axes	Safety
2	each	Fire Extinguishers - 20lb ABC	Safety
1	each	First Aid Kit - 10 Man #3	Safety
8	each	Flashlights	Safety
10	each	Highway Cones	Safety
5	each	Highway Vests	Safety
2	each	Roadside Emergency Kits	Safety
1	set	Allen Wrench Set - 25 piece	Tools
1	each	Crescent Wrench - 12"	Tools
1	each	Crescent Wrench - 8"	Tools
1	roll	Duct Tape	Tools
1	roll	Electrical Tape	Tools
1	each	Flat File	Tools

1	each	Chainsaw File	Tools
1	each	Hacksaw	Tools
10	each	Hacksaw Blades	Tools
1	each	Hammer - Ball Peen 24 oz	Tools
1	each	Hammer - Claw 20 oz	Tools
1	roll	Mechanics Wire	Tools
1	each	Pipe Wrench - 12"	Tools
1	each	Pipe Wrench - 18"	Tools
1	each	Pipe Wrench - 24"	Tools
1	each	Pliers - Needle Nose	Tools
1	each	Pliers - Regular	Tools
1	each	Screwdriver - Large Flat Blade	Tools
1	each	Screwdriver - Multi Tip	Tools
1	set	Socket Set - 20 piece	Tools
1	each	Tin Snips - 3 piece	Tools
1	each	Utility Knife	Tools
1	each	Wire Cutter	Tools

Inventory - Oilspill Container Number 5 (PetroCanada)

Quantity	U of M	Description	Category
4	pairs	Baffin Winter Boots (Sz 10 - 2, Sz 11 - 2)	Clothing
12	Pairs	Disposable Coveralls	Clothing
5	pairs	Insulated Coveralls - XL	Clothing
20	pairs	Winter Monkey Grip Gloves	Clothing
15	sacks	Floor Dry	Consumable
10	sacks	Saw Dust	Consumable
4	rolls	Sorbent	Consumable
20	bundles	Sorbent Pads	Consumable
4	boxes	Sorbent Socks	Consumable
2	each	24' x 30' Tarps	Containment
6	each	Aluminum Scoop Shovels	Containment
2	each	Brooms	Containment
12	each	Empty 45 Gallon Drums	Containment
2	each	Ice Scrapers	Containment
2	each	Long Handle Square Mouth Shovels	Containment
2	each	Pitch Forks	Containment
3	each	Rakes	Containment
2	each	Snow Shovels	Containment
3	each	1" x 15' Tiedown Straps	Miscellaneous
2	each	2" x 15' Tiedown Straps	Miscellaneous
2	each	5 Ft Pry Bars	Miscellaneous
2	each	Bungy Cords	Miscellaneous
2	each	Clipboards	Miscellaneous
1	each	Disposable Camera	Miscellaneous
2	each	Funnels	Miscellaneous
1	each	Greenlee Tool Box	Miscellaneous
2	each	Pencils	Miscellaneous
2	each	100 Ft Extension Cords - 15amp	Power
2	each	50 Ft Extension Cords - 15amp	Power
6	each	Halogen Bulbs - Spare for Work Lights	Power
2	each	Halogen Lights with Stands	Power
4	each	Halogen Work Lights	Power
12	each	6 Volt Batteries	Safety
2	each	Fire Axes	Safety
2	each	Fire Extinguishers - 20lb ABC	Safety
1	each	First Aid Kit - 10 Man #3	Safety
8	each	Flashlights	Safety
10	each	Highway Cones	Safety
5	each	Highway Vests	Safety
2	each	Roadside Emergency Kits	Safety
1	set	Allen Wrench Set - 25 piece	Tools
1	each	Chainsaw File	Tools
1	each	Crescent Wrench - 12"	Tools
1	each	Crescent Wrench - 8"	Tools
1	roll	Duct Tape	Tools
1	roll	Electrical Tape	Tools
1	each	Flat File	Tools

1	each	Hacksaw	Tools
10	each	Hacksaw Blades	Tools
1	each	Hammer - Ball Peen 24 oz	Tools
1	each	Hammer - Claw 20 oz	Tools
1	roll	Mechanics Wire	Tools
1	each	Pipe Wrench - 12"	Tools
1	each	Pipe Wrench - 18"	Tools
1	each	Pipe Wrench - 24"	Tools
1	each	Pliers - Needle Nose	Tools
1	each	Pliers - Regular	Tools
1	each	Screwdriver - Large Flat Blade	Tools
1	each	Screwdriver - Multi Tip	Tools
1	set	Socket Set - 20 piece	Tools
1	each	Tin Snips - 3 piece	Tools
1	each	Utility Knife	Tools
1	each	Wire Cutter	Tools

OILSPILL Equipment Inventory - Petro-Canada Swimming Point

Description	Qty	Loc'n
20ft Aqua-Dek Jet Boat w / twin 175 HP Merc Jets	1	Coverall
Anchor Assemblies (70# Danforth Anchor, 10' chain, 50' 3/4" nylon line, line/marker buoy)	3	BoomBoxes
Riverboom - 6" x 6" x 1000ft	1000ft	Boom Boxes
Towing bridles (5/16" galv cable, legs are 36" long)	4	Boom Boxes
MultiSkimmer Model 1230DI (Di for Disc)	1	Container # 9
Shallow water boom vane w/ 150m custom control line	1	Container # 9
Tow paravane (welded alum 9" diameter x 24" long float tapered @ one end 21" overall height)	1	Container # 9
Yanmar 10 hp Diesel Power Pack and Hydratech S2T2 discharge pump w/ suction discharge hoses	1	Container # 9
ShoreSaver Boom, 50ft, 22oz PVC	100ft	Container # 9
ShoreSaver Boom Adapter Set includes water and air adapter fitting, hose and camlock	2	Container # 9
ShoreSaver Inflation Blower	1	Container # 9
ShoreSaver Water Pump - 2" Honda	1	Container # 9
ShoreSaver Hoses w/Camlocks	1	Container # 9
Marker Buoys, 36" dia	4	Container # 9
Mooring Bouys, 18.5" dia	8	Container # 9
Boom Connector Pins	24	Container # 9
Boom Towing Bridles	6	Container # 9
Carabiners, Stainless Steel	24	Container # 9
Danforth Anchors, 25lb	6	Container # 9
Chain for 25lb Anchors	6	Container # 9
Danforth Anchors, 43lb	2	Container # 9
Chain for 43lb Anchors	2	Container # 9
Shackles, 1/4"	25	Container # 9
Shackles, 3/8"	25	Container # 9
Shackles, 1/2"	25	Container # 9
Disposal Bags, 20 bags per roll	6	Container # 9
Anchor Pins, Straight	12	Container # 9
Anchor Pins, Delta Wing	12	Container # 9
MuliSkimmer Drum Insert in Wooden Box	1	Container # 9
Aluminum Rope Reels	3	Container # 9
Rope, Floating 1/2" x 100ft	4	Container # 9
Rope, Floating 1/2" x 50ft	6	Container # 9
Rope, Floating 1/2" x 25ft	6	Container # 9
ChemGuard Terra Tank, 1500 Imp Gallons, 2"Fill/Drain and 2" Vent	1	Container # 9
2" Trash Pump, Honda WT20XR	2	Container # 6
Discharge Hose, 2" x 25 ft	8	Container # 6
Discharge Hose, 2" x 50 ft	6	Container # 6
Suction Hose, 2" x 20 ft	6	Container # 6
Hose Screen, 2"	3	Container # 6
Hose Foot Valve, 2"	3	Container # 6
Hose Caps, 2"	18	Container # 6
Swedge, 2" x 3"	2	Container # 6
Swedge, 2" x 4"	2	Container # 6
Camlock Seals, 2"	8	Container # 6
Fire Nozzle c/w 1-1/2" x 2" Swedge	2	Container # 6

Ball Valves, 2" c/w Camlocks	4	Container # 6

2.9 Arctic Oil Handling Facility Declaration

ARCTIC OIL HANDLING FACILITY DECLARATION

Pursuant to paragraph 660.2(4)(c) of the *Canada Shipping Act*, I,

SHELL CANADA LIMITED
(Name of the operator of the oil handling facility)

declare that

(a) to comply with the regulations made under paragraph 657(1)(a) of the *Canada Shipping Act*, on the detection of an oil pollution incident that arises out of the loading or unloading of oil to or from a ship,

IMPLEMENT THE "CAMP FAREWELL CONTINGENCY PLAN" AND NOTIFY AS PER OPEP. IE. NWT Spill Line & CANADIAN COAST GUARD - HAY RIVER
(Declare the manner in which the operator will comply with the regulations made under paragraph 657(1)(a) of the Act.)

(b) ~~in accordance with paragraph 660.2(4)(b) of the Canada Shipping Act, I have an arrangement with the certified response organization known as~~

~~*(Name of response organization)*~~

In accordance with paragraph 660.2(6) the requirements under paragraph 660.2(4)(b) do not apply

The arrangement is with respect to 1750 tonnes of oil
(Number of tonnes)

and in respect of LAT. 69°12'30.0" LONG 135°06'04.4"
(Geographic location of the oil handling facility)

2.9 Arctic Oil Handling Facility Declaration

SCHEDULE - *Concluded*

(c) ~~the persons listed below are authorized to implement the arrangement described in paragraph (b).~~

~~(Name, address, telephone number and fax or telex number)~~

~~(Name, address, telephone number and fax or telex number) (If required, attach additional pages.)~~

In accordance with paragraph 660.2(6) the requirements under paragraph 660.2(4)(b) do not apply.

(d) the persons listed below are authorized to implement the oil pollution emergency plan:

BLAIR BENNETT
SHANE MILLARD
KEVIN DELLAIRE
JOHN RUSSELL
} CAMP FAREWELL, INUVIK, NT
Ph (867) 777-5460 or 777-5364
Fax (867) 777-5365

(Name, address, telephone number and fax or telex number)

MAILING ADDRESS: P.O. BOX 100, POSTAL STN 'M'
CALGARY, AB
T2P 2H5

(Name, address, telephone number and fax or telex number) *(If required, attach additional pages.)*

R. H. Hetman

(Signed by the operator of the oil handling facility or its representative)

Sept. 5, 2002
(Date)

R. H. HETMAN
DRM/CONSTRUCTION Mgr.
Shell Canada Ltd.

General Spill file
700 - Spill line

Indian and Northern Affairs Canada
www.inac.gc.ca

Affaires indiennes et du Nord Canada
www.ainc.gc.ca

Your file - Votre référence

Our file - Notre référence

December 17, 2003

Oil and Gas Exploration and Production Companies
Operating in the Northwest Territories and Nunavut

INAC Spill Reporting Protocol for Upstream Oil and Gas Operations

The Northwest Territories/Nunavut Spills working Agreement (revised 2003) does not specify what quantity of a substance would trigger a requirement to report a spill, largely because there are seven signatories to the Agreement who have different spill reporting requirements.

Recently, the National Energy Board (NEB) developed a Spill Reporting Protocol for NEB lead spills in the NWT/Nunavut (see attached letter). The purpose of the revised upstream oil and gas spill reporting protocol is to:

- more closely align spill reporting requirements with reporting requirements of other jurisdictions such as the territorial governments;
- focus spill notification and follow-up on spills that have potential to be a threat to the environment; and
- minimize the number of spill reports of low volume and areal extent that can be immediately and adequately dealt with by the operator and have minimal or no potential to be a threat to the environment.

The NEB spill reporting protocol came into effect on 15 July 2003 for well drilling and production operations where the NEB is the lead agency for that spill. At that time, Indian and Northern Affairs Canada had adopted the NEB protocol for INAC lead spills for oil and gas operations including well drilling where the NEB is not the lead agency and seismic operations. The conditions outlined in Appendix A of the NEB protocol must be met prior to the operator being permitted to use this protocol.

Effective immediately, the following conditions are added to the Appendix A of the protocol for INAC lead spills:

- An on-site record shall be kept of all minor spills and immediately reportable spills and be readily available to INAC Inspectors or officials upon request;
- Monthly reporting of all minor spills shall be reported to the District INAC Inspector(s) in the condensed form attached;
- All spills requiring assistance by the operator (i.e. not cleaned up immediately and assistance is required for cleanup), continuing spills, or in situations where further spillage is possible are to be reported immediately;

- All spills, irregardless of size (areal extent), amount, and product, remain the liability of the proponent and must be cleaned up immediately. All INAC lead spills must be cleaned up to the satisfaction of the INAC Inspector.

Please review the attached and if you wish to take advantage of this protocol, please contact Robert Jenkins at (867) 669-2574.

Sincerely,

David Milburn
Manager, Water Resources Division
Indian and Northern Affairs Canada

cc. Annette McRobert, Operations Directorate
Bob Wooley, Mackenzie Valley Land and Water Board
George Govier, Sahtu Land and Water Board
Gordon Wray, Northwest Territories Water Board
Robert Alexie, Gwich'in Land and Water Board
Rudy Cockney, North Mackenzie District
Ed Hornby, South Mackenzie District
Norman Wells Sub-District
Fort Simpson Sub-District
Fort Smith Sub-District
Hay River Sub-District
John Korec, National Energy Board
Harvey Gaukel, Government of the Northwest Territories
Terry Cook, DFO
Ed Collins, Environment Canada
James Thorbourne, Inuvialuit Land Admintistration
Gordon Mackay, Government of Nunavut

INAC Monthly Spill Reporting Form

Company Responsible:
Project Name and Water Licence #:
Month:

Date of Spill (d/m/y)	Product Spilled	Amount	Extent of Contaminated Area (m^2)	Location (latitude and longitude)

DIAND District Fax Numbers
North Mackenzie District (Inuvik): (867) 777-2090
Norman Wells Sub-District: (867) 587-2928
South Mackenzie District (Yellowknife) (867) 669-2720
Hay River Sub-District: (867) 874-2460
Fort Smith Sub-District: (867) 872-3472
Fort Simpson Sub-District: (867) 695-2615
Nunavut District: (867) 979-6445

National Energy Board / Office national de l'énergie

File 9720-A000-7-2
14 July 2003

Oil and Gas Exploration and Production Companies
Operating in Northwest Territories and Nunavut

Spill Reporting Protocol for Upstream Oil and Gas Operations in the Northwest Territories and Nunavut Regulated by the National Energy Board

Protocol Purpose and Effective Date

A revised upstream oil and gas spill reporting protocol (Protocol) is intended:

1) to more closely align spill reporting requirements with reporting requirements of other jurisdictions such as the territorial governments;
2) to focus spill notification and follow-up on spills that have potential to be an imminent threat to the environment; and
3) to minimize the number of spill reports of low volume and areal extent that can be immediately and adequately dealt with by the operator and have minimal or no potential to be a threat to the environment.

Effective 15 July 2003, the new Spill Reporting Protocol for Upstream Oil and Gas Operations in the Northwest Territories and Nunavut will apply to exploratory and development oil and gas drilling and production operations[2].

Protocol Highlights

The Upstream Oil and Gas Spill Reporting Protocol will:

- Apply to companies authorized to carry on drilling or production activities in the Northwest Territories and Nunavut and who meet the conditions set out in the Protocol;
- Apply to spills where either the NEB or Indian and Northern Affairs Canada (INAC) would be designated as lead agency as per the NWT Spills Working Agreement[3];

...2

[2] Existing reporting protocols, such as for Imperial Oil Resources Ltd.'s Norman Wells facility and operations, would not be affected by this new protocol.
[3] See attached Table 1A of the Northwest Territories/Nunavut Spills Working Agreement.

444 Seventh Avenue SW
Calgary, Alberta T2P 0X8

444, Septième Avenue S.-O.
Calgary (Alberta) T2P 0X8

Canada

Telephone/Téléphone : (403) 292-4800
Facsimile/Télécopieur : (403) 292-5503
http://www.neb.gc.ca

- Establish that the triggers for immediately reportable spills meet *the Canada Oil and Gas Operations Act* (COGOA) and *Regulations* and, be consistent with the reporting triggers in the Numavut and Northwest Territories *Spill Contingency Planning and Reporting Regulations*[4]; and
- Require that each operator have, and implement, an approved spill contingency plan.

Immediately Reportable Spills

For the purpose of the Protocol, an "immediately reportable spill" is defined as a release of a substance that is likely to be an imminent environmental or human health hazard or meets or exceeds the volumes in Schedule 1.

Minor Spills

All other releases, for which there is no loss of control, are not considered immediately reportable spills and can be handled as part of ongoing operations and maintenance, i.e., immediately cleaned up. However, an on-site record shall be maintained for all releases, whether or not reported.

Please review the attached and if you wish to take advantage of this protocol, please contact me at (403) 292-6614.

John Korec

John Korec, P.Geol.
Environmental Assessment Officer

c.c. Terry Baker, NEB
Gregory Lever, NEB
Rick Turner, NEB
Rick Fisher, NEB
Mieke Vander Valk, NEB

[4] The Territories reference *Transportation of Dangerous Goods* (TDG) *Act* and Regulations for reportable quantities. The same quantities are intended for the Spill Reporting Protocol for those releases not addressed by the TDG or Regulations.

APPENDIX A

Terms and Conditions For Implementing the Spill Reporting Protocol For Upstream Oil and Gas Operations

1.	Applies only to upstream projects in a single geographic area, i.e., well drilling programs or production operations including flowlines and pipelines. The Protocol does not apply to upstream geological or geophysical operations.	UPSTREAM WELL DRILLING OR PRODUCTION OPERATIONS
2.	Applies to spills for which the National Energy Board (NEB) or Indian and Northern Affairs Canada (INAC) would be designated as the Lead Agency under the Northwest Territories/Nunavut Spills Working Agreement.	LEAD AGENCY
3.	This Spill Reporting Protocol **does not apply** to spills for which the Government of the Northwest Territories (GNWT), Government of Nunavut (GNU), Environment Canada Environmental Protection Branch (EPB), Canadian Coast Guard (CCG), or Inuvialuit Land Administration would be designated as the Lead Agency under the Northwest Territories/Nunavut Spills Working Agreement.	NON-APPLICABLE SPILLS
4.	Immediately reportable spills include releases as per **Schedule 1**, and releases of substances of lesser volumes that are likely to be an imminent environmental or human health hazard or where an operator is uncertain if a release is reportable.	IMMEDIATELY REPORTABLE SPILLS
5.	An on-site record shall be kept of all minor spills and immediately reportable spills and be available for inspectors upon request, including the INAC Inspector prior to Land Use Permit closure.	ON-SITE RECORD OF ALL SPILLS
6.	Operator, i.e., the company or individual who holds an authorization for the project, must have a spill contingency plan approved by the NEB or INAC, i.e., signatories to the Northwest Territories/Nunavut Spills Agreement.	SPILL CONTINGENCY PLAN
7.	Spill contingency plan must meet the appropriate regulatory requirements and/or spill contingency planning guidelines, including procedures to clean up minor spills and ensure environmental protection.	
8.	Appropriate field spill kits, as indicated in the spill contingency plan, must accompany each crew and/or mobile equipment and/or vehicle.	
9.	Contractors and sub contractors for the Operator must abide by the Protocol and the spill contingency plan. All spills or releases, whether by the Operator, contractors or sub-contractors, remain the liability of the Proponent or Operator.	LIABILITY

Schedule 1 – Immediately Reportable Quantities

TDG Class	Substance	Immediately Reportable Quantities for NWT/NU 24-Hour Spill Reports
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 liquid	≥ 100 L
4.1 4.2 4.3	Flammable solid 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 parts per million	≥ 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, wastewater, etc.)	≥ 100 L or 100 kg
None	Sour natural gas (i.e., contains H_2S) Sweet natural gas	Uncontrolled release or sustained flow of 10 minutes or more

As well, all releases of harmful substances, regardless of quantity, are immediately reportable where the release:

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

Example Scenarios:

1. NEB Lead Agency (assumes spills are under control)

Activity	Spill Location	Quantity & Product Spilled	Spill Reporting
Drilling operation	Drilling lease on Crown land	200 L gel-chem mud	Immediately reportable to the NWT 24-hour Spill Report Line
Drilling operation	Drilling lease on Crown land	2 m^3 sour gas	Immediately reportable to the NWT 24-hour Spill Report Line
Water injection line operation	Pipeline right-of-way on Crown land	150 L produced water from valve	Immediately reportable to the NWT 24-hour Spill Report Line
Drilling operation	Drilling lease on Crown land and into near-by creek	75 L of crude oil	Spill has entered a water body - immediately reportable to the NWT 24-hour Spill Report Line
Drilling operation	Drilling lease on Crown land	50 L oil-based mud	On-site record of spill & clean up.
Drilling operation	Drilling on Crown land	0.5 m^3 sweet gas	On-site record of spill & clean up.
Water injection line operation	Pipeline right-of-way on Crown land	80 L produced water from valve	On-site record of spill & clean up.
Drilling operation	Inside shed for the diesel-generator	100 L of diesel leaks into fully-contained generator shed	Not a spill – diesel did not get into or threaten the environment or human health – no report necessary. However, as an operational upset, the leak would be cleaned up and included on the daily tour sheet.

2. INAC Lead Agency (assumes spills are under control)

Activity	Spill Location	Quantity & Product Spilled	Spill Reporting
Fuel tank refilling	Bermed storage tank area on drilling lease on Crown Land	100 L gasoline	Immediately reportable to the NWT 24-hour Spill Report Line
Truck refuelling	Drilling lease on Crown land	2 L of diesel	On-site record of spill & clean up.
Camp operations	Camp on Crown land	75 L of grey water overflows camp sump	On-site record of spill & clean up.
Vibroseis operation	Seismic line on Crown land	50 ml of hydraulic fluid on snow, immediately scooped up and placed in disposal container	Protocol does not apply for a seismic operation – however, this is not a spill as the hydraulic fluid did not enter the environment.
Truck refuelling	Seismic line on Crown land	2 L of diesel	Protocol does not apply for a seismic operation – spill is immediately reportable to the NWT 24-hour Spill Report Line

3. Other Lead Agencies (assumes spills are under control unless otherwise stated)

Activity	Spill Location	Lead Agency	Quantity & Product Spilled	Spill Reporting
Drilling operation	Drilling lease on ILA land	ILA	50 L gel-chem mud	Protocol does not apply – spill is immediately reportable to the NWT 24-hour Spill Report Line
Refilling tanks from fuel barge	River next to drilling base camp	CCG	10 L diesel fuel	Protocol does not apply – spill is immediately reportable to the NWT 24-hour Spill Report Line
Fuel re-supply	Truck overturn on a territorial road (would also apply to spills within a community)	GNWT or GNU	50 L of diesel fuel	Refer to GNWT or GNU *Spill Contingency Planning and Reporting Regulations*

Table 1A
Designation of Lead Agency for spills in the NWT and NU
(From the Northwest Territories/Nunavut Spills Working Agreement)

	SPILL INCIDENT	LEAD AGENCY
1.	**Spills on Commissioner's Land in NWT**[1,2] (i.e., Territorial Highways[3], communities)	GNWT
	Except:	
	a) At facilities authorized under Federal Legislation.	INAC
	b) At Federal Facilities[4] not authorized under Federal or Territorial legislation	EPB
	c) At oil and gas exploration and production facilities[5]	NEB
	d) Those sections of Territorial Highways on ice surfaces.	INAC
2.	**Spills on Commissioner's Land in NU**[6,7] (i.e., Territorial Roads[8], communities)	GN
	Except:	
	a) At facilities authorized under Federal Legislation.	INAC
	b) At Federal Facilities[4] not authorized under Federal or Territorial legislation	EPB
	c) At oil and gas exploration and production facilities[5]	NEB

Table 1A cont'd

3.	**Spills on Territorial Land in NWT[9,2] and NU[9,7]**	INAC
	Except:	
	a) At Federal Facilities[4] not authorized under Federal or Territorial legislation	EPB
	b) At oil and gas exploration and production facilities[5]	NEB
	c) In National Parks.	EPB
4.	**Spills on Water in NWT[10] and NU[10]**	INAC
	Except:	
	a) From ships and barges (i.e., ship source pollution incidents, including refuelling shore-based tanks from ships)	CCG
	b) At oil and gas exploration and production facilities[5]	NEB
5.	**Spills on Land in the NWT set aside under the Inuvialuit Land Claim.** (i.e., on private 7-1-a, b lands under the claim, excluding spills on water bodies)	ILA

FOOTNOTES:

1 **Commissioner's Land** means land in the NWT transferred by Order in Council to the GNWT and is, generally, land within a community, town or city.

2 See Table 1B for Jurisdiction Designation of **Airports** in the NWT.

3 **Territorial Highways** are described in the GNWT *Public Highways Act* Schedules A, B and C (attached as Table 1D).

4 **Federal Facilities** means any facility owned by the Government of Canada, such as DEW Line Stations, North Warning System Stations, High Arctic Weather Stations including airports, docks and wharves, and Research Centres, operated directly or indirectly by the following agents of the Crown:

- Department of Industry
- Department of Fisheries and Oceans
- Indian and Northern Affairs Canada
- Environment Canada
- Natural Resources Canada
- Health Canada
- Department of National Defence
- Transport Canada
- Department of Public Works and Government Services (PWGSC)
- Department of Justice
- Royal Canadian Mounted Police (RCMP)

Crown Corporations such as:

- Canadian National (Railway)
- Canadian Broadcasting Corporation (CBC)
- Canadian Mortgage and Housing Corporation (CMHC)
- Federal Business Development Bank (FBDB)
- Canada Post Corporation
- Freshwater Fish Marketing Corp.

This designation does not include private dwellings owned or leased by PWGSC; or office and other complexes leased by PWGSC; or Petro-Canada facilities located within communities or on Commissioner's Land.

5 This designation includes pipelines, gas plants and refineries.

6 **Commissioner's Land** means land in NU which is described in the *Commissioner's Land Act*, R.S.N.W.T. 1988,c-11 as amended for NU pursuant to the *Nunavut Act* and is, generally, land within a community or town.

7 See Table 1C for jurisdictional designation of Airports in NU.

8 **Territorial Roads** are described in the GNWT *Public Highways Act* Schedules A, B and C (attached as Table 1E), and in the *Public Highways Act*, R.S.N.W.T. 1988, c.P-13, as amended for NU pursuant to the *Nunavut Act*.

9 **Territorial Land** means lands in NWT and NU that are vested in the Crown or for which the Government of Canada has power to dispose.

10 **Water** means both inland and Arctic waters as defined in the *Northwest Territories Waters Act* and *Arctic Waters Pollution Prevention Act*. Where a spill on land enters surface or ground water, the lead agency is the agency responsible for the spill on land.

N.W.T. SPILL REPORT

(Oil, Gas, Hazardous Chemicals or other Materials)

National Energy Board
Phone (403) 299-3926
Fax (403) 292-5875

24-Hour Report Line
Phone (867) 920-8130
Fax (867) 873-6924

A Report date and time Report ASAP after appropriate, safe action has been taken	B Date and time of spill (if known)	C Original Report Update when cleanup is completed Update Report	Spill number

D Location and map coordinates (if known) and direction (if moving)
Indicate if spill is into or on: a water body; Crown Land; or First Nation private land (e.g., Inuvialuit Settlement land)

E Party responsible for spill
e.g., geophysical contractor for Operator (name) for NEB-authorized program (name)

F Product(s) spilled and estimated quantities (provide metric volumes/weights if possible)

G Cause of spill

H Is Spill terminated? yes no	I If spill is continuing, give estimated rate	J Is further spillage possible? yes no	K Extent of contaminated area (m2)

L Factors affecting spill recovery (weathering conditions, terrain, snow cover, etc.)	M Containment (natural depression, dykes, etc.)

N Action, if any, taken or proposed to contain, recover, clean up or dispose of product(s) and contaminated materials

Do you require assistance? no yes, describe:	P Possible hazards to persons, property, or environment

Q Comments and/or recommendations
- Corrective actions taken;
- Disposal of contaminated materials (e.g., soil, snow, sorbent pads, etc.);
- Anticipated final cleanup date;
- Inspector/agency on site

FOR SPILL LINE USE ONLY

Lead Agency

Spill significance

Lead Agency contact and time

Is this file now closed?

Reported by	Position, Employer, Location	Telephone
Reported to	Position, Employer, Location	Telephone

Northwest Territories

NWT SPILL REPORT

(Oil, Gas, Hazardous Chemicals or other Materials)

24 – Hour Report Line
Phone: (867) 920-8130
Fax: (867) 873-6924

A Report Date and Time	B Date and Time of spill (if known)	C ☐ Original Report ☐ Update no._____	Spill Number
D Location and map coordinates (if known) and direction (if moving)			
E Partly responsible for spill			
F Product(s) spilled and estimated quantities (provide metric volumes/weights if possible)			
G Cause of spill			
H Is spill terminated? ☐ yes ☐ no	I If spill is continuing, give estimated rate	J Is further spillage possible? ☐ yes ☐ no	K Extent of contaminated area (in square meters if possible)
L Factors effecting spill or recovery (weather conditions, terrain, snow cover, etc.)		M Containment (natural depression, dikes, etc.)	
N Action, if any, taken or proposed to contain, recover, clean up or dispose of product(s) and contaminated materials			
O Do you require assistance? ☐ no ☐ yes, describe:	P Possible hazards to person, property, or environment; eg: fire, drink water, fish or wildlife		
Q Comments or recommendations			

FOR SPILL LINE USE ONLY

Lead agency

Spill significance

Lead Agency contact and time

.....

.....

.....

Is this file now closed? ☐ yes ☐ no

Reported by	Position. Employer, Location	Telephone
Reported to	Position. Employer, Location	Telephone

SECTION 8

LICENSE N7L1-1762

NORTHWEST TERRITORIES WATER BOARD

WATER REGISTER: N7L1-1762

November 28, 2001

Mr. Randy Hetman
DAR/Construction Manager
Shell Canada Ltd.
P.O. Box 100, Stn. M
400 - 4 Avenue S.W.
CALGARY, AB T2P OJ4

Dear Mr. Hetman:

AMENDMENT OF A "B" TYPE LICENCE

The Northwest Territories Water Board has reviewed your application for amendment to the discharge limits of your current Water Licence.

The Board hereby approves this request. Please find attached an amendment which reflects changes to the discharge limits. The other duplicate of this amendment has been filed with the Water Resources Division of the Department of Indian Affairs and Northern Development.

If you require further assistance, please contact this office. For technical enquiries, contact Ms Shannon Pagotto at (867) 669-2658 or Mr. David Milburn at (867) 669-2650 of Water Resources Division.

Sincerely,

Gordon Wray
Chairman
N.W.T. Water Board

Attach.

NORTHWEST TERRITORIES WATER BOARD

LICENCE AMENDMENT

LICENSEE:	**Shell Canada Ltd.**
LICENCE NUMBER:	**N7L1-1762**
EFFECTIVE DATE:	**November 28, 2001**

Pursuant to the *Northwest Territories Waters Act* the Northwest Territories Water Board hereby grants the following Licence Amendment.

1. PART A, Item 2 is hereby enhanced with:

"Analyst" means an Analyst designated by the Minister under Section 35(1) of the *Northwest Territories Waters Act*;

"Freeboard" means the vertical distance between water line and crest on a dam or dyke's upstream slope;

"Geotechnical Engineer" means a professional engineer registered with the Association of Professional Engineers, Geologists, and Geophysicists of the Northwest Territories and whose experience is the design and construction of earthworks in a permafrost environment;

"Modification" means an alteration to a physical work that introduces a new structure or eliminates an existing structure and does not alter the purpose or function of the work, but does not include an expansion;

"Permeability" means the capacity to transmit water through a medium;

"Project Description" refers to the report titled "Project Description for the Proposed Petro-Canada Mackenzie Delta Kugpik and Kurk Seismic Program", and dated September, 2000 prepared by Inuvialuit Environmental Inc.;

"Sewage" means all toilet wastes and greywater;

"Sewage Treatment Facilities" comprises the area and engineered structures designed to contain sewage as identified in Appendix B of the Project Description, titled "Camp Farewell and Sewage System Drawings", and also includes a Sump constructed of impervious material and or with an impervious liner;

"Sump" means an excavation for the purpose of catching or storing water and/or waste;

"Water Supply Facilities" comprises the area and engineered structures designed to withdraw and treat Water for potable use, as described in Section 4.3.3 of the Project Description;

PART B, Item 1 is hereby enhanced with:

g) details on the restoration of any Sumps; and

h) any revisions to the approved Contingency Plan.

PART B, Item 1 (d) is hereby rescinded and replaced with:

d) a summary of any Modifications carried out on the Water Supply and Sewage Treatment Facilities, including all associated structures;

PART D, Item 7 and 8 are hereby added:

7. A freeboard limit of 1.0 metre in the Sewage Treatment Facilities shall be maintained at all times or as recommended by a Geotechnical Engineer and as approved by the Board.

8. All analyses shall be conducted in accordance with methods prescribed in the current edition of "Standard Methods for the Examination of Water and Wastewater" or by such other methods as may be approved by an Analyst.

PART D, Item 4 is hereby rescinded and replaced with:

4. All Sewage effluent discharged by the Licensee from the Sewage Treatment Facilities at "Surveillance Network Program" Station Number 1762-1 shall meet the following effluent quality requirements:

Sample Parameter	Maximum Average Concentration	
BOD_5	70.0	mg/L
Total Suspended Solids	70.0	mg/L
Faecal Coliforms	10E4	CFU/dL
Oil and Grease	5.0	mg/L

The Waste discharged shall have a pH between 6 and 9.

This Licence Amendment issued and recorded at Yellowknife, Northwest Territories on November 28, 2001.

NORTHWEST TERRITORIES WATER BOARD

Witness

Chairman

NORTHWEST TERRITORIES WATER BOARD

Rec'd 12/11/2000

WATER REGISTER: N7L1-1762

November 30, 2000

Mr. Randy H. Hetman
Construction Manager
SHELL CANADA
400-4th Ave. S.W.
PO Box 100, Station M
CALGARY, ALBERTA T2P 2H5

Dear Mr. Hetman

ISSUANCE OF A "B" TYPE LICENCE

Attached is a duplicate of Licence No. N7L1-1762 granted to SHELL CANADA. by the Northwest Territories Water Board in accordance with the *Northwest Territories Waters Act*. The other original of this Licence has been filed with the Department of Indian Affairs and Northern Development in Yellowknife, Northwest Territories.

Also attached are general procedures for the administration of licences in the Northwest Territories. I request that you review these and address any questions to the Board's office.

In conclusion, please be advised that this letter with attached procedures, all inspection reports, and correspondence related thereto are part of the public Water Register, and are intended to keep all interested parties informed of the manner in which the Licence requirements are being met. All Water Register material will be considered when the Licence comes up for renewal or amendment.

The full cooperation of SHELL CANADA is anticipated.

Sincerely,

Gordon Wray
Chairman
N.W.T. Water Board

Attachments (2)

P.O. Box 1500, Yellowknife, NT, X1A 2R3, 2nd Floor Goga Cho Building
Phone: (867) 669-2772 Fax: (867) 669-2719

GENERAL PROCEDURES FOR THE ADMINISTRATION OF LICENCES ISSUED UNDER THE NORTHWEST TERRITORIES WATERS ACT IN THE NORTHWEST TERRITORIES

1. At the time of issuance, a copy of the Licence is placed on the Water Register in the Office of the Northwest Territories Water Board in Yellowknife, and is then available to the public.

2. To enforce the terms and conditions of the Licence, the Minister of Indian Affairs and Northern Development has appointed Inspectors in accordance with Section 35(1) of the *Northwest Territories Waters Act*. The Inspectors coordinate their activities with officials of the Water Resources Division of the Department of Indian Affairs and Northern Development. The Inspector responsible for Licence No. N7L1-1762 is located in the North Mackenzie- Inuvik District.

3. To keep the Water Board and members of the public informed of the Licensee's conformity to Licence conditions, the Inspectors prepare reports which detail observations on how each item in the Licence has been met. These reports are forwarded to the Licensee with a covering letter indicating what action, if any, should be taken. The inspection reports and covering letters are placed on the public Water Register, as are any responses received from the Licensee pertaining to the inspection reports. It is therefore of prime importance that you react in all areas of concern regarding all inspection reports so that these concerns may be clarified.

4. If the renewal of Licence No. N7L1-1762 is contemplated it is the responsibility of the Licensee to apply to the Water Board for renewal of the Licence. The past performance of the Licensee, new documentation and information, and points raised during a public hearing, if required, will be used to determine the terms and conditions of any Licence renewal. Please note that if the Licence expires and another has not been issued, then water and waste disposal must cease, or you, the Licensee, would be in contravention of the *Northwest Territories Waters Act*. It is suggested that an application for renewal of Licence No. N7L1-1762 be made at least eight months in advance of the Licence expiry date.

5. If, for some reason, Licence No. N7L1-1762 requires amendment, then a public hearing may be required. You are reminded that applications for amendments should be submitted as soon as possible to provide the Water Board with ample time to go through the amendment process. The process may take up to six (6) months or more depending on the scope of the amendment requested.

   The Surveillance Network Program annexed to the Licence can be modified at the discretion of the Board and does not require a public hearing. A request for any proposed change to the Surveillance Network Program should be forwarded to the Board in writing, including a rationale for the change.

.....2

6. Specific clauses of your Licence make reference to the Board, Analyst or Inspector. The contact person, address, phone and fax number of each is:

BOARD:

Executive Assistant
Northwest Territories Water Board
P.O. Box 1500
YELLOWKNIFE, NT X1A 2R3

Phone No: (867) 669-2772
Fax No: (867) 669-2719

ANALYST:

Analyst
Water Laboratory
Northern Affairs Program
Department of Indian Affairs
and Northern Development
Box 1500
4601 - 52nd Avenue
YELLOWKNIFE, NT X1A 2R3

Phone No: (867) 669-2780
Fax No: (867) 669-2718

INSPECTOR:

Inspector
Inuvik District Office
Northern Affairs Program
Department of Indian Affairs
and Northern Development
P.O. Box 2100
INUVIK, NT X0E 0T0

Phone No: (867) 777-3361
Fax No: (867) 777-2090

NORTHWEST TERRITORIES WATER BOARD

Pursuant to the Northwest Territories Waters Act and Regulations the Northwest Territories Water Board, hereinafter referred to as the Board, hereby grants to

SHELL CANADA
(Licensee)

400-4th Avenue S.W.
PO BOX 100, STATION M
of Calgary, Alberta T2P 2H5
(Mailing Address)

hereinafter called the Licensee, the right to alter, divert or otherwise use water subject to the restrictions and conditions contained in the Northwest Territories Waters Act and Regulations made thereunder and subject to and in accordance with the conditions specified in this Licence.

Licence Number	N7L1-1762
Licence Type	"B"
Water Management Area	NORTHWEST TERRITORIES 07
Location	LATITUDE 69°12'30" N. AND LONGITUDE 135°06'04" W. NORTHWEST TERRITORIES
Purpose	WATER USE AND WASTE DISPOSAL FOR MUNICIPAL UNDERTAKINGS
Quantity of Water Not To Be Exceeded	150 CUBIC METRES DAILY
Effective Date of Licence	DECEMBER 1, 2000
Expiry Date of Licence	NOVEMBER 30, 2005

This Licence issued and recorded at Yellowknife includes and is subject to the annexed conditions.

NORTHWEST TERRITORIES WATER BOARD

Witness

Chairman

PART A: SCOPE AND DEFINITIONS

1. Scope

a) This Licence entitles Shell Canada to use water and dispose of waste for municipal undertakings in oil and gas exploration and associated uses at Camp Farewell in the MacKenzie River Delta, located at Latitude 69°12'30" N. and Longitude 135°06'04" W., Northwest Territories;

b) This Licence is issued subject to the conditions contained herein with respect to the taking of water and the depositing of waste of any type in any waters or in any place under any conditions where such waste or any other waste that results from the deposits of such waste may enter any waters. Whenever new Regulations are made or existing Regulations are amended by the Governor in Council under the *Northwest Territories Waters Act*, or other statutes imposing more stringent conditions relating to the quantity or type of waste that may be so deposited or under which any such waste may be so deposited this Licence shall be deemed, upon promulgation of such Regulations, to be automatically amended to conform with such Regulations; and

c) Compliance with the terms and conditions of this Licence does not absolve the Licensee from responsibility for compliance with the requirements of all applicable Federal, Territorial and Municipal legislation.

2. Definitions

In this Licence: N7L1-1762

"Act" means the *Northwest Territories Waters Act*;

"Board" means the Northwest Territories Water Board established under Section 10 of the *Northwest Territories Waters Act*;

"Inspector" means an Inspector designated by the Minister under Section 35(1) of the *Northwest Territories Waters Act*;

"Licensee" means the holder of this Licence;

"Maximum Average Concentration" means the moving average of any four (4) consecutive analytical results submitted to the Board in accordance with the sampling and analysis requirements specified in the "Surveillance Network Program";

"Minister" means the Minister of Indian Affairs and Northern Development;

"Regulations" mean Regulations proclaimed pursuant to Section 33 of the *Northwest Territories Waters Act*;

"Waste" means waste as defined by Section 2 of the *Northwest Territories Waters Act*;

"Waters" mean waters as defined by Section 2 of the *Northwest Territories Waters Act*;

PART B: GENERAL CONDITIONS

1. The Licensee shall file an Annual Report with the Board not later than March 31 of the year following the calendar year reported which shall contain the following:

   a) the total quantities in cubic metres of fresh water obtained from all sources;

   b) the total quantities in cubic metres of each and all waste discharged;

   c) the results of sampling carried out under the Surveillance Network Program;

   d) a summary of any modifications carried out on the Water Supply and Waste Disposal Facilities, including all associated structures;

   e) a list of any spills and unauthorised discharges; and

   f) any other details on water use or waste disposal requested by the Board within forty-five (45) days before the annual report is due.

2. The Licensee shall comply with the "Surveillance Network Program" annexed to this Licence, and any amendment to the said "Surveillance Network Program" as may be made from time to time, pursuant to the conditions of this Licence.

3. The "Surveillance Network Program" and compliance dates specified in the Licence may be modified at the discretion of the Board.

4. Meters, devices or other such methods used for measuring the volumes of water used and waste discharged shall be installed, operated and maintained by the Licensee to the satisfaction of an Inspector.

5. The Licensee shall, within thirty (30) days of the issuance of this Licence, post the necessary signs, to identify the stations of the "Surveillance Network Program". All postings shall be located and maintained to the satisfaction of an Inspector.

6. Prior to the use of water for municipal undertakings or the disposal of waste and pursuant to Section 17(1) of the *Act* and Section 12 of the Regulations, the Licensee shall have posted and shall maintain a security deposit of Two Hundred Fifty Thousand dollars ($250,000.00) in a form suitable to the Minister.

7. The Licensee shall ensure a copy of this Licence is maintained at the site of operation at all times.

PART C: CONDITIONS APPLYING TO WATER USE

1. The Licensee shall obtain water the Mackenzie River or the unnamed lake as described in the project description or as otherwise approved by an Inspector.

2. The daily quantity of water used for all purposes shall not exceed 150 cubic metres.

3. The water intake hose used on the water pumps shall be equipped with a screen with a mesh size sufficient to ensure no entrainment of fish.

PART D: CONDITIONS APPLYING TO WASTE DISPOSAL

1. The Licensee shall within one (1) year of the issuance of this Licence, submit to the Board for approval an Operation and Management Plan for the Sewage and Solid Waste Treatment Facilities. This plan shall include but not necessarily be limited to details on the design, operational capacity, management and maintenance, and disposal of sludges.

2. The Licensee shall direct all piped and pumpout sewage to the Sewage Treatment Facilities or as otherwise approved by the Board.

3. The Licensee shall provide at least five (5) days notice to an Inspector prior to commencement of any discharges to the Mackenzie River.

4. All Sewage effluent discharged by the Licensee from the Sewage Treatment Facilities at "Surveillance Network Program" Station Number 1762-1 shall meet the following effluent quality requirements:

Sample Parameter	Maximum Average Concentration	
BOD_5	30.0	mg/L
Total Suspended Solids	35.0	mg/L
Faecal Coliforms	250	CFU/dL
Oil and Grease	5.0	mg/L

The Waste discharged shall have a pH between 6 and 9.

5. The Licensee shall maintain the Sewage Treatment Facilities to the satisfaction of and Inspector.

6. The Licensee shall dispose of all solid wastes in a manner acceptable to the Inspector.

PART E: CONDITIONS APPLYING TO MODIFICATIONS

1. The Licensee may, without written approval from the Board, carry out modifications to the Water Intake and Waste Treatment Facilities provided that such modifications are consistent with the terms of this Licence and the following requirements are met:

   a) the Licensee has notified the Board in writing of such proposed modifications at least forty-five (45) days prior to beginning the modifications;

   b) such modifications do not place the Licensee in contravention of either the Licence or the *Act*;

   c) the Board has not, during the forty-five (45) days following notification of the proposed modifications, informed the Licensee that review of the proposal will require more than forty-five (45) days; and

   d) the Board has not rejected the proposed modifications.

2. Modifications for which all of the conditions referred to in Part E, Item 1 have not been met may be carried out only with written approval from the Board.

3. The Licensee shall provide to the Board as-built plans and drawings of the modifications referred to in this Licence within ninety (90) days of completion of the modifications.

PART F: CONDITIONS APPLYING TO CONTINGENCY PLANNING

1. The Licensee shall submit to the Board for approval within thirty (30) days of issuance of this Licence, a Contingency Plan in accordance with the Board's "Guidelines for Contingency Planning, January 1987," or subsequent edition.

2. If, during the period of this Licence, an unauthorised discharge of waste occurs, or if such a discharge is foreseeable, the Licensee shall:

   a) employ the appropriate contingency plan;

b) report the incident immediately via the 24 Hour Spill Report Line. The current telephone number is (867) 920-8130; and

c) submit to an Inspector a detailed report on each occurrence not later than thirty (30) days after initially reporting the event.

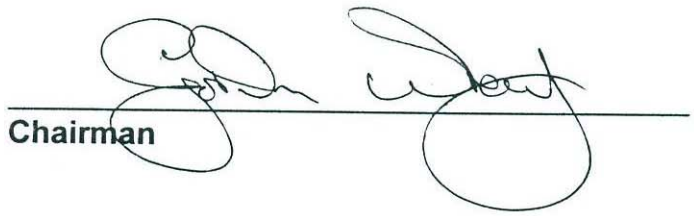
PART G: CONDITIONS APPLYING TO ABANDONMENT AND RESTORATION

1. The Licensee shall submit to the Board for approval within one year of issuance of this Licence, an Interim Abandonment and Restoration Plan in accordance with the Board's "Guidelines for Mines in the Northwest Territories," September 1980, or subsequent edition.

2. The Licensee shall implement the Plan specified in Part G, Item 1 as and when approved by the Board.

3. The Licensee shall review the Abandonment and Restoration Plan every two years and shall modify the Plan as necessary to reflect changes in operations, technology. All proposed modifications to the Plan(s) shall be submitted to the Board for approval.

NORTHWEST TERRITORIES WATER BOARD



Witness

Chairman

NORTHWEST TERRITORIES WATER BOARD

LICENSEE:	SHELL CANADA
LICENCE NUMBER:	N7L1-1762
EFFECTIVE DATE OF LICENCE:	DECEMBER 1, 2000
EFFECTIVE DATE OF SURVEILLANCE NETWORK PROGRAM:	DECEMBER 1, 2000

SURVEILLANCE NETWORK PROGRAM

A. Location of Sampling Stations

Station Number	Description
1762-1	Treated Effluent Discharge Prior to Entering the Mackenzie River

B. Sampling and Analysis Requirements

1. Water at Station Number 1762-1, shall be sampled every two weeks, and analysed for the following parameters:

BOD_5	Total Suspended Solids
Oil and Grease	Faecal Cloiforms
Ammonia	

2. More frequent sample collection maybe required at the request of an Inspector.

3. All sampling, sample preservation, and analyses shall be conducted in accordance with methods prescribed in the current edition of "Standard Methods for the Examination of Water and Wastewater", or by such other methods approved by an Analyst.

4. All analysis shall be performed in a laboratory approved by an Analyst.

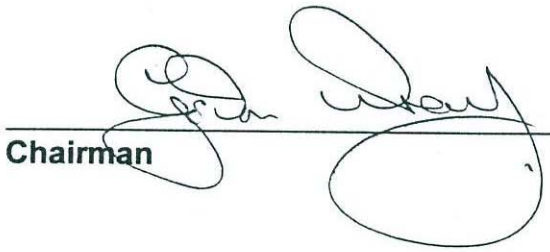
5. The Licensee shall, by January 31, 2001, submit to an Analyst for approval a Quality Assurance/Quality Control Plan.

6. The plan referred to in Part B, Item 5 shall be implemented as approved by an Analyst.

C. Reports

1. The Licensee shall, within thirty (30) days following the month being reported, submit to the Board all data and information required by the "Surveillance Network Program" including the results of the approved Quality Assurance Plan.

NORTHWEST TERRITORIES WATER BOARD



Witness **Chairman**

SECTION 9

SOLIDS DISPOSAL PLAN

9. Camp Farewell Operations and Maintenance Plan - Solid Waste Disposal

Solids designated for disposal and the disposal options varies depending on the material. Six major solid waste streams have been identified and the disposal plans are addressed as follows:

1. Combustible camp waste will continue to be burned in the incinerator located within the camp.

2. The larger construction debris (pallets etc) that was previously burned in an earthen pit onsite will now be burned in a metal sloop. This will contain the fire and eliminate the introduction of waste materials to the soil. The residual ashes from the incinerator and burn sloop will be transported to the Inuvik landfill for final disposal after obtaining appropriate approval.

3. Recyclable materials will be collected and recycled. Materials including, but not limited to used oil, used anti-freeze, oily rags, etc. will be shipped to suitable facilities located in Alberta. Metal including aluminum and scrap steel are separated into bins that will be shipped from the location to appropriate recycling facilities.

4. Un-usable drilling products including, but not limited to cement, potash, caustic soda, etc. are either recycled or shipped to appropriate disposal facilities in Alberta.

5. Upon approval of the District Inspector, the digested sludge and sediment that has accumulated in the sewage lagoon is to be air dried to reduce hydrocarbons and pathogens. The sediment can then be used onsite as fill or as a topsoil amendment as a component of site reclamation. See Camp Farewell Reclamation Plan, submitted under separate cover, for additional details.

All waste materials will be managed and disposed of in accordance with Northwest Territories Regulations and Guidelines.

SECTION 10

CORRESPONDANCE

NORTHWEST TERRITORIES WATER BOARD

WATER REGISTER: N7L1-1762

May 2, 2002

Rec'd May 15/2002 RH
DUE June 14, 2002

Mr. Randy Hetman
DAR/Construction Manager
Shell Canada Limited
P.O. Box 100, Stn. "M"
400 - 4th Avenue S.W.
CALGARY, NT T2P 2H5

Dear Mr. Hetman:

CAMP FAREWELL O&M PLAN: SEWAGE AND SOLID WASTE FACILITIES

The Northwest Territories Water Board has reviewed the above Operations and Maintenance Plan as required by your Water Licence, Part D, Item 1.

The Plan is a good manual for the operation and maintenance of the RBC Sewage Treatment Facilities. However, the Board is concerned that this system is producing wastewater that is not meeting the Water Licence discharge limits. What is Shell's plan to ensure that the post-treatment wastewater will meet the Water Licence limits?

Also, the Plan is lacking the required information on the Solid Waste Management Facilities, specifically, any reference to the disposal of the combustible and non-combustible solid wastes generated by the camp and operation. Therefore, the Board is requesting that a revised Plan be submitted for review and approval within forty-five (45) days of the date of this letter.

.../2

P.O. Box 1500, Yellowknife, NT, X1A 2R3, 2nd Floor Goga Cho Building
Phone: (867) 669-2772 Fax: (867) 669-2719

If you require further assistance, please contact this office. For enquiries of a technical nature, contact Ms Sarah Aho at (867) 669-2402 or Mr. David Milburn at (867) 669-2650 of the Water Resources Division.

Sincerely,

Gordon Wray
Chairman
N.W.T. Water Board

Shell Canada Limited

400 - 4th Avenue S.W.
P.O. Box 100, Station M
Calgary, Alberta T2P 2H5
TEL (403) 691-3111

June 3, 2002

Gordon Wray, Chairman
Northwest Territories Water Board
P.O. Box 1500
YELLOWKNIFE, NT
X1A 2R3

SUBJECT: **Water Register: N7L1-1762**
Camp Farewell O&M Plan: Sewage and Solid Waste Facilities

Thank you for reviewing the Camp Farewell Operations and Maintenance Plan previously submitted for your approval and your response of May 2, 2002.

Shell's plan to ensure post-treatment wastewater will meet the Water License limits is to replace the current RBC unit with an extended aeration, activated sludge system. This plan and the benefits of the system has been outlined in the Notification of Modification 2002-1 May 24, 2002 (rev May 30, 2002). Continuing with the current system did not provide us the confidence that the License limits could be achieved. As stated in the notification, Sections 2-4 of the O&M Plan will be updated as soon as the information is provided from the vendor.

Attached is a summary of the disposal plan for solids waste management at Camp Farewell. Please insert as Section 9 in the existing Camp Farewell Operations and Maintenance Plan. Also, please replace the Table of Contents with the attached version, which reflects the addition of the solids waste management section.

We trust this meets your requirements. Should any additional information be required, please contact the undersigned.

Yours truly,

R. (Randy) H. Hetman
DAR/Construction Manager
Ph. (403) 691-2521
Fax (403) 269-7948
Email: randy.hetman@shell.ca

cc- Inspector – Inuvik District Office, DIAND (w/attachments)
R. Calvert - Western Geco - Inuvik (w/attach)
Attachments