Shell Canada Limited

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Our File: 5015-01
Via Courier

March 19, 2002

Ms. Vickie Losier
Executive Assistant
Northwest Territories Water Board
P.O. Box 1500
Yellowknife NT
X1A 2R3

Dear Ms. Losier:

RE: Annual Report 2001 – Water Licence N7L1-1770 West Channel

The following letter summarizes the information required by Part B of the Water licence General Conditions. The water licence is effective as of August 1, 2001 and will expire on July 31, 2003. All information reported is based on the operating field season, which began on June 28, 2001 and ended on September 14, 2001.

1a. **The Total Quantity Of Fresh Water Obtained From All Sources**
A total of 3800m³ of fresh water was obtained from the Mackenzie River in the area located at 68° 28' 33"N latitude and 135° 33'25"W longitude.

1b. **The Total Quantity Of Each And All Waste Discharged**
No waste effluent water was discharged to the Mackenzie River. All grey wastewater was treated using the In-situ Bio-circulation Cell. All black wastewater was collected and shipped to Inuvik for disposal. All solid camp waste was collected and transported to Inuvik for disposal.

1c. **Results of Any Sampling Program**
No waste effluent water was discharged so there was no effluent sampling. Please see the attached tables for the results of soil and groundwater monitoring conducted during this remediation project.

1d. **Summary Of Any Modifications Carried Out On The Project As Described In The Project Description**
Based on site conditions and our meeting with Ethan Sawchuk, some minor modifications were made to the system. The most notable modification was that the eastern containment trench had to be relocated west of BH20 and BH21and east of BH18, BH17, and 7BH16 (see Drawing 1). This change was made because the soil on the eastern portion of the site was too soft for excavating.

The depth of some of the trenches varied from that given in the project description as the depth at which permafrost was encountered varied across the site.

Additional injection wells were also added. These additional wells were necessary to increase the saturation rate of the subsurface soils by injecting nutrient amended water in more locations.

1e. **List Of Any Spills And Unauthorized Discharges**
There were no spills or unauthorized discharges during the field season of 2001.

1f. **A Description Of Any Trenches Excavated**
During the installation phase of the project, 5 recovery trenches containing 23 recovery wells (RW1 through RW23) were installed. The recovery system layout installed at the site is depicted in the attached Drawing 2. As shown on the drawing, the general shape and locations of the trenches and wells are similar to the locations proposed in the Project Description.

Each trench was excavated to a depth of approximately 2.1 m below grade or until the backhoe bucket hit refusal due to the presence of permafrost. It should be noted that in some cases the depth of the permafrost halted the excavation limits to <1 m below grade. For example, this occurred during the installation of recovery trench 3 (RW7 and RW8); therefore, this trench was primarily utilized as an injection trench. During excavation of the trenches, 200 mm diameter perforated sewer pipe was covered with geo-textile and assembled with at least two - 100 mm diameter riser pipes and one - 150 mm diameter riser pipe. The purpose of the riser pipes was to facilitate the installation of the groundwater recovery lines and also to measure the depth of groundwater within the trenches during remediation activities.

1g. **Details On The Restoration Of Any Trenches**
All trenches were backfilled to grade with excavated native material. If any slumping or settling was noted trenches were backfilled to grade again. The recovery trenches were left in place with piping still attached to facilitate project start-up for work proposed in summer 2002.

1h. **Any Revisions To The Approved Emergency Response Plan**
The ERP for this project was updated in December 2001 with more detailed response actions to situations, contact lists, and the new spill-reporting requirements. Shell Canada Limited provided a copy of the revised N7L1-1770 Contingency Plan for the West Channel Remediation Program to the Water Board under separate cover on March 13, 2002.

Yours truly,

R. (Randy) H. Hetman
DAR/Construction Manager

Cc: Inuvialuit Environmental Inc. – Attention: Jennifer Wyatt
Indian and Northern Affairs Canada – Attention: Scott F. Gallupe

Table 1 - Laboratory Results

LEGEND
IW-Injection Well TW - Test Well MW-Monitoring Well DA - Dutch Auger

Sample Location	Sample Depth (m)	Sample Date	Matrix	BTEX-TVH & TEH (C11-C30) mg/L							% Moisture
				TEH	TVH	TPH	Benzene	Toluene	Ethylbenzene	Xylene	
IW-1	1.0	03-Jul-01	Soil	47	22	69	1.70	0.02	0.06	0.06	23
IW-1	0.8	03-Jul-01	Soil	2800	31	2831	0.35	0.08	0.18	0.27	20
IW-6	1.0	04-Jul-01	Soil	26000	1300	27300	<0.1	0.4	0.40	[redacted]	19
IW-7	1.0	04-Jul-01	Soil	20000	870	20870	<0.1	0.2	<0.1	[redacted]	15
IW-9	1.0	04-Jul-01	Soil	8400	190	8590	<0.1	0.1	<0.1	[redacted]	12
IW-14	1.0	06-Jul-01	Soil	39000	1500	40500	<0.1	0.3	0.20	[redacted]	23
IW-17	1.6	07-Jul-01	Soil	21000	650	21650	<0.5	0.5	1.80	[redacted]	15
IW-21	1.8	08-Jul-01	Soil	26000	670	26670	1.0	[redacted]	18.00	[redacted]	15
IW-23	1.0	08-Jul-01	Soil	19000	980	19980	<0.5	[redacted]	19.00	[redacted]	17
IW-24	1.0	08-Jul-01	Soil	18000	930	18930	<0.5	<0.5	<0.5	[redacted]	15
IW-26	1.0	09-Jul-01	Soil	17000	850	17850	<0.5	0.6	11.00	[redacted]	16
IW-30	1.0	09-Jul-01	Soil	20000	840	20840	<0.5	<0.5	<0.5	[redacted]	14
IW-31	1.0	09-Jul-01	Soil	13000	260	13260	0.20	0.2	0.20	[redacted]	19
IW-32	1.0	09-Jul-01	Soil	17000	410	17410	<0.01	0.14	0.06	4.40	23
IW-34	1.0	09-Jul-01	Soil	90	23	113	0.59	0.03	0.65	0.28	21
IW-35	1.8	09-Jul-01	Soil	580	69	649	[redacted]	[redacted]	2.10	4.30	24
IW-37	1.9	09-Jul-01	Soil	59	<0.5	<59.5	<0.01	<0.01	<0.01	<0.01	25
IW-38	1.8	09-Jul-01	Soil	39000	8000	47000	[redacted]	[redacted]	[redacted]	[redacted]	26
IW-39	1.9	09-Jul-01	Soil	10000	7300	17300	[redacted]	[redacted]	[redacted]	[redacted]	24
IW-42	1.0	10-Jul-01	Soil	38	<0.5	<38.5	<0.01	<0.01	<0.01	<0.01	25
IW-43	1.0	10-Jul-01	Soil	40	<0.5	<40.5	<0.01	<0.01	<0.01	<0.01	31
TW-1	1.0	11-Jul-01	Soil	29	6.1	35.1	0.04	0.07	0.03	0.29	19
TW-4	1.0	11-Jul-01	Soil	800	560	1360	0.46	[redacted]	7.20	[redacted]	21
TW-8	1.0	11-Jul-01	Soil	50	<0.5	<50.5	<0.01	<0.01	<0.01	0.03	24
MW-17	1.0	28-Aug-01	Soil	<5	0.8	<5.8	<0.01	<0.01	<0.01	<0.01	25
MW-17	1.8	28-Aug-01	Soil	<5	3.9	<8.9	0.07	0.04	0.01	0.06	23
WoodChips		28-Aug-01	Soil	37000	1400	38400	<0.03	<0.03	<0.03	0.5	37
DA-8	1.0	12-Sep-01	Soil	29	-	29	-	-	-	-	23
DA-9	1.0	12-Sep-01	Soil	32	-	32	-	-	-	-	25
DA-10	1.0	12-Sep-01	Soil	17	-	17	-	-	-	-	26
DA-11	1.0	12-Sep-01	Soil	27	-	27	-	-	-	-	24
DA-12	1.0	12-Sep-01	Soil	44	4	48	0.13	0.08	0.1	0.32	22
DA-12	1.9	12-Sep-01	Soil	21000	13000	34000	[redacted]	[redacted]	[redacted]	[redacted]	24
DA-13	1.8	12-Sep-01	Soil	310	21	331	2.3	[redacted]	0.82	3.6	26
DA-14	1.1	12-Sep-01	Soil	37	25	62	0.06	0.12	0.03	0.18	25
DA-14	1.9	12-Sep-01	Soil	750	190	940	1.2	0.08	2.5	0.82	24
DA-15	1.0	12-Sep-01	Soil	56	1.8	57.8	0.13	0.2	0.08	0.34	25
DA-15	1.8	12-Sep-01	Soil	54	2.2	56.2	<0.01	0.02	<0.01	0.05	24
DA-16	1.2	12-Sep-01	Soil	4900	1400	6300	2.3	[redacted]	[redacted]	[redacted]	21
DA-17	1	12-Sep-01	Soil	21000	1600	22600	[redacted]	0.66	18	[redacted]	20
DA-18	1	12-Sep-01	Soil	44000	830	44830	[redacted]	[redacted]	[redacted]	[redacted]	22
DA-19	2	12-Sep-01	Soil	7100	7100	14200	-	-	-	-	24
DA-20	1.2	12-Sep-01	Soil	19000	19000	38000	-	-	-	-	20
DA-21	1.2	12-Sep-01	Soil	21000	230	21230	0.04	0.1	0.09	0.94	22
DA-22	1.2	12-Sep-01	Soil	45000	520	45520	1.9	0.53	11	[redacted]	22
DA-23	1	12-Sep-01	Soil	4500	1100	5600	2.1	0.38	5.1	[redacted]	20
DA-24	1.2	12-Sep-01	Soil	21000	1000	22000	[redacted]	0.61	14	[redacted]	22
DA-25	0.6	12-Sep-01	Soil	38000	480	38480	1.3	0.11	6.5	[redacted]	19
DA-26	1	12-Sep-01	Soil	15000	610	15610	0.23	0.17	0.39	[redacted]	22
DA-27	-	12-Sep-01	Soil	46000	310	46310	0.28	0.06	0.12	[redacted]	25
DA-28	-	12-Sep-01	Soil	16000	2700	18700	11	0.33	[redacted]	[redacted]	23
DA-29	-	12-Sep-01	Soil	17000	-	17000	-	-	-	-	19
DA-30	-	12-Sep-01	Soil	24000	-	24000	-	-	-	-	21
DA-31	-	12-Sep-01	Soil	76000	-	76000	-	-	-	-	29
DA-32	-	12-Sep-01	Soil	12000	330	12330	0.21	0.09	4.8	[redacted]	17
DA-33	-	12-Sep-01	Soil	65	-	65	-	-	-	-	26
DA-34	-	12-Sep-01	Soil	28000	-	28000	-	-	-	-	22
DA-35	-	12-Sep-01	Soil	340	-	340	-	-	-	-	20
DA-36	-	12-Sep-01	Soil	50	-	50	-	-	-	-	21
DA-37	-	12-Sep-01	Soil	1400	-	1400	-	-	-	-	23
DA-38	-	12-Sep-01	Soil	4600	-	4600	-	-	-	-	19
DA-39	-	12-Sep-01	Soil	<5	-	<5	-	-	-	-	19
DA-40	-	12-Sep-01	Soil	1700	-	1700	-	-	-	-	20
DA-41	-	12-Sep-01	Soil	210	12	222	0.32	0.04	0.62	0.14	23
DA-42	-	12-Sep-01	Soil	13000	120	13120	<0.01	0.01	0.01	0.08	27
DA-43	-	12-Sep-01	Soil	170	8.5	178.5	0.02	0.03	0.03	0.25	23
DA-44	-	12-Sep-01	Soil	180	-	180	-	-	-	-	19
DA-45	-	12-Sep-01	Soil	4000	1000	5000	0.24	0.05	1.5	[redacted]	22
DA-46	-	12-Sep-01	Soil	<5	3.7	<8.7	0.06	0.03	0.02	0.08	-
DA-47	-	12-Sep-01	Soil	26000	-	26000	-	-	-	-	-
DA-48	-	12-Sep-01	Soil	11000	-	11000	-	-	-	-	-
DA-49	-	12-Sep-01	Soil	31	-	31	-	-	-	-	22
DA-50	-	12-Sep-01	Soil	190	-	190	-	-	-	-	28
DA-51	-	12-Sep-01	Soil	30	-	30	-	-	-	-	22
DA-52	-	12-Sep-01	Soil	23	-	23	-	-	-	-	22
CCME	-	-	-	-	-	-	5	0.8	20	17/20	-
NWT	-	-	-	-	-	2500	5	0.8	20	17/20	-

Sample Location	Sample Date	Matrix	BTEX-TVH & TEH (C11-C30) mg/L							Nutrients		
			TEH	TVH	TPH	Benzene	Toluene	Ethylbenzene	Xylene	Phosporus	Amonia	Nitrate
IW-37	28-Aug-01	Water	<0.05	<0.1	<0.15	<0.0005	<0.0005	<0.0005	<0.0005	0.9	<0.05	<0.1
IW-42	28-Aug-01	Water	<0.05	<0.1	<0.15	<0.0005	<0.0005	<0.0005	<0.0005	6.46	-	-
IW-43	28-Aug-01	Water	<0.05	<0.1	<0.15	<0.0005	<0.0005	<0.0005	<0.0005	1	-	-
River	28-Aug-01	Water	<0.05	<0.1	<0.15	<0.0005	<0.0005	<0.0005	<0.0005	0.07	<0.05	<0.1
MW-17	04-Oct-01	Water	<0.05	<0.1	<0.15	0.0038	<0.0005	<0.0005	<0.0005	-	-	-
IW-42	04-Oct-01	Water	<0.05	<0.1	<0.15	<0.0005	<0.0005	<0.0005	<0.0005	-	-	-
IW-43	04-Oct-01	Water	<0.05	<0.1	<0.15	<0.0005	<0.0005	<0.0005	<0.0005	-	-	-
CCME	-	Water	-	-		370	90	2	-	-	-	-

[redacted] Exceeds CCME Remediation Criteria for Soils - Comerical / Industrial
Exceeds NWT Remediation Criteria for Soils - Comerical / Industrial