



July 26, 2018

Sahtu Land and Board File Numbers: S17L8-003 & S17X-004

Ms. Sabrina Sturman
Sahtu Land and Water Board
P.O. Box 1
Fort Good Hope, NT
XOE OH0
(867) 598-2413

**Memorandum RE: Proposed Poned Water Discharge Location and Soil Laydown Area
Norman Wells Airside Land Treatment Unit
Norman Wells, Northwest Territories XOE OVO**

Dear Ms. Sturman:

The following memo documents the investigations and communication required to support the proposed discharge of ponded water and the removal of treated soil from the Norman Wells Airside Land Treatment Unit (LTU), located on the Norman Wells Airport lands as part of Transport Canada's (TC) Sahtu Land and Water Board Type B Water Licence S17L8-003 and Type A Land Use Permit S17X-004. This memo has been prepared by BluMetric Environmental Inc. (BluMetric) on behalf of TC.

LTU SOIL INVESTIGATIONS

BluMetric has supported the maintenance and sampling work that occurred at the Norman Wells LTU facility in 2017/2018 and has provided supervision for local contractor HRN Contracting.

The LTU is currently estimated to contain approximately 4,230 cubic metres (m³) of soil. The majority of the soil is assembled into three windrows, as a result of two soil maintenance events conducted in 2017, totaling approximately 2,950 m³. The remaining material (approximately 1,280 m³) has been left in place to form an approximate 0.3 m thick cover to protect the integrity of the LTU liner throughout the soil maintenance work. As per the minimum sample volume requirements for LTU closure outlined by the SLWB Water Licence (S17L8-003), a minimum of six (6) composite soil samples are required for a representative evaluation of soil quality within the entirety of the LTU facility. All soil sampling densities used to evaluate treated soil quality within the LTU meet or exceed the minimum sampling density prescribed within the Water Licence.

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In addition to requirements of the SLWB Water Licence, BluMetric has conducted LTU soil sampling according to best practice procedures as per the Federal Contaminated Sites Action Plan (FCSAP), Federal Guidelines for Landfarming Petroleum Hydrocarbon and Contaminated Soils (Government of Canada, 2006). The most current LTU soil quality results correspond with work conducted at the facility in January 2018 which included sampling of the treated soil material assembled in windrows. Soil quality results from sampling conducted within the LTU are presented in Attachment A; Tables 1 through 6 present general chemistry, Petroleum Hydrocarbon (PHC), Polycyclic Aromatic Hydrocarbon (PAH), Polychlorinated Biphenyl (PCB), phenols, and metals results from the January 2018 sampling event. Table 7 presents additional soil quality results for Per- and Polyfluoralkyl Substances (PFAS), from LTU soil sampling conducted in July 2017 prior to LTU maintenance work.

Applicable criteria are presented within tables included in Attachment A alongside the LTU soil quality results, where available, including maximum concentrations for composite samples as per the 'Treated Soil Criteria' detailed within the SLWB Water Licence (S17L8-003). Determination of applicable environmental quality soil guidelines for the LTU was based on the grain size analysis from the January 2018 sampling program, which determined that the soils are predominantly fine-grained (See Attachment A – Table 1).

SOIL QUALITY RESULTS

Results from the July 2017 and January 2018 LTU soil sampling programs did not yield any exceedances to the SLWB Water Licence Treated Soil Criteria.

pH was reported slightly above the GNWT Guideline at one sample location, although the concentration was within the pH range specified within the Water Licence.

Arsenic was reported above the GNWT Guideline (both 12 mg/kg), at values ranging from 12.2 mg/kg to 35 mg/kg, in all but one (1) of the 22 soil samples collected from the LTU in January 2018. All arsenic concentrations remained well below the SLWB Water Licence Treated Soil Criteria, at 120 mg/kg.

To further investigate the exceedances of the GNWT arsenic criterion, background soil sampling was conducted on the Airport lands up-gradient of the LTU on June 26, 2018. A total of 35 background soil samples were collected from sixteen (16) test pits, with sample depths generally ranging between 0.15 m and 0.75 m. Arsenic concentrations from the background soil sampling results are presented in Attachment B along with the SLWB Water Licence Treated Soil Criteria and the GNWT Guideline.

The background soil sample results did not yield any exceedances of the Water Licence Criteria, and arsenic was the only parameter reported above the GNWT Guideline. Two (2) of the 35

background soil samples exceeded the 12 mg/kg GNWT guideline for arsenic with concentrations of 12.6 mg/kg and 16.6 mg/kg. Arsenic concentrations in the background soil sample results ranged from 6.13 mg/kg to 16.6 mg/kg, with a mean concentration of 9.2 mg/kg. The mean arsenic concentration within the treated soils of the LTU was 15.5 mg/kg. The presence of arsenic concentrations in soils located upgradient of the site that exceed the GNWT criterion suggest that naturally occurring concentrations of arsenic are present in the area.

REMOVAL OF TREATED SOIL

As per the SLWB Water Licence, soil analytical results are required to be submitted to PSPC, the GNWT ENR Inspector, and the SLWB a minimum of 10 days prior to commencing removal of treated soil from the LTU. Upon receipt of written authorization from the Inspector, removal of the approximate 2,950 m³ of treated soil from the LTU will be facilitated and supervised by BluMetric.

At the time of the June on-Site work, discussions were had with Trevor Bremner, Manager, Resource Management Sahtu Region - GNWT Lands, as well as Stuart Pope, Supervisor of Structures and Services, Department of Infrastructure, GNWT for the Norman Wells Airport, regarding the proposed location of an on-site laydown area for the treated soil upon its removal from the LTU. An area to the west of the LTU, as indicated on Figure 1, was agreed upon as the proposed soil laydown area, pending the review of the Airport Manager and Security Supervisor and approval from the GNWT ENR Inspector and the SLWB. Emails indicating their approval have been provided in Attachment D.

WATER MANAGEMENT

BluMetric personnel was on-Site from June 25 to June 27, 2018 to conduct field investigations and facilitate initial communications for the discharge of the standing water accumulated in the low area (sump) located at the southern end of the LTU.

A surface water grab sample was collected from the sump on June 27, 2018. The surface water sample was analyzed for general chemistry, PHCs, PCB, PAH, metals, and PFAS parameters, analytical results are presented in Attachment C along with the applicable SLWB Water Licence 'Effluent Quality Criteria', where available. The surface water analytical results do not report any exceedances to the either the SLWB Water Licence. In addition, all surface water results for PHCs, PCB, and PAH were reported below their respective laboratory detection limits,

At the time of the June on-Site work, discussions were had with Trevor Bremner, Manager, Resource Management Sahtu Region - GNWT Lands, as well as Stuart Pope, Supervisor of

Structures and Services, Department of Infrastructure, GNWT for the Norman Wells Airport, regarding the proposed effluent discharge location. A location to the south east of the LTU, as indicated on Figure 1, was agreed upon as the proposed effluent discharge location, pending approval from the GNWT ENR Inspector and the SLWB.

As per the SLWB Water Licence, effluent analytical results are required to be submitted to PSPC, the GNWT ENR Inspector, and the SLWB, along with the proposed discharge location, a minimum of 10 days prior to the discharge of standing water from the LTU. Upon receipt of written authorization from the Inspector discharge of the standing water accumulated in the low area (sump), located at the southern end of the LTU, will be facilitated and supervised by BluMetric.

CLOSURE

The information presented within this memo has been prepared for Public Services and Procurement Canada and Transport Canada. Any use a third party makes of this report, any reliance on the report, or decisions based upon the report, are the responsibility of those third parties unless authorization is received from BluMetric Environmental Inc. in writing. BluMetric Environmental Inc. accepts no responsibility for any loss or damages suffered by any unauthorized third party as a result of decisions made or actions taken based on this report.

If you have any questions please do not hesitate to contact the undersigned.

Respectfully submitted,

BluMetric Environmental Inc.



Jenna Findlay, B.Sc. GIT.

Environmental Scientist



Andrea Jenney, P.Eng.

Senior Engineer

cc: Mr. Michael Brownlee, Project Manager, Public Services and Procurement Canada
Melissa Fraser, Environmental Officer, Transport Canada

List of Attachments

Figure 1 – Site Plan

Attachment A - LTU Soil Chemistry Tables

Attachment B - Background Soil Chemistry Table

Attachment C - Effluent Discharge Chemistry Tables

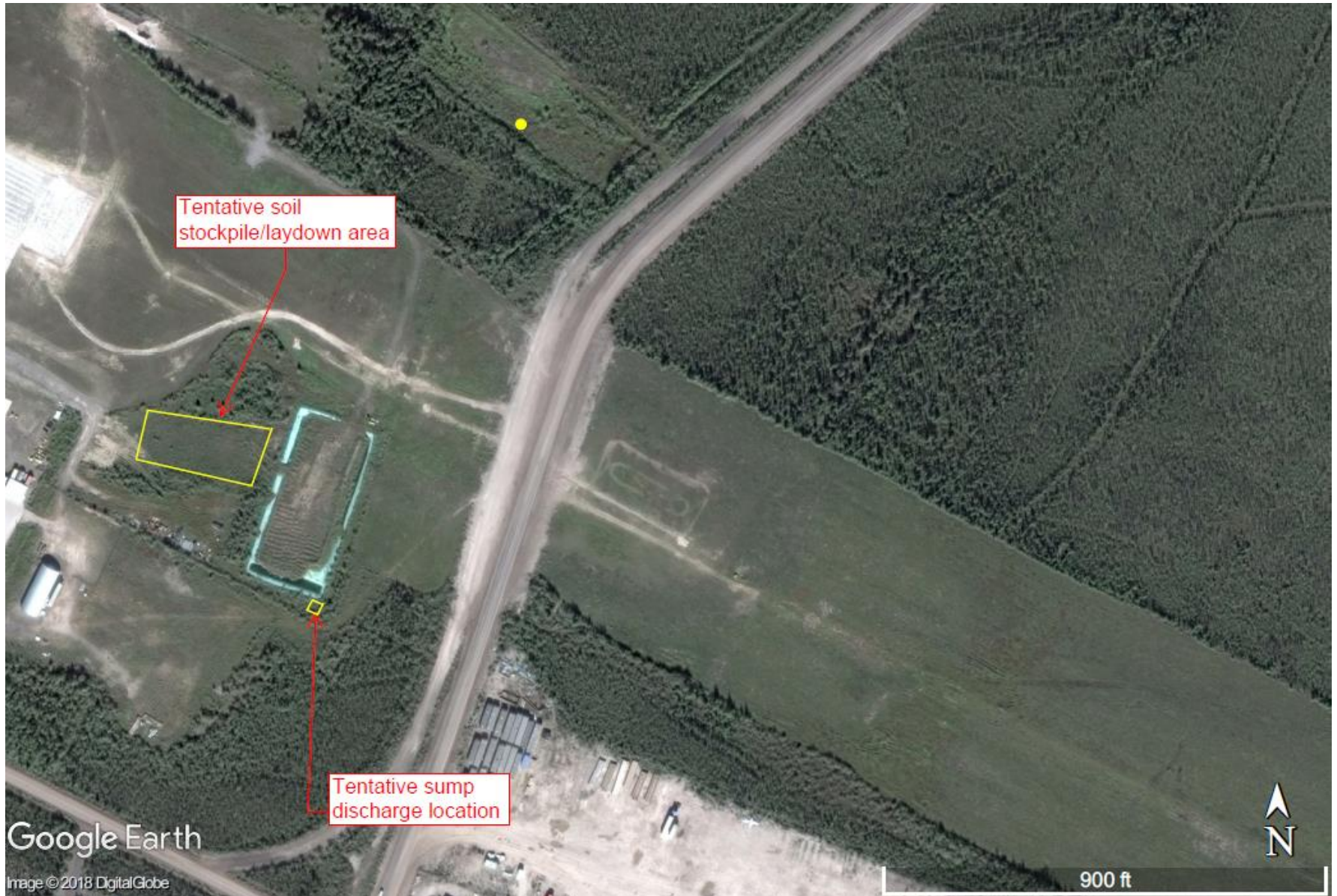
Attachment D – Email Authorization for Soil Movement and Water Discharge locations

FIGURES



Figure 1. Site Plan

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July 2018



ATTACHMENT A
LTU Soil Chemistry Tables



Table 1: LTU Soil - General Chemistry Analytical Results

Sample ID	MDL	Units	GNWT ¹	Water Licence Criteria ²	E1 A	E2 B	E3 C	E4 C	E5 D	E6 D	E7 E
Date Sampled					16-Jan-2018	16-Jan-2018	16-Jan-2018	16-Jan-2018	16-Jan-2018	16-Jan-2018	16-Jan-2018
ALS Sample ID					L2046505-1	L2046505-7	L2046505-13	L2046505-18	L2046505-24	L2046505-29	L2046505-35
Physical Tests (Soil)											
Moisture	0.25	%	NV	NV	14.8	17.3	16.1	14.5	16.6	13.3	14.9
pH (1:2 soil:water)	0.10	pH	6-8	6-9	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Particle Size (Soil)											
General Texture Class	-	-	NV	NV	N/A	N/A	N/A	N/A	N/A	N/A	N/A
% >75um	1.0	%	NV	NV	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Plant Available Nutrients (Soil)											
Available Nitrate-N	1.0	mg/kg	NV	NV	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Available Phosphate-P	2.0	mg/kg	NV	NV	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Available Potassium	20	mg/kg	NV	NV	N/A	N/A	N/A	N/A	N/A	N/A	N/A

Notes:

12.9 Exceeds GNWT Criteria

1 - Environmental Guideline for Contaminated Site Remediation, Commercial Land Use, Government of Northwest Territories, November 2003

2 - Type B Water Licence S17L8-003 & Type A Land Use Permit S17X-004

NV - No Value

N/A - Not Analyzed

MDL - Method Detection Limit

Table 1: LTU Soil - General Chemistry Analytical Results

Sample ID	MDL	Units	GNWT ¹	Water Licence Criteria ²	E8 C	M1 D	M2 E	M3 A	DUP1 (M3 A)	M4 B	M5 A	M6 E	
Date Sampled					16-Jan-2018	16-Jan-2018	16-Jan-2018	16-Jan-2018	16-Jan-2018	16-Jan-2018	16-Jan-2018	16-Jan-2018	16-Jan-2018
ALS Sample ID					L2046505-38	L2046505-44	L2046505-50	L2046505-51	L2046505-101	L2046505-57	L2046505-61	L2046505-70	
Physical Tests (Soil)													
Moisture	0.25	%	NV	NV	16.3	16.8	18.4	13.4	5.60	12.6	12.9	15.1	
pH (1:2 soil:water)	0.10	pH	6-8	6-9	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	
Particle Size (Soil)													
General Texture Class	-	-	NV	NV	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	
% >75um	1.0	%	NV	NV	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	
Plant Available Nutrients (Soil)													
Available Nitrate-N	1.0	mg/kg	NV	NV	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	
Available Phosphate-P	2.0	mg/kg	NV	NV	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	
Available Potassium	20	mg/kg	NV	NV	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	

Notes:

12.9 Exceeds GNWT Criteria

1 - Environmental Guideline for Contaminated Site Remediation, Commercial Land Use, Government of Northwest Territories, November 2003

2 - Type B Water Licence S17L8-003 & Type A Land Use Permit S17X-004

NV - No Value

N/A - Not Analyzed

MDL - Method Detection Limit

Table 1: LTU Soil - General Chemistry Analytical Results

Sample ID	MDL	Units	GNWT ¹	Water Licence Criteria ²	M7 E	W1 B	W2 B	DUP2 (W2B)	W3 E	W4 C	W5 A	E1
Date Sampled					16-Jan-2018	16-Jan-2018	16-Jan-2018	16-Jan-2018	16-Jan-2018	16-Jan-2018	16-Jan-2018	16-Jan-2018
ALS Sample ID					L2046505-75	L2046505-77	L2046505-82	L2046505-102	L2046505-90	L2046505-93	L2046505-96	L2046505-103
Physical Tests (Soil)												
Moisture	0.25	%	NV	NV	14.6	15.7	14.6	14.2	14.1	15.0	12.8	14.5
pH (1:2 soil:water)	0.10	pH	6-8	6-9	N/A	N/A	N/A	N/A	N/A	N/A	N/A	7.71
Particle Size (Soil)												
General Texture Class	-	-	NV	NV	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
% >75um	1.0	%	NV	NV	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Plant Available Nutrients (Soil)												
Available Nitrate-N	1.0	mg/kg	NV	NV	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Available Phosphate-P	2.0	mg/kg	NV	NV	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Available Potassium	20	mg/kg	NV	NV	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A

Notes:

12.9 Exceeds GNWT Criteria

1 - Environmental Guideline for Contaminated Site Remediation, Commercial Land Use, Government of Northwest Territories, November 2003

2 - Type B Water Licence S17L8-003 & Type A Land Use Permit S17X-004

NV - No Value

N/A - Not Analyzed

MDL - Method Detection Limit

Table 1: LTU Soil - General Chemistry Analytical Results

Sample ID	MDL	Units	GNWT ¹	Water Licence Criteria ²	E2	E3	E4	E5	E6	E7	E8	M1
Date Sampled					16-Jan-2018	16-Jan-2018	16-Jan-2018	16-Jan-2018	16-Jan-2018	16-Jan-2018	16-Jan-2018	16-Jan-2018
ALS Sample ID					L2046505-104	L2046505-105	L2046505-106	L2046505-107	L2046505-108	L2046505-109	L2046505-110	L2046505-111
Physical Tests (Soil)												
Moisture	0.25	%	NV	NV	15.5	15.4	13.6	15.3	17.7	17.7	18.9	15.5
pH (1:2 soil:water)	0.10	pH	6-8	6-9	7.75	7.82	7.85	7.63	7.80	7.81	7.88	7.73
Particle Size (Soil)												
General Texture Class	-	-	NV	NV	N/A	N/A	N/A	Fine	N/A	N/A	N/A	N/A
% >75um	1.0	%	NV	NV	N/A	N/A	N/A	32.6	N/A	N/A	N/A	N/A
Plant Available Nutrients (Soil)												
Available Nitrate-N	1.0	mg/kg	NV	NV	N/A	N/A	30.1	N/A	N/A	N/A	N/A	N/A
Available Phosphate-P	2.0	mg/kg	NV	NV	N/A	N/A	<2.0	N/A	N/A	N/A	N/A	N/A
Available Potassium	20	mg/kg	NV	NV	N/A	N/A	65	N/A	N/A	N/A	N/A	N/A

Notes:

12.9 Exceeds GNWT Criteria

1 - Environmental Guideline for Contaminated Site Remediation, Commercial Land Use, Government of Northwest Territories, November 2003

2 - Type B Water Licence S17L8-003 & Type A Land Use Permit S17X-004

NV - No Value

N/A - Not Analyzed

MDL - Method Detection Limit

Table 1: LTU Soil - General Chemistry Analytical Results

Sample ID	MDL	Units	GNWT ¹	Water Licence Criteria ²	M2	M3	DUP4 (M3)	M4	M5	M6	M7	W1
Date Sampled					16-Jan-2018	16-Jan-2018	16-Jan-2018	16-Jan-2018	16-Jan-2018	16-Jan-2018	16-Jan-2018	16-Jan-2018
ALS Sample ID					L2046505-112	L2046505-113	L2046505-124	L2046505-114	L2046505-115	L2046505-116	L2046505-117	L2046505-118
Physical Tests (Soil)												
Moisture	0.25	%	NV	NV	15.3	14.3	14.6	14.3	13.3	14.1	14.3	17.9
pH (1:2 soil:water)	0.10	pH	6-8	6-9	7.73	7.64	7.68	7.85	7.85	7.95	7.93	7.78
Particle Size (Soil)												
General Texture Class	-	-	NV	NV	N/A	Fine	N/A	N/A	N/A	N/A	N/A	N/A
% >75um	1.0	%	NV	NV	N/A	29.6	N/A	N/A	N/A	N/A	N/A	N/A
Plant Available Nutrients (Soil)												
Available Nitrate-N	1.0	mg/kg	NV	NV	N/A	N/A	N/A	N/A	58.8	N/A	N/A	N/A
Available Phosphate-P	2.0	mg/kg	NV	NV	N/A	N/A	N/A	N/A	5.3	N/A	N/A	N/A
Available Potassium	20	mg/kg	NV	NV	N/A	N/A	N/A	N/A	57	N/A	N/A	N/A

Notes:

12.9 Exceeds GNWT Criteria

1 - Environmental Guideline for Contaminated Site Remediation, Commercial Land Use, Government of Northwest Territories, November 2003

2 - Type B Water Licence S17L8-003 & Type A Land Use Permit S17X-004

NV - No Value

N/A - Not Analyzed

MDL - Method Detection Limit

Table 1: LTU Soil - General Chemistry Analytical Results

Sample ID	MDL	Units	GNWT ¹	Water Licence Criteria ²	W2	DUP3 (W2)	W3	W4	W5
Date Sampled					16-Jan-2018	16-Jan-2018	16-Jan-2018	16-Jan-2018	16-Jan-2018
ALS Sample ID					L2046505-119	L2046505-123	L2046505-120	L2046505-121	L2046505-122
Physical Tests (Soil)									
Moisture	0.25	%	NV	NV	13.6	16.1	15.5	12.7	14.6
pH (1:2 soil:water)	0.10	pH	6-8	6-9	7.80	7.83	7.93	8.01	7.99
Particle Size (Soil)									
General Texture Class	-	-	NV	NV	N/A	N/A	N/A	N/A	N/A
% >75um	1.0	%	NV	NV	N/A	N/A	N/A	N/A	N/A
Plant Available Nutrients (Soil)									
Available Nitrate-N	1.0	mg/kg	NV	NV	N/A	N/A	N/A	28.9	N/A
Available Phosphate-P	2.0	mg/kg	NV	NV	N/A	N/A	N/A	2.7	N/A
Available Potassium	20	mg/kg	NV	NV	N/A	N/A	N/A	46	N/A

Notes:

12.9 Exceeds GNWT Criteria

1 - Environmental Guideline for Contaminated Site Remediation, Commercial Land Use, Government of Northwest Territories, November 2003

2 - Type B Water Licence S17L8-003 & Type A Land Use Permit S17X-004

NV - No Value

N/A - Not Analyzed

MDL - Method Detection Limit

Table 2: LTU Soil - BTEX and PHC Analytical Results

Sample ID	MDL	Units	GNWT ¹	Water Licence Criteria ²	E1	E1 A	E2	E2 B	E3	E3 C	E4	E4 C
Date Sampled					16-Jan-2018	16-Jan-2018	16-Jan-2018	16-Jan-2018	16-Jan-2018	16-Jan-2018	16-Jan-2018	16-Jan-2018
ALS Sample ID					L2046505-103	L2046505-1	L2046505-104	L2046505-7	L2046505-105	L2046505-13	L2046505-106	L2046505-18
Volatile Organic Compounds (Soil)												
Benzene	0.0050	mg/kg	5	5	N/A	0.4	N/A	0.0228	N/A	0.122	N/A	0.238
Ethylbenzene	0.015	mg/kg	20	20	N/A	0.909	N/A	0.114	N/A	0.576	N/A	0.929
Methyl t-butyl ether (MTBE)	0.20	mg/kg	NV	NV	N/A	<0.20	N/A	<0.20	N/A	<0.20	N/A	<0.20
Styrene	0.050	mg/kg	50	NV	N/A	<0.050	N/A	<0.050	N/A	<0.050	N/A	<0.050
Toluene	0.050	mg/kg	0.8	0.8	N/A	0.074	N/A	<0.050	N/A	<0.050	N/A	<0.050
ortho-Xylene	0.050	mg/kg	NV	NV	N/A	0.100	N/A	<0.050	N/A	<0.050	N/A	0.12
meta- & para-Xylene	0.050	mg/kg	NV	NV	N/A	0.509	N/A	<0.050	N/A	0.08	N/A	0.21
Xylenes	0.075	mg/kg	17	20	N/A	0.609	N/A	<0.075	N/A	0.08	N/A	0.33
Hydrocarbons (Soil)												
F1 (C6-C10)	10	mg/kg	660	660	N/A	129	N/A	49	N/A	88	N/A	135
F1-BTEX	10	mg/kg	NV	NV	N/A	127	N/A	49	N/A	87	N/A	134
F2 (C10-C16)	30	mg/kg	1500	1500	175	N/A	150	N/A	138	N/A	214	N/A
F3 (C16-C34)	50	mg/kg	2500	2500	268	N/A	321	N/A	350	N/A	317	N/A
F4 (C34-C50)	50	mg/kg	6600	6600	189	N/A	342	N/A	431	N/A	263	N/A
F4G-SG	500	mg/kg	NV	NV	670	N/A	980	N/A	1490	N/A	830	N/A

Notes:

- 1 - Environmental Guideline for Contaminated Site Remediation, Commercial Land Use, Government of Northwest Territories, November 2003
- 2 - Type B Water Licence S17L8-003 & Type A Land Use Permit S17X-004
- NV - No Value
- N/A - Not Analyzed
- MDL - Method Detection Limit

Table 2: LTU Soil - BTEX and PHC Analytical Results

Sample ID	MDL	Units	GNWT ¹	Water Licence Criteria ²	E5	E5 D	E6	E6 D	E7	E7 E	E8	E8 C
Date Sampled					16-Jan-2018	16-Jan-2018	16-Jan-2018	16-Jan-2018	16-Jan-2018	16-Jan-2018	16-Jan-2018	16-Jan-2018
ALS Sample ID					L2046505-107	L2046505-24	L2046505-108	L2046505-29	L2046505-109	L2046505-35	L2046505-110	L2046505-38
Volatile Organic Compounds (Soil)												
Benzene	0.0050	mg/kg	5	5	N/A	0.180	N/A	0.0690	N/A	0.0068	N/A	0.0869
Ethylbenzene	0.015	mg/kg	20	20	N/A	0.543	N/A	0.227	N/A	<0.015	N/A	1.52
Methyl t-butyl ether (MTBE)	0.20	mg/kg	NV	NV	N/A	<0.20	N/A	<0.20	N/A	<0.20	N/A	<0.20
Styrene	0.050	mg/kg	50	NV	N/A	<0.050	N/A	<0.050	N/A	<0.050	N/A	<0.050
Toluene	0.050	mg/kg	0.8	0.8	N/A	0.071	N/A	0.069	N/A	<0.050	N/A	0.606
ortho-Xylene	0.050	mg/kg	NV	NV	N/A	0.09	N/A	0.059	N/A	<0.050	N/A	1.27
meta- & para-Xylene	0.050	mg/kg	NV	NV	N/A	0.198	N/A	0.136	N/A	<0.050	N/A	2.34
Xylenes	0.075	mg/kg	17	20	N/A	0.287	N/A	0.195	N/A	<0.075	N/A	3.6
Hydrocarbons (Soil)												
F1 (C6-C10)	10	mg/kg	660	660	N/A	74	N/A	71	N/A	<10	N/A	79
F1-BTEX	10	mg/kg	NV	NV	N/A	73	N/A	71	N/A	<10	N/A	73
F2 (C10-C16)	30	mg/kg	1500	1500	174	N/A	174	N/A	120	N/A	70	N/A
F3 (C16-C34)	50	mg/kg	2500	2500	409	N/A	566	N/A	315	N/A	238	N/A
F4 (C34-C50)	50	mg/kg	6600	6600	430	N/A	746	N/A	286	N/A	177	N/A
F4G-SG	500	mg/kg	NV	NV	1410	N/A	2070	N/A	820	N/A	<500	N/A

Notes:

- 1 - Environmental Guideline for Contaminated Site Remediation, Commercial Land Use, Government of Northwest Territories, November 2003
- 2 - Type B Water Licence S17L8-003 & Type A Land Use Permit S17X-004
- NV - No Value
- N/A - Not Analyzed
- MDL - Method Detection Limit

Table 2: LTU Soil - BTEX and PHC Analytical Results

Sample ID	MDL	Units	GNWT ¹	Water Licence Criteria ²	M1	M1 D	M2	M2 E	M3	DUP4 (M3)	M3 A	DUP1 (M3 A)
Date Sampled					16-Jan-2018	16-Jan-2018	16-Jan-2018	16-Jan-2018	16-Jan-2018	16-Jan-2018	16-Jan-2018	16-Jan-2018
ALS Sample ID					L2046505-111	L2046505-44	L2046505-112	L2046505-50	L2046505-113	L2046505-124	L2046505-51	L2046505-101
Volatile Organic Compounds (Soil)												
Benzene	0.0050	mg/kg	5	5	N/A	0.0273	N/A	0.0901	N/A	N/A	0.0235	0.0837
Ethylbenzene	0.015	mg/kg	20	20	N/A	0.091	N/A	1.7	N/A	N/A	0.292	0.487
Methyl t-butyl ether (MTBE)	0.20	mg/kg	NV	NV	N/A	<0.20	N/A	<0.20	N/A	N/A	<0.20	<0.20
Styrene	0.050	mg/kg	50	NV	N/A	<0.050	N/A	<0.050	N/A	N/A	<0.050	<0.050
Toluene	0.050	mg/kg	0.8	0.8	N/A	<0.050	N/A	0.203	N/A	N/A	<0.050	<0.050
ortho-Xylene	0.050	mg/kg	NV	NV	N/A	<0.050	N/A	0.838	N/A	N/A	0.20	0.11
meta- & para-Xylene	0.050	mg/kg	NV	NV	N/A	0.078	N/A	2.81	N/A	N/A	0.21	0.303
Xylenes	0.075	mg/kg	17	20	N/A	0.078	N/A	3.65	N/A	N/A	0.407	0.408
Hydrocarbons (Soil)												
F1 (C6-C10)	10	mg/kg	660	660	N/A	59	N/A	125	N/A	N/A	89	64
F1-BTEX	10	mg/kg	NV	NV	N/A	59	N/A	120	N/A	N/A	89	63
F2 (C10-C16)	30	mg/kg	1500	1500	165	N/A	131	N/A	167	206	N/A	N/A
F3 (C16-C34)	50	mg/kg	2500	2500	279	N/A	206	N/A	291	302	N/A	N/A
F4 (C34-C50)	50	mg/kg	6600	6600	101	N/A	75	N/A	113	125	N/A	N/A
F4G-SG	500	mg/kg	NV	NV	<500	N/A	<500	N/A	<500	<500	N/A	N/A

Notes:

- 1 - Environmental Guideline for Contaminated Site Remediation, Commercial Land Use, Government of Northwest Territories, November 2003
- 2 - Type B Water Licence S17L8-003 & Type A Land Use Permit S17X-004
- NV - No Value
- N/A - Not Analyzed
- MDL - Method Detection Limit

Table 2: LTU Soil - BTEX and PHC Analytical Results

Sample ID	MDL	Units	GNWT ¹	Water Licence Criteria ²	M4	M4 B	M5	M5 A	M6	M6 E	M7	M7 E
Date Sampled					16-Jan-2018	16-Jan-2018	16-Jan-2018	16-Jan-2018	16-Jan-2018	16-Jan-2018	16-Jan-2018	16-Jan-2018
ALS Sample ID					L2046505-114	L2046505-57	L2046505-115	L2046505-61	L2046505-116	L2046505-70	L2046505-117	L2046505-75
Volatile Organic Compounds (Soil)												
Benzene	0.0050	mg/kg	5	5	N/A	0.0169	N/A	0.0296	N/A	0.0202	N/A	0.1370
Ethylbenzene	0.015	mg/kg	20	20	N/A	0.223	N/A	0.073	N/A	0.034	N/A	0.220
Methyl t-butyl ether (MTBE)	0.20	mg/kg	NV	NV	N/A	<0.20	N/A	<0.20	N/A	<0.20	N/A	<0.20
Styrene	0.050	mg/kg	50	NV	N/A	<0.050	N/A	<0.050	N/A	<0.050	N/A	<0.050
Toluene	0.050	mg/kg	0.8	0.8	N/A	<0.050	N/A	<0.050	N/A	<0.050	N/A	<0.050
ortho-Xylene	0.050	mg/kg	NV	NV	N/A	<0.050	N/A	<0.050	N/A	<0.050	N/A	0.07
meta- & para-Xylene	0.050	mg/kg	NV	NV	N/A	0.141	N/A	0.077	N/A	<0.050	N/A	0.122
Xylenes	0.075	mg/kg	17	20	N/A	0.141	N/A	0.077	N/A	<0.075	N/A	0.196
Hydrocarbons (Soil)												
F1 (C6-C10)	10	mg/kg	660	660	N/A	35	N/A	87	N/A	74	N/A	131
F1-BTEX	10	mg/kg	NV	NV	N/A	35	N/A	87	N/A	74	N/A	130
F2 (C10-C16)	30	mg/kg	1500	1500	88	N/A	136	N/A	146	N/A	239	N/A
F3 (C16-C34)	50	mg/kg	2500	2500	207	N/A	298	N/A	354	N/A	347	N/A
F4 (C34-C50)	50	mg/kg	6600	6600	143	N/A	136	N/A	117	N/A	90	N/A
F4G-SG	500	mg/kg	NV	NV	560	N/A	<500	N/A	<500	N/A	<500	N/A

Notes:

- 1 - Environmental Guideline for Contaminated Site Remediation, Commercial Land Use, Government of Northwest Territories, November 2003
- 2 - Type B Water Licence S17L8-003 & Type A Land Use Permit S17X-004
- NV - No Value
- N/A - Not Analyzed
- MDL - Method Detection Limit

Table 2: LTU Soil - BTEX and PHC Analytical Results

Sample ID	MDL	Units	GNWT ¹	Water Licence Criteria ²	W1	W1 B	W2	DUP3 (W2)	W2 B	DUP2 (W2 B)	W3	W3 E
Date Sampled					16-Jan-2018	16-Jan-2018	16-Jan-2018	16-Jan-2018	16-Jan-2018	16-Jan-2018	16-Jan-2018	16-Jan-2018
ALS Sample ID					L2046505-118	L2046505-77	L2046505-119	L2046505-123	L2046505-82	L2046505-102	L2046505-120	L2046505-90
Volatile Organic Compounds (Soil)												
Benzene	0.0050	mg/kg	5	5	N/A	0.0294	N/A	N/A	0.3150	0.0281	N/A	0.0119
Ethylbenzene	0.015	mg/kg	20	20	N/A	0.164	N/A	N/A	0.741	0.101	N/A	0.029
Methyl t-butyl ether (MTBE)	0.20	mg/kg	NV	NV	N/A	<0.20	N/A	N/A	<0.20	<0.20	N/A	<0.20
Styrene	0.050	mg/kg	50	NV	N/A	<0.050	N/A	N/A	<0.050	<0.050	N/A	<0.050
Toluene	0.050	mg/kg	0.8	0.8	N/A	<0.050	N/A	N/A	0.168	<0.050	N/A	<0.050
ortho-Xylene	0.050	mg/kg	NV	NV	N/A	0.11	N/A	N/A	0.24	<0.050	N/A	<0.050
meta- & para-Xylene	0.050	mg/kg	NV	NV	N/A	0.24	N/A	N/A	0.222	<0.050	N/A	<0.050
Xylenes	0.075	mg/kg	17	20	N/A	0.351	N/A	N/A	0.464	<0.075	N/A	<0.075
Hydrocarbons (Soil)												
F1 (C6-C10)	10	mg/kg	660	660	N/A	69	N/A	N/A	71	98	N/A	16
F1-BTEX	10	mg/kg	NV	NV	N/A	69	N/A	N/A	70	98	N/A	16
F2 (C10-C16)	30	mg/kg	1500	1500	99.0	N/A	112	104	N/A	N/A	38	N/A
F3 (C16-C34)	50	mg/kg	2500	2500	173	N/A	214	191	N/A	N/A	136	N/A
F4 (C34-C50)	50	mg/kg	6600	6600	65	N/A	85	76	N/A	N/A	53	N/A
F4G-SG	500	mg/kg	NV	NV	<500	N/A	<500	<500	N/A	N/A	<500	N/A

Notes:

- 1 - Environmental Guideline for Contaminated Site Remediation, Commercial Land Use, Government of Northwest Territories, November 2003
- 2 - Type B Water Licence S17L8-003 & Type A Land Use Permit S17X-004
- NV - No Value
- N/A - Not Analyzed
- MDL - Method Detection Limit

Table 2: LTU Soil - BTEX and PHC Analytical Results

Sample ID	MDL	Units	GNWT ¹	Water Licence Criteria ²	W4	W4 C	W5	W5 A
Date Sampled					16-Jan-2018	16-Jan-2018	16-Jan-2018	16-Jan-2018
ALS Sample ID					L2046505-121	L2046505-93	L2046505-122	L2046505-96
Volatile Organic Compounds (Soil)								
Benzene	0.0050	mg/kg	5	5	N/A	0.0236	N/A	0.0331
Ethylbenzene	0.015	mg/kg	20	20	N/A	0.025	N/A	0.066
Methyl t-butyl ether (MTBE)	0.20	mg/kg	NV	NV	N/A	<0.20	N/A	<0.20
Styrene	0.050	mg/kg	50	NV	N/A	<0.050	N/A	<0.050
Toluene	0.050	mg/kg	0.8	0.8	N/A	<0.050	N/A	<0.050
ortho-Xylene	0.050	mg/kg	NV	NV	N/A	<0.050	N/A	<0.050
meta- & para-Xylene	0.050	mg/kg	NV	NV	N/A	<0.050	N/A	<0.050
Xylenes	0.075	mg/kg	17	20	N/A	<0.075	N/A	<0.075
Hydrocarbons (Soil)								
F1 (C6-C10)	10	mg/kg	660	660	N/A	27	N/A	18
F1-BTEX	10	mg/kg	NV	NV	N/A	27	N/A	18
F2 (C10-C16)	30	mg/kg	1500	1500	90	N/A	181	N/A
F3 (C16-C34)	50	mg/kg	2500	2500	267	N/A	368	N/A
F4 (C34-C50)	50	mg/kg	6600	6600	95	N/A	70	N/A
F4G-SG	500	mg/kg	NV	NV	<500	N/A	<500	N/A

Notes:

- 1 - Environmental Guideline for Contaminated Site Remediation, Commercial Land Use, Government of Northwest Territories, November 2003
- 2 - Type B Water Licence S17L8-003 & Type A Land Use Permit S17X-004
- NV - No Value
- N/A - Not Analyzed
- MDL - Method Detection Limit

Table 3: LTU Soil - PAH Analytical Results

Sample ID	MDL	Units	GNWT ¹	Water Licence Criteria ²	DUP2	E1	E2	E3	E4	E5	E6	E7
Date Sampled					16-Jan-2018	16-Jan-2018	16-Jan-2018	16-Jan-2018	16-Jan-2018	16-Jan-2018	16-Jan-2018	
ALS Sample ID					L2046505-102	L2046505-103	L2046505-104	L2046505-105	L2046505-106	L2046505-107	L2046505-108	L2046505-109
Acenaphthene	0.0050	mg/kg	NV	NV	<0.0090	<0.014	<0.015	<0.014	<0.015	<0.015	<0.0080	<0.0060
Acenaphthylene	0.005	mg/kg	NV	NV	<0.0080	<0.014	<0.015	<0.014	<0.015	<0.015	<0.0060	<0.0050
Anthracene	0.00	mg/kg	NV	NV	<0.0040	<0.014	<0.015	<0.014	<0.015	<0.015	<0.0060	<0.0040
Benz(a)anthracene	0.010	mg/kg	10	10	<0.010	<0.014	<0.015	<0.014	<0.015	0.028	0.028	<0.010
Benzo(a)pyrene	0.010	mg/kg	0.7	0.7	<0.010	<0.014	<0.015	<0.014	0.019	0.038	0.055	0.016
Benzo(b&j)fluoranthene	0.010	mg/kg	10	10	0.02	0.02	0.019	0.019	0.03	0.054	0.07	0.032
Benzo(b+j+k)fluoranthene	0.015	mg/kg	NV	NV	0.02	0.02	0.019	0.019	0.03	0.072	0.094	0.043
Benzo(g,h,i)perylene	0.010	mg/kg	NV	NV	0.021	0.027	0.023	0.021	0.032	0.042	0.056	0.023
Benzo(k)fluoranthene	0.010	mg/kg	10	10	<0.010	<0.014	<0.015	<0.014	<0.015	0.018	0.024	0.01
Chrysene	0.010	mg/kg	NV	NV	<0.020	<0.020	<0.015	<0.020	<0.030	<0.040	<0.050	<0.020
Hydrocarbons (Soil)	0.005	mg/kg	10	10	<0.0050	<0.014	<0.015	<0.014	<0.015	<0.015	<0.020	<0.0050
Fluoranthene	0.010	mg/kg	NV	NV	0.017	0.018	0.018	0.014	0.021	0.059	0.033	0.02
Fluorene	0.010	mg/kg	NV	NV	0.014	<0.014	<0.015	<0.014	<0.015	<0.015	0.012	<0.010
Indeno(1,2,3-c,d)pyrene	0.010	mg/kg	10	10	0.012	<0.020	<0.015	<0.014	<0.030	0.034	0.048	0.018
1-Methylnaphthalene	0.050	mg/kg	NV	NV	0.135	0.096	0.076	0.099	0.113	0.089	0.091	0.077
2-Methylnaphthalene	0.010	mg/kg	NV	NV	0.213	0.154	0.118	0.167	0.166	0.13	0.138	0.116
Naphthalene	0.010	mg/kg	22	22	0.067	0.05	0.038	0.046	0.043	0.033	0.045	0.03
Phenanthrene	0.040	mg/kg	50	50	<0.070	<0.060	<0.050	<0.050	<0.060	<0.070	<0.060	<0.060
Pyrene	0.010	mg/kg	100	100	0.028	0.028	0.024	0.02	0.031	0.059	0.039	0.027
Quinoline	0.050	mg/kg	NV	NV	<0.050	<0.050	<0.050	<0.050	<0.050	<0.050	<0.050	<0.050
B(a)P Total Potency Equivalent d	0.020	mg/kg	NV	NV	<0.020	<0.020	<0.020	<0.020	0.033	0.06	0.082	0.025
IACR	0.150	mg/kg	NV	NV	0.21	0.25	0.25	0.24	0.36	0.7	0.9	0.35

Notes:

1 - Environmental Guideline for Contaminated Site Remediation, Commercial Land Use, Government of Northwest Territories, November 2003

2 - Type B Water Licence S17L8-003 & Type A Land Use Permit S17X-004

NV - No Value

MDL - Method Detection Limit

Table 3: LTU Soil - PAH Analytical Results

Sample ID	MDL	Units	GNWT ¹	Water Licence Criteria ²	E8	M1	M2	M3	M4	M5
Date Sampled					16-Jan-2018	16-Jan-2018	16-Jan-2018	16-Jan-2018	16-Jan-2018	16-Jan-2018
ALS Sample ID					L2046505-110	L2046505-111	L2046505-112	L2046505-113	L2046505-114	L2046505-115
Acenaphthene	0.0050	mg/kg	NV	NV	<0.010	<0.0070	<0.0090	<0.0050	<0.014	<0.0060
Acenaphthylene	0.005	mg/kg	NV	NV	<0.0070	<0.0050	<0.0050	<0.0050	<0.014	<0.0070
Anthracene	0.00	mg/kg	NV	NV	<0.0040	<0.0040	<0.0040	0.0131	<0.014	<0.0090
Benzo(a)anthracene	0.010	mg/kg	10	10	<0.010	<0.010	<0.020	0.051	0.027	0.03
Benzo(a)pyrene	0.010	mg/kg	0.7	0.7	<0.010	<0.010	0.017	0.076	0.046	0.055
Benzo(b&j)fluoranthene	0.010	mg/kg	10	10	0.011	0.02	0.033	0.101	0.075	0.084
Benzo(b+j+k)fluoranthene	0.015	mg/kg	NV	NV	<0.015	0.02	0.033	0.137	0.102	0.109
Benzo(g,h,i)perylene	0.010	mg/kg	NV	NV	<0.010	0.013	0.023	0.06	0.051	0.052
Benzo(k)fluoranthene	0.010	mg/kg	10	10	<0.010	<0.010	<0.010	0.037	0.026	0.026
Chrysene	0.010	mg/kg	NV	NV	<0.020	<0.020	<0.030	0.062	<0.040	<0.050
Hydrocarbons (Soil)	0.005	mg/kg	10	10	<0.0050	<0.0050	<0.0050	0.0128	<0.014	0.0103
Fluoranthene	0.010	mg/kg	NV	NV	<0.010	0.01	0.024	0.095	0.048	0.052
Fluorene	0.010	mg/kg	NV	NV	0.016	0.01	0.014	<0.010	<0.014	<0.020
Indeno(1,2,3-c,d)pyrene	0.010	mg/kg	10	10	<0.010	<0.010	0.017	0.062	0.054	0.053
1-Methylnaphthalene	0.050	mg/kg	NV	NV	0.242	0.083	0.119	0.05	<0.050	0.053
2-Methylnaphthalene	0.010	mg/kg	NV	NV	0.342	0.139	0.185	0.077	0.052	0.083
Naphthalene	0.010	mg/kg	22	22	0.111	0.038	<0.050	0.028	0.017	0.033
Phenanthrene	0.040	mg/kg	50	50	<0.070	<0.050	<0.070	<0.080	<0.050	<0.080
Pyrene	0.010	mg/kg	100	100	0.01	0.015	0.03	0.101	0.053	0.057
Quinoline	0.050	mg/kg	NV	NV	<0.050	<0.050	<0.050	<0.050	<0.050	<0.050
B(a)P Total Potency Equivalent d	0.020	mg/kg	NV	NV	<0.020	<0.020	0.026	0.115	0.072	0.085
IACR	0.150	mg/kg	NV	NV	<0.15	0.2	0.34	1.33	0.91	1.00

Notes:

1 - Environmental Guideline for Contaminated Site Remediation, Commercial Land Use, Government of Northwest Territories, November 2003

2 - Type B Water Licence S17L8-003 & Type A Land Use Permit S17X-004

NV - No Value

MDL - Method Detection Limit

Table 3: LTU Soil - PAH Analytical Results

Sample ID	MDL	Units	GNWT ¹	Water Licence Criteria ²	M6	M7	W1	W2	W3	W4	W5	DUP3
Date Sampled					16-Jan-2018	16-Jan-2018	16-Jan-2018	16-Jan-2018	16-Jan-2018	16-Jan-2018	16-Jan-2018	16-Jan-2018
ALS Sample ID					L2046505-116	L2046505-117	L2046505-118	L2046505-119	L2046505-120	L2046505-121	L2046505-122	L2046505-123
Acenaphthene	0.0050	mg/kg	NV	NV	<0.0080	<0.0050	<0.0080	<0.0050	0.0	<0.0050	<0.0060	<0.010
Acenaphthylene	0.005	mg/kg	NV	NV	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0070
Anthracene	0.00	mg/kg	NV	NV	<0.010	<0.0040	<0.0060	<0.0040	<0.020	<0.0050	<0.0040	<0.0060
Benz(a)anthracene	0.010	mg/kg	10	10	0.022	<0.010	0.03	0.013	0.063	0.026	<0.010	0.021
Benzo(a)pyrene	0.010	mg/kg	0.7	0.7	0.036	0.012	0.048	0.024	0.091	0.039	0.014	0.036
Benzo(b&j)fluoranthene	0.010	mg/kg	10	10	0.056	0.024	0.071	0.04	0.118	0.062	0.025	0.058
Benzo(b+j+k)fluoranthene	0.015	mg/kg	NV	NV	0.073	0.024	0.097	0.052	0.163	0.081	0.025	0.076
Benzo(g,h,i)perylene	0.010	mg/kg	NV	NV	0.031	<0.020	0.031	0.026	0.061	0.033	0.016	0.027
Benzo(k)fluoranthene	0.010	mg/kg	10	10	0.017	<0.010	0.026	0.012	0.045	0.019	<0.010	0.018
Chrysene	0.010	mg/kg	NV	NV	<0.040	0.015	<0.050	<0.020	0.076	<0.030	<0.020	<0.040
Hydrocarbons (Soil)	0.005	mg/kg	10	10	<0.0070	<0.0050	<0.0080	<0.0060	<0.020	<0.0080	<0.0050	<0.0070
Fluoranthene	0.010	mg/kg	NV	NV	0.045	0.013	0.055	0.025	0.13	0.046	0.017	0.033
Fluorene	0.010	mg/kg	NV	NV	0.017	<0.010	0.011	<0.010	<0.010	<0.010	<0.010	<0.020
Indeno(1,2,3-c,d)pyrene	0.010	mg/kg	10	10	0.029	0.013	0.034	0.025	0.066	0.036	0.013	0.027
1-Methylnaphthalene	0.050	mg/kg	NV	NV	0.081	0.078	0.133	<0.050	<0.050	<0.050	0.077	0.127
2-Methylnaphthalene	0.010	mg/kg	NV	NV	0.132	0.119	0.205	0.046	0.049	0.035	0.124	0.218
Naphthalene	0.010	mg/kg	22	22	0.047	0.032	0.066	0.018	0.019	0.015	0.037	0.061
Phenanthrene	0.040	mg/kg	50	50	<0.080	<0.050	<0.060	<0.040	<0.090	<0.040	<0.050	<0.070
Pyrene	0.010	mg/kg	100	100	0.046	0.016	0.052	0.027	0.133	0.045	0.019	0.037
Quinoline	0.050	mg/kg	NV	NV	<0.050	<0.050	<0.050	<0.050	<0.050	<0.050	<0.050	<0.050
B(a)P Total Potency Equivalent d	0.020	mg/kg	NV	NV	0.053	<0.020	0.068	0.037	0.132	0.058	0.022	0.053
IACR	0.150	mg/kg	NV	NV	0.66	0.25	0.87	0.46	1.57	0.74	0.26	0.68

Notes:

1 - Environmental Guideline for Contaminated Site Remediation, Commercial Land Use, Government of Northwest Territories, November 2003

2 - Type B Water Licence S17L8-003 & Type A Land Use Permit S17X-004

NV - No Value

MDL - Method Detection Limit

Table 4: LTU Soil - PCB Analytical Results

Sample ID	MDL	Units	GNWT ¹	Water Licence Criteria ²	DUP2	E1	E2	E3	E4	E5	E6	E7
Date Sampled					16-Jan-2018	16-Jan-2018	16-Jan-2018	16-Jan-2018	16-Jan-2018	16-Jan-2018	16-Jan-2018	16-Jan-2018
ALS Sample ID					L2046505-102	L2046505-103	L2046505-104	L2046505-105	L2046505-106	L2046505-107	L2046505-108	L2046505-109
PCB-1016	0.0200	mg/kg	NV	NV	<0.020	<0.020	<0.020	<0.020	<0.020	<0.020	<0.020	<0.020
PCB-1221	0.020	mg/kg	NV	NV	<0.020	<0.020	<0.020	<0.020	<0.020	<0.020	<0.020	<0.020
PCB-1232	0.02	mg/kg	NV	NV	<0.020	<0.020	<0.020	<0.020	<0.020	<0.020	<0.020	<0.020
PCB-1242	0.020	mg/kg	NV	NV	<0.020	<0.020	<0.020	<0.020	<0.020	<0.020	<0.020	<0.020
PCB-1248	0.020	mg/kg	NV	NV	<0.020	<0.020	<0.020	<0.020	<0.020	<0.020	<0.020	<0.020
PCB-1254	0.020	mg/kg	NV	NV	<0.020	<0.020	<0.020	<0.020	<0.020	<0.020	<0.020	<0.020
PCB-1260	0.020	mg/kg	NV	NV	<0.020	<0.020	<0.020	<0.020	<0.020	<0.020	<0.020	<0.020
PCB-1262	0.020	mg/kg	NV	NV	<0.020	<0.020	<0.020	<0.020	<0.020	<0.020	<0.020	<0.020
PCB-1268	0.020	mg/kg	NV	NV	<0.020	<0.020	<0.020	<0.020	<0.020	<0.020	<0.020	<0.020
Total Polychlorinated Biphenyls	0.020	mg/kg	33	33	<0.020	<0.020	<0.020	<0.020	<0.020	<0.020	<0.020	<0.020

Notes:

1 - Environmental Guideline for Contaminated Site Remediation, Commercial Land Use, Government of Northwest Territories, November 2003

2 - Type B Water Licence S17L8-003 & Type A Land Use Permit S17X-004

NV - No Value

MDL - Method Detection Limit

Table 4: LTU Soil - PCB Analytical Results

Sample ID	MDL	Units	GNWT ¹	Water Licence Criteria ²	E8	M1	M2	M3	M4	M5	M6	M7
Date Sampled					16-Jan-2018	16-Jan-2018	16-Jan-2018	16-Jan-2018	16-Jan-2018	16-Jan-2018	16-Jan-2018	16-Jan-2018
ALS Sample ID					L2046505-110	L2046505-111	L2046505-112	L2046505-113	L2046505-114	L2046505-115	L2046505-116	L2046505-117
PCB-1016	0.0200	mg/kg	NV	NV	<0.020	<0.020	<0.020	<0.020	<0.020	<0.020	<0.020	<0.020
PCB-1221	0.020	mg/kg	NV	NV	<0.020	<0.020	<0.020	<0.020	<0.020	<0.020	<0.020	<0.020
PCB-1232	0.02	mg/kg	NV	NV	<0.020	<0.020	<0.020	<0.020	<0.020	<0.020	<0.020	<0.020
PCB-1242	0.020	mg/kg	NV	NV	<0.020	<0.020	<0.020	<0.020	<0.020	<0.020	<0.020	<0.020
PCB-1248	0.020	mg/kg	NV	NV	<0.020	<0.020	<0.020	<0.020	<0.020	<0.020	<0.020	<0.020
PCB-1254	0.020	mg/kg	NV	NV	<0.020	<0.020	<0.020	<0.020	<0.020	<0.020	<0.020	<0.020
PCB-1260	0.020	mg/kg	NV	NV	<0.020	<0.020	<0.020	<0.020	<0.020	<0.020	<0.020	<0.020
PCB-1262	0.020	mg/kg	NV	NV	<0.020	<0.020	<0.020	<0.020	<0.020	<0.020	<0.020	<0.020
PCB-1268	0.020	mg/kg	NV	NV	<0.020	<0.020	<0.020	<0.020	<0.020	<0.020	<0.020	<0.020
Total Polychlorinated Biphenyls	0.020	mg/kg	33	33	<0.020	<0.020	<0.020	<0.020	<0.020	<0.020	<0.020	<0.020

Notes:

1 - Environmental Guideline for Contaminated Site Remediation, Commercial Land Use, Government of Northwest Territories, November 2003

2 - Type B Water Licence S17L8-003 & Type A Land Use Permit S17X-004

NV - No Value

MDL - Method Detection Limit

Table 4: LTU Soil - PCB Analytical Results

Sample ID	MDL	Units	GNWT ¹	Water Licence Criteria ²	W1	W2	W3	W4	W5	DUP3
Date Sampled					16-Jan-2018	16-Jan-2018	16-Jan-2018	16-Jan-2018	16-Jan-2018	16-Jan-2018
ALS Sample ID					L2046505-118	L2046505-119	L2046505-120	L2046505-121	L2046505-122	L2046505-123
PCB-1016	0.0200	mg/kg	NV	NV	<0.020	<0.020	<0.020	<0.020	<0.020	<0.020
PCB-1221	0.020	mg/kg	NV	NV	<0.020	<0.020	<0.020	<0.020	<0.020	<0.020
PCB-1232	0.02	mg/kg	NV	NV	<0.020	<0.020	<0.020	<0.020	<0.020	<0.020
PCB-1242	0.020	mg/kg	NV	NV	<0.020	<0.020	<0.020	<0.020	<0.020	<0.020
PCB-1248	0.020	mg/kg	NV	NV	<0.020	<0.020	<0.020	<0.020	<0.020	<0.020
PCB-1254	0.020	mg/kg	NV	NV	<0.020	<0.020	<0.020	<0.020	<0.020	<0.020
PCB-1260	0.020	mg/kg	NV	NV	<0.020	<0.020	<0.020	<0.020	<0.020	<0.020
PCB-1262	0.020	mg/kg	NV	NV	<0.020	<0.020	<0.020	<0.020	<0.020	<0.020
PCB-1268	0.020	mg/kg	NV	NV	<0.020	<0.020	<0.020	<0.020	<0.020	<0.020
Total Polychlorinated Biphenyls	0.020	mg/kg	33	33	<0.020	<0.020	<0.020	<0.020	<0.020	<0.020

Notes:

1 - Environmental Guideline for Contaminated Site Remediation, Commercial Land Use, Government of Northwest Territories, November 2003

2 - Type B Water Licence S17L8-003 & Type A Land Use Permit S17X-004

NV - No Value

MDL - Method Detection Limit

Table 5: LTU Soil - Phenols Analytical Results

Sample ID	MDL	Units	GNWT ¹	Water Licence Criteria ²	DUP2	E1	E2	E3	E4	E5	E6	E7
Date Sampled					16-Jan-2018	16-Jan-2018	16-Jan-2018	16-Jan-2018	16-Jan-2018	16-Jan-2018	16-Jan-2018	16-Jan-2018
ALS Sample ID					L2046505-102	L2046505-103	L2046505-104	L2046505-105	L2046505-106	L2046505-107	L2046505-108	L2046505-109
4-Chloro-3-methylphenol	0.050	mg/kg	5	5	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<5.0	<0.50
2-Chlorophenol	0.050	mg/kg	5	5	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<5.0	<0.50
3-Chlorophenol	0.050	mg/kg	5	5	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<5.0	<0.50
4-Chlorophenol	0.050	mg/kg	5	5	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<5.0	<0.50
2,3-Dichlorophenol	0.050	mg/kg	5	5	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<5.0	<0.50
2,4 & 2,5-Dichlorophenol	0.10	mg/kg	5	5	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<10	<1.0
2,6-Dichlorophenol	0.050	mg/kg	5	5	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<5.0	<0.50
3,4-Dichlorophenol	0.050	mg/kg	5	5	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<5.0	<0.50
3,5-Dichlorophenol	0.050	mg/kg	5	5	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<5.0	<0.50
2,4-Dimethylphenol	0.10	mg/kg	10	10	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<10	<1.0
Hydrocarbons (Soil)	2.0	mg/kg	10	10	<20	<20	<20	<20	<20	<20	<200	<20
4,6-Dinitro-2-methylphenol	2.0	mg/kg	10	10	<20	<20	<20	<20	<20	<20	<200	<20
o-Cresol	0.10	mg/kg	10	10	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<10	<1.0
m-Cresol	0.10	mg/kg	10	10	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<10	<1.0
p-Cresol	0.10	mg/kg	10	10	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<10	<1.0
Total Cresols	0.10	mg/kg	10	10	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<10	<1.0
2-Nitrophenol	0.10	mg/kg	10	10	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<10	<1.0
4-Nitrophenol	2.0	mg/kg	10	10	<20	<20	<20	<20	<20	<20	<200	<20
Pentachlorophenol	0.050	mg/kg	7.6	7.6	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<5.0	<0.50
Phenol	0.050	mg/kg	3.8	3.8	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<5.0	<0.50
2,3,4,5-Tetrachlorophenol	0.050	mg/kg	5	5	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<5.0	<0.50
2,3,4,6-Tetrachlorophenol	0.050	mg/kg	5	5	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<5.0	<0.50
2,3,5,6-Tetrachlorophenol	0.050	mg/kg	5	5	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<5.0	<0.50
2,3,4-Trichlorophenol	0.050	mg/kg	5	5	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<5.0	<0.50
2,3,5-Trichlorophenol	0.050	mg/kg	5	5	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<5.0	<0.50
2,3,6-Trichlorophenol	0.050	mg/kg	5	5	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<5.0	<0.50
2,4,5-Trichlorophenol	0.050	mg/kg	5	5	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<5.0	<0.50
2,4,6-Trichlorophenol	0.050	mg/kg	5	5	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<5.0	<0.50
3,4,5-Trichlorophenol	0.050	mg/kg	5	5	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<5.0	<0.50

Notes:

1 - Environmental Guideline for Contaminated Site Remediation, Commercial Land Use, Government of Northwest Territories, November 2003

2 - Type B Water Licence S17L8-003 & Type A Land Use Permit S17X-004

NV - No Value

MDL - Method Detection Limit

Table 5: LTU Soil - Phenols Analytical Results

Sample ID	MDL	Units	GNWT ¹	Water Licence Criteria ²	E8	M1	M2	M3	M4	M5	M6	M7	
Date Sampled					16-Jan-2018	16-Jan-2018	16-Jan-2018	16-Jan-2018	16-Jan-2018	16-Jan-2018	16-Jan-2018	16-Jan-2018	16-Jan-2018
ALS Sample ID					L2046505-110	L2046505-111	L2046505-112	L2046505-113	L2046505-114	L2046505-115	L2046505-116	L2046505-117	
4-Chloro-3-methylphenol	0.050	mg/kg	5	5	<0.050	<0.050	<0.50	<0.050	<0.50	<0.050	<0.050	<0.050	
2-Chlorophenol	0.050	mg/kg	5	5	<0.050	<0.050	<0.50	<0.050	<0.50	<0.050	<0.050	<0.050	
3-Chlorophenol	0.050	mg/kg	5	5	<0.050	<0.050	<0.50	<0.050	<0.50	<0.050	<0.050	<0.050	
4-Chlorophenol	0.050	mg/kg	5	5	<0.050	<0.050	<0.50	<0.050	<0.50	<0.050	<0.050	<0.050	
2,3-Dichlorophenol	0.050	mg/kg	5	5	<0.050	<0.050	<0.50	<0.050	<0.50	<0.050	<0.050	<0.050	
2,4 & 2,5-Dichlorophenol	0.10	mg/kg	5	5	<0.10	<0.10	<1.0	<0.10	<1.0	<0.10	<0.10	<0.10	
2,6-Dichlorophenol	0.050	mg/kg	5	5	<0.050	<0.050	<0.50	<0.050	<0.50	<0.050	<0.050	<0.050	
3,4-Dichlorophenol	0.050	mg/kg	5	5	<0.050	<0.050	<0.50	<0.050	<0.50	<0.050	<0.050	<0.050	
3,5-Dichlorophenol	0.050	mg/kg	5	5	<0.050	<0.050	<0.50	<0.050	<0.50	<0.050	<0.050	<0.050	
2,4-Dimethylphenol	0.10	mg/kg	10	10	<0.10	<0.10	<1.0	<0.10	<1.0	<0.10	<0.10	<0.10	
Hydrocarbons (Soil)	2.0	mg/kg	10	10	<2.0	<2.0	<20	<2.0	<20	<2.0	<2.0	<2.0	
4,6-Dinitro-2-methylphenol	2.0	mg/kg	10	10	<2.0	<2.0	<20	<2.0	<20	<2.0	<2.0	<2.0	
o-Cresol	0.10	mg/kg	10	10	<0.10	<0.10	<1.0	<0.10	<1.0	<0.10	<0.10	<0.10	
m-Cresol	0.10	mg/kg	10	10	<0.10	<0.10	<1.0	<0.10	<1.0	<0.10	<0.10	<0.10	
p-Cresol	0.10	mg/kg	10	10	<0.10	<0.10	<1.0	<0.10	<1.0	<0.10	<0.10	<0.10	
Total Cresols	0.10	mg/kg	10	10	<0.10	<0.10	<1.0	<0.10	<1.0	<0.10	<0.10	<0.10	
2-Nitrophenol	0.10	mg/kg	10	10	<0.10	<0.10	<1.0	<0.10	<1.0	<0.10	<0.10	<0.10	
4-Nitrophenol	2.0	mg/kg	10	10	<2.0	<2.0	<20	<2.0	<20	<2.0	<2.0	<2.0	
Pentachlorophenol	0.050	mg/kg	7.6	7.6	<0.050	<0.050	<0.50	<0.050	<0.50	<0.050	<0.050	<0.050	
Phenol	0.050	mg/kg	3.8	3.8	<0.050	<0.050	<0.50	<0.050	<0.50	<0.050	<0.050	<0.050	
2,3,4,5-Tetrachlorophenol	0.050	mg/kg	5	5	<0.050	<0.050	<0.50	<0.050	<0.50	<0.050	<0.050	<0.050	
2,3,4,6-Tetrachlorophenol	0.050	mg/kg	5	5	<0.050	<0.050	<0.50	<0.050	<0.50	<0.050	<0.050	<0.050	
2,3,5,6-Tetrachlorophenol	0.050	mg/kg	5	5	<0.050	<0.050	<0.50	<0.050	<0.50	<0.050	<0.050	<0.050	
2,3,4-Trichlorophenol	0.050	mg/kg	5	5	<0.050	<0.050	<0.50	<0.050	<0.50	<0.050	<0.050	<0.050	
2,3,5-Trichlorophenol	0.050	mg/kg	5	5	<0.050	<0.050	<0.50	<0.050	<0.50	<0.050	<0.050	<0.050	
2,3,6-Trichlorophenol	0.050	mg/kg	5	5	<0.050	<0.050	<0.50	<0.050	<0.50	<0.050	<0.050	<0.050	
2,4,5-Trichlorophenol	0.050	mg/kg	5	5	<0.050	<0.050	<0.50	<0.050	<0.50	<0.050	<0.050	<0.050	
2,4,6-Trichlorophenol	0.050	mg/kg	5	5	<0.050	<0.050	<0.50	<0.050	<0.50	<0.050	<0.050	<0.050	
3,4,5-Trichlorophenol	0.050	mg/kg	5	5	<0.050	<0.050	<0.50	<0.050	<0.50	<0.050	<0.050	<0.050	

Notes:

1 - Environmental Guideline for Contaminated Site Remediation, Commercial Land Use, Government of Northwest Territories, November 2003

2 - Type B Water Licence S17L8-003 & Type A Land Use Permit S17X-004

NV - No Value

MDL - Method Detection Limit

Table 5: LTU Soil - Phenols Analytical Results

Sample ID	MDL	Units	GNWT ¹	Water Licence Criteria ²	W1	W2	W3	W4	W5	DUP3
Date Sampled					16-Jan-2018	16-Jan-2018	16-Jan-2018	16-Jan-2018	16-Jan-2018	16-Jan-2018
ALS Sample ID					L2046505-118	L2046505-119	L2046505-120	L2046505-121	L2046505-122	L2046505-123
4-Chloro-3-methylphenol	0.050	mg/kg	5	5	<0.050	<0.050	<0.050	<0.050	<0.050	<0.050
2-Chlorophenol	0.050	mg/kg	5	5	<0.050	<0.050	<0.050	<0.050	<0.050	<0.050
3-Chlorophenol	0.050	mg/kg	5	5	<0.050	<0.050	<0.050	<0.050	<0.050	<0.050
4-Chlorophenol	0.050	mg/kg	5	5	<0.050	<0.050	<0.050	<0.050	<0.050	<0.050
2,3-Dichlorophenol	0.050	mg/kg	5	5	<0.050	<0.050	<0.050	<0.050	<0.050	<0.050
2,4 & 2,5-Dichlorophenol	0.10	mg/kg	5	5	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10
2,6-Dichlorophenol	0.050	mg/kg	5	5	<0.050	<0.050	<0.050	<0.050	<0.050	<0.050
3,4-Dichlorophenol	0.050	mg/kg	5	5	<0.050	<0.050	<0.050	<0.050	<0.050	<0.050
3,5-Dichlorophenol	0.050	mg/kg	5	5	<0.050	<0.050	<0.050	<0.050	<0.050	<0.050
2,4-Dimethylphenol	0.10	mg/kg	10	10	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10
Hydrocarbons (Soil)	2.0	mg/kg	10	10	<2.0	<2.0	<2.0	<2.0	<2.0	<2.0
4,6-Dinitro-2-methylphenol	2.0	mg/kg	10	10	<2.0	<2.0	<2.0	<2.0	<2.0	<2.0
o-Cresol	0.10	mg/kg	10	10	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10
m-Cresol	0.10	mg/kg	10	10	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10
p-Cresol	0.10	mg/kg	10	10	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10
Total Cresols	0.10	mg/kg	10	10	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10
2-Nitrophenol	0.10	mg/kg	10	10	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10
4-Nitrophenol	2.0	mg/kg	10	10	<2.0	<2.0	<2.0	<2.0	<2.0	<2.0
Pentachlorophenol	0.050	mg/kg	7.6	7.6	<0.050	<0.050	<0.050	<0.050	<0.050	<0.050
Phenol	0.050	mg/kg	3.8	3.8	<0.050	<0.050	<0.050	<0.050	<0.050	<0.050
2,3,4,5-Tetrachlorophenol	0.050	mg/kg	5	5	<0.050	<0.050	<0.050	<0.050	<0.050	<0.050
2,3,4,6-Tetrachlorophenol	0.050	mg/kg	5	5	<0.050	<0.050	<0.050	<0.050	<0.050	<0.050
2,3,5,6-Tetrachlorophenol	0.050	mg/kg	5	5	<0.050	<0.050	<0.050	<0.050	<0.050	<0.050
2,3,4-Trichlorophenol	0.050	mg/kg	5	5	<0.050	<0.050	<0.050	<0.050	<0.050	<0.050
2,3,5-Trichlorophenol	0.050	mg/kg	5	5	<0.050	<0.050	<0.050	<0.050	<0.050	<0.050
2,3,6-Trichlorophenol	0.050	mg/kg	5	5	<0.050	<0.050	<0.050	<0.050	<0.050	<0.050
2,4,5-Trichlorophenol	0.050	mg/kg	5	5	<0.050	<0.050	<0.050	<0.050	<0.050	<0.050
2,4,6-Trichlorophenol	0.050	mg/kg	5	5	<0.050	<0.050	<0.050	<0.050	<0.050	<0.050
3,4,5-Trichlorophenol	0.050	mg/kg	5	5	<0.050	<0.050	<0.050	<0.050	<0.050	<0.050

Notes:

- 1 - Environmental Guideline for Contaminated Site Remediation, Commercial Land Use, Government of Northwest Territories, November 2003
- 2 - Type B Water Licence S17L8-003 & Type A Land Use Permit S17X-004
- NV - No Value
- MDL - Method Detection Limit

Table 6: LTU Soil - Metals Analytical Results

Sample ID	MDL	Units	Water Licence Criteria ¹	GNWT ²	E1	E2	E3	E4	E5	E6
					16-Jan-2018	16-Jan-2018	16-Jan-2018	16-Jan-2018	16-Jan-2018	16-Jan-2018
					L2046505-103	L2046505-104	L2046505-105	L2046505-106	L2046505-107	L2046505-108
Aluminum (Al)	50	mg/kg	NV	NV	12100	10200	9210	9030	9830	10400
Antimony (Sb)	0.10	mg/kg	40	40	0.99	0.89	0.91	0.86	1.37	0.90
Arsenic (As)	0.10	mg/kg	120	12	14.4	11.8	12.3	12.2	20.8	12.6
Barium (Ba)	0.50	mg/kg	2000	2000	327	290	273	255	267	268
Beryllium (Be)	0.10	mg/kg	8	8	0.60	0.54	0.52	0.50	0.52	0.55
Bismuth (Bi)	0.20	mg/kg	NV	NV	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20
Boron (B)	5.0	mg/kg	NV	NV	7.4	6.3	<5.0	5.6	6.4	6.5
Cadmium (Cd)	0.020	mg/kg	22	22	0.530	0.479	0.489	0.487	0.517	0.487
Calcium (Ca)	50	mg/kg	NV	NV	39300	38500	41200	45800	46200	36800
Chromium (Cr)	0.50	mg/kg	87	87	23.1	20.4	17.9	18.0	20.5	20.7
Hydrocarbons (Soil)	0.10	mg/kg	300	300	11.5	9.74	9.82	10.1	11.8	10.4
Copper (Cu)	0.50	mg/kg	91	91	24.5	21.5	22.2	21.7	23.1	21.9
Iron (Fe)	50	mg/kg	NV	NV	27400	23800	24200	23300	24500	24900
Lead (Pb)	0.50	mg/kg	260	260	14.9	13.9	14.4	14.5	18.1	16.9
Lithium (Li)	2.0	mg/kg	NV	NV	14.9	12.8	12.0	11.8	13.1	13.5
Magnesium (Mg)	20	mg/kg	NV	NV	10900	9480	9600	9450	10700	9920
Manganese (Mn)	1.0	mg/kg	NV	NV	474	411	433	396	434	405
Mercury (Hg)	0.0050	mg/kg	24	24	0.0788	0.0709	0.0662	0.0698	0.125	0.0711
Molybdenum (Mo)	0.10	mg/kg	40	40	11.9	10.6	10.5	10.3	11.0	10.5
Nickel (Ni)	0.50	mg/kg	89	50	38.5	33.6	33.7	33.3	39.2	35.1
Phosphorus (P)	50	mg/kg	NV	NV	618	556	563	526	538	537
Potassium (K)	100	mg/kg	NV	NV	1440	1210	1040	1120	1190	1270
Selenium (Se)	0.20	mg/kg	3.9	3.9	1.43	1.15	1.17	1.12	1.30	1.20
Silver (Ag)	0.10	mg/kg	40	40	0.15	0.13	0.13	0.13	0.13	0.14
Sodium (Na)	50	mg/kg	NV	NV	148	131	134	138	141	129
Strontium (Sr)	0.50	mg/kg	NV	NV	73.7	71.3	78.4	85.7	81.2	67.2
Sulfur (S)	1000	mg/kg	NV	NV	1000	<1000	<1000	1300	1000	1000
Thallium (Tl)	0.050	mg/kg	1	1	0.735	0.733	0.688	0.751	0.770	0.804
Tin (Sn)	2.0	mg/kg	100	300	<2.0	<2.0	<2.0	<2.0	<2.0	<2.0
Titanium (Ti)	1.0	mg/kg	NV	NV	66.4	55.7	36.0	49.0	49.1	50.0
Tungsten (W)	0.50	mg/kg	NV	NV	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50
Uranium (U)	0.050	mg/kg	300	NV	2.66	2.46	2.59	2.62	2.47	2.47
Vanadium (V)	0.20	mg/kg	130	130	51.3	44.0	40.8	42.8	43.8	45.1
Zinc (Zn)	2.0	mg/kg	360	360	110	94.9	94.8	94.9	103	99.2
Zirconium (Zr)	1.0	mg/kg	NV	NV	2.9	2.4	2.8	2.9	2.8	2.6

Notes:

- 1 - Type B Water Licence S17L8-
 - 2 - Environmental Guideline for Contaminated Site Remediation, Commercial Land Use, Government of Northwest Territories, November 2003
- NV - No Value
MDL - Method Detection Limit

Table 6: LTU Soil - Metals Analytical

Sample ID	E7	E8	M1	M2	M3	DUP4 (M3)	M4	M5	M6
Date Sampled	16-Jan-2018	16-Jan-2018	16-Jan-2018	16-Jan-2018	16-Jan-2018	16-Jan-2018	16-Jan-2018	16-Jan-2018	16-Jan-2018
ALS Sample ID	L2046505-109	L2046505-110	L2046505-111	L2046505-112	L2046505-113	L2046505-124	L2046505-114	L2046505-115	L2046505-116
Aluminum (Al)	10400	11900	11800	10500	10200	11700	11500	11000	14400
Antimony (Sb)	0.87	0.99	1.02	0.83	0.89	0.90	0.73	0.65	0.77
Arsenic (As)	13.7	17.0	13.5	12.2	13.4	14.2	13.4	14.7	18.4
Barium (Ba)	276	271	301	262	259	275	247	227	292
Beryllium (Be)	0.56	0.54	0.61	0.55	0.50	0.57	0.56	0.55	0.65
Bismuth (Bi)	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20
Boron (B)	7.1	7.4	7.3	6.5	<5.0	6.1	5.9	<5.0	6.1
Cadmium (Cd)	0.453	0.459	0.495	0.451	0.447	0.439	0.404	0.354	0.345
Calcium (Ca)	36200	33400	27800	26800	29200	27200	34700	36800	36100
Chromium (Cr)	20.3	22.5	22.9	20.5	20.2	23.6	21.3	21.9	27.7
Hydrocarbons (Soil)	10.1	11.0	11.2	10.4	10.8	11.5	10.6	10.9	13.1
Copper (Cu)	21.1	21.3	23.2	21.4	22.4	23.7	20.5	19.4	23.1
Iron (Fe)	26200	25900	26500	25000	25000	26800	26500	27700	33400
Lead (Pb)	15.8	16.7	25.4	14.6	19.8	23.4	24.2	28.9	25.7
Lithium (Li)	13.6	14.4	14.7	13.8	13.8	14.9	14.9	15.4	18.2
Magnesium (Mg)	10600	10300	9970	9250	8930	9600	10100	9570	12500
Manganese (Mn)	404	502	460	405	417	481	422	442	558
Mercury (Hg)	0.0768	0.0760	0.0700	0.0729	0.0669	0.0720	0.0616	0.0675	0.0710
Molybdenum (Mo)	9.84	7.94	12.3	9.03	8.85	8.68	7.09	4.88	3.99
Nickel (Ni)	34.4	35.1	38.2	34.3	36.8	39.5	34.2	33.7	40.5
Phosphorus (P)	525	477	532	500	544	516	503	512	623
Potassium (K)	1310	1370	1460	1290	1030	1280	1170	940	1250
Selenium (Se)	1.16	0.98	1.42	1.17	1.03	1.12	0.80	0.60	0.69
Silver (Ag)	0.13	0.13	0.15	0.13	0.16	0.15	0.18	0.16	0.16
Sodium (Na)	133	119	134	117	106	124	97	94	110
Strontium (Sr)	66.9	64.1	62.0	48.3	49.8	54.2	56.5	55.6	56.1
Sulfur (S)	<1000	<1000	1200	<1000	<1000	<1000	<1000	<1000	<1000
Thallium (Tl)	0.663	0.619	0.836	0.665	0.666	0.680	0.511	0.382	0.348
Tin (Sn)	<2.0	<2.0	<2.0	<2.0	<2.0	<2.0	<2.0	<2.0	<2.0
Titanium (Ti)	50.6	63.5	<65	<54	<36	<58	52.6	38.2	49.4
Tungsten (W)	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50
Uranium (U)	2.52	2.03	2.80	2.36	2.32	2.22	1.76	1.37	1.44
Vanadium (V)	45.9	47.1	52.7	45.6	42.3	48.0	44.1	41.7	54.0
Zinc (Zn)	96.4	96.9	105	94.4	102	105	94.5	95.1	108
Zirconium (Zr)	2.5	2.4	3.0	2.6	2.6	2.7	2.3	2.5	2.7

Notes:

- 1 - Type B Water Licence S17L8-
- 2 - Environmental Guideline for Co
Government of Northwest Terri
- NV - No Value
- MDL - Method Detection Limit

Table 6: LTU Soil - Metals Analytical

Sample ID	M7	W1	W2	DUP3 (W2)	W3	W4	W5
Date Sampled	16-Jan-2018	16-Jan-2018	16-Jan-2018	16-Jan-2018	16-Jan-2018	16-Jan-2018	16-Jan-2018
ALS Sample ID	L2046505-117	L2046505-118	L2046505-119	L2046505-123	L2046505-120	L2046505-121	L2046505-122
Aluminum (Al)	11900	12900	13100	10500	12600	12600	12400
Antimony (Sb)	0.64	0.88	0.81	0.72	0.69	0.75	0.64
Arsenic (As)	14.7	14.2	15.5	15.5	18.1	35.0	15.1
Barium (Ba)	238	284	293	258	282	261	237
Beryllium (Be)	0.54	0.57	0.61	0.52	0.60	0.58	0.56
Bismuth (Bi)	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20
Boron (B)	6.2	7.0	7.2	<5.0	5.8	6.6	7.0
Cadmium (Cd)	0.309	0.464	0.462	0.397	0.317	0.319	0.231
Calcium (Ca)	33500	28500	27600	33500	32000	28200	38700
Chromium (Cr)	22.6	23.2	23.8	22.2	23.8	24.3	23.6
Hydrocarbons (Soil)	10.5	11.5	11.7	10.6	11.3	11.7	10.4
Copper (Cu)	19.3	22.7	22.3	20.9	20.5	19.3	18.9
Iron (Fe)	28300	27000	28400	26200	27900	27900	28600
Lead (Pb)	18.9	15.3	17.6	22.1	22.6	24.6	20.8
Lithium (Li)	14.8	15.3	16.2	14.2	15.6	15.7	15.4
Magnesium (Mg)	9450	10300	9790	10800	9980	9990	10300
Manganese (Mn)	464	447	463	482	501	513	482
Mercury (Hg)	0.0506	0.0637	0.0723	0.0636	0.0586	0.0754	0.0471
Molybdenum (Mo)	3.77	9.56	8.07	6.18	4.09	2.76	2.37
Nickel (Ni)	32.2	37.9	37.0	33.3	34.8	33.0	31.6
Phosphorus (P)	517	558	568	505	549	499	465
Potassium (K)	1120	1460	1550	930	1290	1260	1100
Selenium (Se)	0.56	1.14	0.92	0.82	0.61	0.43	0.40
Silver (Ag)	0.11	0.14	0.13	0.11	0.12	0.17	0.12
Sodium (Na)	100	120	117	97	98	100	98
Strontium (Sr)	54.4	55.5	55.1	52.0	54.3	46.4	57.0
Sulfur (S)	<1000	<1000	<1000	<1000	<1000	<1000	<1000
Thallium (Tl)	0.331	0.675	0.609	0.465	0.380	0.293	0.263
Tin (Sn)	<2.0	<2.0	<2.0	<2.0	<2.0	<2.0	<2.0
Titanium (Ti)	55.6	67.7	64.4	<36	51.3	54.1	56.7
Tungsten (W)	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50
Uranium (U)	1.21	2.29	2.07	1.68	1.32	0.982	0.876
Vanadium (V)	45.4	50.5	51.8	39.9	47.0	47.3	46.8
Zinc (Zn)	92.5	105	108	92.7	96.3	90.0	86.8
Zirconium (Zr)	2.2	2.6	2.6	2.4	2.3	2.2	2.1

Notes:

- 1 - Type B Water Licence S17L8-
- 2 - Environmental Guideline for Co
Government of Northwest Terri
- NV - No Value
- MDL - Method Detection Limit

Table 7: LTU Soil - PFAS Analytical Results

Sample ID	MDL	Units	Water Licence Criteria ¹	11S	11D	12S	12D	13S	13D	14S	14D	DUP 3	
Date Sampled				8-Jul-17	8-Jul-17	8-Jul-17	8-Jul-17	8-Jul-17	8-Jul-17	8-Jul-17	8-Jul-17	8-Jul-17	8-Jul-17
ALS Sample ID				ESQ209	ESQ210	ESQ211	ESQ212	ESQ213	ESQ214	ESQ215	ESQ216	ESQ217	
Perfluorobutane Sulfonate (PFBS)	ug/kg	1.0	NV	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	
Perfluorobutanoic acid	ug/kg	1.0	NV	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	
Perfluorodecane Sulfonate	ug/kg	1.0	NV	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	
Perfluorodecanoic Acid (PFDA)	ug/kg	1.0	NV	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	
Perfluorododecanoic Acid (PFDoA)	ug/kg	1.0	NV	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	
Perfluoroheptane sulfonate	ug/kg	1.0	NV	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	
Perfluoroheptanoic Acid (PFHpA)	ug/kg	1.0	NV	<1.0	<1.0	<1.0	<1.0	1.2	1.6	<1.0	<1.0	<1.0	
Perfluorohexane Sulfonate (PFHxS)	ug/kg	1.0	NV	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	
Perfluorohexanoic Acid (PFHxA)	ug/kg	1.0	NV	<1.0	<1.0	<1.0	<1.0	1.2	1.8	<1.0	<1.0	<1.0	
Perfluoro-n-Octanoic Acid (PFOA)	ug/kg	1.0	NV	<1.0	<1.0	<1.0	<1.0	1.9	2.6	<1.0	<1.0	<1.0	
Perfluorononanoic Acid (PFNA)	ug/kg	1.0	NV	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	
Perfluorooctane Sulfonamide (PFOSA)	ug/kg	1.0	NV	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	
Perfluorooctane Sulfonate (PFOS)	ug/kg	1.0	210	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	
Perfluoropentanoic Acid (PFPeA)	ug/kg	1.0	NV	<1.0	<1.0	<1.0	<1.0	1.5	2.2	1.5	<1.0	<1.0	
Perfluorotetradecanoic Acid	ug/kg	1.0	NV	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	
Perfluorotridecanoic Acid	ug/kg	1.0	NV	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	
Perfluorou<1.0ecanoic Acid (PFUnA)	ug/kg	1.0	NV	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	
PFOS/PFOA Screening Approach (≤ 1) ²	N/A	N/A	NV	N/A	N/A	N/A	N/A	0.0015	0.0020	N/A	N/A	N/A	

Notes:

- 1 - Type B Water Licence S17L8-003 & Type A Land Use Permit S17X-004
- 2 - Health Canada's recommended screening approach when both PFOS and PFOA concentrations are detected

NV - No Value
MDL - Method Detection Limit

ATTACHMENT B
Background Soil Chemistry Tables



Table 1. Background Soil - Metals Analytical Results

Sample ID	MDL	Units	GNWT ¹	Water Licence Criteria ²	TP1SS1	TP1SS2	TP2SS1	TP2SS2	TP3SS1	TP3SS2	TP3SS3	TP4SS1	TP4SS2	
Date Sampled					26-Jun-2018	26-Jun-2018	26-Jun-2018	26-Jun-2018	26-Jun-2018	26-Jun-2018	26-Jun-2018	26-Jun-2018	26-Jun-2018	26-Jun-2018
ALS Sample ID					L2120846-1	L2120846-2	L2120846-3	L2120846-4	L2120846-5	L2120846-6	L2120846-7	L2120846-8	L2120846-9	
Arsenic (As)	0.10	mg/kg	12	120	12.0	9.4	8.5	8.4	9.8	12.6	12.0	7.7	7.2	

Notes:

14 Exceeds GNWT Criteria

1 - Environmental Guideline for Contaminated Site Remediation, Commercial Land Use, Government of Northwest Territories, November 2003

2 - Type B Water Licence S17L8-003 & Type A Land Use Permit S17X-004

NV - No Value

MDL - Method Detection Limit

Table 1. Background Soil - Metals Analytical Results

Sample ID	MDL	Units	GNWT ¹	Water Licence Criteria ²	TP5SS1	TP5SS2	TP6SS1	TP6SS2	TP7SS1	TP7SS2	TP8SS1	TP8SS2	TP8SS3	
Date Sampled					26-Jun-2018	26-Jun-2018	26-Jun-2018	26-Jun-2018	26-Jun-2018	26-Jun-2018	26-Jun-2018	26-Jun-2018	26-Jun-2018	26-Jun-2018
ALS Sample ID					L2120846-10	L2120846-11	L2120846-12	L2120846-13	L2120846-14	L2120846-15	L2120846-16	L2120846-17	L2120846-18	
Arsenic (As)	0.10	mg/kg	12	120	9.3	9.0	9.1	10.0	8.4	16.6	9.4	7.5	9.0	

Notes:

14 Exceeds GNWT Criteria

1 - Environmental Guideline for Contaminated Site Remediation, Commercial Land Use, Government of Northwest Territories, November 2003

2 - Type B Water Licence S17L8-003 & Type A Land Use Permit S17X-004

NV - No Value

MDL - Method Detection Limit

Table 1. Background Soil - Metals Analytical Results

Sample ID	MDL	Units	GNWT ¹	Water Licence Criteria ²	TP9SS1	TP9SS2	TP10SS1	TP10SS2	TP11SS1	TP11SS2	TP11SS3	TP12SS1	TP12SS2	
Date Sampled					27-Jun-2018	27-Jun-2018	27-Jun-2018	27-Jun-2018	27-Jun-2018	27-Jun-2018	27-Jun-2018	27-Jun-2018	27-Jun-2018	27-Jun-2018
ALS Sample ID					L2120846-19	L2120846-20	L2120846-21	L2120846-22	L2120846-23	L2120846-24	L2120846-25	L2120846-26	L2120846-27	
Arsenic (As)	0.10	mg/kg	12	120	7.4	9.0	9.5	7.7	9.6	8.7	8.6	10.4	8.6	

Notes:

14 Exceeds GNWT Criteria

1 - Environmental Guideline for Contaminated Site Remediation, Commercial Land Use, Government of Northwest Territories, November 2003

2 - Type B Water Licence S17L8-003 & Type A Land Use Permit S17X-004

NV - No Value

MDL - Method Detection Limit

Table 1. Background Soil - Metals Analytical Results

Sample ID	MDL	Units	GNWT ¹	Water Licence Criteria ²	TP13SS1	TP13SS2	TP14SS1	TP14SS2	TP15SS1	TP15SS2	TP16SS1	TP16SS2	
Date Sampled					27-Jun-2018	27-Jun-2018	27-Jun-2018	27-Jun-2018	27-Jun-2018	27-Jun-2018	27-Jun-2018	27-Jun-2018	27-Jun-2018
ALS Sample ID					L2120846-28	L2120846-29	L2120846-30	L2120846-31	L2120846-32	L2120846-33	L2120846-34	L2120846-35	
Arsenic (As)	0.10	mg/kg	12	120	7.8	8.8	9.9	8.6	7.9	6.1	9.4	7.4	

Notes:

14 Exceeds GNWT Criteria

1 - Environmental Guideline for Contaminated Site Remediation, Commercial Land Use, Government of Northwest Territories, November 2003

2 - Type B Water Licence S17L8-003 & Type A Land Use Permit S17X-004

NV - No Value

MDL - Method Detection Limit

ATTACHMENT C
Effluent Discharge Chemistry Tables



Table 1. Effluent Discharge - BTEX and PHC

Sample ID	MDL	Units	Water Licence Criteria ¹	SW1	TRIP BLANK
Date Sampled				27-Jun-2018	27-Jun-2018
ALS Sample ID				L2120779-1	L2120779-1
Volatile Organic Compounds					
Benzene	0.00	mg/L	0.37	<0.00050	<0.00050
Ethylbenzene	0.00	mg/L	0.09	<0.00050	<0.00050
Methyl t-butyl ether (MTBE)	0.00	mg/L	NV	<0.00050	<0.00050
Styrene	0.00	mg/L	0.072	<0.00050	<0.00050
Toluene	0.000	mg/L	0.002	<0.00045	<0.00045
ortho-Xylene	0.00	mg/L	NV	<0.00050	<0.00050
meta- & para-Xylene	0.00	mg/L	NV	<0.00050	<0.00050
Xylenes	0.00	mg/L	3.9	<0.00075	<0.00075
Hydrocarbons					
F1 (C6-C10)	0.10	mg/L	0.81	<0.10	N/A
F1-BTEX	0.10	mg/L	NV	<0.10	N/A
F2 (C10-C16)	0.30	mg/L	1.3	<0.30	N/A
F3 (C16-C34)	0.30	mg/L	NV	<0.30	N/A
F4 (C34-C50)	0.300	mg/L	NV	<0.30	N/A

Notes:

1 - Type B Water Licence S17L8-003

ND - Not Detected

NV - No Value

N/A - Not Analyzed

MDL - Method Detection Limit

Table 2. Effluent Discharge - Metals

Sample ID	MDL	Units	Water Licence Criteria ¹	SW1
Date Sampled				27-Jun-2018
ALS Sample ID				L2120779-1
Dissolved Metals				
Calcium (Ca)-Dissolved	0.10	mg/L	NV	41.4
Magnesium (Mg)-Dissolved	0.00	mg/L	NV	26
Speciated Metals				
Chromium (III)-Total	0.00010	mg/L	0.0089	0.00014
Hexavalent Chromium	0.00050	mg/L	0.001	<0.00050
Methylmercury (as MeHg)-Total	0.000020	ug/L	0.004	0.000207
Total Metals				
Aluminum (Al)-Total	0.00	mg/L	0.1	0.0369
Antimony (Sb)-Total	0.00	mg/L	0.006	0.00024
Arsenic (As)-Total	0.00	mg/L	0.005	0.00200
Barium (Ba)-Total	0.00	mg/L	1	0.0534
Beryllium (Be)-Total	0.000	mg/L	0.0053	<0.00010
Bismuth (Bi)-Total	0.000	mg/L	NV	<0.000050
Boron (B)-Total	0.010	mg/L	1.5	0.053
Cadmium (Cd)-Total	0.000	mg/L	0.001	0.0000056
Calcium (Ca)-Total	0.050	mg/L	NV	40.9
Cesium (Cs)-Total	0.000	mg/L	NV	<0.000010
Chromium (Cr)-Total	0.000	mg/L	NV	0.00014
Cobalt (Co)-Total	0.000	mg/L	0.05	0.00011
Copper (Cu)-Total	0.001	mg/L	0.004 ³	0.00119
Iron (Fe)-Total	0.010	mg/L	0.3	0.104
Lead (Pb)-Total	0.000	mg/L	0.007 ³	0.000094
Lithium (Li)-Total	0.001	mg/L	NV	0.0013
Magnesium (Mg)-Total	0.005	mg/L	NV	26.3
Manganese (Mn)-Total	0.000	mg/L	0.05	0.0247
Mercury (Hg)-Total	0.000	mg/L	0.000026	<0.0000050
Molybdenum (Mo)-Total	0.000	mg/L	0.073	0.00364
Nickel (Ni)-Total	0.001	mg/L	0.007 ³	0.00111
Phosphorus (P)-Total	0.050	mg/L	NV	<0.050
Potassium (K)-Total	0.050	mg/L	NV	1.14
Rubidium (Rb)-Total	0.000	mg/L	NV	0.00027
Selenium (Se)-Total	0.000	mg/L	0.001	0.000212
Silicon (Si)-Total	0.100	mg/L	NV	0.2
Silver (Ag)-Total	0.000	mg/L	0.00025	<0.000010
Sodium (Na)-Total	0.050	mg/L	NV	7.46
Strontium (Sr)-Total	0.000	mg/L	NV	0.117
Sulfur (S)-Total	0.500	mg/L	NV	47.4
Tellurium (Te)-Total	0.000	mg/L	NV	<0.00020
Thallium (Tl)-Total	0.000	mg/L	NV	0.000011
Thorium (Th)-Total	0.000	mg/L	NV	<0.00010
Tin (Sn)-Total	0.000	mg/L	NV	0.00011
Titanium (Ti)-Total	0.000	mg/L	NV	0.00034
Tungsten (W)-Total	0.000	mg/L	NV	<0.00010
Uranium (U)-Total	0.000	mg/L	0.02	0.00225
Vanadium (V)-Total	0.001	mg/L	0.1	<0.00050
Zinc (Zn)-Total	0.003	mg/L	0.03	<0.0030
Zirconium (Zr)-Total	0.000	mg/L	NV	<0.000060

Notes:

1 - Type B Water Licence S17L8-003

ND - Not Detected

NV - No Value

N/A - Not Analyzed

MDL - Method Detection Limit



Table 3. Effluent Discharge - PAH and PCB

Sample ID	MDL	Units	Water Licence Criteria ¹	SW1
Date Sampled				27-Jun-2018
ALS Sample ID				L2120779-1
Polycyclic Aromatic Hydrocarbons				
Acenaphthene	0.00001	mg/L	0.0058	<0.000010
Acenaphthylene	0.00001	mg/L	0.046	<0.000010
Acridine	0.00001	mg/L	NV	<0.000010
Anthracene	0.00001	mg/L	0.000012	<0.000010
Benz(a)anthracene	0.00001	mg/L	0.000018	<0.000010
Benzo(a)pyrene	0.000005	mg/L	0.000017	<0.0000050
Benzo(b&j)fluoranthene	0.00001	mg/L	0.00048	<0.000010
Benzo(b+j+k)fluoranthene	0.000015	mg/L	NV	<0.000015
Benzo(g,h,i)perylene	0.00001	mg/L	NV	<0.000010
Benzo(k)fluoranthene	0.00001	mg/L	NV	<0.000010
Chrysene	0.00001	mg/L	0.0014	<0.000010
Dibenz(a,h)anthracene	0.000005	mg/L	0.00028	<0.0000050
Fluoranthene	0.00001	mg/L	0.00004	<0.000010
Fluorene	0.00001	mg/L	0.003	<0.000010
Indeno(1,2,3-c,d)pyrene	0.00001	mg/L	0.00023	<0.000010
1-Methylnaphthalene	0.00005	mg/L	NV	<0.000050
2-Methylnaphthalene	0.00005	mg/L	NV	<0.000050
Naphthalene	0.00005	mg/L	0.0011	<0.000050
Phenanthrene	0.00002	mg/L	0.0004	<0.000020
Pyrene	0.00001	mg/L	0.000025	<0.000010
Quinoline	0.00005	mg/L	NV	<0.000050
Polychlorinated Biphenyls				
PCB-1016	0.0010	mg/L	NV	<0.0010
PCB-1221	0.0010	mg/L	NV	<0.0010
PCB-1232	0.0010	mg/L	NV	<0.0010
PCB-1242	0.0010	mg/L	NV	<0.0010
PCB-1248	0.0010	mg/L	NV	<0.0010
PCB-1254	0.0010	mg/L	NV	<0.0010
PCB-1260	0.0010	mg/L	NV	<0.0010
PCB-1262	0.0010	mg/L	NV	<0.0010
PCB-1268	0.0010	mg/L	NV	<0.0010
Total Polychlorinated Biphenyls	0.0010	mg/L	0.0094	<0.0010

Notes:

1 - Type B Water Licence S17L8-003

ND - Not Detected

NV - No Value

N/A - Not Analyzed

MDL - Method Detection Limit

Table 4. Effluent Discharge - General Chemistry, Organics, Anions, and Nutrients

Sample ID	MDL	Units	Water Licence Criteria ¹	SW1
Date Sampled				27-Jun-2018
ALS Sample ID				L2120779-1
Physical				
Hardness (as CaCO ₃)	0.5	mg/L	NV	209
pH	0.1	pH	6.5-8.5	8.21
Anions and Nutrients				
Ammonia, Total (as N)	0.005	mg/L	0.715 ³	<0.0050
Nitrate and Nitrite (as N)	0.0051	mg/L	100	<0.0051
Nitrate (as N)	0.005	mg/L	13	<0.0050
Nitrite (as N)	0.001	mg/L	0.06	<0.0010
Phosphorus (P)-Total	0.002	mg/L	NV	0.0143
Phenols				
Phenols (4AAP)	0.001	mg/L	0.004	<0.0010

Notes:

1 - Type B Water Licence S17L8-003

NV - No Value

MDL - Method Detection Limit

Table 5. Effluent Discharge - Per and Polyfluoroalkyl Substances

Sample ID	MDL	Units	Water Licence Criteria ¹	SW1
Date Sampled				27-Jun-2018
Maxxam Sample ID				HCP161
Polycyclic Aromatic Hydrocarbons				
Perfluorobutanoic Acid	0.0055	ug/L	NV	0.049
Perfluorobutane Sulfonate (PFBS)	0.0054	ug/L	NV	< 0.0054
Perfluorodecane Sulfonate	0.006	ug/L	NV	< 0.006
Perfluoroheptanoic Acid (PFHpA)	0.0074	ug/L	NV	0.03
Perfluoroheptane sulfonate ug/L	0.008	ug/L	NV	< 0.008
Perfluorohexanoic Acid (PFHxA)	0.0035	ug/L	NV	0.069
Perfluorohexane Sulfonate (PFHxS)	0.0056	ug/L	NV	< 0.0056
Perfluorononanoic Acid (PFNA)	0.0087	ug/L	NV	< 0.0087
Perfluoropentanoic Acid (PFPeA)	0.0075	ug/L	NV	0.16
Perfluorotetradecanoic Acid	0.0027	ug/L	NV	< 0.0027
Perfluorotridecanoic Acid	0.0038	ug/L	NV	< 0.0038
Perfluoroundecanoic Acid (PFUnA)	0.0025	ug/L	NV	< 0.0025
Perfluorodecanoic Acid (PFDA) ug/L	0.0061	ug/L	NV	< 0.0061
Perfluorododecanoic Acid (PFDoA)	0.005	ug/L	NV	< 0.005
Perfluoro-n-Octanoic Acid (PFOA)	0.0033	ug/L	NV	< 0.0033
Perfluorooctane Sulfonate (PFOS)	0.006	ug/L	6.8	< 0.006

Notes:

1 - Type B Water Licence S17L8-003

NV - No Value

MDL - Method Detection Limit

ATTACHMENT D
Email Authorization for Soil Movement and Water Discharge Locations



From: [Stuart Pope](#)
To: [Dan Tucholski](#)
Cc: [Andrea Jenney](#)
Subject: RE: Tentative Soil Laydown/Stockpile and Sump Discharge Locations
Date: June 29, 2018 12:37:50 PM
Attachments: [image003.png](#)

Good morning,

The sites specified will work just fine, we have no issues at this time. When it come's time to move the soil, I will show you the exact spot to stockpile, to avoid any infringement on the Runway Protected Area.

Have a good long weekend

Stuart Pope
Supervisor Surface and Structures
Department of Infrastructure
Government of the Northwest Territories
Bag service 1000
Norman Wells, NT X0E-0V0
Phone: (867) 587- 2451
Cell: (867)446-4586
Fax: (867)587-2718



This e-mail and all attachments to it are confidential and is intended solely for the use of the person to whom it is addressed. If you have received this message in error, please delete it and any and all attachments to it and notify me immediately by replying to sender.

From: Dan Tucholski [mailto:dtucholski@blumetric.ca]
Sent: Thursday, June 28, 2018 6:16 PM
To: Stuart Pope
Cc: Andrea Jenney
Subject: Tentative Soil Laydown/Stockpile and Sump Discharge Locations

Hi Stuart,

As per our discussion, we would like to discharge in the location shown on the attached figure once we receive laboratory results indicating that the water within the LTU meets criteria. We will install a temporary spillway area consisting of a relatively small tarp and cobbles to slow the water down and

minimize erosion. I have spoken with Trevor Bremner, the acting Sahtu Land and Water Board Inspector, who indicated that the location should be fine as long as there is no erosion and the water isn't running off into an existing body of water. Please confirm with your colleagues at the airport if this location is approved so that I may officially propose it to Trevor for his approval as well.

For the soil within the LTU, once the windrows meet criteria, we would like to remove that soil and place it to the west of the LTU footprint as shown on the attached figure as well. This will allow us to deal with the remaining 0.3 metre of the soil within the LTU, the liner, and the soil beneath the liner. The idea is that the soil in the windrows will eventually be used to help backfill the footprint of the LTU.

Please let me know if this all sounds accurate from our conversation, if you or your colleagues at the airport have any concerns, and if these discharge and laydown areas are approved.

Regards,



Dan Tucholski, B.A.

Intermediate Environmental Scientist

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