

# Watson Lake Airport APEC 22 Supplemental Site Investigation and RAP/RMP

Watson Lake, Yukon

Prepared For:

Public Works and Government Services Canada - Pacific Region



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# Executive Summary

Azimuth Consulting Group Partnership (Azimuth), in partnership with SNC-Lavalin Inc. (SNC-Lavalin), was retained by Public Works and Government Services Canada (PWGSC) to complete a Supplemental Site Investigation (SSI) and Remedial Action Plan and Remedial Management Plan (RAP/RMP) at areas of potential environmental concern (APECs) 22 A to E at the Watson Lake Airport, Watson Lake, Yukon (the “Site”).

The work reported on herein was conducted under the Contract Task Authorization (CTA) #EZ897-160027/003/PWY, Task Authorization # 700334659. A detailed Scope of Work<sup>1</sup>, dated September 28, 2016, was provided to PWGSC and included proposed tasks, sampling locations and rationale, schedule, and estimate of costs for completion of scope of work for the SSI.

Limited investigations conducted at Areas of Potential Environmental Concern (APECs) 22 A to E in 2006 and 2009 addressed several potential source locations and key parameters regulated by both the *Yukon Contaminated Sites Regulation*<sup>2</sup> (Yukon CSR) and the Canadian Council of Ministers of the Environment (CCME). At the time, the intent of the investigations was to provide a preliminary assessment of the APECs, as well as providing supporting data for funding purposes. The purpose of the Supplemental Site Investigation (SSI) was to further assess soil and groundwater quality with respect to the Yukon CSR at APECs 22 A to E. The SSI included soil and groundwater sampling for potential contaminants of concern (PCOCs) associated with former fuel underground and above ground storage tanks (USTs/ASTs), former garage activities, and product storage (i.e., drums and paint).

Based on the results from ESAs conducted in 2006, 2009 and 2016 at APECs 22 A to E, COCs were detected in both soil and groundwater at concentrations above their respective regulatory standards, as summarized in the table below. As such, these locations were considered Areas of Environmental Concern (AECs).

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<sup>1</sup> Scope of Work and Cost Estimate: APEC 22 Supplemental Site Investigation at the Watson Lake Airport, Watson Lake, YT. SNC-Lavalin, September 28, 2016.

<sup>2</sup> Yukon Environment Act, *Contaminated Sites Regulations* (CSR), Yukon Reg. 2002/171, dated August 5, 2002.



AEC #	COCs Identified	Location	Estimated Area (m <sup>2</sup> )	Estimated Thickness (m)	Approximate Volume of Impacted Soil (m <sup>3</sup> )
<b>On-Site AECs</b>					
22B	<b>Soil:</b> CWS F2 (3.0 – 3.8 m) <b>Groundwater:</b> none	22B-MW06-3	200	1.5	300
	<b>Soil:</b> none <b>Groundwater:</b> Mn (background). No PHC exceedances in soil or gw at this location	MW09-22B-7	-	-	-
Sub-Total AEC 22B					300
22E	<b>Soil:</b> LEPH (3.7 – 4.0 m) <b>Groundwater:</b> none	22E-BH16-6-2	500	1	500
	<b>Soil:</b> none <b>Groundwater:</b> Mn (background). No PHC exceedances in soil or gw at this location	MW09-22E-4	-	-	-
Sub-Total AEC 22E					500
<b>Sub-Total On-Site</b>					<b>800</b>
<b>Off-Site AECs</b>					
22A	<b>Soil:</b> CWS F4 (2.4 – 3.0 m) <b>Groundwater:</b> none	22A-MW06-1	250	1	250
	<b>Soil:</b> EPH <sub>C10-C19</sub> (2.7 – 2.9 m) <b>Groundwater:</b> LEPHw	MW09-22A-15	940	1	940
	<b>Soil:</b> none <b>Groundwater:</b> Mn, Fe (background). No PHC exceedances in soil or gw at this location	MW09-22A-19	-	-	-
	<b>Soil:</b> Arsenic (0.3 – 0.5 m) <b>Groundwater:</b> none	22A-BH16-28	20	0.5	10
	<b>Soil:</b> none <b>Groundwater:</b> LEPHw (slightly above standard. Re-sampling recommended to confirm or refute result)	22A-MW16-30	-	-	-
Sub-Total AEC 22A					1,200
22C	<b>Soil:</b> none <b>Groundwater:</b> Fe (background). No PHC exceedances in soil or gw at this location	22C-MW06-2	-	-	-
	<b>Soil:</b> none <b>Groundwater:</b> Mn (background). No PHC exceedances in soil or gw at this location	MW09-22C-14 MW09-22C-22	-	-	-



AEC #	COCs Identified	Location	Estimated Area (m <sup>2</sup> )	Estimated Thickness (m)	Approximate Volume of Impacted Soil (m <sup>3</sup> )
<b>Off-Site AECs (Cont'd)</b>					
22C Cont'd)	<b>Soil:</b> Arsenic (2.7 – 2.9 m) <b>Groundwater:</b> none	BH09-22C-20	20	0.5	10
	<b>Soil:</b> none <b>Groundwater:</b> benzo(a)pyrene (slightly above standard. Re-sampling recommended to confirm or refute result)	22C-MW16-29	-	-	-
	<b>Soil:</b> LEPH (2.9 – 3.2 m) <b>Groundwater:</b> none	22C-BH16-30-2	490	1	490
Sub-Total AEC 22C					500
22D	<b>Soil:</b> CWS F2 (2.1 – 3.0 m) <b>Groundwater:</b> none	22D-MW06-2	265	1.5	400
	<b>Soil:</b> LEPH (1.2 – 1.5 m) <b>Groundwater:</b> none	22D-MW16-9	600	1	600
Sub-Total AEC 22D					1,000
<b>Sub-Total Off-Site</b>					<b>2,700</b>
<b>TOTAL AEC 22</b>					<b>3,500</b>

LEPH, F2, F4 and metals were identified as COCs in soil, and LEPHw was identified as a COC in groundwater in well MW09-22A-15. LEPHw in well 22A-MW16-30 and benzo(a)pyrene in well 22C-MW16-29 were reported at concentrations slightly above the applicable standards; however, re-sampling of these wells is recommended to confirm or refute these parameters as COCs at the specified locations. Iron and manganese exceedances in groundwater at AEC 22 were identified at locations with no hydrocarbon impact and may be related to a background condition of the local aquifer. Therefore, iron and manganese elevated concentrations in groundwater will be addressed as part of a background study and/or risk assessment. The total approximate volume of impacted soil at AECs 22 (A to E) is 3,500 m<sup>3</sup>.

It is important to note that the data obtained in this SSI indicated that contamination in both soil and groundwater has been identified at locations not addressed in previous investigations. These impacts have not been fully delineated and, therefore, the calculated volumes are estimated based on available sample data.

A remedial options analysis was conducted for strategies to remove or treat and risk assess the contaminants in the affected media, as follows:



Remedial Options	Option 1: Excavation of Contamination	Option 2: In Situ Remedial Treatment and Risk Assessment	Option 3: Risk Assessment / Management
Technical Feasibility	Good	Satisfactory	Satisfactory
Timing	Satisfactory	Poor	Poor
Operations and Maintenance	Satisfactory	Poor	Good
Likelihood of Success	Good	Satisfactory	Satisfactory
Estimated Cost	Moderate (\$2,400,000)	Highest (4,000,000)	Lowest (\$800,000) <sup>1</sup>
Liability	Good	Satisfactory	Poor

<sup>1</sup> Estimated cost for additional delineation, Risk Assessment and monitoring only. If excavation of “hot spots” is required, additional remedial costs will be incurred.

Excavation of soil impacts (Option 1) to numerical standards has a moderate cost and the shortest schedule. The removal of contamination also has the lowest liability risk. The option B with in-situ treatment and risk assessment components has the highest cost and potential to require additional mitigation measures and long term monitoring. Risk assessment and risk management is the most cost effective option; however, it has the highest liability risk and it may result in long term monitoring requirements. Additionally, community acceptance can be low for approaches that do not involve removal of contaminants.

Based on the remedial options screening, Option 1 is recommended for remediation of the PHC and metals contamination at AEC 22 due to satisfactory timeline and potential for successful remediation of contaminated soil to numerical standards. Contaminated soil disposal costs can be minimized by treating hydrocarbon impacted soil at the existing on site LTF.

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# 1 Introduction

Azimuth Consulting Group Partnership (Azimuth), in partnership with SNC-Lavalin Inc. (SNC-Lavalin), was retained by Public Works and Government Services Canada (PWGSC) to complete a Supplemental Site Investigation (SSI) at areas of potential environmental concern (APECs) 22 A to E at the Watson Lake Airport, Watson Lake, Yukon (the “Site”). The Watson Lake airport and the APEC locations are illustrated on Drawings 640752-001 and 640752-002, respectively.

The work reported on herein was conducted under the Human Health and Ecological Risk Assessment Contract Task Authorization (CTA) #EZ897-161534/003/VAN from Azimuth with PWGSC, Task Authorization #700364618 (R.084250.001). A detailed Scope of Work<sup>1</sup>, dated September 28, 2016, was provided to PWGSC and included proposed tasks, sampling locations and rationale, schedule, and estimate of costs for completion of scope of work for the SSI.

## 1.1 Background

Aviation activity at the Watson Lake Airport began in the 1930's when the Watson Lake airfield served as a stopping point for Pacific Airlines (CP Airlines). Upon the entrance of the United States into WWII in 1941, the airfield and navigational facilities were expanded. Residences and significant fuelling facilities were constructed at the airport. With the end of the war, and for many years afterwards, came a steady decline in the use of the airport. By 1996, all operations at the airport were reduced and the airport was transferred to the Yukon Territorial Government (YTG). The Yukon Territorial Government currently operates the facility acquired from Transport Canada (TC), formerly the Department of Transport.

Under the direction of PWGSC and TC, previous environmental assessments have been conducted at the Watson Lake airport since 2001, including a Phase I Environmental Site Assessment (ESA) by Gartner Lee Limited (GLL), and Phase I, II and III ESAs by Arcadis Canada (Arcadis, formerly Franz Environmental Inc.). Limited investigations conducted at areas of potential environmental concern (APECs) 22 A to E in 2006 and 2009 addressed several potential source locations and key parameters regulated by both the *Yukon Contaminated Sites Regulation*<sup>2</sup> (Yukon CSR) and the Canadian Council of Ministers of the Environment (CCME). At the time, the intent of the investigations was to provide a preliminary assessment of the APECs, as well as providing supporting data for funding purposes. The Devolution Transfer Agreement allows federal departments to apply, at their discretion, either the CCME guidelines or the Yukon CSR Standards. As a result of discussions between TC and Environment Yukon, the Yukon CSR standards were selected as the assessment and remediation criteria for the Site.

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<sup>1</sup> Scope of Work and Cost Estimate: APEC 22 Supplemental Site Investigation at the Watson Lake Airport, Watson Lake, YT. SNC-Lavalin, September 28, 2016.

<sup>2</sup> Yukon Environment Act, *Contaminated Sites Regulations* (CSR), Yukon Reg. 2002/171, dated August 5, 2002.

## 1.2 Purpose and Scope of Work

The purpose of the SSI was to further assess soil and groundwater quality with respect to the Yukon CSR at APECs 22 A to E.

The SSI included soil and groundwater sampling for potential contaminants of concern (PCOCs) associated with former fuel underground and above ground storage tanks (USTs/ASTs), former garage activities, and product storage (i.e., drums and paint). The results of the investigation were incorporated into a summary of the environmental status of each APEC.

The scope of work conducted by SNC-Lavalin included the following tasks:

- › Review of relevant historical data from previous environmental reports;
- › Field investigation and sampling program planning;
- › Preparation of a site-specific Health and Safety Plan (HASP);
- › Locating aboveground and underground utilities by Quadra Utility Locating (Quadra) of Surrey, BC;
- › Advancement of boreholes and installation of monitoring wells by Omega Environmental & Geotechnical Drilling Ltd. (Omega) of Pitt Meadows, BC;
- › Collection of soil and groundwater samples and submission to Maxxam Analytics Inc. (Maxxam) of Burnaby, BC for laboratory analysis; and
- › Data processing and preparation of the APEC 22 Supplemental Site Investigation Report, which includes a Remedial Action Plan (RAP) and a Risk Management Plan (RMP).

## 2 Site Description

The Watson Lake Airport is situated on the north shore of Watson Lake, approximately 7 km northwest of the Town of Watson Lake. The approximate coordinates of the Site center is 60° 07' North and 128° 46' West. The airport can be accessed from the northeast by an access road off the Robert Campbell Highway (Yukon #4). The airport property has an irregular shape as the current property boundary is primarily formed by the shore of Watson Lake and Yukon #4 Highway. APEC 22 A to D are located in the southwest corner of the airport property, bounded by Watson Lake on the south and west and airport operational areas on the north (see Drawing 640752-002). The APECs are located within an area approximate 750 m by 375 m in size.

### 2.1 Topography

Watson Lake airport lies within the Liard Plain between the Cassiar Mountains to the west and the Simpson Range of the Pelly Mountains to the east. To the south and west of Watson Lake, the land slopes moderately downward to the Liard River (Arcadis 2009). Typical of an airport, the property is essentially level, having an average runway elevation of 685 metres above mean sea level (masl). The water level in Watson Lake lies at an elevation of 680 masl and the ground slopes gently up to a maximum elevation of approximately 705 masl in the northern portion of the airport property. There is on balance a slight slope downward from the north and east to the south and west. A narrow ridge rising 10 m to 12 m above the surrounding land is present in the northeastern portion of the property. To the east and north of the airport land, there is considerable relief and the terrain is almost rugged.

### 2.2 Adjacent Lands

Watson Lake to the south is a relatively shallow water body with considerable marshlands on the western end. It has an area about three times that of the airport property. A large hill about 2 kilometres east of the airport is used for downhill skiing and there is a small lake, Windid Lake, lying a kilometre north of the airport boundary. Lands for more than 5 kilometres to the northwest, west and southwest are uninhabited and undeveloped except for residences beside the lake. A few isolated residences are present to the north and a couple of borrow pits lie north of Highway #4 near the middle of the airport boundary (Arcadis 2009).

### 2.3 General Soil Stratigraphy

Most of the area is reportedly underlain by sedimentary rock, consisting of shale, slate, conglomerate, limestone, chert, argillite and dolomite (Oswald and Senyl, 1997) and to a lesser extent some metamorphic rocks. Three glacial ice advances are known to have covered most of the area during the last ice age resulting in morainal, glaciofluvial and lacustrine deposits (Arcadis 2009).

## 2.4 Regional Hydrogeology

Based on local topography, the regional groundwater regime is inferred to flow from the northeast to southwest towards Watson Lake. Groundwater recharge occurs in the topographical high areas to the northeast from infiltration of precipitation into the ground. A shallow groundwater table was observed to occur in the glaciofluvial sediments between 0.4 m to 5.0 m below ground surface (bgs) (Arcadis 2009). Water supply wells have been reported within the Watson Lake Airport<sup>3</sup> (Drawing 640752-002).

## 2.5 Regional Hydrology

Watson Lake drains directly into the Liard River. The Liard River and its tributaries provide drainage to the southeast and eventually discharge into the MacKenzie River. Some local shallow ditches around the airport grounds control local drainage. A creek located in the northeast of the site drains Windit Lake through to Watson Lake (Arcadis 2009).

## 2.6 Climate

The climate normals for Watson Lake Airport indicate that the average yearly total precipitation is 413.8 mm and the mean daily temperature varies between -25° C in January to +15° C in July (Arcadis 2009).

## 2.7 Areas of Potential Environmental Concern (APECs)

The proposed work was designed to further assess APECs 22 A to E at the Watson Lake Airport. A summary of these APECs and associated PCOCs are presented in Table A.

**Table A: APECs 22 A to E Historic Military Base and Associated PCOCs**

APEC	Description	PCOCs	Yukon CSR Regulated Parameters	
			Soil	Groundwater
APEC 22A	Former residential and storage buildings and former barracks	heating oil ASTs	BETX, VPH, LEPH/HEPH, PAH, metals	BTEX, VPHw, VHW <sub>6-10</sub> , LEPHw, EPHw, PAH, dissolved metals
APEC 22B	Former storage, fire hall and recreation buildings, and air terminal building	heating oil USTs/ASTs, waste oil, lubricants, solvents	BETX, VPH, LEPH/HEPH, PAH, VOC, metals	BTEX, VPHw, VHW <sub>6-10</sub> , LEPHw, EPHw, PAH, VOC, dissolved metals

<sup>3</sup> Environment Yukon, provided by Groundwater Information Network website ([http://gin.gw-info.net/service/api\\_nqws:gin2/en/wmc/standard.html](http://gin.gw-info.net/service/api_nqws:gin2/en/wmc/standard.html)), and *Phase II and III Environmental Site Assessment* (Arcadis, 2006).

**Table A (Cont'd): APECs 22 A to E Historic Military Base and Associated PCOCs**

APEC	Description	PCOCs	Yukon CSR Regulated Parameters	
			Soil	Groundwater
APEC 22C	Former barracks, garage, hydrogenerator building, tank (for fuelling float planes or boats) and residential buildings	heating oil USTs/ASTs, hydrogenerator sludge, aviation fuel, gasoline, diesel, waste oil, lubricants, solvents	BETX, VPH, LEPH/HEPH, PAH, VOC, metals	BTEX, VPHw, VHW <sub>6-10</sub> , LEPHw, EPHw, PAH, VOC, dissolved metals
APEC 22D	Former drum and paint storage buildings, former warehouse, dispensary and residences	heating oil USTs/ASTs, waste oil, diesel, gasoline, lubricants, solvents	BETX, VPH, LEPH/HEPH, PAH, VOC, metals	BTEX, VPHw, VHW <sub>6-10</sub> , LEPHw, EPHw, PAH, VOC, dissolved metals
APEC 22E	Former garages and oil storage shed	heating oil USTs/ASTs, waste oil, diesel, gasoline, lubricants, solvents	BETX, VPH, LEPH/HEPH, PAH, VOC, metals	BTEX, VPHw, VHW <sub>6-10</sub> , LEPHw, EPHw, PAH, VOC, dissolved metals

BTEX = benzene, toluene, ethylbenzene, and xylenes  
 EPHw = extractable petroleum hydrocarbons in water  
 VHW<sub>6-10</sub> = volatile hydrocarbon in water  
 VPHw = volatile petroleum hydrocarbon in water  
 VOC = volatile organic compound

VPH = volatile petroleum hydrocarbon  
 LEPHw = light extractable petroleum hydrocarbons in water  
 HEPH = heavy extractable petroleum hydrocarbons  
 PAH = polycyclic aromatic hydrocarbons



## 3 Regulatory Framework

The following is a review of the relevant regulatory standards applicable at the time this report was prepared. The PCOCs for each APEC were assessed by the analysis of soil and groundwater and were compared to standards contained in the following territorial regulation:

- › Yukon Environment Act, *Contaminated Sites Regulations* (CSR), Yukon Reg. 2002/171, dated August 5, 2002.

The Yukon government passed the CSR under the Act in 1996 to protect human health and the environment from harmful effects of contaminants in soil and water. In 2002, amendments to the Yukon CSR were passed to enable the use of complex approaches to restoration, as well as to make the regulations more consistent with other provincial jurisdictions, particularly British Columbia.

### 3.1 Soil

The soil analytical results were compared to the Yukon CSR commercial land use (CL) standards for APECs 22 B and E (areas located within the current airport boundary), and for APECs A, C, and D (areas located offsite). According to information provided by PWGSC, offsite areas remain within the airport zoning classification; therefore, commercial land has been assumed for data comparison for the entire APEC 22. For a given contaminant, the Yukon CSR provides either generic or matrix standards for soils. Generic standards (Schedule 1) are based on land use, while matrix standards (Schedule 2) are based on a series of site-specific factors. The following site-specific factors are applicable to the APECs:

- › Human Health – intake of contaminated soil (mandatory for all APECs);
- › Human Health – groundwater use for drinking water (for all APECs);
- › Environmental Protection – toxicity to soil invertebrates and plants (mandatory for all APECs); and
- › Environmental Protection – groundwater flow to surface water used by aquatic life (for all APECs).

The lowest value of these site-specific factors (i.e., the most stringent standard) was applied for comparison with the analytical results, providing the most conservative approach to characterizing soil conditions.

### 3.2 Groundwater

There are two site-specific factors which are applicable to the APECs with respect to groundwater impacts, as described below:

- › Human Health – Groundwater used for drinking water (DW) for all APECs; and
- › Environmental Protection – Groundwater flow to surface water used by freshwater aquatic life (AW) for all APECs.

When applicable, the more stringent of the two site-specific factors noted above was used for comparison against the analytical data. Environment Yukon guidance specifies that AW standards are applicable to sites where surface water supporting aquatic life is located within a 50-year travel time of the leading edge of a contaminated groundwater plume. This generally correlates to a 1 km distance. Therefore, AW standards are considered generally applicable to sites where surface water is located within a 1 km radius of the site.

Using a similar approach, the Environment Yukon specifies that the DW standards apply to sites where the leading edge of a contaminated groundwater plume is within a 100-year travel time of an existing or probable future drinking water source. This correlates to surface water used as a drinking water source (and by default water wells) located within a 1.5 km radius of the site.

In view of the guidance mentioned above and based on the site-specific hydrogeological conditions, it is assumed that groundwater discharging from all identified areas could potentially intersect Watson Lake within 50 years. Furthermore, considering the location of existing drinking water intakes (i.e., water wells<sup>4</sup>) and the potential for future drinking water sources, it was assumed that the groundwater discharging from APECs 22 A and E could potentially have an impact on existing and future drinking water supply sources located dowgradient and within a 1.5 km radius of these APECs.

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<sup>4</sup> Data from Environment Yukon, provided by Groundwater Information Network (GIN) website:  
[http://gin.gw-info.net/service/api\\_ngwds:gin2/en/gin.html](http://gin.gw-info.net/service/api_ngwds:gin2/en/gin.html)

## 4 Methodology

Field methodologies employed during this project were consistent with the applicable Environment Yukon Protocols No. 3<sup>5</sup> and 7<sup>6</sup> and SNC-Lavalin Preferred Operating Procedures (POPs).

### 4.1 Utility Locates

Prior to any intrusive investigation work, SNC-Lavalin contacted local service providers, ATCO Electric Yukon (ATCO) and Northwestel Inc. (Northwestel), to identify existing utilities in the proposed ground disturbance locations. Site visits were conducted by ATCO and Northwestel representatives to inspect the proposed drilling locations. All proposed drilling locations were approved by both ATCO and Northwestel. The Yukon Airport authorities were advised of proposed drilling locations prior to field work, and any available as-built drawings showing on-site utilities were reviewed prior to drilling.

Following clearance from all parties with potential utilities in the proposed the drilling locations, Quadra was contracted to complete a subsurface utility locate at the APECs. On October 26, 2016, Quadra surveyed the proposed borehole location areas using electromagnetic (EM) and ground penetrating radar (GPR). Identified subsurface utilities were marked at surface.

### 4.2 Borehole Drilling

Following the utility locates, Omega completed the borehole drilling and well installation at APECs 22 A to E from November 01 to 06, 2016, as follows:

- › APEC 22 A: twelve (12) boreholes (22A-BH16-23 to 22A-BH16-34) drilled to a maximum depth of 7.0 m bgs;
- › APEC 22 B: five (5) boreholes (22B-BH16-8 to 22B-BH16-12) drilled to a maximum depth of 5.5 m bgs;
- › APEC 22 C: fourteen (14) boreholes (22C-BH16-26 to 22C-BH16-39) drilled to a maximum depth of 5.5 m bgs;
- › APEC 22 D: four (4) boreholes (22D-BH16-7 to 22D-BH16-10) drilled to a maximum depth of 5.5 m bgs; and
- › APEC 22 E: two (2) boreholes (22E-BH16-5 and 22E-BH16-6) drilled to a maximum depth of 5.5 m bgs.

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<sup>5</sup> *Protocol No. 3: Soil Sampling Procedures at Contaminated Sites*, Protocol for the Contaminated Sites Regulation Under the Environment Act, Prepared pursuant to Part 6 – Administration, Section 21, Contaminated Sites Regulation, OIC 2002/171.

<sup>6</sup> *Protocol No. 7: Groundwater Monitoring Well Installation, Sampling and Decommissioning*, Protocol for the Contaminated Sites Regulation Under the Environment Act, Prepared pursuant to Part 6 – Administration, Section 21, Contaminated Sites Regulation, OIC 2002/171.

The advancement of boreholes was performed using a Geoprobe 8140LS Sonic Track Drill Rig, operated by Omega. At APEC 25, SNC-Lavalin personnel collected a surficial soil sample at location 25-SS16-7, using hand auger and a shovel. The borehole locations are shown on Drawings 640752-003 to 640752-008. Borehole logs are included in Appendix I.

Prior to ground penetration activities at each location, the drill rods, casing, and hand augers were washed down with clean water whenever possible to minimize the potential for cross-contamination between borehole locations.

### 4.3 Soil Sampling

Soil conditions in each borehole were field logged with respect to soil type, colour, density, moisture content, and evidence of contamination. This information is presented in the borehole logs (Appendix I). During drilling, soil samples were collected at: a) regular intervals; b) changes in soil stratigraphy; and/or c) evidence of contamination. Drill cores were collected from the sonic core barrel, extruded into plastic bags. Samples were selected from the cores. Samples were also collected at the surface using a clean hand auger or shovel.

Soil samples were collected directly into laboratory supplied duplicate sample jars with Teflon<sup>®</sup>-lined lids. A portion of each collected sample was placed in a sealable polyethylene bag and allowed to off-gas into the headspace in the bag. The headspace was field screened for hydrocarbon vapour concentration using a RKI Eagle2 organic vapour analyzer (OVA) calibrated to a hexane standard and operated in methane-elimination mode. The field screening results are shown on the borehole logs (Appendix I) and were used, along with visual observations, to identify samples for subsequent laboratory analysis. Jarred samples were stored in an ice-chilled cooler with appropriate chain-of-custody documentation and shipped via air to Maxxam for analysis.

### 4.4 Monitoring Well Installation

Monitoring wells were installed to allow for the collection of groundwater samples, monitoring of potential non-aqueous phase liquid (NAPL) accumulations and hydrocarbon vapour concentrations. All monitoring wells were made of a 50-mm diameter threaded polyvinyl chloride (PVC) pipe, with a slotted PVC pipe (No. 10 slot; 0.010 inch openings) for the screened intervals.

The following borehole locations were installed with groundwater monitoring wells:

- › APEC 22 A: three (3) monitoring wells installed with screen intervals from 1.5 m to 3.0 m bgs (22A-MW16-25), 0.9 m to 2.4 m bgs (22A-MW16-30), and 1.8 m to 3.3 m bgs (22A-MW16-32);
- › APEC 22 B: one (1) monitoring well installed with screen interval from 2.3 m to 3.8 m bgs (22B-MW16-9);

- › APEC 22 C: five (5) monitoring wells installed with screen intervals from 1.8 m to 3.3 m bgs (22C-MW16-26 and 22C-MW16-29), 2.4 m to 3.9 m bgs (22C-MW16-28), 1.6 m to 3.1 m bgs (22C-MW16-30), and 0.6 m to 2.1 m bgs (22C-MW16-38); and
- › APEC 22 D: three (3) monitoring wells installed with screen intervals from 1.5 m to 3.0 m bgs (22D-MW16-7), 2.1 m to 3.6 m bgs (22D-MW16-8), and 0.9 m to 2.4 m bgs (22D-MW16-9).

For each well, the casing between the screen and the ground surface was constructed with 50 mm diameter solid PVC pipe. The annulus surrounding the screened section was backfilled with clean 10-20 grade silica sand to approximately 0.2 m above the top of the screened section (sand pack), and a bentonite seal placed above the sand pack to the surface. Monitoring wells 22B-MW16-9, 22D-MW16-7 and 22D-MW16-9 were completed with protective steel flush mount road boxes, and the other monitoring wells were installed with protective steel stick-up well covers. All monitoring wells used self-draining bottom caps and j-plugs. Construction details for the monitoring wells are presented in the borehole logs (Appendix I).

## 4.5 Monitoring Well Development

New monitoring wells were developed following installation from November 3 to 6, 2016, using dedicated 5/8" high density polyethylene (HDPE) Waterra<sup>®</sup> tubing, foot valve, and surge block. Where possible, well development consisted of removal of a minimum of three borehole volumes of water. Field observations (i.e., turbidity, hydrocarbon odour and sheen presence) and field measurements (i.e., pH, electrical conductivity, and temperature) were recorded during development of the newly installed monitoring wells.

## 4.6 Groundwater Monitoring

Each well in the sampling plan and located in the field was monitored for depth to water, hydrocarbon vapour concentrations wherever possible, and presence (if any) of light non-aqueous phase liquid (LNAPL). Hydrocarbon vapour concentrations were measured inside the well using a RKI Eagle2 OVA in methane elimination mode. Water level measurements were collected using an electronic water level meter. During water level measurements, hydrocarbon detecting paste was applied to the end of the meter's probe to detect LNAPL, if present. A total of 12 wells within APEC 22 (A to E) were monitored from December 14 to 16, 2016 f. The monitoring report is provided in Appendix II.

## 4.7 Groundwater Sampling

Groundwater sampling was conducted from December 14 to 16, 2016. Prior to sample collection, wells were purged using low flow sampling techniques using a Geotech peristaltic pump. Purging was continued until the depth of water stabilized, and a minimum of 5 L of purge volume was achieved, in accordance to the applicable procedures. Following purging, groundwater samples were collected using the peristaltic pump. In order to reduce turbidity in the samples, the flow rate of the pump was reduced to allow the sediments inside the monitoring wells to settle.



Groundwater samples were placed into laboratory supplied containers and preserved and field filtered, as required. The sample containers were placed into chilled coolers, with completed chain-of-custody documentation and custody seals, and shipped via air to Maxxam for analysis. Maxxam is accredited with the Canadian Association for Laboratory Accreditation Inc. (CALA).

## 4.8 Quality Assurance / Quality Control

SNC-Lavalin implements strict quality assurance/quality control (QA/QC) measures for all sampling and analysis to ensure that all data is representative. The QA/QC program included the following.

- › Senior supervision of field staff.
- › Use of in house trained personnel.
- › Implementation of SNC-Lavalin's POPs.
- › Written field instructions.
- › Documentation of all field activities:
  - › Samples were collected in a manner appropriate for the prevention of cross-contamination and other field sampling errors. Samples were collected using an appropriate contaminant-free utensil and placed in contaminant-free containers specifically designed for such use and appropriate to the subsequent analyses.
- › Chain-of-Custody documentation for sample submission:
  - › Use of an appropriate coding system for submitting samples to the analytical laboratory to ensure that information concerning location or expected concentration is unavailable to the analyst(s). A chain-of-custody form was provided by the laboratory to trace the movement and handling of samples from the field to their final destination.
  - › Use of a CALA accredited laboratory.
- › Adherence to laboratory sampling and analysis protocols (e.g., hold times, sample containers, preservatives, detection limits, approved methodology).
- › Procedures to confirmation accurate transcription of laboratory data into tables.
- › Review of laboratory QC performance (standards, spike recoveries etc.) to confirm results are within acceptable limits.
- › Results of the laboratory's internal checks were included in the analytical report.
- › Use of dedicated well development and sampling equipment.
- › Generally, submission of field QC samples at a rate of 10% of total samples. Implementation of corrective action plans when acceptable limits are exceeded.

The QA/QC procedure involves the calculation of the Relative Percent Difference (RPD) for each sample parameter analyzed in both the original and the duplicate samples. The calculated RPDs for samples are included in the attached tables. RPDs less than 60% for petroleum hydrocarbons and inorganic parameters, and less than 75% for PAH parameters in soil, less than 45% for organic parameters in groundwater and less than 30% for inorganic parameters in groundwater indicate that the variability is within SNC-Lavalin's target range. In cases where the analytical result of the original or the duplicate sample is less than five times the laboratory detection limit, the RPD is not meaningful and, thus, is not calculated. The results of the QA/QC analyses are presented below.

Analysis of split sample duplicates was conducted to ensure variability was less than RPD<sub>DUP</sub> trigger criteria as described above. If data variability was greater than trigger criteria the reason for the variability was investigated and documented. All of the samples were submitted in a manner to eliminate laboratory bias. RPD<sub>DUP</sub> values are indicated on the analytical tables.

A total of ten (10) pairs of field duplicate samples (eight [8] soil, two [2] groundwater) were analyzed as part of QA/QC measures undertaken to ensure unbiased and representative sample collection and to assess the repeatability of lab analyses.

Sample ID	Duplicate	Date	Parameter	RPD <sub>DUP</sub> Value
<b>Soil – 75 samples and 8 duplicate pairs were submitted for analysis</b>				
22A-BH16-23-2	22A-BH16-23-3	2016 11 03	EPH, PAH, metals	<RPD <sub>DUP</sub> Criteria
22A-BH16-32-2	22A-BH16-32-3	2016 11 04	BTEX, VPH, EPH, PAH	<RPD <sub>DUP</sub> Criteria
22B-BH16-8-2	22B-BH16-8-3	2016 11 06	BTEX, VPH, EPH, PAH, metals	<RPD <sub>DUP</sub> Criteria
22C-BH16-28-1	22C-BH16-28-2	2016 11 01	BTEX, VPH, EPH, PAH, metals	<RPD <sub>DUP</sub> Criteria
22C-BH16-30-2	22C-BH16-30-3	2016 11 02	BTEX, VPH, EPH, PAH	<RPD <sub>DUP</sub> Criteria
22C-BH16-38-2	22C-BH16-38-3	2016 11 03	BTEX, VPH, EPH, PAH	<RPD <sub>DUP</sub> Criteria
22D-BH16-10-2	22D-BH16-10-3	2016 11 05	BTEX, VPH, EPH, PAH, metals	<RPD <sub>DUP</sub> Criteria
22D-BH16-7-2	22D-BH16-7-3	2016 11 05	BTEX, VPH, EPH, PAH, VOC	<RPD <sub>DUP</sub> Criteria
<b>Groundwater – 13 samples and 2 duplicated pairs were submitted for analysis</b>				
22C-MW16-38	22C-MW16-A	2016 12 14	BTEX, VPHw, VHW <sub>6-10</sub> , EPHw, LEPHw, PAH, Select Dissolved Metals	<RPD <sub>DUP</sub> Criteria
22D-MW16-7	22D-MW16-B	2016 12 16	BTEX, VPHw, VHW <sub>6-10</sub> , EPHw, LEPHw, PAH, VOC, Select Dissolved Metals	<RPD <sub>DUP</sub> Criteria

BTEX = benzene, toluene, ethylbenzene, and xylenes  
 EPH = extractable petroleum hydrocarbons  
 VHW<sub>6-10</sub> = volatile hydrocarbon in water  
 VPHw = volatile petroleum hydrocarbon in water  
 VOC = volatile organic compound

VPH = volatile petroleum hydrocarbon  
 EPHw = extractable petroleum hydrocarbons in water  
 LEPHw = light extractable petroleum hydrocarbons in water  
 PAH = polycyclic aromatic hydrocarbons

All soil and groundwater sample pairs had  $RPD_{DUP}$  values less than accepted criteria. Therefore, the analytical results for the soil and groundwater samples analyzed are considered reliable and representative of subsurface conditions.

## 5 Results

### 5.1 Stratigraphy

Details of the stratigraphical information observed during the drilling and sampling program are presented in the borehole logs (Appendix I) and summarized in the table below.

**Table B: Borehole Soil Summary**

APEC ID	Borehole ID	Drilling Depth (m)	Borehole Predominant Lithology
APEC 22A	22A-BH16-23 to 22A-BH16-34	0.2 to 7.0	sand and gravel
APEC 22B	22B-BH16-8, 9 and 12	0.2 to 5.5	sand and gravel
	22B-BH16-10 and 11	0.5 to 2.0	silt and clay
		2.0 to 5.5	sand and gravel
APEC 22C	22C-BH16-26 to 22C-BH16-39	0.5 to 5.5	sand and gravel
APEC 22D	22D-BH16-7 to 22D-BH16-10	0.3 to 5.5	sand, silt and gravel
APEC 22E	22E-BH16-5 and 6	0.0 to 5.5	sand and gravel

Observed soil consisted mostly of glaciofluvial outwash sand and gravel throughout APEC 22 (A to E). A top layer with high organic silt matter was observed in the boreholes, and silt and clay occur locally. Organic vapour field screening results for soil samples collected from the boreholes were low.

### 5.2 Soil Quality Assessment

Soil samples were collected from thirty-nine (39) boreholes during the drilling program. The samples were submitted to Maxxam for analysis, as outlines in Table C. Tabulated soil analytical data compared to the applicable standards is provided in Tables 1 through 4, and illustrated on Drawings 640752-003 (APEC 22A), 640752-005 (APEC 22B), 640752-007 (APEC 22C), 640752-009 (APEC 22D), and 640752-011 (APEC 22E). Soil analytical laboratory reports are included in Appendix III.

A summary of the soil analytical results obtained from the boreholes with respect to the applicable standards is summarized below.

**Table C: Analytes in Soil Above (+) and Below (-) Yukon CSR Standards – 2016**

Borehole ID	Sample Depth (m)	Soil Laboratory Analyses				
		BTEX/VPH	EPH	PAH	VOC	Metals
<b>APEC 22A</b>						
22A-BH16-23-2	1.8 – 2.0		(-)	(-)		(-)
22A-BH16-23-3	Duplicate		(-)	(-)		(-)
22A-BH16-23-4	3.7 – 3.8		(-)	(-)		
22A-BH16-24-1	0.5 – 0.8		(-)	(-)		(-)
22A-BH16-24-2	2.7 – 2.9		(-)	(-)		
22A-BH16-25-1	0.3 – 0.5		(-)	(-)		(-)
22A-BH16-25-2	2.7 – 2.9		(-)	(-)		
22A-BH16-26-1	0.6 – 0.8	(-)	(-)	(-)		(-)
22A-BH16-26-2	3.0 – 3.2	(-)	(-)	(-)		
22A-BH16-27-1	0.6 – 0.8	(-)	(-)	(-)		(-)
22A-BH16-27-2	2.3 – 2.4	(-)	(-)	(-)		
22A-BH16-28-1	0.3 – 0.5	(-)	(-)	(-)		<b>As +</b>
22A-BH16-28-2	3.0 – 3.2	(-)	(-)	(-)		
22A-BH16-29-1	0.6 – 0.8	(-)	(-)	(-)		(-)
22A-BH16-29-2	3.2 – 3.4	(-)	(-)	(-)		
22A-BH16-30-1	0.5 – 0.6	(-)	(-)	(-)		(-)
22A-BH16-30-2	1.7 – 2.0	(-)	(-)	(-)		
22A-BH16-31-1	0.6 – 0.9	(-)	(-)	(-)		(-)
22A-BH16-31-2	3.4 – 3.7	(-)	(-)	(-)		
22A-BH16-32-1	0.3 – 0.6	(-)	(-)	(-)		(-)
22A-BH16-32-2	3.0 – 3.4	(-)	(-)	(-)		
22A-BH16-32-3	Duplicate	(-)	(-)	(-)		
22A- BH16-33-1	0.3 – 0.5	(-)	(-)	(-)		(-)
22A-BH16-33-2	5.2 – 5.3	(-)	(-)	(-)		
22A-BH16-34-1	0.8 – 0.9	(-)	(-)	(-)		(-)
22A-BH16-34-2	6.1 – 6.4	(-)	(-)	(-)		
<b>APEC 22B</b>						
22B-BH16-8-2	2.1 – 2.4	(-)	(-)	(-)		(-)
22B-BH16-8-3	Duplicate	(-)	(-)	(-)		(-)
22B-BH16-8-4	3.4 – 3.5	(-)	(-)	(-)		
22B-BH16-9-1	0.8 – 0.9	(-)	(-)	(-)		(-)



**Table C (Cont'd): Analytes in Soil Above ( + ) and Below ( - ) Yukon CSR Standards – 2016**

Borehole ID	Sample Depth (m)	Soil Laboratory Analyses				
		BTEX/VPH	EPH	PAH	VOC	Metals
<b>APEC 22B (Cont'd)</b>						
22B-BH16-9-2	2.6 – 2.7	( - )	( - )	( - )		
22B-BH16-10-1	0.2 – 0.3	( - )	( - )	( - )		( - )
22B-BH16-10-2	2.6 – 2.7	( - )	( - )	( - )		
22B-BH16-11-1	0.5 – 0.6	( - )	( - )	( - )		( - )
22B-BH16-11-2	1.7 – 2.0	( - )	( - )	( - )		
22B-BH16-12-2	3.5 – 3.7	( - )	( - )	( - )		( - )
22B-BH16-12-3	4.6 – 4.7	( - )	( - )	( - )		
<b>APEC 22C</b>						
22C-BH16-26-1	0.9 – 1.2	( - )	( - )	( - )	( - )	( - )
22C-BH16-26-2	3.4 – 3.7	( - )	( - )	( - )		
22C-BH16-27-1	0.6 – 0.9	( - )	( - )	( - )		( - )
22C-BH16-27-2	3.2 – 3.5	( - )	( - )	( - )		
22C-BH16-28-1	0.6 – 0.9	( - )	( - )	( - )		( - )
22C-BH16-28-2	Duplicate	( - )	( - )	( - )		( - )
22C-BH16-28-3	3.4 – 3.7	( - )	( - )	( - )		
22C-BH16-29-1	0.9 – 1.2	( - )	( - )	( - )		( - )
22C-BH16-29-2	3.7 – 4.0	( - )	( - )	( - )		
22C-BH16-30-1	0.9 – 1.2	( - )	( - )	( - )		( - )
22C-BH16-30-2	2.9 – 3.2	( - )	<b>LEPH +</b>	( - )		
22C-BH16-30-3	Duplicate	( - )	<b>LEPH +</b>	( - )		
22C-BH16-31-1	0.6 – 0.9	( - )	( - )	( - )		( - )
22C-BH16-31-2	3.2 – 3.5	( - )	( - )	( - )		
22C-BH16-32-1	0.3 – 0.6	( - )	( - )	( - )		( - )
22C-BH16-32-2	3.0 – 3.4	( - )	( - )	( - )		
22C-BH16-33-1	0.6 – 0.9	( - )	( - )	( - )		( - )
22C-BH16-33-2	3.0 – 3.4	( - )	( - )	( - )		
22C-BH16-34-1	0.3 – 0.5	( - )	( - )	( - )		( - )
22C-BH16-34-2	3.0 – 3.4	( - )	( - )	( - )		
22C-BH16-35-1	0.3 – 0.6	( - )	( - )	( - )		( - )
22C-BH16-35-2	2.6 – 0.9	( - )	( - )	( - )		
22C-BH16-36-1	0.5 – 0.8	( - )	( - )	( - )		( - )
22C-BH16-36-2	2.9 – 3.2	( - )	( - )	( - )		
22C-BH16-37-1	0.3 – 0.6	( - )	( - )	( - )		( - )
22C-BH16-37-2	2.7 – 3.0	( - )	( - )	( - )		
22C-BH16-38-1	0.8 – 0.9	( - )	( - )	( - )		( - )

**Table C (Cont'd): Analytes in Soil Above ( + ) and Below ( - ) Yukon CSR Standards – 2016**

Borehole ID	Sample Depth (m)	Soil Laboratory Analyses				
		BTEX/VPH	EPH	PAH	VOC	Metals
<b>APEC 22C (Cont'd)</b>						
22C-BH16-38-2	1.8 – 2.1	( - )	( - )	( - )		
22C-BH16-38-3	Duplicate	( - )	( - )	( - )		
22C-BH16-39-1	0.6 – 0.9	( - )	( - )	( - )		( - )
22C-BH16-39-2	3.0 – 3.4	( - )	( - )	( - )		
<b>APEC 22D</b>						
22D-BH16-7-1	0.3 – 0.5	( - )	( - )	( - )		( - )
22D-BH16-7-2	2.6 – 2.9	( - )	( - )	( - )	( - )	
22D-BH16-7-3	Duplicate	( - )	( - )	( - )	( - )	
22D-BH16-8-1	0.3 – 0.5	( - )	( - )	( - )	( - )	( - )
22D-BH16-8-2	3.4 -3.7	( - )	( - )	( - )		
22D-BH16-9-2	1.2 – 1.5	( - )	<b>LEPH +</b>	( - )		( - )
22D-BH16-9-3	2.6 – 2.7	( - )	( - )	( - )		
22D-BH16-10-2	2.1 – 2.4	( - )	( - )	( - )		( - )
22D-BH16-10-3	Duplicate	( - )	( - )	( - )		( - )
22D-BH16-10-4	3.2 – 3.4	( - )	( - )	( - )		
<b>APEC 22E</b>						
22E-BH16-5-1	0.8 – 1.1	( - )	( - )	( - )	( - )	( - )
22E-BH16-5-2	2.4 – 3.0	( - )	( - )	( - )		
22E-BH16-6-1	0.6 – 0.9	( - )	( - )	( - )		( - )
22E-BH16-6-2	3.7 – 4.0	( - )	<b>LEPH +</b>	( - )		
22E-BH16-6-3	4.4 – 4.6	( - )	( - )	( - )		

Blank space: parameter not analyzed  
BTEX: includes benzene, toluene, ethylbenzene, xylenes  
VPH: volatile petroleum hydrocarbon in soil.  
EPH: extractable petroleum hydrocarbon in soil

PAH: polycyclic aromatic hydrocarbons  
VOC: volatile organic compound

Concentrations of LEPH at samples 22C-BH16-30-2/3 (5,400 ug/g), 22D-BH16-9-2 (3,600 ug/g), and 22E-BH16-6-2 (4,900 ug/g) collected at depth intervals varying from 1.2 m to 4.0 m bgs exceeded the applicable Yukon CSR standards. Arsenic concentration was above the Yukon CSR CL standard in a surficial sample (22A-BH16-28-1) collected at APEC 22 A. All remaining soil analytical results from samples collected in 2016 at APECs 22 A to E were below the applicable standards.

## 5.3 Groundwater Monitoring

A total of thirteen (13) wells were monitored from December 14 to 16, 2016. Well headspaces were monitored for the presence of hydrocarbon vapour concentrations where possible. Groundwater elevation, depth to well bottom, and presence of LNAPL were determined for each well. The monitoring report detailing the results of the groundwater monitoring event is provided in Appendix II.

Results of the groundwater monitoring events are summarized as follows:

- › LNAPL was not observed in any of the wells monitored in this program;
- › Hydrocarbon vapour concentrations measured in the monitoring well headspaces were below instrument detection level; and
- › Groundwater depths varied from 1.29 m bgs to 3.81 m bgs.

## 5.4 Hydrogeology

Groundwater elevations reported in previous reports indicate a preferential groundwater flow direction from north-northeast to south-southwest, towards Watson Lake. According to information provided by Environment Yukon, an existing water supply well is located in APEC 22 B and downgradient in relation to APEC 22 E. No water supply wells have been reported downgradient in relation to APECs 22 A, C and D.

## 5.5 Groundwater Quality Assessment

Groundwater samples collected in the fall (early November and December of 2016) included a total of fourteen (14) wells. The samples were submitted for the analyses listed below, according to the PCOCs associated to each APEC. Tabulated groundwater analytical data compared to the applicable standards is provided in Tables 5 through 10, and illustrated on 640752-004 (APEC 22A), 640752-006 (APEC 22B), 640752-008 (APEC 22C), 640752-010 (APEC 22D), and 640752-012 (APEC 22E). Groundwater analytical laboratory reports are included in Appendix III. A summary of the analytical results obtained from the monitoring wells with respect to the applicable standards is presented in the table, and discussed in detail below.

**Table D: Analytes in Groundwater Above ( + ) and Below ( - ) Yukon CSR Standards – 2016**

#MW	Sampling Date	Groundwater Laboratory Analyses				
		BTEX/VPHw/ VHw MTBE	LEPHw/ EPHw	PAH	VOC	Select Dissolved Metals
<b>APEC 22 A</b>						
MW09-22A-15	2016 02 02		<b>+LEPHw</b>	( - )		
	2016 11 02		( - )	( - )		
MW09-22A-20	2016 11 02		( - )	( - )		

**Table D (Cont'd): Analytes in Groundwater Above ( + ) and Below ( - ) Yukon CSR Standards – 2016**

#MW	Sampling Date	Groundwater Laboratory Analyses				
		BTEX/VPHw/ VHw MTBE	LEPHw/ EPHw	PAH	VOC	Select Dissolved Metals
22A-MW16-25	2016 12 14	( - )	( - )	( - )		( - )
22A-MW16-30	2016 12 14	( - )	<b>+LEPHw</b>	( - )		( - )
22A-MW16-32	2016 12 14	( - )	( - )	( - )		( - )
<b>APEC 22 B</b>						
MW09-22B-7	2016 11 06					<b>+ Mn</b>
<b>APEC 22 C</b>						
22C-MW16-26	2016 12 15	( - )	( - )	( - )		( - )
22C-MW16-29	2016 12 15	( - )	( - )	<b>+benzo(a) pyrene</b>		( - )
22C-MW16-30	2016 12 15	( - )	( - )	( - )		( - )
22C-MW16-38	2016 12 14	( - )	( - )	( - )		( - )
22C-MW16-A	Duplicate	( - )	( - )	( - )		( - )
<b>APEC 22 D</b>						
22D-MW16-7	2016 12 16	( - )	( - )	( - )	( - )	( - )
22D-MW16-B	Duplicate	( - )	( - )	( - )	( - )	( - )
22D-MW16-8	2016 12 16	( - )	( - )	( - )		( - )
22D-MW16-9	2016 12 16		( - )	( - )		( - )
<b>APEC 22 E</b>						
22E-MW16-6	2016 12 15	( - )	( - )	( - )		( - )

Blank space: parameter not analyzed

BTEX: includes benzene, toluene, ethylbenzene, and xylenes

VPHw: volatile petroleum hydrocarbon in water

VHw<sub>6-10</sub>: volatile hydrocarbon in water

LEPHw: light extractable petroleum hydrocarbon in water

PAH: polycyclic aromatic hydrocarbons

VOC: volatile organic compound

EPHw: extractable petroleum hydrocarbon in water

LEPHw concentration in well MW09-22A-15 has decreased from 2,100 ug/L (February 20016) to below laboratory detection limit and applicable standard (November 2016). Previous monitoring results from the Watson Lake Airport site indicate that hydrocarbon concentrations are typically higher during the peak of the winter season (e.g., February), which corresponds to the lowest groundwater levels. Groundwater samples from wells 22A-MW16-30 and 22C-MW16-29 contained, respectively, LEPHw (900 µg/L) and benzo(a)pyrene (0.011 ug/L) concentrations slightly above the applicable Yukon CSR standards.

Concentration of manganese (900 µg/L) in well MW09-22B-7 exceeded the Yukon CSR DW standard, which is consistent with previous sampling events. Historical concentrations of iron and manganese at APEC 22 have been reported to exceed the Yukon CSR DW standards at locations with no hydrocarbon impacts. The elevated concentrations of iron and manganese may be consistent with background conditions of the local aquifer and will be addressed as part of a background study and/or risk assessment.

The remainder of the groundwater analytical results obtained in the 2016 program was below the applicable Yukon CSR DW and AW standards.

## 6 Summary of Assessment Programs

In order to investigate the subsurface soil and groundwater quality at APEC 22, samples of both media were collected and submitted for chemical analysis.

Based on the results from ESAs conducted in 2006, 2009 and 2016 at APECs 22 A to E, COCs were detected in both soil and groundwater at concentrations above their respective regulatory standard. As such, these locations were considered Areas of Environmental Concern (AECs), as summarized in the table below.

AEC #	COCs Identified	Location	Estimated Area (m <sup>2</sup> )	Estimated Thickness (m)	Approximate Volume of Impacted Soil (m <sup>3</sup> )
<b>On-Site AECs</b>					
22B	<b>Soil:</b> CWS F2 (3.0 – 3.8 m) <b>Groundwater:</b> none	22B-MW06-3	200	1.5	300
	<b>Soil:</b> none <b>Groundwater:</b> Mn (background). No PHC exceedances in soil or gw at this location	MW09-22B-7	-	-	-
Sub-Total AEC 22B					300
22E	<b>Soil:</b> LEPH (3.7 – 4.0 m) <b>Groundwater:</b> none	22E-BH16-6-2	500	1	500
	<b>Soil:</b> none <b>Groundwater:</b> Mn (background). No PHC exceedances in soil or gw at this location	MW09-22E-4	-	-	-
Sub-Total AEC 22E					500
<b>Sub-Total On-Site</b>					<b>800</b>
<b>Off-Site AECs</b>					
22A	<b>Soil:</b> CWS F4 (2.4 – 3.0 m) <b>Groundwater:</b> none	22A-MW06-1	250	1	250
	<b>Soil:</b> EPH <sub>C10-C19</sub> (2.7 – 2.9 m) <b>Groundwater:</b> LEPHw	MW09-22A-15	940	1	940
	<b>Soil:</b> none <b>Groundwater:</b> Mn, Fe (background). No PHC exceedances in soil or gw at this location	MW09-22A-19	-	-	-
	<b>Soil:</b> Arsenic (0.3 – 0.5 m) <b>Groundwater:</b> none	22A-BH16-28	20	0.5	10
	<b>Soil:</b> none <b>Groundwater:</b> LEPHw (slightly above standard. Re-sampling recommended to confirm or refute result)	22A-MW16-30	-	-	-
Sub-Total AEC 22A					1,200



AEC #	COCs Identified	Location	Estimated Area (m <sup>2</sup> )	Estimated Thickness (m)	Approximate Volume of Impacted Soil (m <sup>3</sup> )
<b>Off-Site AECs (Cont'd)</b>					
22C	<b>Soil:</b> none <b>Groundwater:</b> Fe (background). No PHC exceedances in soil or gw at this location	22C-MW06-2	-	-	-
	<b>Soil:</b> none <b>Groundwater:</b> Mn (background). No PHC exceedances in soil or gw at this location	MW09-22C-14 MW09-22C-22	-	-	-
	<b>Soil:</b> Arsenic (2.7 – 2.9 m) <b>Groundwater:</b> none	BH09-22C-20	20	0.5	10
	<b>Soil:</b> none <b>Groundwater:</b> benzo(a)pyrene (slightly above standard. Re-sampling recommended to confirm or refute result)	22C-MW16-29	-	-	-
	<b>Soil:</b> LEPH (2.9 – 3.2 m) <b>Groundwater:</b> none	22C-BH16-30-2	490	1	490
Sub-Total AEC 22C					500
22D	<b>Soil:</b> CWS F2 (2.1 – 3.0 m) <b>Groundwater:</b> none	22D-MW06-2	265	1.5	400
	<b>Soil:</b> LEPH (1.2 – 1.5 m) <b>Groundwater:</b> none	22D-MW16-9	600	1	600
Sub-Total AEC 22D					1,000
<b>Sub-Total Off-Site</b>					<b>2,700</b>
<b>TOTAL AEC 22</b>					<b>3,500</b>

LEPH, F2, F4 and metals were identified as COCs in soil, and LEPHw was identified as a COC in groundwater in well MW09-22A-15. LEPHw in well 22A-MW16-30 and benzo(a)pyrene in well 22C-MW16-29 were reported at concentrations slightly above the applicable standards; however, re-sampling of these wells is recommended to confirm or refute these parameters as COCs at the specified locations. Iron and manganese exceedances in groundwater at AEC 22 were identified at locations with no hydrocarbon impact and may be related to a background condition of the local aquifer. Therefore, iron and manganese elevated concentrations in groundwater will be addressed as part of a background study and/or risk assessment. The total approximate volume of impacted soil at AECs 22 (A to E) is 3,500 m<sup>3</sup>.

It is important to note that the data obtained in this SSI indicated that contamination in both soil and groundwater has been identified at locations not addressed in previous investigations. These impacts have not been fully delineated and, therefore, the calculated volumes are estimated based on available sample data.

## 6.1 Technical Constraints

Based on data to date, the contamination in the soil is accessible for removal without significant impact to the infrastructure of the Site. Groundwater within the impacted areas varies from approximately 1.3 mbg to 3.8 mbg, dependent on location and season. Excavation in wet conditions with occasional dewatering (i.e., during backfilling) is anticipated.

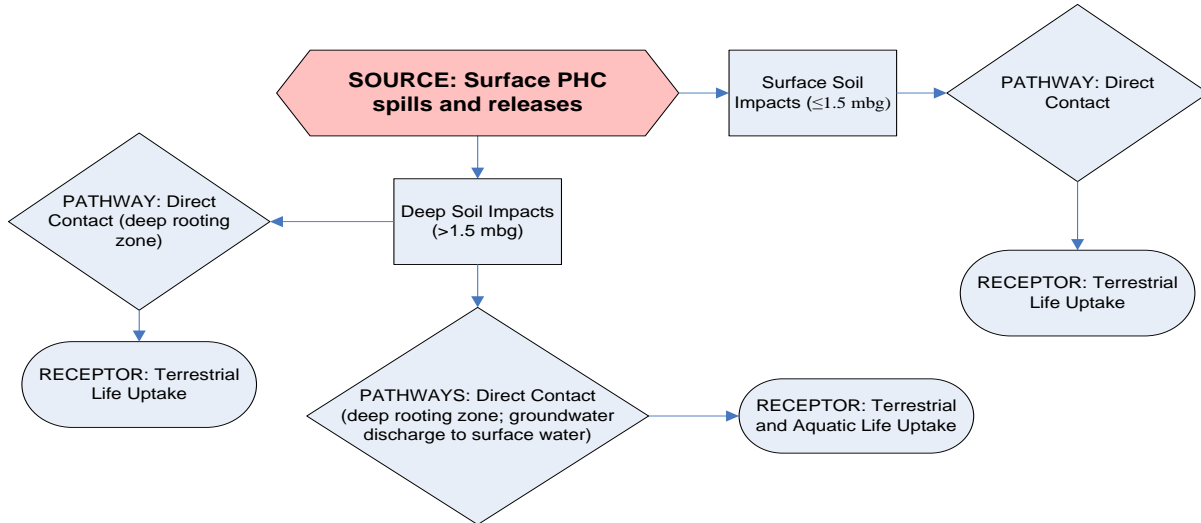
It is important to note that the data obtained in this SSI indicated that contamination in both soil and groundwater has been identified at locations not addressed in previous investigations. These impacts have not been fully delineated and, therefore, the calculated volumes are estimated based on available sample data. Remedial approaches for AECs 22 A to E are discussed in the following section.



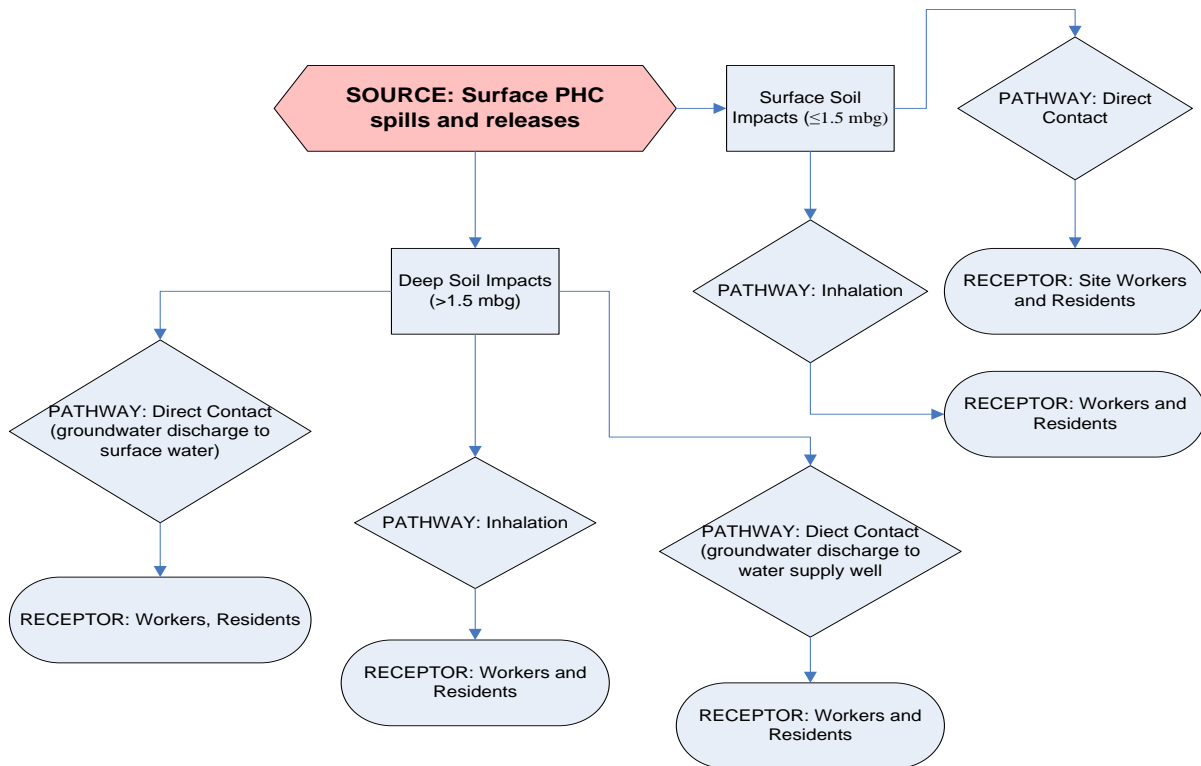
## 7 Conceptual Site Model

The following flow charts illustrate the Conceptual Site Model (CSM) for human health and ecological receptors at the Site.

## ECOLOGICAL



## HUMAN HEALTH



## 8 Remedial Action Plan/Risk Management Plan

Based on the findings detailed above, SNC-Lavalin provides the following Remedial Action Plan/Risk Management Plan (RAP/RMP) for AECs 22 A to E.

### 8.1 Approach and Evaluation Criteria

The remediation/risk management priorities are based on the removal, containment or control of contaminants in the affected media. Hydrocarbon contamination was identified both in soil, from 1.2 m to 4.0 m bgs, at AECs 22 A to E, and as impacted groundwater at AEC 22A. Metals impact in soil has been identified at AECs 22 A and C. Remedial approaches discussed below assume hydrocarbon and metals contamination in soil at AEC 22 is most suitably addressed by excavating the contaminated soils to numerical cleanup levels, which is also expected to address hydrocarbon contaminated groundwater by removing the source. As mentioned previously, iron and manganese exceedances in groundwater at AEC 22 may be related to background conditions of the local aquifer, and is anticipated to be addressed as part of a background study and/or risk assessment.

Based on these approaches, detailed remedial option costs are discussed in the following sections.

### 8.2 Remedial Strategies

The long-term strategy for the study area should be based on the following goals, in order of priority:

- › Removal of contaminated media;
- › Risk management, which may include containment and control;
- › Risk management/remediation of impacted media; and
- › Site monitoring and inspections.

In cases where combining these approaches yields a more feasible solution, the options are presented as a combined approach and evaluated accordingly in the following remedial option analyses.

### 8.3 Evaluation Criteria

For the analysis of remedial and risk management strategies, a set of criteria for the evaluation of the options includes:

- › Only utilizing remedial or risk management methods for COPCs derived from anthropogenic sources;
- › Overall protection of human health and the environment;

- › Removal of hazards;
- › Long term effectiveness;
- › Ease of implementation;
- › High level of confidence in remediation results;
- › Minimization of remediation time;
- › Minimal site disruption;
- › Regulatory acceptance; and
- › Cost effectiveness.

It should be noted that our responses to the criteria have been established based on our professional opinion and available information.

## 8.4 Remedial Options

### **OPTION 1: Excavation of Contaminated Soil; On-site Treatment of Hydrocarbon Contaminated Soil; and Off-site disposal of Metals Contaminated Soil**

Remedial excavation is a common approach and could be used to remove the hydrocarbon contaminated soil for treatment in the on-site Land Treatment Facility (LTF) and metals contaminated soil for off-site disposal at a licensed solid waste disposal site. Hydrocarbon impacted soil could be treated on-site and reused as backfill in future excavations within the airport. Remediation activities would require temporary closure of the affected areas, excavation, shoring support, water management, and transportation of the excavated soil on site and off site.

The primary advantage of this approach is that the contaminant source is removed from Site to meet numerical standards. Excavation of contaminated soils in the saturated zone will require excavation in wet conditions to a probable maximum depth of 5.0 m.

Primary project risks associated with this method include the following:

- › The extent of impacts is greater than anticipated and remedial objectives cannot be met without additional excavation. This would result in an incremental cost adjustment during the excavation program.
- › Groundwater management may be challenging due to higher recharge rates, and may delay the excavation process and collection of confirmatory samples.
- › Treatment of hydrocarbon contaminated soil at the on-site LTF is not feasible due to exceeding the capacity of the LTF, or soil quality in excess of Yukon *Special Waste* criteria, and disposal at a permitted landfill facility is required. This would result in costly trucking and landfill disposal fees.

Upon completion of the remedial excavation and subject to the results of post remedial temporal groundwater sampling, the schedule for closure for this option (including confirmation monitoring and soil treatment) ranges from 2-4 years. The order of magnitude estimated cost for this operation is approximately \$2,300,000 to \$2,400,000. Additional post remedial groundwater monitoring and sampling is estimated to be approximately \$50,000 per year.

The proposed remediation program consists of the following steps:

- › Conduct a remedial feasibility study;
- › Prepare a tender package;
- › Conduct a soil remedial excavation program;
- › Conduct hydrocarbon soil treatment at the on-site LTF;
- › Dispose of metals contaminated soil at a licensed solid waste facility;
- › Conduct a post-remediation drilling program; and
- › Conduct post remediation groundwater monitoring and sampling.

Options	Impacted Soil Excavation and On-site Treatment
Operating Principle	Soils and groundwater are impacted with PHCs. Hydrocarbon soils are removed and treated on-site as appropriate for the given waste stream class. Metals impacted soil is removed and disposed at an approved off-site facility.
Protection of Human Health and the Environment	Yes
Degree of Site Disruption	Moderate
Confidence Level	High
Estimated Time for Implementation	2-4 years
Long-term Effectiveness	Yes
Ease of Implementation	Yes
Regulatory and Community Acceptance	High <sup>1</sup>
<b>Total Estimated Cost +/-</b>	<b>\$2,400,000</b>

<sup>1</sup> Assuming stakeholders are informed that iron and manganese in groundwater is non-anthropogenic

**OPTION 2: In Situ Remedial Treatment for Hydrocarbon Impacts / Risk Assessment**

An in-situ remedial system would be installed to address PHC impacts in shallow soils, using multi-phase extraction. Following in-situ application, a Human Health and Ecological Risk Assessment (HHERA) would be conducted to address residual PHC and metals impacts, and to determine the need for further contaminant mass remediation using physical or chemical treatment.

The primary advantage of this approach is that no excavation or waste management (i.e., bulk soil disposal) would be required.

The primary risks associated with this method include the following:

- › The risk assessment identifies unacceptable risks that cannot be effectively managed by in-situ treatment.
- › The extent of hydrocarbon impacts are greater than anticipated and remedial objectives cannot be met within an acceptable timeframe.
- › Unanticipated additional in-situ treatment and/or system design elements may be required to meet remedial objectives.
- › There is a potential that the in-situ treatment may not meet the remedial objectives within the proposed time period.
- › The risk management approach may conclude unacceptable risks to human health or the environment.

The anticipated schedule for closure using this option is 6-10 years for the combined multi-phase extraction (possibly followed by supplemental, enhanced bioremediation) and risk assessment. A high level cost estimate (rounded up) for the in-situ treatment is estimated at \$500,000 in capital cost, with an additional \$300,000 per year for operations and maintenance. A high level cost estimate for the risk assessment/management component is \$250,000, plus \$50,000 annually for groundwater sampling/monitoring for a period of approximately two years, or until successful demonstration that no unacceptable risks remain following termination of the treatment system. The risk management component would not commence until after the in-situ treatment system monitoring program has shown that concentrations meet numerical guidelines or site-specific remediation objectives.

The proposed remediation program consists of the following steps:

- › Conduct a remedial feasibility study;
- › Prepare a tender package;
- › Construct an in-situ groundwater treatment system;
- › Conduct a groundwater remedial program;
- › Conduct a risk assessment; and
- › Conduct groundwater monitoring/sampling.

Options	Impacted Soil Excavation and Offsite Disposal
Operating Principle	An in situ treatment system will be operated to address soil and groundwater hydrocarbon contamination. Following in situ application, an HHERA would be conducted to address residual PHC and metals impacts.
Protection of Human Health and the Environment	Yes
Degree of Site Disruption	High
Confidence Level	Moderate

Options	Impacted Soil Excavation and Offsite Disposal
Estimated Time for Implementation	6 to 10 years
Long-term Effectiveness	Yes
Ease of Implementation	Low
Regulatory and Community Acceptance	Moderate
<b>Total Estimated Cost +/-</b>	<b>\$4,000,000</b>

**OPTION 3: Risk Assessment / Risk Management and Ongoing Site Monitoring of Soil and Groundwater**

A Risk Assessment could be completed to identify any potential risks to human and ecological receptors at the Site. The risk assessment would be conducted in accordance with the most current guidance provided by Health Canada (human health) and the Canadian Council of Ministers of the Environment (ecological health). Under our current Site conditions, following completion of a risk assessment, potential unacceptable risk may be identified. In these cases, further and more aggressive remediation activities still need to be considered and undertaken to address and minimize this risk.

The risk assessment option provides a sustainable approach but in cases where significantly high concentrations are present, it is not able to effectively reduce liability or meet regulatory compliance when undertaken as a single approach. Thus risk assessment, while not feasible on its own, could be effective to address residual contamination at the Site in combination with other approaches (i.e., excavation of “hot spots” in limited areas where exposures may be determined to be unacceptable through the risk assessment) to more effectively address reduction in liability and compliance with regulatory guidelines. Overall, the risk assessment would help identify the contamination that requires more aggressive remediation technologies (and cannot be readily risk assessed) while also identifying those that do not.

The primary risks associated with this method include the following:

- › The risk management approach may conclude unacceptable risk in some impacted areas; hence the remedial objectives would not be met unless additional remedial efforts are expended. This would result in an incremental cost adjustment during the risk management program; and
- › Institutional controls and land use restrictions may be required which may cause impacts on future operations and development at the Site.

The anticipated schedule for closure for this option is 3-6 years, including delineation of all contamination in all media and confirmation of steady-state/declining concentrations by temporal groundwater. High level cost estimates (rounded up) for the supplemental assessment is \$300,000 and for the HHERA/risk management is \$250,000, plus \$50,000 annually for groundwater sampling and monitoring for a period ranging from two to five years. Additional remedial costs (i.e., limited excavation of “hot spots” in selective areas within the upper 1 mbg) will be dependent on the HHERA recommendations.



The work required under the Risk Assessment program will be:

- › Conduct additional site assessment work;
- › Prepare the Risk Assessment Report;
- › Identify if engineered risk management approaches will be required;
- › Implement required risk management options; and
- › Conduct monitoring as required.

Options	Risk Assessment/Risk Management
Operating Principle	Soils and groundwater are impacted with PHCs and metals. Objective of risk management is to eliminate exposure pathways and/or monitored natural attenuation.
Protection of Human Health and the Environment	Yes
Degree of Site Disruption	High
Confidence Level	Moderate
Estimated Time for Implementation	3 to 6 years
Long-term Effectiveness	Yes
Ease of Implementation	Yes
Regulatory and Community Acceptance	Regulatory Acceptance: Moderate Community Acceptance: Low
<b>Total Estimated Cost +/-</b>	<b>\$800,000</b>

## 8.5 Remedial Options Screening

Table F below provides a comparative evaluation of the above outlined options to assist in identifying the most suitable site management strategy for implementation. The evaluation criteria include:

- › Technical Feasibility – the technical feasibility evaluates whether the type and distribution of contaminants and subsurface conditions are amenable to the method proposed.
- › Timing – timing for the project is evaluated based on the likelihood of obtaining the remediation objectives within a 1 year (good), 3 – 5 year (satisfactory) or longer (poor) timeframe.
- › Operations and Maintenance – the requirement for procuring and operating equipment to support the remedial approach (considers cost and timing implications).
- › Likelihood of Success – an overall qualitative assessment of meeting the remediation objectives for the proposed method within a reasonable timeframe.
- › Estimated Cost – the estimated relative cost of the methods based on industry experience.

- › Liability – consider future liability, including removal of liability (good), long-term liability with low impact (e.g., no anticipated future changes in land use or Site conditions) on human health or ecology (satisfactory), or long term liability with high impact (e.g., future land use change or change in conditions) to human health or ecology (poor).

**Table E: Remedial Alternatives and Cost Analysis**

Remedial Options	Option 1: Excavation of Contamination	Option 2: In Situ Remedial Treatment and Risk Assessment	Option 3: Risk Assessment / Management
Technical Feasibility	Good	Satisfactory	Satisfactory
Timing	Satisfactory	Poor	Poor
Operations and Maintenance	Satisfactory	Poor	Good
Likelihood of Success	Good	Satisfactory	Satisfactory
Estimated Cost	Moderate (\$2,400,000)	Highest (4,000,000)	Lowest (\$800,000) <sup>1</sup>
Liability	Good	Satisfactory	Poor

<sup>2</sup> Estimated cost for additional delineation, Risk Assessment and monitoring only. If excavation of “hot spots” is required, additional remedial costs will be incurred.

Excavation of soil impacts (Option 1) to numerical standards has a moderate cost and the shortest schedule. The removal of contamination also has the lowest liability risk. The option B with in-situ treatment and risk assessment components has the highest cost and potential to require additional mitigation measures and long term monitoring. Risk assessment and risk management is the most cost effective option; however, it has the highest liability risk and it may result in long term monitoring requirements. Additionally, community acceptance can be low for approaches that do not involve removal of contaminants.

Based on the remedial options screening, Option 1 is recommended for remediation of the PHC and metals contamination at AEC 22 due to satisfactory timeline and potential for successful remediation of contaminated soil to numerical standards. Contaminated soil disposal costs can be minimized by treating hydrocarbon impacted soil at the existing on-site LTF.

## 8.6 Remedial Action / Risk Management Plan – Soil Excavation (Option 1)

This section provides a brief description on how the selected soil excavation remedial option is proposed to be implemented. Key tasks are briefly described, and a cost estimate and recommended schedule are presented.

## 8.6.1 Overview

The remediation program will involve the following:

- › Excavation of contaminated soils to an approximate depth of 5 m bgs;
- › Treatment of hydrocarbon excavated soils within the existing on-site LTF;
- › Disposal of metals contaminated soil at an approved off-site facility; and
- › Restoration of Site grade.

It is understood that iron and manganese exceedances in groundwater at AEC 22 will be subsequently addressed in the Site background study or risk assessment and will therefore not be addressed during the remedial excavation program.

A total of approximately 3,500 m<sup>3</sup> of contaminated soil is anticipated to be removed from the Site, the bulk of which is anticipated to be treated at the existing LTF within the airport site, located approximately 2.0 km from AEC 22.

## 8.6.2 Health and Safety and Site Expectations

This includes identification of Prime Contractor, preparation of health and safety plans, confirmation of communication hierarchies, and a kick-off meeting to confirm scope of work, Site safety rules and expectations.

The remediation contractor responsible for the remedial excavation will be selected through a tender process, and will be the Prime Contractor for the remediation and restoration activities. This task is anticipated to occur in FY 2017/2018, prior to start of remedial excavations.

SNC-Lavalin will be the Prime Contractor for the investigation work on the Site.

## 8.6.3 Remedial Feasibility Study

A remedial feasibility study to delineate newly identified soil and groundwater hydrocarbon impacts at AEC 22 is proposed to be completed early in FY 2017/2018, prior to the preparation of the tender documentation.

## 8.6.4 Confirmation of Site Requirements

Confirmation of Site requirements applicable to the investigation and the remedial works will be completed prior to start of work. These requirements include (but are not limited to) the following:

- › Timing requirements for work, including least disruption of airport activities;
- › Review of regulatory approvals;
- › Geotechnical requirements, including sloping, shoring and backfilling;

- › Site restoration design; and
- › Site protection requirements.

### 8.6.4.1 Site Preparation

Site preparation includes activities conducted prior to the start of excavation work to ensure the work will proceed smoothly, including (but not limited to) the following:

- › Utility locates and any required protection, re-routing or removal of utilities prior to ground disturbance;
- › Survey of project area pre-remediation conditions;
- › Decommissioning of monitoring wells located within the excavation area;
- › Removal of aboveground structures and materials as required;
- › Preparation of spaces for Site support, such as office trailers, portable washrooms, lay-down areas, worker parking, and equipment refueling;
- › Set up temporary barricades or fencing/hoarding around work Site;
- › Initiation of erosion and sediment control measures;
- › Deployment of dewatering water treatment system, as required;
- › Identification and implementation of on- and off-Site traffic control requirements;
- › Identification and implementation of Site security requirements; and
- › Development of a quality assurance plan for all construction tasks.

## 8.6.5 Excavation and Restoration

### 8.6.5.1 Preparation of Tender Documents

This includes preparation of work scope, specifications, restrictions, and limitations to provide to prospective contractors as needed so they can submit a sound bid. Preparation of tender documents for the remedial excavation and LTF soil treatment is anticipated to be completed in the spring of FY 2017/2018.

### 8.6.5.2 Contractor Selection

This will include meeting with prospective contractors at the Site to confirm expectations and constraints (i.e., mandatory Site visit), reviewing submitted contractor bids, selecting a winning bid, and reviewing contractor submitted documents regarding proposed methodology and schedule.

### 8.6.5.3 Structures and Utilities

Sub-grade utilities, if present in excavation areas, will be cut-off, removed, and/or re-routed prior to commencement of ground disturbance activities. Overhead utilities, if present, will be identified and limits of approach will be established.

### 8.6.5.4 Excavation Approach

It is anticipated that the proposed excavation sequence will be designed to allow for multiple tasks to be completed at the same time, where possible, and to limit the exposure of excavation equipment to contaminated media. Sequencing will be at the discretion of the contractor. It is anticipated that contaminated soil removed within the specified extents will be hot-loaded for transport to the LTF or off-site disposal facility. If required, soil requiring further characterization will be stockpiled for sampling and subsequent appropriate disposition. The remedial excavation work is anticipated to be conducted in the summer of FY 2017/2018.

### 8.6.5.5 Excavation Sampling

SNC-Lavalin personnel will be on-Site for the duration of the remedial excavation to define the limits of excavation and observe and record remedial activities. Final remediation limits at the bottom of each excavation will be confirmed by sampling on a grid, depending: a) on the material quality removed; and b) the size of the excavation. Samples from excavation walls will be collected on an appropriate horizontal grid and vertically from a depth consistent with the removed zone of contamination. Sample locations will be surveyed and the extents of the excavation using appropriate survey methods (e.g., total station or GPS).

Excavated material to be further characterized will be stockpiled into 50 m<sup>3</sup> stockpiles of material suspected to be of consistent quality. Stockpiled soil will be sampled and analyzed for COCs. A summary will be provided to the remediation contractor in support of disposition requirements (i.e., LTF treatment, disposal, or re-use on Site).

### 8.6.5.6 Water Management

Remedial excavation is planned for the unsaturated and saturated zones; therefore, wet excavation techniques are likely required, with occasional dewatering (i.e., during backfilling). When dewatering is required, water in the excavation may be pumped through a treatment system designed for PHC removal, temporarily stored and disposed off-site, or re-infiltrated within the excavation area for recirculation. The treated water will be sampled for COCs and other constituents, as required, prior to discharge to ground on the Site, or disposal at an off-site permitted facility. Any water discharge on Site must occur at a rate for infiltration to occur with limited surface erosion. It is anticipated that an in-flow meter or other approved proposed method will be used to track the volume of discharge water.

### 8.6.5.7 Backfilling

The remedial excavations will be backfilled with suitable material and compacted. Backfill material must meet Yukon CSR CL standards. Prior to transport and placement, demonstration of compliance to these standards will be required for all material supplied for backfill. It is anticipated that compliance metrics for imported fill and compaction testing will be addressed in the contractor's Quality Plan.

### 8.6.5.8 Surface Restoration

Restoration of the Site will be to pre-excavation conditions or as specified by PWGSC and TC. At the conclusion of the remedial activities, at a minimum the remediation contractor will:

- › Restore the Site to conditions specified in their approved Site Restoration Plan, as required.
- › Clean all work areas to the satisfaction of PWGSC and TC.
- › Repair or replace at contractor's cost as necessary any damage to asphalt, buildings, lights, and other existing infrastructure that has occurred as a result of the contractor's use of the Site.
- › Remove all environmental controls (e.g., erosion and sediment controls).
- › Complete an as-built survey (by a licensed Land Surveyor) following Site restoration including (but not limited to) structures, utilities, and final Site grade.
- › Conduct a final Site walk-through with PWGSC and TC to inspect the Site works for any deficiencies. Once PWGSC and TC are satisfied with the final conditions, the contractor will be released from the Site.

## 8.6.6 LTF Soil Treatment

Soil treatment of PHC impacted soil from AEC 22 excavations is anticipated to be completed in the summer and early fall of FY 2017/2018 by a contractor selected by PWGSC. SNC-Lavalin personnel will be on-site during appropriate portions of the program to supervise the soil treatment activities, conduct confirmatory soil and sump water sampling, and to advise the contractor on treatment progress and completion.

Soil treatment activities will consist of re-working the soil (e.g., tilling) and application of nutrients and water, as needed. Confirmatory soil samples will be collected from each layer treated, using a grid pattern according to the Yukon CSR Protocol No. 11. Sump water sampling will be conducted periodically during the soil treatment program in order to assess the water quality and to obtain approval from Environment Yukon for water discharge. Soil and sump water analytical results will be compared to applicable Yukon CSR standards. Prior to removal of compliant soils from the LTF, analytical results will be submitted to Environment Yukon to request permission to remove the compliant soil to a stockpile location for future use as backfill within the airport.

## 8.6.7 Post-Remediation Study

Following remedial excavation, groundwater monitoring wells will be installed within and proximate to the excavation footprints to assess whether the objectives of the remedial excavation have been met. In general, monitoring wells will be installed: a) in areas in which concentrations of PHCs were previously detected above standards/guidelines (i.e., within excavation footprints); and c) down-gradient of the former contaminant sources (as required). Post-remedial well installation is anticipated to occur in the fall of FY 2017/2018. Groundwater sampling events are anticipated to occur in the fall of FY 2017/2018 and in the summer of FY 2018/2019.

## 8.7 Implementation Plan

### 8.7.1 Schedule

Key implementation tasks and approximate dates are described below (subject to change):

**Table F: Schedule of RAP Implementation**

Item	Fiscal Year
Remedial Feasibility Study	2017/2018
Tender Package Preparation – Remedial Excavation and LTF Soil Treatment	2017/2018
Remedial Excavation, backfill, restoration	2017/2018
LTF Soil Treatment	2017/2018
Post-Remediation Groundwater Monitoring	2017/2018
Additional Post-Remediation Groundwater Monitoring	2018/2019
Risk Assessment for Residual COCs	2018/2019
Monitoring Well Decommissioning	2018/2019
Closure Report	2018/2019

### 8.7.2 Preliminary Contractor and Consulting Costs

A liability estimate for FY2017/2018 and FY2018/2019 is presented in Appendix IV and includes estimated consulting and contractor costs based on both unit prices and lump sums.

## 8.8 Environmental Controls

Environmental controls will be required during all Site activities, including:

- › Minimization of air emissions;
- › Protection of surface water quality; and
- › Minimization of health and safety risks.



The remediation contractor will be required to prepare and submit an Environmental Protection Plan (EPP) that outlines the measures to be taken to prevent impacts to the environment and human health and safety. The EPP will incorporate the PWGSC Risk Management Form. As a due diligence control, permitting under YESAB may be required prior to start of remedial construction.

Effective erosion and sediment control will be paramount due to the proximity of Watson Lake to the excavation areas. It is anticipated that surface runoff will be collected and stored on Site for quality testing prior to release or disposal.

The Site is located in an area where it is accessible by members of the public. It is expected that as part of the EMP and Health and Safety Plan (HASp), security control measures based on the tender specification requirements will be outlined, including fencing, hoarding and public Site access constraints. If required, public consultation regarding environmental conditions (e.g., dust and odor) will be conducted under the direction of PWGSC, prior to start of construction work.

The remediation contractor will keep all traffic routes outside the Site clean (e.g., through the use of a street sweeper or other approved means). Debris generated during cleaning activities will be placed into a designated disposal location.

## 8.8.1 Yukon Environmental and Socio-economic Assessment Board (YESAB)

As part of PWGSC's due diligence during construction phase of the project, an Environmental Assessment report will be prepared to meet the requirements of the YESAB. Information would be collected from available sources, including site visit, online databases, and any relevant reports. The required forms will be completed and sent to PWGSC for signing and submission to YESAB.

## 8.8.2 Environmental Monitoring

If required by YESAB, environmental monitoring will be conducted on a daily basis, to ensure compliance with the Environmental Management Plan. A qualified Environmental Monitor will be on-site at all times during the remedial work. The condition of the Site will be monitored with respect to the EPP and YESAB assessment (if required) and issues will be managed to ensure that work is conducted in a safe and environmentally responsible manner.

## 8.9 Emergency Spill Response

The construction contractor will prepare an Emergency Spill Prevention and Response Plan as an adjunct to the EPP. The plan should include (but not be limited to) the following:

- › Identification of potentially hazardous materials in use on the Site;
- › Material Safety Data Sheet for hazardous materials;

- › Measures to mitigate the release of hazardous materials to the environment;
- › Communication hierarchy for reporting of hazardous material releases; and
- › Response measures to remove or contain the hazardous materials upon release.

## 8.10 Residual Contaminant Fate

Following remedial excavation, a risk assessment may be conducted to identify risk management requirements for residual metals and PHC contamination in soil and groundwater at AEC 22. Risk management of residual COCs is anticipated to identify the ecological and human health impacts of existing contamination and plan for mitigating additional risk indefinitely into the future.

## 8.11 Remedial Verification and Long-Term Monitoring

It is anticipated that remedial verification will be completed for each contaminant of concern as follows:

- › Remediation of PHC contamination in soil and groundwater will be verified by excavation confirmation soil samples and groundwater monitoring. It is anticipated that groundwater monitoring will be conducted during two seasons following excavation to verify that the objectives of the remedial excavation have been met.
- › Confirmation of treatment of PHC impacted soil at the on-site LTF will include collection of soil and sump water samples. It is anticipated that completion of the treatment will conclude within one year following excavation. Upon confirmation of compliance, a request letter will be prepared and submitted to Yukon Environment for approval to transfer the soil from the LTF to a compliant stockpile at the airport and to discharge the sump water at a vegetated area adjacent to the LTF. It is anticipated that the compliant soil may be reused as backfill for future excavations within the airport.

## 9 Conclusion and recommendations

Based on the results from ESAs conducted in 2006, 2009 and 2016 at APECs 22 A to E, COCs were detected in both soil and groundwater at concentrations above their respective regulatory standard. As such, these locations were considered Areas of Environmental Concern (AECs), as summarized in the table below.

AEC #	COCs Identified	Location	Estimated Area (m <sup>2</sup> )	Estimated Thickness (m)	Approximate Volume of Impacted Soil (m <sup>3</sup> )
<b>On-Site AECs</b>					
22B	<b>Soil:</b> CWS F2 (3.0 – 3.8 m) <b>Groundwater:</b> none	22B-MW06-3	200	1.5	300
	<b>Soil:</b> none <b>Groundwater:</b> Mn (background). No PHC exceedances in soil or gw at this location	MW09-22B-7	-	-	-
Sub-Total AEC 22B					300
22E	<b>Soil:</b> LEPH (3.7 – 4.0 m) <b>Groundwater:</b> none	22E-BH16-6-2	500	1	500
	<b>Soil:</b> none <b>Groundwater:</b> Mn (background). No PHC exceedances in soil or gw at this location	MW09-22E-4	-	-	-
Sub-Total AEC 22E					500
<b>Sub-Total On-Site</b>					<b>800</b>
<b>Off-Site AECs</b>					
22A	<b>Soil:</b> CWS F4 (2.4 – 3.0 m) <b>Groundwater:</b> none	22A-MW06-1	250	1	250
	<b>Soil:</b> EPH <sub>C10-C19</sub> (2.7 – 2.9 m) <b>Groundwater:</b> LEPHw	MW09-22A-15	940	1	940
	<b>Soil:</b> none <b>Groundwater:</b> Mn, Fe (background). No PHC exceedances in soil or gw at this location	MW09-22A-19	-	-	-
	<b>Soil:</b> Arsenic (0.3 – 0.5 m) <b>Groundwater:</b> none	22A-BH16-28	20	0.5	10
	<b>Soil:</b> none <b>Groundwater:</b> LEPHw (slightly above standard. Re-sampling recommended to confirm or refute result)	22A-MW16-30	-	-	-
Sub-Total AEC 22A					1,200



AEC #	COCs Identified	Location	Estimated Area (m <sup>2</sup> )	Estimated Thickness (m)	Approximate Volume of Impacted Soil (m <sup>3</sup> )
<b>Off-Site AECs (Cont'd)</b>					
22C	<b>Soil:</b> none <b>Groundwater:</b> Fe (background). No PHC exceedances in soil or gw at this location	22C-MW06-2	-	-	-
	<b>Soil:</b> none <b>Groundwater:</b> Mn (background). No PHC exceedances in soil or gw at this location	MW09-22C-14 MW09-22C-22	-	-	-
	<b>Soil:</b> Arsenic (2.7 – 2.9 m) <b>Groundwater:</b> none	BH09-22C-20	20	0.5	10
	<b>Soil:</b> none <b>Groundwater:</b> benzo(a)pyrene (slightly above standard. Re-sampling recommended to confirm or refute result)	22C-MW16-29	-	-	-
	<b>Soil:</b> LEPH (2.9 – 3.2 m) <b>Groundwater:</b> none	22C-BH16-30-2	490	1	490
Sub-Total AEC 22C					500
22D	<b>Soil:</b> CWS F2 (2.1 – 3.0 m) <b>Groundwater:</b> none	22D-MW06-2	265	1.5	400
	<b>Soil:</b> LEPH (1.2 – 1.5 m) <b>Groundwater:</b> none	22D-MW16-9	600	1	600
Sub-Total AEC 22D					1,000
<b>Sub-Total Off-Site</b>					<b>2,700</b>
<b>TOTAL AEC 22</b>					<b>3,500</b>

LEPH, F2, F4 and metals were identified as COCs in soil and LEPHw was identified as a COC in groundwater in well MW09-22A-15. LEPHw in well 22A-MW16-30 and benzo(a)pyrene in well 22C-MW16-29 were reported at concentrations slightly above the applicable standards; however, re-sampling of these wells is recommended to confirm or refute these parameters as COCs at the specified locations. Iron and manganese exceedances in groundwater at AEC 22 were identified at locations with no hydrocarbon impact and may be related to a background condition of the local aquifer. Therefore, iron and manganese elevated concentrations in groundwater will be addressed as part of a background study and/or risk assessment. The total approximate volume of impacted soil at AECs 22 (A to E) is 3,500 m<sup>3</sup>.

It is important to note that the data obtained in this SSI indicated that contamination in both soil and groundwater has been identified at locations not addressed in previous investigations. These impacts have not been fully delineated and, therefore, the calculated volumes are estimated based on available sample data.

A remedial options analysis was conducted for strategies to remove or treat and risk assess the contaminants in the affected media, as follows:

<b>Remedial Options</b>	<b>Option 1: Excavation of Contamination</b>	<b>Option 2: In Situ Remedial Treatment and Risk Assessment</b>	<b>Option 3: Risk Assessment / Management</b>
Technical Feasibility	Good	Satisfactory	Satisfactory
Timing	Satisfactory	Poor	Poor
Operations and Maintenance	Satisfactory	Poor	Good
Likelihood of Success	Good	Satisfactory	Satisfactory
Estimated Cost	Moderate (\$2,400,000)	Highest (4,000,000)	Lowest (\$800,000) <sup>1</sup>
Liability	Good	Satisfactory	Poor

<sup>1</sup> Estimated cost for additional delineation, Risk Assessment and monitoring only. If excavation of “hot spots” is required, additional remedial costs will be incurred.

Excavation of soil impacts (Option 1) to numerical standards has a moderate cost and the shortest schedule. The removal of contamination also has the lowest liability risk. The option B with in-situ treatment and risk assessment components has the highest cost and potential to require additional mitigation measures and long term monitoring. Risk assessment and risk management is the most cost effective option; however, it has the highest liability risk and it may result in long term monitoring requirements. Additionally, community acceptance can be low for approaches that do not involve removal of contaminants.

Based on the remedial options screening, Option 1 is recommended for remediation of the PHC and metals contamination at AEC 22 due to satisfactory timeline and potential for successfully remediation of contaminated soil to numerical standards. Contaminated soil disposal costs can be minimized by treating hydrocarbon impacted soil at the existing on site LTF.

## 10 References

*Yukon Contaminated Sites Regulation (CSR) standards*, O.I.C. 2002/171 Environment Act, Whitehorse, Yukon Territory, August 5, 2002.

*Protocol No. 3: Soil Sampling Procedures at Contaminated Sites*, Protocol for the Contaminated Sites Regulation under the Environment Act, Prepared pursuant to Part 6 – Administration, Section 21, Contaminated Sites Regulation, OIC 2002/171

*Protocol No. 7: Groundwater Monitoring Well Installation, Sampling and Decommissioning*, Protocol for the Contaminated Sites Regulation Under the Environment Act, Prepared pursuant to Part 6 – Administration, Section 21, Contaminated Sites Regulation, OIC 2002/171

*Groundwater Supply Wells*, data from Environment Yukon, provided by Groundwater Information Network (GIN) website: [http://gin.gw-info.net/service/api\\_ngwds:gin2/en/gin.html](http://gin.gw-info.net/service/api_ngwds:gin2/en/gin.html)

*Phase I Environmental Site Assessment*, Watson Lake Airport, Watson Lake, Yukon Territory, prepared by Gartner Lee Ltd., dated December, 2002.

*Phase II and III Environmental Site Assessment*, Watson Lake Airport, Watson Lake, Yukon Territory, prepared by Franz Environmental Inc. (Arcadis), dated October, 2006.

*Supplemental Drilling Program*, Watson Lake Airport, Watson Lake, Yukon Territory, prepared by Franz Environmental Inc. (Arcadis), dated March, 2010.

# 11 Notice to Reader

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This report is intended to provide information to Canada to assist it in making business decisions. SNC-Lavalin is not a party to the various considerations underlying the business decisions, and does not make recommendations regarding such business decisions.

The findings, conclusions and recommendations in this report have been developed in a manner consistent with the level of skill normally exercised by environmental professionals currently practising under similar conditions in the area. The findings contained in this report are based, in part, upon information provided by others. If any of the information is inaccurate, modifications to the findings, conclusions and recommendations may be necessary.

The findings, conclusions and recommendations presented by SNC-Lavalin in this report reflect SNC-Lavalin's best judgement based on the site conditions at the time of the site inspection on the date(s) set out in this report and on information available at the time of preparation of this report. They have been prepared for specific application to this site and are based, in part, upon visual observation of the site, subsurface investigation at discrete locations and depths, and specific analysis of specific materials as described in this report during a specific time interval. Substances other than those described may exist within the site, reported substance parameters may exist in areas of the site not investigated, and concentrations of substances greater or less than those reported may exist between sample locations.

The findings and conclusions of this report are valid only as of the date of this report. If site conditions change, new information is discovered, or unexpected site conditions are encountered in future work, including excavations, borings, or other studies, the findings, conclusions and/or recommendations of this report should be re-evaluated. It is recommended that users of this report should engage a suitably qualified professional to assist in interpreting the significance, if any, of the findings.

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**TABLE 1a: Summary of Analytical Results for Soil - Hydrocarbons (AEC 22B, AEC 22E)**

Sample Location	Sample ID	Sample Date (yyyy mm dd)	Depth Interval (m)	Field Screen <sup>b</sup> (ppm)	Monocyclic Aromatic Hydrocarbons					Gross Parameters					MTBE
					Benzene (µg/g)	Ethylbenzene (µg/g)	Toluene (µg/g)	Xylenes (µg/g)	Styrene (µg/g)	VPH (C6-C10) (µg/g)	EPH (C10-C19) <sup>d</sup> (µg/g)	LEPH (C10-C19) (µg/g)	EPH (C19-C32) <sup>c</sup> (µg/g)	HEPH (C19-C32) (µg/g)	
<b>AEC 22B</b>															
BH09-22B-4	BH09-22B-4-2	2009 09 12	1.2 - 1.4	-	< 0.04	< 0.5	< 0.5	< 0.1	< 0.1	< 100	-	-	-	-	-
	BH09-22B-4-2(M)	2009 09 12	1.2 - 1.4	-	< 0.5 <sup>a</sup>	< 0.5	< 0.5	< 0.5	-	< 100	< 250	-	< 250	-	-
	BH09-22B-4-5	2009 09 12	3.3 - 3.5	-	< 0.04	< 0.5	< 0.5	< 0.1	< 0.1	< 100	< 250	< 250	< 250	< 250	-
	BH09-22B-4-5(M)	2009 09 12	3.3 - 3.5	-	< 0.5 <sup>a</sup>	< 0.5	< 0.5	< 0.5	-	< 100	< 250	-	< 250	-	-
BH09-22B-5	BH09-22B-5-4	2009 09 12	2.7 - 2.9	-	< 0.04	< 0.5	< 0.5	< 0.1	< 0.1	< 100	< 250	< 250	< 250	< 250	-
	BH09-22B-5-4(M)	2009 09 12	2.7 - 2.9	-	< 0.5 <sup>a</sup>	< 0.5	< 0.5	< 0.5	-	< 100	< 250	-	< 250	-	-
	BH09-22B-5-6	2009 09 12	4.2 - 4.4	-	< 0.04	< 0.5	< 0.5	< 0.1	< 0.1	< 100	< 250	-	< 250	-	-
	BH09-22B-5-6(M)	2009 09 12	4.2 - 4.4	-	< 0.5 <sup>a</sup>	< 0.5	< 0.5	< 0.5	-	< 100	< 250	-	< 250	-	-
BH09-22B-6	BH09-22B-6-5	2009 09 12	3.3 - 3.5	-	< 0.04	< 0.5	< 0.5	< 0.1	< 0.1	< 100	< 250	< 250	< 250	< 250	-
	BH09-22B-6-5(M)	2009 09 12	3.3 - 3.5	-	< 0.5 <sup>a</sup>	< 0.5	< 0.5	< 0.5	-	< 100	< 250	-	< 250	-	-
	BH09-22B-6-6	2009 09 12	4.2 - 4.5	-	< 0.04	< 0.5	< 0.5	< 0.1	< 0.1	< 100	< 250	-	< 250	-	-
	BH09-22B-6-6(M)	2009 09 12	4.2 - 4.5	-	< 0.5 <sup>a</sup>	< 0.5	< 0.5	< 0.5	-	< 100	< 250	-	< 250	-	-
BH09-22B-7	BH09-22B-7-4	2009 09 12	2.7 - 2.9	-	< 0.04	< 0.5	< 0.5	< 0.1	< 0.1	< 100	< 250	-	< 250	-	-
	BH09-22B-7-4(M)	2009 09 12	2.7 - 2.9	-	< 0.5 <sup>a</sup>	< 0.5	< 0.5	< 0.5	-	< 100	< 250	-	< 250	-	-
	BH09-22B-7-6	2009 09 12	4.2 - 4.5	-	< 0.04	< 0.5	< 0.5	< 0.1	< 0.1	< 100	< 250	< 250	< 250	< 250	-
	BH09-22B-7-6(M)	2009 09 12	4.2 - 4.5	-	< 0.5 <sup>a</sup>	< 0.5	< 0.5	< 0.5	-	< 100	< 250	-	< 250	-	-
BH09-22B-8	BH09-22B-8-4	2009 09 12	2.7 - 2.9	-	< 0.04	< 0.5	< 0.5	< 0.1	< 0.1	< 100	< 250	< 250	< 250	< 250	-
	BH09-22B-8-4(M)	2009 09 12	2.7 - 2.9	-	< 0.5 <sup>a</sup>	< 0.5	< 0.5	< 0.5	-	< 100	< 250	-	< 250	-	-
	BH09-22B-8-8	2009 09 12	5.8 - 6.2	-	< 0.04	< 0.5	< 0.5	< 0.1	< 0.1	< 100	< 250	< 250	< 250	< 250	-
	BH09-22B-8-8(M)	2009 09 12	5.8 - 6.2	-	< 0.5 <sup>a</sup>	< 0.5	< 0.5	< 0.5	-	< 100	< 250	-	< 250	-	-
22B-BH16-8	22B-BH16-8-2	2016 11 06	2.1 - 2.4	0	< 0.0050	0.35	0.039	1.2	< 0.030	61	280	280	< 100	< 100	< 0.10
	22B-BH16-8-3	Duplicate	2.1 - 2.4	0	< 0.0050	0.20	0.043	0.73	< 0.030	39	160	160	< 100	< 100	< 0.10
	<b>QA/QC RPD%</b>					*	55	*	49	*	*	*	*	*	*
22B-BH16-9	22B-BH16-9-1	2016 11 06	3.4 - 3.5	0	< 0.0050	< 0.010	< 0.020	< 0.040	< 0.030	< 10	< 100	< 100	< 100	< 100	< 0.10
	22B-BH16-9-2	2016 11 06	0.8 - 0.9	0	< 0.0050	< 0.010	< 0.020	< 0.040	< 0.030	< 10	< 100	< 100	< 100	< 100	< 0.10
22B-BH16-10	22B-BH16-10-1	2016 11 06	2.6 - 2.7	0	< 0.0050	< 0.010	< 0.020	< 0.040	< 0.030	< 10	< 100	< 100	< 100	< 100	< 0.10
	22B-BH16-10-2	2016 11 06	0.2 - 0.3	0	< 0.0050	< 0.010	< 0.020	< 0.040	< 0.030	< 10	< 100	< 100	< 100	< 100	< 0.10
22B-BH16-11	22B-BH16-11-1	2016 11 06	2.6 - 2.7	0	< 0.0050	< 0.010	< 0.020	< 0.040	< 0.030	< 10	< 100	< 100	< 100	< 100	< 0.10
	22B-BH16-11-2	2016 11 06	0.5 - 0.6	0	< 0.0050	< 0.010	< 0.020	< 0.040	< 0.030	< 10	< 100	< 100	< 100	< 100	< 0.10
22B-BH16-12	22B-BH16-12-2	2016 11 06	1.7 - 2.0	0	< 0.0050	< 0.010	< 0.020	< 0.040	< 0.030	< 10	< 100	< 100	< 100	< 100	< 0.10
	22B-BH16-12-3	2016 11 06	3.5 - 3.7	0	< 0.0050	< 0.010	< 0.020	< 0.040	< 0.030	< 10	< 100	< 100	< 100	< 100	< 0.10
<b>AEC 22E</b>															
BH09-22E-3	BH09-22E-3-1(M)	2009 08 26	0.3 - 0.6	-	< 0.5 <sup>a</sup>	< 0.5	< 0.5	< 0.5	-	< 100	< 250	-	2,100	-	-
	BH09-22E-3-2(M)	2009 08 26	0.9 - 1.2	-	< 0.5 <sup>a</sup>	< 0.5	< 0.5	< 0.5	-	< 100	< 250	-	1,800	-	-
	BH09-22E-3-3(M)	2009 08 26	1.8 - 2.3	-	< 0.5 <sup>a</sup>	< 0.5	< 0.5	< 0.5	-	< 100	< 250	-	< 250	-	-
	BH09-22E-3-4(M)	2009 08 26	2.6 - 2.9	-	< 0.5 <sup>a</sup>	< 0.5	< 0.5	< 0.5	-	< 100	< 250	-	< 250	-	-
	DUP-04S-22E(M)	Duplicate	2.6 - 2.9	-	< 0.5 <sup>a</sup>	< 0.5	< 0.5	< 0.5	-	< 100	< 250	-	< 250	-	-
	<b>QA/QC RPD%</b>					*	*	*	*	-	*	*	-	*	-
BH09-22E-4	BH09-22E-3-5	2009 08 19	3.4 - 3.6	-	< 0.04	< 0.5	< 0.5	< 0.1	< 0.1	< 100	< 250	< 250	< 250	< 250	-
	BH09-22E-3-5(M)	2009 08 26	3.4 - 3.6	-	< 0.5 <sup>a</sup>	< 0.5	< 0.5	< 0.5	-	< 100	< 250	-	< 250	-	-
	BH09-22E-3-6(M)	2009 08 26	4.2 - 4.5	-	< 0.5 <sup>a</sup>	< 0.5	< 0.5	< 0.5	-	< 100	< 250	-	< 250	-	-
	BH09-22E-4-1	2009 08 19	0.3 - 0.4	-	< 0.04	< 0.5	< 0.5	< 0.1	< 0.1	< 100	< 250	< 250	< 250	< 250	-
	BH09-22E-4-1(M)	2009 08 26	0.3 - 0.4	-	< 0.5 <sup>a</sup>	< 0.5	< 0.5	< 0.5	-	< 100	< 250	-	< 250	-	-
	BH09-22E-4-2(M)	2009 08 26	0.9 - 0.8	-	< 0.5 <sup>a</sup>	< 0.5	< 0.5	< 0.5	-	< 100	< 250	-	< 250	-	-
	BH09-22E-4-3(M)	2009 08 26	2.1 - 2.4	-	< 0.5 <sup>a</sup>	< 0.5	< 0.5	< 0.5	-	< 100	< 250	-	< 250	-	-
	BH09-22E-4-4(M)	2009 08 26	2.4 - 2.7	-	< 0.5 <sup>a</sup>	< 0.5	< 0.5	< 0.5	-	< 100	< 250	-	< 250	-	-
22E-BH16-5	22E-BH16-5-1	2016 11 01	3.3 - 3.5	-	< 0.5 <sup>a</sup>	< 0.5	< 0.5	< 0.5	-	< 100	< 250	-	< 250	-	-
	DUP-05S-22E(M)	Duplicate	3.3 - 3.5	-	< 0.5 <sup>a</sup>	< 0.5	< 0.5	< 0.5	-	< 100	< 250	-	< 250	-	-
	<b>QA/QC RPD%</b>					*	*	*	*	-	*	-	*	-	-
22E-BH16-6	22E-BH16-6-1	2016 11 01	4.1 - 4.2	-	< 0.5 <sup>a</sup>	< 0.5	< 0.5	< 0.5	-	< 100	< 250	-	< 250	-	-
	22E-BH16-6-2	2016 11 01	0.8 - 1.1	0	< 0.0050	< 0.010	< 0.020	< 0.040	< 0.030	< 10	120	120	390	390	< 0.10
	22E-BH16-6-3	2016 11 05	2.4 - 3.0	0	< 0.0050	< 0.010	< 0.020	< 0.040	< 0.030	< 10	< 100	< 100	290	290	< 0.10
Yukon Standard	Yukon CSR Commercial Land Use (CL) <sup>c</sup>				0.04	7	2.5	20	50	200	2,000	2,000	5,000	5,000	n/a
	<b>SHADOW</b> Concentration greater than Yukon CSR Commercial Land Use (CL) Standard														

Associated Maxxam file(s): B699544, B6A0684, B6A0697.  
 All terms defined within the body of SNC-Lavalin's report.  
 < Denotes concentration less than indicated detection limit or RPD less than indicated value.  
 - Denotes analysis not conducted.  
 n/a Denotes no applicable standard/guideline.  
 RPD Denotes relative percent difference.  
 \* RPDs are not calculated where one or more concentrations are less than five times RDL.  
 RDL Denotes reported detection limit.  
 (M) Sample analyzed at mobile laboratory.

<sup>a</sup> Laboratory detection limit exceeds regulatory standard/guideline.  
<sup>b</sup> Field screening results are measured based on a 'dry headspace' method using a combustible gas meter calibrated to a hexane standard.  
<sup>c</sup> The site-specific factors used for determining the matrix standards for this site include: intake of contaminated soil, groundwater used for drinking water, toxicity to soil invertebrates and plants, and groundwater flow to surface water used by freshwater aquatic life (whichever is most stringent).  
<sup>d</sup> EPH has no applicable CSR standard, however results have been compared to LEPH and HEPH standards, which are conservative comparisons.





TABLE 2a: Summary of Analytical Results for Soil - Polycyclic Aromatic Hydrocarbons (AEC 22B, AEC 22E)

Sample Location	Sample ID	Sample Date (yyyy mm dd)	Depth Interval (m)	Field Screen <sup>a</sup> (ppm)	Polycyclic Aromatic Hydrocarbons																		
					Naphthalene µg/g	2-Methylnaphthalene µg/g	Acenaphthylene µg/g	Acenaphthene µg/g	Fluorene µg/g	Phenanthrene µg/g	Anthracene µg/g	Fluoranthene µg/g	Pyrene µg/g	Benzo(a)anthracene µg/g	Chrysene µg/g	Benzo(b)fluoranthene µg/g	Benzo(b+j)fluoranthene µg/g	Benzo(k)fluoranthene µg/g	Benzo(a)pyrene µg/g	Indeno(1,2,3-cd)pyrene µg/g	Dibenz(a,h)anthracene µg/g	Benzo(g,h,i)perylene µg/g	
<b>AEC 22B</b>																							
BH09-22B-4	BH09-22B-4-5	2009 09 12	3.3 - 3.5	-	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05	-	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05
BH09-22B-5	BH09-22B-5-4	2009 09 12	2.7 - 2.9	-	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05	-	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05
BH09-22B-6	BH09-22B-6-5	2009 09 12	3.3 - 3.5	-	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05	-	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05
BH09-22B-7	BH09-22B-7-6	2009 09 12	4.2 - 4.5	-	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05	-	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05
BH09-22B-8	BH09-22B-8-4	2009 09 12	2.7 - 2.9	-	0.06	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05	-	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05
	BH09-22B-8-8	2009 09 12	5.8 - 6.2	-	0.06	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05	-	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05
22B-BH16-8	22B-BH16-8-2	2016 11 06	2.1 - 2.4	0	2.5	2.9	< 0.050	< 0.050	< 0.050	< 0.050	< 0.050	< 0.050	< 0.050	< 0.050	< 0.050	< 0.050	< 0.050	< 0.050	< 0.050	< 0.050	< 0.050	< 0.050	< 0.050
	22B-BH16-8-3	Duplicate	2.1 - 2.4	0	1.7	1.6	< 0.050	< 0.050	< 0.050	< 0.050	< 0.050	< 0.050	< 0.050	< 0.050	< 0.050	< 0.050	< 0.050	< 0.050	< 0.050	< 0.050	< 0.050	< 0.050	< 0.050
	<b>QA/QC RPD%</b>					38	58	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*
	22B-BH16-8-4	2016 11 06	3.4 - 3.5	0	< 0.050	< 0.050	< 0.050	< 0.050	< 0.050	< 0.050	< 0.050	< 0.050	< 0.050	< 0.050	< 0.050	< 0.050	< 0.050	< 0.050	< 0.050	< 0.050	< 0.050	< 0.050	< 0.050
22B-BH16-9	22B-BH16-9-1	2016 11 06	0.8 - 0.9	0	< 0.050	< 0.050	< 0.050	< 0.050	< 0.050	< 0.050	< 0.050	< 0.050	< 0.050	< 0.050	< 0.050	< 0.050	< 0.050	< 0.050	< 0.050	< 0.050	< 0.050	< 0.050	< 0.050
	22B-BH16-9-2	2016 11 06	2.6 - 2.7	0	< 0.050	< 0.050	< 0.050	< 0.050	< 0.050	< 0.050	< 0.050	< 0.050	< 0.050	< 0.050	< 0.050	< 0.050	< 0.050	< 0.050	< 0.050	< 0.050	< 0.050	< 0.050	< 0.050
	22B-BH16-10	22B-BH16-10-1	2016 11 06	0.2 - 0.3	0	< 0.050	< 0.050	< 0.050	< 0.050	< 0.050	< 0.050	< 0.050	< 0.050	< 0.050	< 0.050	< 0.050	< 0.050	< 0.050	< 0.050	< 0.050	< 0.050	< 0.050	< 0.050
	22B-BH16-10-2	2016 11 06	2.6 - 2.7	0	< 0.050	< 0.050	< 0.050	< 0.050	< 0.050	< 0.050	< 0.050	< 0.050	< 0.050	< 0.050	< 0.050	< 0.050	< 0.050	< 0.050	< 0.050	< 0.050	< 0.050	< 0.050	< 0.050
22B-BH16-11	22B-BH16-11-1	2016 11 06	0.5 - 0.6	0	< 0.050	< 0.050	< 0.050	< 0.050	< 0.050	< 0.050	< 0.050	< 0.050	< 0.050	< 0.050	< 0.050	< 0.050	< 0.050	< 0.050	< 0.050	< 0.050	< 0.050	< 0.050	< 0.050
	22B-BH16-11-2	2016 11 06	1.7 - 2.0	0	< 0.050	< 0.050	< 0.050	< 0.050	< 0.050	< 0.050	< 0.050	< 0.050	< 0.050	< 0.050	< 0.050	< 0.050	< 0.050	< 0.050	< 0.050	< 0.050	< 0.050	< 0.050	< 0.050
22B-BH16-12	22B-BH16-12-2	2016 11 06	3.5 - 3.7	0	< 0.050	< 0.050	< 0.050	< 0.050	< 0.050	< 0.050	< 0.050	< 0.050	< 0.050	< 0.050	< 0.050	< 0.050	< 0.050	< 0.050	< 0.050	< 0.050	< 0.050	< 0.050	< 0.050
	22B-BH16-12-3	2016 11 06	4.6 - 4.7	0	< 0.050	< 0.050	< 0.050	< 0.050	< 0.050	< 0.050	< 0.050	< 0.050	< 0.050	< 0.050	< 0.050	< 0.050	< 0.050	< 0.050	< 0.050	< 0.050	< 0.050	< 0.050	< 0.050
<b>AEC 22E</b>																							
BH09-22E-3	BH09-22E-3-5	2009 08 19	3.4 - 3.6	-	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05	-	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05
BH09-22E-4	BH09-22E-4-1	2009 08 19	0.3 - 0.4	-	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05	-	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05
22E-BH16-5	22E-BH16-5-1	2016 11 01	0.8 - 1.1	0	< 0.050	< 0.050	< 0.050	< 0.050	< 0.050	0.45	0.072	0.75	0.61	0.28	0.41	0.34	0.54	0.18	0.32	0.21	0.21	0.061	0.28
	22E-BH16-5-2	2016 11 01	2.4 - 3.0	0	< 0.050	< 0.050	< 0.050	< 0.050	< 0.050	0.34	0.054	0.52	0.40	0.19	0.26	0.20	0.34	0.11	0.21	0.11	< 0.050	0.15	
22E-BH16-6	22E-BH16-6-1	2016 11 01	0.6 - 0.9	0	< 0.050	< 0.050	< 0.050	< 0.050	< 0.050	< 0.050	< 0.050	< 0.050	< 0.050	< 0.050	< 0.050	< 0.050	< 0.050	< 0.050	< 0.050	< 0.050	< 0.050	< 0.050	< 0.050
	22E-BH16-6-2	2016 11 01	3.7 - 4.0	0	< 0.050	2.1	< 0.050	0.23	0.62	0.23	< 0.050	< 0.050	< 0.050	< 0.050	< 0.050	< 0.050	< 0.050	< 0.050	< 0.050	< 0.050	< 0.050	< 0.050	< 0.050
	22E-BH16-6-3	2016 11 05	4.4 - 4.6	0	< 0.050	< 0.050	< 0.050	< 0.050	< 0.050	< 0.050	< 0.050	< 0.050	< 0.050	< 0.050	< 0.050	< 0.050	< 0.050	< 0.050	< 0.050	< 0.050	< 0.050	< 0.050	< 0.050
<b>Yukon Standard</b>																							
Yukon CSR Commercial Land Use (CL) <sup>b</sup>					50	n/a	n/a	n/a	n/a	50	n/a	n/a	100	10	n/a	10	n/a	10	10	10	10	10	n/a

Associated Maxxam file(s): B699544, B6A0684, B6A0697.

All terms defined within the body of SNC-Lavalin's report.

< Denotes concentration less than indicated detection limit or RPD less than indicated value.

- Denotes analysis not conducted.

n/a Denotes no applicable standard/guideline.

RPD Denotes relative percent difference.

\* RPDs are not calculated where one or more concentrations are less than five times RDL.

RDL Denotes reported detection limit.

**SHADOW** Concentration greater than Yukon CSR Commercial Land Use (CL) Standard

<sup>a</sup> Field screening results are measured based on a 'dry headspace' method using a combustible gas meter calibrated to a hexane standard.

<sup>b</sup> The site-specific factors used for determining the matrix standards for this site include: intake of contaminated soil, groundwater used for drinking water, toxicity to soil invertebrates and plants, and groundwater flow to surface water used by freshwater aquatic life (whichever is most stringent).





TABLE 2b (Cont'd): Summary of Analytical Results for Soil - Polycyclic Aromatic Hydrocarbons (AEC 22A, AEC 22C, AEC 22D)

Sample Location	Sample ID	Sample Date (yyyy mm dd)	Depth Interval (m)	Field Screen <sup>a</sup> (ppm)	Polycyclic Aromatic Hydrocarbons																	
					Naphthalene µg/g	2-Methylnaphthalene µg/g	Acenaphthylene µg/g	Acenaphthene µg/g	Fluorene µg/g	Phenanthrene µg/g	Anthracene µg/g	Fluoranthene µg/g	Pyrene µg/g	Benzo(a)anthracene µg/g	Chrysene µg/g	Benzo(b)fluoranthene µg/g	Benzo(b+j)fluoranthene µg/g	Benzo(k)fluoranthene µg/g	Benzo(a)pyrene µg/g	Indeno(1,2,3-cd)pyrene µg/g	Dibenz(a,h)anthracene µg/g	Benzo(g,h,i)perylene µg/g
<b>AEC 22D</b>																						
22D-BH16-7	22D-BH16-7-1	2016 11 05	0.3 - 0.5	0	< 0.050	< 0.050	< 0.050	< 0.050	< 0.050	< 0.050	< 0.050	< 0.050	< 0.050	< 0.050	< 0.050	< 0.050	< 0.050	< 0.050	< 0.050	< 0.050	< 0.050	< 0.050
	22D-BH16-7-2	2016 11 05	2.6 - 2.9	0	< 0.050	< 0.050	< 0.050	< 0.050	< 0.050	< 0.050	< 0.050	< 0.050	< 0.050	< 0.050	< 0.050	< 0.050	< 0.050	< 0.050	< 0.050	< 0.050	< 0.050	< 0.050
	22D-BH16-7-3	Duplicate	2.6 - 2.9	0	< 0.050	< 0.050	< 0.050	< 0.050	< 0.050	< 0.050	< 0.050	< 0.050	< 0.050	< 0.050	< 0.050	< 0.050	< 0.050	< 0.050	< 0.050	< 0.050	< 0.050	< 0.050
<b>QA/QC RPD%</b>					*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*
22D-BH16-8	22D-BH16-8-1	2016 11 05	0.3 - 0.5	0	< 0.050	< 0.050	< 0.050	< 0.050	< 0.050	< 0.050	< 0.050	< 0.050	< 0.050	< 0.050	< 0.050	< 0.050	< 0.050	< 0.050	< 0.050	< 0.050	< 0.050	< 0.050
	22D-BH16-8-2	2016 11 05	3.4 - 3.7	0	< 0.050	< 0.050	< 0.050	< 0.050	< 0.050	< 0.050	< 0.050	< 0.050	< 0.050	< 0.050	< 0.050	< 0.050	< 0.050	< 0.050	< 0.050	< 0.050	< 0.050	< 0.050
22D-BH16-9	22D-BH16-9-2	2016 11 05	1.2 - 1.5	0	< 0.050	< 0.050	< 0.050	0.10	< 0.050	< 0.050	< 0.050	< 0.050	< 0.050	< 0.050	< 0.050	< 0.050	< 0.050	< 0.050	< 0.050	< 0.050	< 0.050	< 0.050
	22D-BH16-9-3	2016 11 05	2.6 - 2.7	0	< 0.050	< 0.050	< 0.050	< 0.050	< 0.050	< 0.050	< 0.050	< 0.050	< 0.050	< 0.050	< 0.050	< 0.050	< 0.050	< 0.050	< 0.050	< 0.050	< 0.050	< 0.050
22D-BH16-10	22D-BH16-10-2	2016 11 05	2.1 - 2.4	0	< 0.050	< 0.050	< 0.050	< 0.050	< 0.050	< 0.050	< 0.050	< 0.050	< 0.050	< 0.050	< 0.050	< 0.050	< 0.050	< 0.050	< 0.050	< 0.050	< 0.050	< 0.050
	22D-BH16-10-3	Duplicate	2.1 - 2.4	0	< 0.050	< 0.050	< 0.050	< 0.050	< 0.050	< 0.050	< 0.050	< 0.050	< 0.050	< 0.050	< 0.050	< 0.050	< 0.050	< 0.050	< 0.050	< 0.050	< 0.050	< 0.050
	<b>QA/QC RPD%</b>					*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*
22D-BH16-10-4	2016 11 05	3.2 - 3.4	0	< 0.050	< 0.050	< 0.050	< 0.050	< 0.050	< 0.050	< 0.050	< 0.050	< 0.050	< 0.050	< 0.050	< 0.050	< 0.050	< 0.050	< 0.050	< 0.050	< 0.050	< 0.050	< 0.050
<b>Yukon Standard</b>																						
Yukon CSR Commercial Land Use (CL) <sup>b</sup>					50	n/a	n/a	n/a	n/a	50	n/a	n/a	100	10	n/a	10	n/a	10	10	10	10	n/a

Associated Maxxam file(s): B699546, B699547, B6A0687, B6A0692.  
 All terms defined within the body of SNC-Lavalin's report.  
 < Denotes concentration less than indicated detection limit or RPD less than indicated value.  
 - Denotes analysis not conducted.  
 n/a Denotes no applicable standard/guideline.  
 RPD Denotes relative percent difference.  
 \* RPDs are not calculated where one or more concentrations are less than five times RDL.  
 RDL Denotes reported detection limit.

**SHADOW** Concentration greater than Yukon CSR Commercial Land Use (CL) Standard

<sup>a</sup> Field screening results are measured based on a 'dry headspace' method using a combustible gas meter calibrated to a hexane standard.  
<sup>b</sup> The site-specific factors used for determining the matrix standards for this site include: intake of contaminated soil, groundwater used for drinking water, toxicity to soil invertebrates and plants, and groundwater flow to surface water used by freshwater aquatic life (whichever is most stringent).

TABLE 3a: Summary of Analytical Results for Soil - Total Metals (AEC 22B, AEC 22E)

Sample Location	Sample ID	Sample Date (yyyy mm dd)	Depth Interval (m)	pH		Total Metals																				
				pH	Antimony µg/g	Arsenic µg/g	Barium µg/g	Beryllium µg/g	Cadmium µg/g	Chromium µg/g	Cobalt µg/g	Copper µg/g	Lead µg/g	Lithium µg/g	Manganese µg/g	Mercury µg/g	Molybdenum µg/g	Nickel µg/g	Selenium µg/g	Silver µg/g	Strontium µg/g	Thallium µg/g	Tin µg/g	Uranium µg/g	Vanadium µg/g	Zinc µg/g
<b>AEC 22B</b>																										
BH09-22B-4	BH09-22B-4-5	2009 09 12	3.3 - 3.5	7.9	< 10	< 10	27	< 1	< 0.5	4	2	4	< 5	-	104	0.02	< 4	7	< 2	< 2	6	-	< 5	-	4	11
BH09-22B-5	BH09-22B-5-4	2009 09 12	2.7 - 2.9	7.6	< 10	< 10	58	< 1	< 0.5	9	3	6	< 5	-	90	0.11	< 4	7	< 2	< 2	9	-	< 5	-	11	18
BH09-22B-6	BH09-22B-6-5	2009 09 12	3.3 - 3.5	7.1	< 10	< 10	30	< 1	< 0.5	6	2	6	5	-	224	0.03	< 4	8	< 2	< 2	4	-	< 5	-	5	12
BH09-22B-7	BH09-22B-7-6	2009 09 12	4.2 - 4.5	7.2	< 10	< 10	60	< 1	< 0.5	9	3	7	< 5	-	344	0.03	< 4	12	< 2	< 2	5	-	< 5	-	7	15
BH09-22B-8	BH09-22B-8-4	2009 09 12	2.7 - 2.9	5.8	< 10	< 10	139	< 1	< 0.5	19	3	11	5	-	82	0.1	< 4	14	< 2	< 2	13	-	< 5	-	15	22
22B-BH16-8	22B-BH16-8-2	2016 11 06	2.1 - 2.4	8.22	1.07	5.07	117	< 0.40	0.288	19.6	8.85	12.3	13.4	6.3	335	< 0.050	0.56	30.0	< 0.50	0.068	19.8	0.060	0.26	0.436	18.3	49.0
	22B-BH16-8-3	Duplicate	2.1 - 2.4	8.29	0.72	4.71	117	< 0.40	0.243	16.8	6.73	11.0	13.3	6.1	303	< 0.050	0.55	21.3	< 0.50	0.057	18.7	0.058	0.24	0.365	16.1	44.9
	<b>QA/QC RPD%</b>				*	39	7	0	*	*	15	27	11	1	*	10	*	2	34	*	*	6	*	*	18	13
22B-BH16-9	22B-BH16-9-1	2016 11 06	0.8 - 0.9	8.12	0.59	4.94	95.0	< 0.40	0.151	13.9	5.01	12.1	12.0	5.5	277	0.074	0.60	16.6	< 0.50	0.070	12.1	< 0.050	0.17	0.359	16.0	32.8
22B-BH16-10	22B-BH16-10-1	2016 11 06	0.2 - 0.3	6.65	0.40	4.49	96.5	< 0.40	0.123	15.1	5.27	10.2	5.96	5.3	227	0.184	0.44	17.8	< 0.50	< 0.050	11.9	< 0.050	0.17	0.423	16.1	30.0
22B-BH16-11	22B-BH16-11-1	2016 11 06	0.5 - 0.6	6.54	0.61	4.39	89.3	< 0.40	0.206	11.6	4.34	19.5	30.1	< 5.0	556	0.076	0.49	14.9	< 0.50	0.050	6.55	0.052	0.14	0.419	11.8	39.2
22B-BH16-12	22B-BH16-12-2	2016 11 06	3.5 - 3.7	6.90	0.20	2.46	38.7	< 0.40	0.071	5.4	2.55	5.52	2.91	< 5.0	66.5	< 0.050	0.36	7.51	< 0.50	< 0.050	5.56	< 0.050	< 0.10	0.377	6.9	16.0
<b>AEC 22E</b>																										
BH09-22E-3	BH09-22E-3-5	2009 08 19	3.4 - 3.6	7	< 10	< 10	36	< 1	< 0.5	7	2	5	< 5	-	164	0.02	< 4	9	< 2	< 2	5	-	< 5	-	6	13
22E-BH16-5	22E-BH16-5-1	2016 11 01	0.8 - 1.1	6.65	0.53	5.19	125	< 0.40	0.356	12.3	5.71	15.7	9.26	5.6	239	0.068	0.53	14.5	< 0.50	0.084	12.8	0.053	0.44	0.660	14.1	41.2
22E-BH16-6	22E-BH16-6-1	2016 11 01	0.6 - 0.9	7.69	0.66	4.77	73.8	< 0.40	0.114	14.1	4.29	9.58	4.54	< 5.0	293	< 0.050	0.49	14.7	< 0.50	< 0.050	6.61	< 0.050	< 0.10	0.280	12.2	21.8
<b>Yukon Standard</b>																										
Yukon CSR Commercial Land Use (CL) <sup>a</sup>				n/a	40	15	2,000	8	1.5-100 <sup>b</sup>	60	300	200-250 <sup>b</sup>	100-1,000 <sup>b</sup>	n/a	n/a	40	40	500	10	40	n/a	n/a	300	n/a	n/a	150-600 <sup>b</sup>

Associated Historic file(s): .  
 Associated Maxxam file(s): B699544, B6A0684.  
 All terms defined within the body of SNC-Lavalin's report.  
 < Denotes concentration less than indicated detection limit or RPD less than indicated value.  
 - Denotes analysis not conducted.  
 n/a Denotes no applicable standard/guideline.  
 RPD Denotes relative percent difference.  
 \* RPDs are not calculated where one or more concentrations are less than five times RDL.  
 RDL Denotes reported detection limit.

**SHADOW** Concentration greater than Yukon CSR Commercial Land Use (CL) Standard

<sup>a</sup> The site-specific factors used for determining the matrix standards for this site include: intake of contaminated soil, groundwater used for drinking water, toxicity to soil invertebrates and plants, and groundwater flow to surface water used by freshwater aquatic life (whichever is most stringent).

<sup>b</sup> Standard is pH dependent.





TABLE 3b (Cont'd): Summary of Analytical Results for Soil - Total Metals (AEC 22A, AEC 22C, AEC 22D)

Sample Location	Sample ID	Sample Date (yyyy mm dd)	Depth Interval (m)	pH		Total Metals																					
				pH	Antimony µg/g	Arsenic µg/g	Barium µg/g	Beryllium µg/g	Cadmium µg/g	Chromium µg/g	Cobalt µg/g	Copper µg/g	Lead µg/g	Lithium µg/g	Manganese µg/g	Mercury µg/g	Molybdenum µg/g	Nickel µg/g	Selenium µg/g	Silver µg/g	Strontium µg/g	Thallium µg/g	Tin µg/g	Uranium µg/g	Vanadium µg/g	Zinc µg/g	
<b>AEC 22C</b>																											
22C-BH16-32	22C-BH16-32-1	2016 11 02	0.3 - 0.6	7.44	0.64	4.11	101	< 0.40	0.488	16.7	5.65	19.1	76.7	< 5.0	358	0.069	0.75	14.3	< 0.50	0.079	8.17	< 0.050	1.76	0.328	12.2	60.0	
22C-BH16-33	22C-BH16-33-1	2016 11 02	0.6 - 0.9	6.72	0.53	6.23	274	0.46	0.545	25.7	7.17	20.3	27.5	9.6	564	0.069	0.94	21.5	< 0.50	0.180	29.0	0.083	0.55	1.28	28.2	97.4	
22C-BH16-34	22C-BH16-34-1	2016 11 02	0.3 - 0.5	6.57	0.60	5.26	104	< 0.40	0.210	21.0	6.09	10.7	8.05	5.6	408	0.057	0.50	19.8	< 0.50	0.063	8.18	0.056	0.33	0.313	20.3	36.9	
22C-BH16-35	22C-BH16-35-1	2016 11 02	0.3 - 0.6	5.52	0.61	5.68	73.7	< 0.40	0.138	23.2	6.64	12.0	5.91	5.5	201	< 0.050	0.52	17.8	< 0.50	< 0.050	6.70	< 0.050	0.19	0.359	20.1	28.1	
22C-BH16-36	22C-BH16-36-1	2016 11 03	0.5 - 0.8	6.28	0.39	3.18	83.1	< 0.40	0.109	17.0	6.16	9.16	7.05	< 5.0	172	3.11	0.49	16.8	< 0.50	0.068	6.74	< 0.050	0.24	0.214	15.6	25.3	
22C-BH16-37	22C-BH16-37-1	2016 11 03	0.3 - 0.6	5.97	0.51	4.93	99.2	< 0.40	0.152	17.7	5.46	10.9	14.5	< 5.0	316	0.050	0.68	15.0	< 0.50	0.067	8.23	0.061	0.39	0.345	14.9	33.7	
22C-BH16-38	22C-BH16-38-1	2016 11 03	0.8 - 0.9	6.52	< 0.10	< 0.50	65.9	< 0.40	< 0.050	6.7	1.15	1.56	1.71	< 5.0	34.3	< 0.050	0.11	4.60	< 0.50	0.051	4.37	< 0.050	< 0.10	0.247	5.7	8.2	
22C-BH16-39	22C-BH16-39-1	2016 11 03	0.6 - 0.9	7.48	0.55	6.17	64.1	< 0.40	0.130	25.0	5.64	10.1	5.06	< 5.0	332	< 0.050	0.72	22.6	< 0.50	< 0.050	6.27	< 0.050	0.12	0.263	13.8	22.7	
<b>AEC 22D</b>																											
BH09-22D-6	BH09-22D-6-2	2009 09 13	0.9 - 1.1	6.7	< 10	< 10	57	< 1	< 0.5	9	5	8	8	-	145	0.03	< 4	12	< 2	< 2	5	-	< 5	-	8	20	
22D-BH16-7	22D-BH16-7-1	2016 11 05	0.3 - 0.5	8.66	0.50	9.34	68.9	< 0.40	0.125	10.1	5.76	11.1	6.17	< 5.0	155	< 0.050	0.42	12.7	< 0.50	0.096	11.3	0.052	0.15	0.309	13.7	20.4	
22D-BH16-8	22D-BH16-8-1	2016 11 05	0.3 - 0.5	5.65	0.48	6.66	92.7	< 0.40	0.178	15.3	7.23	10.5	8.62	5.7	221	< 0.050	0.82	16.0	< 0.50	0.063	7.12	0.055	0.13	0.415	17.1	39.4	
22D-BH16-9	22D-BH16-9-2	2016 11 05	1.2 - 1.5	6.88	0.22	1.55	29.4	< 0.40	0.398	4.7	5.75	5.00	2.37	< 5.0	39.8	< 0.050	0.22	13.2	< 0.50	< 0.050	8.80	0.071	< 0.10	0.197	5.7	14.7	
22D-BH16-10	22D-BH16-10-2	2016 11 05	2.1 - 2.4	7.14	0.31	2.37	41.5	< 0.40	0.085	9.3	3.15	5.78	2.91	< 5.0	165	< 0.050	0.19	9.26	< 0.50	< 0.050	7.28	< 0.050	< 0.10	0.229	8.2	16.3	
	22D-BH16-10-3	Duplicate	2.1 - 2.4	7.09	0.19	2.58	46.8	< 0.40	0.094	7.0	2.82	4.07	2.74	< 5.0	165	< 0.050	0.18	8.96	< 0.50	< 0.050	8.05	< 0.050	< 0.10	0.217	7.0	14.7	
<b>QA/QC RPD%</b>				*	*	*	*	*	*	28	*	35	6	*	0	*	*	3	*	*	10	*	*	*	16	*	
<b>Yukon Standard</b>																											
Yukon CSR Commercial Land Use (CL) <sup>a</sup>				n/a	40	15	2,000	8	1.5-100 <sup>b</sup>	60	300	200-250 <sup>b</sup>	100-1,000 <sup>b</sup>	n/a	n/a	40	40	500	10	40	n/a	n/a	300	n/a	n/a	150-600 <sup>b</sup>	

Associated Maxxam file(s): B699546, B699547, B6A0687, B6A0692.

All terms defined within the body of SNC-Lavalin's report.

< Denotes concentration less than indicated detection limit or RPD less than indicated value.

- Denotes analysis not conducted.

n/a Denotes no applicable standard/guideline.

RPD Denotes relative percent difference.

\* RPDs are not calculated where one or more concentrations are less than five times RDL.

RDL Denotes reported detection limit.

**SHADOW** Concentration greater than Yukon CSR Commercial Land Use (CL) Standard

<sup>a</sup> The site-specific factors used for determining the matrix standards for this site include: intake of contaminated soil, groundwater used for drinking water, toxicity to soil invertebrates and plants, and groundwater flow to surface water used by freshwater aquatic life (whichever is most stringent).

TABLE 4a: Summary of Analytical Results for Soil - Volatile Organic Compounds (AEC 22B, AEC 22E)

Sample Location	Sample ID	Sample Date (yyyy mm dd)	Depth Interval (m)	Field Screen <sup>a</sup> (ppm)	Volatile Organic Compounds																																							
					Bromo dichloro methane µg/g	Bromo form µg/g	Bromo methane µg/g	Carbon tetra chloride µg/g	Chloro benzene µg/g	Chloro ethane µg/g	Chloro form µg/g	Chloro methane µg/g	Dibromo chloro methane µg/g	1,2-Di bromo ethane µg/g	1,2-Di chloro benzene µg/g	1,3-Di chloro benzene µg/g	1,4-Di chloro benzene µg/g	Dichloro difluoro methane µg/g	1,1-Dichloro ethane µg/g	1,2-Dichloro ethane µg/g	1,1-Dichloro ethylene µg/g	cis-1,2-Dichloro ethylene µg/g	trans-1,2-Dichloro ethylene µg/g	Dichloro methane µg/g	1,2-Dichloro propane µg/g	cis-1,3-Dichloro propene µg/g	trans-1,3-Dichloro propene µg/g	Hexa chloro butadiene µg/g	2-Hexanone µg/g	Methyl ethyl ketone µg/g	Methyl isobutyl ketone µg/g	Methylene bromide µg/g	1,1,1,2-Tetra chloroethane µg/g	1,1,2,2-Tetra chloroethane µg/g	Tetra chloro ethylene µg/g	1,2,3-Trichloro benzene µg/g	1,2,4-Trichloro benzene µg/g	1,1,1-Tri chloro ethane µg/g	1,1,2-Tri chloro ethane µg/g	Trichloro ethylene µg/g	Trichloro fluoro methane µg/g	Vinyl chloride µg/g		
AEC 22B																																												
BH09-22B-6	BH09-22B-6-5	2009 09 12	3.3 - 3.5	-	< 0.03	< 0.03	< 0.12	< 0.03	< 0.03	< 0.06	< 0.03	< 0.12	< 0.03	< 0.03	< 0.03	< 0.03	< 0.03	< 0.03	< 0.03	< 0.06	< 0.03	< 0.06	< 0.03	< 0.03	< 0.03	< 0.1	< 0.03	< 0.03	< 0.03	-	< 1.5	< 1.5	< 0.6	< 0.03	-	< 0.03	< 0.03	-	-	< 0.03	< 0.03	< 0.01	< 0.03	< 0.06
BH09-22B-8	BH09-22B-8-4	2009 09 12	2.7 - 2.9	-	< 0.03	< 0.03	< 0.12	< 0.03	< 0.03	< 0.06	< 0.03	< 0.12	< 0.03	< 0.03	< 0.03	< 0.03	< 0.03	< 0.03	< 0.06	< 0.03	< 0.06	< 0.03	< 0.03	< 0.03	< 0.1	< 0.03	< 0.03	< 0.03	-	< 1.5	< 1.5	< 0.6	< 0.03	-	< 0.03	< 0.03	-	-	< 0.03	< 0.03	< 0.01	< 0.03	< 0.06	
BH09-22E-3	BH09-22E-3-5	2009 08 19	3.4 - 3.6	-	< 0.03	< 0.03	< 0.12	< 0.03	< 0.03	< 0.06	< 0.03	< 0.12	< 0.03	< 0.03	< 0.03	< 0.03	< 0.03	< 0.03	< 0.06	< 0.03	< 0.06	< 0.03	< 0.03	< 0.03	< 0.1	< 0.03	< 0.03	< 0.03	-	< 1.5	< 1.5	< 0.6	< 0.03	-	< 0.03	< 0.03	-	-	< 0.03	< 0.03	< 0.01	< 0.03	< 0.06	
AEC 22E																																												
22E-BH16-5	22E-BH16-5-1	2016 11 01	0.8 - 1.1	0	< 0.050	< 0.050	< 0.30	< 0.025	< 0.025	< 0.10	< 0.050	-	< 0.050	< 0.025	< 0.025	< 0.025	< 0.025	-	< 0.025	< 0.025	< 0.025	< 0.025	< 0.10	< 0.025	< 0.050	< 0.050	< 0.20	-	-	-	-	< 0.025	< 0.025	< 0.025	< 0.025	< 0.025	< 0.025	< 0.025	< 0.0050	< 0.20	< 0.060			
Yukon Standard																																												
Yukon CSR Commercial Land Use (CL) <sup>b</sup>					n/a	n/a	n/a	50	10	50	50	50	n/a	10	10	10	50	50	50	50	50	50	50	50	50	50	50	n/a	n/a	n/a	n/a	50	50	5	10	n/a	50	50	0.15	50	50			

Associated Maxam file(s): B699544.  
 All terms defined within the body of SNC-Lavalin's report.  
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 - Denotes analysis not conducted.  
 n/a Denotes no applicable standard/guideline.  
 RPD Denotes relative percent difference.  
 \* RPDs are not calculated where one or more concentrations are less than five times RDL.  
 RDL Denotes reported detection limit.

**SHADOW** Concentration greater than Yukon CSR Commercial Land Use (CL) Standard

<sup>a</sup> Field screening results are measured based on a 'dry headspace' method using a combustible gas meter calibrated to a hexane standard.  
<sup>b</sup> The site-specific factors used for determining the matrix standards for this site include: intake of contaminated soil, groundwater used for drinking water, toxicity to soil invertebrates and plants, and groundwater flow to surface water used by freshwater aquatic life (whichever is most stringent).

TABLE 4b: Summary of Analytical Results for Soil - Volatile Organic Compounds (AEC 22A, AEC 22C, AEC 22D)

Sample Location	Sample ID	Sample Date (yyyy mm dd)	Depth Interval (m)	Field Screen (ppm)	Volatile Organic Compounds																																				
					Bromo dichloro methane µg/g	Bromo form methane µg/g	Bromo methane µg/g	Carbon tetra chloride µg/g	Chloro benzene µg/g	Chloro ethane µg/g	Chloro form methane µg/g	Chloro methane µg/g	Dibromo chloro methane µg/g	1,2-Di bromo ethane µg/g	1,2-Di chloro benzene µg/g	1,3-Di chloro benzene µg/g	1,4-Di chloro benzene µg/g	Dichloro difluoro methane µg/g	1,1-Dichloro ethane µg/g	1,2-Dichloro ethane µg/g	1,1-Dichloro ethylene µg/g	Dichloro Dichloro ethylene µg/g	Dichloro Dichloro ethylene µg/g	Dichloro methane µg/g	1,2-Dichloro propane µg/g	Dichloro propene µg/g	trans-1,3-Dichloro propene µg/g	Hexa chloro butadiene µg/g	2-Hexanone µg/g	Methyl ethyl ketone µg/g	Methyl isobutyl ketone µg/g	Methylene bromide µg/g	1,1,1,2-Tetra chloroethane µg/g	1,1,2,2-Tetra chloroethane µg/g	Tetra chloro ethylene µg/g	1,2,3-Trichloro benzene µg/g	1,2,4-Trichloro benzene µg/g	1,1,1-Tri chloro ethane µg/g	1,1,2-Tri chloro ethane µg/g	Trichloro ethylene µg/g	Trichloro fluoro methane µg/g
AEC 22A																																									
BH09-22A-15	BH09-22A-15-4	2009 09 15	2.7 - 2.9	-	< 0.03	< 0.03	< 0.12	< 0.03	< 0.03	< 0.06	< 0.03	< 0.12	< 0.03	< 0.03	< 0.03	< 0.03	< 0.06	< 0.03	< 0.06	< 0.03	< 0.03	< 0.03	< 0.1	< 0.03	< 0.03	< 0.03	-	< 1.5	< 1.5	< 0.6	< 0.03	-	< 0.03	< 0.03	-	-	< 0.03	< 0.03	< 0.01	< 0.03	< 0.06
AEC 22C																																									
BH09-22C-10	BH09-22C-10-3	2009 08 18	1.8 - 2.1	-	< 0.03	< 0.03	< 0.12	< 0.03	< 0.03	< 0.06	< 0.03	< 0.12	< 0.03	< 0.03	< 0.03	< 0.03	< 0.06	< 0.03	< 0.06	< 0.03	< 0.03	< 0.1	< 0.03	< 0.03	< 0.03	< 0.03	-	< 1.5	< 1.5	< 0.6	< 0.03	-	< 0.03	< 0.03	-	-	< 0.03	< 0.03	< 0.01	< 0.03	< 0.06
BH09-22C-11	BH09-22C-11-3	2009 08 18	2.0 - 2.3	-	< 0.03	< 0.03	< 0.12	< 0.03	< 0.03	< 0.06	< 0.03	< 0.12	< 0.03	< 0.03	< 0.03	< 0.03	< 0.06	< 0.03	< 0.06	< 0.03	< 0.03	< 0.1	< 0.03	< 0.03	< 0.03	< 0.03	-	< 1.5	< 1.5	< 0.6	< 0.03	-	< 0.03	< 0.03	-	-	< 0.03	< 0.03	< 0.01	< 0.03	< 0.06
BH09-22C-12	BH09-22C-12-5	2009 08 18	3.3 - 3.6	-	< 0.03	< 0.03	< 0.12	< 0.03	< 0.03	< 0.06	< 0.03	< 0.12	< 0.03	< 0.03	< 0.03	< 0.03	< 0.06	< 0.03	< 0.06	< 0.03	< 0.03	< 0.1	< 0.03	< 0.03	< 0.03	< 0.03	-	< 1.5	< 1.5	< 0.6	< 0.03	-	< 0.03	< 0.03	-	-	< 0.03	< 0.03	< 0.01	< 0.03	< 0.06
BH09-22C-13	BH09-22C-13-5	2009 12 09	3.6 - 3.9	-	< 0.03	< 0.03	< 0.12	< 0.03	< 0.03	< 0.06	< 0.03	< 0.12	< 0.03	< 0.03	< 0.03	< 0.03	< 0.06	< 0.03	< 0.06	< 0.03	< 0.03	< 0.1	< 0.03	< 0.03	< 0.03	< 0.03	-	< 1.5	< 1.5	< 0.6	< 0.03	-	< 0.03	< 0.03	-	-	< 0.03	< 0.03	< 0.01	< 0.03	< 0.06
	BH09-22C-13-8	2009 09 12	5.4 - 5.8	-	< 0.03	< 0.03	< 0.12	< 0.03	< 0.03	< 0.06	< 0.03	< 0.12	< 0.03	< 0.03	< 0.03	< 0.03	< 0.06	< 0.03	< 0.06	< 0.03	< 0.03	< 0.1	< 0.03	< 0.03	< 0.03	< 0.03	-	< 1.5	< 1.5	< 0.6	< 0.03	-	< 0.03	< 0.03	-	-	< 0.03	< 0.03	< 0.01	< 0.03	< 0.06
BH09-22C-14	BH09-22C-14-5	2009 09 12	3.6 - 3.9	-	< 0.03	< 0.03	< 0.12	< 0.03	< 0.03	< 0.06	< 0.03	< 0.12	< 0.03	< 0.03	< 0.03	< 0.03	< 0.06	< 0.03	< 0.06	< 0.03	< 0.03	< 0.1	< 0.03	< 0.03	< 0.03	< 0.03	-	< 1.5	< 1.5	< 0.6	< 0.03	-	< 0.03	< 0.03	-	-	< 0.03	< 0.03	< 0.01	< 0.03	< 0.06
BH09-22C-15	BH09-22C-15-5	2009 09 13	3.6 - 3.8	-	< 0.03	< 0.03	< 0.12	< 0.03	< 0.03	< 0.06	< 0.03	< 0.12	< 0.03	< 0.03	< 0.03	< 0.03	< 0.06	< 0.03	< 0.06	< 0.03	< 0.03	< 0.1	< 0.03	< 0.03	< 0.03	< 0.03	-	< 1.5	< 1.5	< 0.6	< 0.03	-	< 0.03	< 0.03	-	-	< 0.03	< 0.03	< 0.01	< 0.03	< 0.06
BH09-22C-16	BH09-22C-16-5	2009 09 13	3.0 - 3.2	-	< 0.03	< 0.03	< 0.12	< 0.03	< 0.03	< 0.06	< 0.03	< 0.12	< 0.03	< 0.03	< 0.03	< 0.03	< 0.06	< 0.03	< 0.06	< 0.03	< 0.03	< 0.1	< 0.03	< 0.03	< 0.03	< 0.03	-	< 1.5	< 1.5	< 0.6	< 0.03	-	< 0.03	< 0.03	-	-	< 0.03	< 0.03	< 0.01	< 0.03	< 0.06
BH09-22C-18	BH09-22C-18-5	2009 09 13	3.0 - 3.3	-	< 0.03	< 0.03	< 0.12	< 0.03	< 0.03	< 0.06	< 0.03	< 0.12	< 0.03	< 0.03	< 0.03	< 0.03	< 0.06	< 0.03	< 0.06	< 0.03	< 0.03	< 0.1	< 0.03	< 0.03	< 0.03	< 0.03	-	< 1.5	< 1.5	< 0.6	< 0.03	-	< 0.03	< 0.03	-	-	< 0.03	< 0.03	< 0.01	< 0.03	< 0.06
BH09-22C-20	BH09-22C-20-4	2009 09 13	2.7 - 2.9	-	< 0.03	< 0.03	< 0.12	< 0.03	< 0.03	< 0.06	< 0.03	< 0.12	< 0.03	< 0.03	< 0.03	< 0.03	< 0.06	< 0.03	< 0.06	< 0.03	< 0.03	< 0.1	< 0.03	< 0.03	< 0.03	< 0.03	-	< 1.5	< 1.5	< 0.6	< 0.03	-	< 0.03	< 0.03	-	-	< 0.03	< 0.03	< 0.01	< 0.03	< 0.06
BH09-22C-22	BH09-22C-22-4	2009 09 13	2.7 - 2.9	-	< 0.03	< 0.03	< 0.12	< 0.03	< 0.03	< 0.06	< 0.03	< 0.12	< 0.03	< 0.03	< 0.03	< 0.03	< 0.06	< 0.03	< 0.06	< 0.03	< 0.03	< 0.1	< 0.03	< 0.03	< 0.03	< 0.03	-	< 1.5	< 1.5	< 0.6	< 0.03	-	< 0.03	< 0.03	-	-	< 0.03	< 0.03	< 0.01	< 0.03	< 0.06
	22C-BH16-26-1	2016 11 01	0.9 - 1.2	0	< 0.050	< 0.050	< 0.30	< 0.025	< 0.025	< 0.10	< 0.050	-	< 0.050	< 0.025	< 0.025	< 0.025	< 0.025	< 0.025	-	< 0.025	< 0.025	< 0.10	< 0.025	< 0.050	< 0.050	< 0.20	-	-	-	-	< 0.025	< 0.025	< 0.025	< 0.025	< 0.025	< 0.025	< 0.025	< 0.0050	< 0.20	< 0.060	
AEC 22D																																									
BH09-22D-6	BH09-22D-6-2	2009 09 13	0.9 - 1.1	-	< 0.03	< 0.03	< 0.12	< 0.03	< 0.03	< 0.06	< 0.03	< 0.12	< 0.03	< 0.03	< 0.03	< 0.03	< 0.06	< 0.03	< 0.06	< 0.03	< 0.03	< 0.1	< 0.03	< 0.03	< 0.03	< 0.03	-	< 1.5	< 1.5	< 0.6	< 0.03	-	< 0.03	< 0.03	-	-	< 0.03	< 0.03	< 0.01	< 0.03	< 0.06
22D-BH16-7	22D-BH16-7-2	2016 11 05	2.6 - 2.9	0	< 0.050	< 0.050	< 0.30	< 0.025	< 0.025	< 0.10	< 0.050	-	< 0.050	< 0.025	< 0.025	< 0.025	< 0.025	-	< 0.025	< 0.025	< 0.10	< 0.025	< 0.050	< 0.050	< 0.20	-	-	-	-	< 0.025	< 0.025	< 0.025	< 0.025	< 0.025	< 0.025	< 0.025	< 0.0050	< 0.20	< 0.060		
	22D-BH16-7-3	Duplicate	2.6 - 2.9	0	< 0.050	< 0.050	< 0.30	< 0.025	< 0.025	< 0.10	< 0.050	-	< 0.050	< 0.025	< 0.025	< 0.025	< 0.025	-	< 0.025	< 0.025	< 0.10	< 0.025	< 0.050	< 0.050	< 0.20	-	-	-	-	< 0.025	< 0.025	< 0.025	< 0.025	< 0.025	< 0.025	< 0.0050	< 0.20	< 0.060			
	QA/QC RPD%					*	*	*	*	*	*	-	*	*	*	*	*	*	-	*	*	*	*	*	*	*	*	-	-	-	-	*	*	*	*	*	*	*	*	*	
22D-BH16-8	22D-BH16-8-1	2016 11 05	0.3 - 0.5	0	< 0.050	< 0.050	< 0.30	< 0.025	< 0.025	< 0.10	< 0.050	-	< 0.050	< 0.025	< 0.025	< 0.025	< 0.025	-	< 0.025	< 0.025	< 0.10	< 0.025	< 0.050	< 0.050	< 0.20	-	-	-	-	< 0.025	< 0.025	< 0.025	< 0.025	< 0.025	< 0.025	< 0.025	< 0.0050	< 0.20	< 0.060		
<b>Yukon Standard</b>																																									
Yukon CSR Commercial Land Use (CL) <sup>b</sup>					n/a	n/a	n/a	50	10	50	50	50	50	n/a	10	10	10	50	50	50	50	50	50	50	50	50	n/a	n/a	n/a	n/a	50	50	5	10	n/a	50	50	0.15	50	50	

Associated Maxxam file(s): B699547, B6A0692.  
 All terms defined within the body of SNC-Lavalin's report.  
 < Denotes concentration less than indicated detection limit or RPD less than indicated value.  
 - Denotes analysis not conducted.  
 n/a Denotes no applicable standard/guideline.  
 RPD Denotes relative percent difference.  
 \* RPDs are not calculated where one or more concentrations are less than five times RDL.  
 RDL Denotes reported detection limit.

**SHADOW** Concentration greater than Yukon CSR Commercial Land Use (CL) Standard

<sup>a</sup> Field screening results are measured based on a 'dry headspace' method using a combustible gas meter calibrated to a hexane standard.  
<sup>b</sup> The site-specific factors used for determining the matrix standards for this site include: intake of contaminated soil, groundwater used for drinking water, toxicity to soil invertebrates and plants, and groundwater flow to surface water used by freshwater aquatic life (whichever is most stringent).

**TABLE 5a: Summary of Analytical Results for Groundwater - Hydrocarbons (AEC 22B, AEC 22E)**

Sample Location	Sample ID	Sample Date (yyyy mm dd)	Monocyclic Aromatic Hydrocarbons				Gross Parameters					MTBE (µg/L)
			Benzene (µg/L)	Ethyl-benzene (µg/L)	Toluene (µg/L)	Xylenes (µg/L)	VHw6-10 (µg/L)	VPHw (C6-C10) (µg/L)	EPHw10-19 (µg/L)	LEPHw (C10-C19) (µg/L)	EPHw19-32 (µg/L)	
<b>AEC 22B</b>												
H-1	H-1	2001 09 22	< 0.5	< 0.5	< 0.5	< 0.5	< 100	< 100	< 100	< 100 <sup>c</sup>	< 100	-
H-2	H-2	2001 09 22	< 0.5	< 0.5	< 0.5	< 0.5	< 100	< 100	< 100	< 100 <sup>c</sup>	< 100	-
22B-MW06-1	22B-MW06-1	2006 07 22	-	-	-	-	-	-	< 80	< 80 <sup>c</sup>	< 80	-
22B-MW06-2	22B-MW06-2	2006 07 22	-	-	-	-	-	-	< 80	< 80 <sup>c</sup>	< 80	-
	22B-MW06-02	2013 08 19	< 0.4	< 0.4	< 0.4	< 0.4	< 300	< 300	< 200	< 200	< 200	< 4
22B-MW06-3	22B-MW06-3-82607	2007 08 26	-	-	-	-	-	-	130	130	< 80	-
	22B-MW06-3	2008 07 30	-	-	-	-	-	-	< 80	< 80	< 80	-
	22B-MW06-3	2009 08 12	-	-	-	-	-	-	< 250	< 250	< 250	-
22B-MW06-3A	22B-MW06-3A-82607	2007 08 26	-	-	-	-	-	-	< 80	< 80	< 80	-
	22B-MW06-3A	2009 08 12	-	-	-	-	-	-	< 250	< 250	< 250	-
22B-MW06-3B	22B-MW06-3B-82607	2007 08 26	-	-	-	-	-	-	< 80	< 80	< 80	-
	22B-MW06-3B	2009 08 12	-	-	-	-	-	-	< 250	< 250	< 250	-
22B-MW06-3C	22B-MW06-3C	2009 08 12	-	-	-	-	-	-	< 250	< 250	< 250	-
MW09-22B-4	MW09-22B-4	2009 09 28	< 0.1	< 0.1	< 0.1	< 0.1	< 100	< 100	< 250	< 250	< 250	-
MW09-22B-5	MW09-22B-5	2009 09 28	< 0.1	< 0.1	< 0.1	< 0.1	< 100	< 100	< 250	< 250	< 250	-
MW09-22B-6	MW09-22B-6	2009 09 28	< 0.1	< 0.1	< 0.1	< 0.1	< 100	< 100	< 250	< 250	< 250	-
MW09-22B-7	MW09-22B-7	2009 09 28	< 0.1	< 0.1	< 0.1	< 0.1	< 100	< 100	< 250	< 250	< 250	-
22B-BH11-9	22B-BH11-9	2013 08 19	< 0.4	< 0.4	< 0.4	< 0.4	< 300	< 300	< 200	< 200	< 200	< 4
<b>AEC 22E</b>												
22E-MW06-1	22E-MW06-1	2006 07 22	-	-	-	-	-	-	< 80	< 80 <sup>c</sup>	< 80	-
MW09-22E-3	MW09-22E-3	2009 08 21	< 0.1	< 0.1	< 0.1	< 0.1	< 100	< 100	< 250	< 250	< 250	-
MW09-22E-4	MW09-22E-4	2009 08 21	< 0.1	< 0.1	< 0.1	< 0.1	< 100	< 100	< 250	< 250	< 250	-
22E-MW16-6	22E-MW16-6-161215	2016 12 15	< 0.40	< 0.40	< 0.40	< 0.40	< 300	< 300	< 200	< 200	< 200	< 4.0
<b>Yukon Standards</b>												
Yukon CSR Drinking Water (DW)			5	2.4	24	300	n/a	n/a	n/a	n/a	n/a	20
Yukon CSR Aquatic Life (AW) <sup>a</sup>			4,000	2,000	390	n/a	n/a	1,500	n/a	500	n/a	34,000
Yukon CSR Standards Irrespective of Water Use (NAPL) <sup>b</sup>			n/a	n/a	n/a	n/a	15,000	n/a	5,000	n/a	n/a	n/a

Associated Maxxam file(s): B6B2850.

All terms defined within the body of SNC-Lavalin's report.

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- Denotes analysis not conducted.

n/a Denotes no applicable standard.

\* RPDs are not normally calculated where one or more concentrations are less than five times MDL.

**BOLD** Concentration greater than or equal to Yukon CSR Drinking Water (DW) standard.

**SHADOW** Concentration greater than or equal to Yukon CSR Aquatic Life (AW) standard.

**INVERSE** Concentration greater than the EPHw or VHw standard "could be considered proof of non-aqueous phase liquids presence" (per CSR Protocol 7).

<sup>a</sup> Standard to protect freshwater aquatic life.

<sup>b</sup> Applicable at all sites irrespective of water use.

<sup>c</sup> EPHw10-19 concentration has been compared to the CSR AW standard for LEPHw, which is a conservative comparison.

**TABLE 5b: Summary of Analytical Results for Groundwater - Hydrocarbons (AEC 22A, AEC 22C, AEC 22D)**

Sample Location	Sample ID	Sample Date (yyyy mm dd)	Monocyclic Aromatic Hydrocarbons				Gross Parameters					MTBE (µg/L)
			Benzene (µg/L)	Ethylbenzene (µg/L)	Toluene (µg/L)	Xylenes (µg/L)	VHw6-10 (µg/L)	VPHw (C6-C10) (µg/L)	EPHw10-19 (µg/L)	LEPHw (C10-C19) (µg/L)	EPHw19-32 (µg/L)	
<b>AEC 22A</b>												
22A-MW06-1	22A-MW06-1	2006 07 23	-	-	-	-	-	-	< 80	< 80 <sup>c</sup>	< 80	-
	22A-MW06-1	2009 08 13	-	-	-	-	-	-	< 250	< 250	< 250	-
22A-MW06-1B	22A-MW06-1B	2009 08 13	-	-	-	-	-	-	< 250	< 250	< 250	-
22A-MW06-2	22A-MW06-2	2006 07 22	-	-	-	-	-	-	< 80	< 80	< 80	-
22A-MW06-3	22A-MW06-3	2006 07 22	-	-	-	-	-	-	< 80	< 80	< 80	-
MW09-22A-15	MW09-22A-15	2009 09 26	< 0.1	< 0.1	< 0.1	< 0.1	< 100	< 100	1,000	<b>1,000</b>	< 250	-
	MW09-22A-15	2011 02 14	-	-	-	-	-	-	180	180	< 80	-
	MW09-22A-15-150723	2015 07 23	-	-	-	-	-	-	< 100	< 100	< 100	-
	MW09-22A-15-160202	2016 02 02	< 0.5	< 0.5	< 0.5	< 1	< 100	< 100	2,100	<b>2,100</b>	130	< 1
MW09-22A-16	MW09-22A-15-161102	2016 11 02	-	-	-	-	-	-	< 200	< 200	< 200	-
	MW09-22A-16	2009 09 26	< 0.1	< 0.1	< 0.1	< 0.1	< 100	< 100	-	-	-	-
	MW09-22A-16	2009 10 22	-	-	-	-	-	-	< 250	< 250	< 250	-
MW09-22A-17	MW09-22A-16	2014 06 02	< 0.5	< 0.5	< 0.5	< 1	< 100	< 100	< 100	< 100	< 100	< 1
	MW09-22A-17	2009 09 25	< 0.1	< 0.1	< 0.1	< 0.1	< 100	< 100	< 250	< 250 <sup>c</sup>	< 250	-
MW09-22A-18	MW09-22A-18	2009 09 26	< 0.1	< 0.1	< 0.1	< 0.1	< 100	< 100	-	-	-	-
	MW09-22A-18	2009 10 22	-	-	-	-	-	-	< 250	< 250	< 250	-
MW09-22A-19	MW09-22A-19	2009 11 20	-	-	-	-	-	-	3,400	<b>3,400</b>	< 250	-
	MW09-22A-19	2011 02 14	-	-	-	-	-	-	< 80	< 80	< 80	-
	MW09-22A-19	2014 06 02	< 0.5	< 0.5	< 0.5	< 1	< 100	< 100	570	<b>570</b>	200	< 1
	MW09-22A-19-150723	2015 07 23	-	-	-	-	-	-	170	170	< 100	-
	MW09-22A-19-160202	2016 02 02	< 0.5	< 0.5	< 0.5	< 1	< 100	< 100	220	210	< 100	< 1
	MW15-B-160202	Duplicate	< 0.5	< 0.5	< 0.5	< 1	< 100	< 100	240	240	< 100	< 1
<b>QA/QC RPD%</b>			*	*	*	*	*	*	*	*	*	*
<b>Yukon Standards</b>												
Yukon CSR Drinking Water (DW)			5	2.4	24	300	n/a	n/a	n/a	n/a	n/a	20
Yukon CSR Aquatic Life (AW) <sup>a</sup>			4,000	2,000	390	n/a	n/a	1,500	n/a	500	n/a	34,000
Yukon CSR Standards Irrespective of Water Use (NAPL) <sup>b</sup>			n/a	n/a	n/a	n/a	15,000	n/a	5,000	n/a	n/a	n/a

Associated AGAT files: 15V000058, 16V066320.

Associated Maxxam file(s): B699514, B6B2798, B6B2838, B6B2856.

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- Denotes analysis not conducted.

n/a Denotes no applicable standard.

\* RPDs are not normally calculated where one or more concentrations are less than five times MDL.

**BOLD** Concentration greater than Yukon CSR Drinking Water (DW) standard

**SHADOW** Concentration greater than or equal to Yukon CSR Aquatic Life (AW) standard.

**INVERSE** Concentration greater than the EPHw or VHw standard "could be considered proof of non-aqueous phase liquids presence" (per CSR Protocol 7).

<sup>a</sup> Standard to protect freshwater aquatic life.

<sup>b</sup> Applicable at all sites irrespective of water use.

<sup>c</sup> EPHw10-19 concentration has been compared to the CSR AW standard for LEPHw, which is a conservative comparison.

**TABLE 5b: Summary of Analytical Results for Groundwater - Hydrocarbons (AEC 22A, AEC 22C, AEC 22D)**

Sample Location	Sample ID	Sample Date (yyyy mm dd)	Monocyclic Aromatic Hydrocarbons				Gross Parameters					MTBE (µg/L)
			Benzene (µg/L)	Ethyl-benzene (µg/L)	Toluene (µg/L)	Xylenes (µg/L)	VHw6-10 (µg/L)	VPHw (C6-C10) (µg/L)	EPHw10-19 (µg/L)	LEPHw (C10-C19) (µg/L)	EPHw19-32 (µg/L)	
MW09-22A-20	MW09-22A-20	2009 11 20	-	-	-	-	-	-	< 250	< 250	< 250	-
	MW09-22A-20	2014 06 02	-	-	-	-	-	-	160	160	120	-
	MW09-22A-20-161102	2016 11 02	-	-	-	-	-	-	< 200	< 200	< 200	-
MW09-22A-21	MW09-22A-21	2009 11 20	-	-	-	-	-	-	<b>30,000</b>	<b>30,000</b>	1,400	-
	MW09-22A-21	2011 02 14	-	-	-	-	-	-	310	310	< 80	-
	MW09-22A-21	2014 06 02	< 0.5	< 0.5	< 0.5	< 1	< 100	< 100	160	160	< 100	< 1
	MW09-22A-21-160202	2016 02 02	< 0.5	< 0.5	< 0.5	< 1	< 100	< 100	< 100	< 100	< 100	< 1
MW09-22A-22	MW09-22A-22	2009 11 20	-	-	-	-	-	< 250	< 250	< 250	-	
22A-MW16-25	22A-MW16-25-161214	2016 12 14	< 0.40	< 0.40	< 0.40	< 0.40	< 300	< 300	< 200	< 200	< 200	< 4.0
22A-MW16-30	22A-MW16-30-161214	2016 12 14	< 0.40	< 0.40	< 0.40	1.2	< 300	< 300	900	<b>900</b>	< 200	< 4.0
22A-MW16-32	22A-MW16-32-161214	2016 12 14	< 0.40	< 0.40	< 0.40	< 0.40	< 300	< 300	< 200	< 200	< 200	< 4.0
<b>AEC 22C</b>												
22C-MW06-1	22C-MW06-1	2006 07 23	-	-	-	-	-	-	< 80	< 80 <sup>c</sup>	< 80	-
22C-MW06-2	22C-MW06-2	2006 07 23	< 0.5	< 0.5	< 0.5	< 0.5	< 100	< 100	< 80	< 80 <sup>c</sup>	< 80	< 4
22C-MW06-3	22C-MW06-3	2006 07 23	-	-	-	-	-	-	< 80	< 80 <sup>c</sup>	< 80	-
MW09-22C-9	MW09-22C-9	2011 02 13	< 0.5	< 0.5	< 0.5	< 1	< 300	< 300	< 80	< 80	< 80	< 4
MW09-22C-10	MW09-22C-10	2009 08 19	< 0.1	< 0.1	< 0.1	< 0.1	< 100	< 100	< 250	< 250 <sup>c</sup>	< 250	-
MW09-22C-11	MW09-22C-11	2009 08 19	< 0.1	< 0.1	< 0.1	< 0.1	< 100	< 100	< 250	< 250	< 250	-
MW09-22C-12	MW09-22C-12	2009 08 19	< 0.1	< 0.1	< 0.1	0.2	< 100	< 100	< 250	< 250	< 250	-
MW09-22C-14	MW09-22C-14	2009 09 28	< 0.1	< 0.1	< 0.1	< 0.1	< 100	< 100	< 250	< 250	< 250	-
MW09-22C-15	MW09-22C-15	2009 09 28	< 0.1	< 0.1	< 0.1	< 0.1	< 100	< 100	< 250	< 250 <sup>c</sup>	< 250	-
MW09-22C-16	MW09-22C-16	2009 09 28	< 0.1	< 0.1	< 0.1	< 0.1	< 100	< 100	< 250	< 250 <sup>c</sup>	< 250	-
<b>Yukon Standards</b>												
Yukon CSR Drinking Water (DW)			5	2.4	24	300	n/a	n/a	n/a	n/a	n/a	20
Yukon CSR Aquatic Life (AW) <sup>a</sup>			4,000	2,000	390	n/a	n/a	1,500	n/a	500	n/a	34,000
Yukon CSR Standards Irrespective of Water Use (NAPL) <sup>b</sup>			n/a	n/a	n/a	n/a	15,000	n/a	5,000	n/a	n/a	n/a

Associated AGAT files: 15V000058, 16V066320.

Associated Maxxam file(s): B699514, B6B2798, B6B2838, B6B2856.

All terms defined within the body of SNC-Lavalin's report.

< Denotes concentration less than indicated detection limit or RPD less than indicated value.

- Denotes analysis not conducted.

n/a Denotes no applicable standard.

\* RPDs are not normally calculated where one or more concentrations are less than five times MDL.

**BOLD** Concentration greater than Yukon CSR Drinking Water (DW) standard

**SHADOW** Concentration greater than or equal to Yukon CSR Aquatic Life (AW) standard.

**INVERSE** Concentration greater than the EPHw or VHw standard "could be considered proof of non-aqueous phase liquids presence" (per CSR Protocol 7).

<sup>a</sup> Standard to protect freshwater aquatic life.

<sup>b</sup> Applicable at all sites irrespective of water use.

<sup>c</sup> EPHw10-19 concentration has been compared to the CSR AW standard for LEPHw, which is a conservative comparison.

**TABLE 5b: Summary of Analytical Results for Groundwater - Hydrocarbons (AEC 22A, AEC 22C, AEC 22D)**

Sample Location	Sample ID	Sample Date (yyyy mm dd)	Monocyclic Aromatic Hydrocarbons				Gross Parameters					MTBE (µg/L)
			Benzene (µg/L)	Ethyl-benzene (µg/L)	Toluene (µg/L)	Xylenes (µg/L)	VHw6-10 (µg/L)	VPHw (C6-C10) (µg/L)	EPHw10-19 (µg/L)	LEPHw (C10-C19) (µg/L)	EPHw19-32 (µg/L)	
<b>AEC 22C</b>												
MW09-22C-19	MW09-22C-19	2009 09 28	< 0.1	< 0.1	< 0.1	< 0.1	< 100	< 100	< 250	< 250	< 250	-
MW09-22C-22	MW09-22C-22	2009 09 28	< 0.1	< 0.1	< 0.1	< 0.1	< 100	< 100	< 250	< 250	< 250	-
22C-MW16-26	22C-MW16-26-161215	2016 12 15	< 0.40	< 0.40	< 0.40	< 0.40	< 300	< 300	< 200	< 200	< 200	< 4.0
22C-MW16-29	22C-MW16-29-161215	2016 12 15	< 0.40	< 0.40	< 0.40	< 0.40	< 300	< 300	< 200	< 200	< 200	< 4.0
22C-MW16-30	22C-MW16-30-161215	2016 12 15	< 0.40	< 0.40	< 0.40	< 0.40	< 300	< 300	< 200	< 200	< 200	< 4.0
22C-MW16-38	22C-MW16-38-161214	2016 12 14	< 0.40	< 0.40	< 0.40	< 0.40	< 300	< 300	< 200	< 200	< 200	< 4.0
	22C-MW16-A-161214	Duplicate	< 0.40	< 0.40	< 0.40	< 0.40	< 300	< 300	< 200	< 200	< 200	< 4.0
<b>QA/QC RPD%</b>			*	*	*	*	*	*	*	*	*	*
<b>AEC 22D</b>												
22D-MW06-1	22D-MW06-1	2006 07 23	-	-	-	-	-	-	< 80	< 80 <sup>c</sup>	< 80	-
22D-MW06-2	22D-MW06-2	2009 08 13	< 0.1	< 0.1	< 0.1	< 0.1	< 100	< 100	< 250	< 250	< 250	-
22D-MW06-2A	22D-MW06-2A	2009 08 13	-	-	-	-	-	-	< 250	< 250	< 250	-
Mw09-22D-6	Mw09-22D-6	2009 09 27	< 0.1	< 0.1	< 0.1	< 0.1	< 100	< 100	< 250	< 250	< 250	-
22D-MW16-7	22D-MW16-7-161216	2016 12 16	< 0.40	< 0.40	< 0.40	< 0.40	< 300	< 300	< 200	< 200	< 200	< 4.0
	22D-MW16-B-161216	Duplicate	< 0.40	< 0.40	< 0.40	< 0.40	< 300	< 300	< 200	< 200	< 200	< 4.0
<b>QA/QC RPD%</b>			*	*	*	*	*	*	*	*	*	*
22D-MW16-8	22D-MW16-8-161216	2016 12 16	< 0.40	< 0.40	< 0.40	< 0.40	< 300	< 300	< 200	< 200	< 200	< 4.0
22D-MW16-9	22D-MW16-9-161216	2016 12 16	-	-	-	-	-	-	460	460	< 200	-
<b>Yukon Standards</b>												
Yukon CSR Drinking Water (DW)			5	2.4	24	300	n/a	n/a	n/a	n/a	n/a	20
Yukon CSR Aquatic Life (AW) <sup>a</sup>			4,000	2,000	390	n/a	n/a	1,500	n/a	500	n/a	34,000
Yukon CSR Standards Irrespective of Water Use (NAPL) <sup>b</sup>			n/a	n/a	n/a	n/a	15,000	n/a	5,000	n/a	n/a	n/a

Associated AGAT files: 15V000058, 16V066320.

Associated Maxxam file(s): B699514, B6B2798, B6B2838, B6B2856.

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- Denotes analysis not conducted.

n/a Denotes no applicable standard.

\* RPDs are not normally calculated where one or more concentrations are less than five times MDL.

**BOLD** Concentration greater than Yukon CSR Drinking Water (DW) standard

**SHADOW** Concentration greater than or equal to Yukon CSR Aquatic Life (AW) standard.

**INVERSE** Concentration greater than the EPHw or VHw standard "could be considered proof of non-aqueous phase liquids presence" (per CSR Protocol 7).

<sup>a</sup> Standard to protect freshwater aquatic life.

<sup>b</sup> Applicable at all sites irrespective of water use.

<sup>c</sup> EPHw10-19 concentration has been compared to the CSR AW standard for LEPHw, which is a conservative comparison.



**TABLE 6a: Summary of Analytical Results for Groundwater - Polycyclic Aromatic Hydrocarbons (AEC 22B, AEC 22E)**

Sample Location	Sample ID	Sample Date (yyyy mm dd)	Polycyclic Aromatic Hydrocarbons																				
			Naphthalene (µg/L)	2-Methylnaphthalene (µg/L)	Acenaphthylene (µg/L)	Acenaphthene (µg/L)	Fluorene (µg/L)	Phenanthrene (µg/L)	Anthracene (µg/L)	Acridine (µg/L)	Fluoranthene (µg/L)	Pyrene (µg/L)	Benzo(a)anthracene (µg/L)	Chrysene (µg/L)	Benzo(b)fluoranthene (µg/L)	Benzo(b+j)fluoranthene (µg/L)	Benzo(k)fluoranthene (µg/L)	Benzo(a)pyrene (µg/L)	Indeno(1,2,3-cd)pyrene (µg/L)	Dibenz(a,h)anthracene (µg/L)	Benzo(g,h,i)perylene (µg/L)	Quinoline (µg/L)	
<b>AEC 22B</b>																							
22B-MW06-2	22B-MW06-02	2013 08 19	< 0.1	< 0.1	< 0.05	< 0.05	< 0.05	< 0.05	< 0.01	< 0.05	< 0.02	< 0.02	< 0.01	< 0.05	-	< 0.05	< 0.05	< 0.009	< 0.05	< 0.05	< 0.05	< 0.5	
22B-MW06-3	22B-MW06-3-82607	2007 08 26	< 0.01	0.028	< 0.01	0.011	0.036	0.012	< 0.01	< 0.05	< 0.01	< 0.01	< 0.01	< 0.01	-	< 0.01	< 0.01	< 0.01	< 0.02	< 0.02	< 0.02	< 0.05	
	22B-MW06-3	2008 07 30	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	< 0.05	< 0.01	< 0.01	< 0.01	< 0.01	-	< 0.01	< 0.01	< 0.01	< 0.02	< 0.02	< 0.02	< 0.05	
22B-MW06-3A	22B-MW06-3	2009 08 12	< 0.3	-	< 0.1	< 0.1	0.05	< 0.05	< 0.01	< 0.05	< 0.04	< 0.02	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	< 0.5	
	22B-MW06-3A-82607	2007 08 26	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	< 0.05	< 0.01	< 0.01	< 0.01	< 0.01	-	< 0.01	< 0.01	< 0.01	< 0.02	< 0.02	< 0.02	< 0.05	
22B-MW06-3B	22B-MW06-3A	2009 08 12	< 0.3	-	< 0.1	< 0.1	< 0.05	< 0.05	< 0.01	< 0.05	< 0.04	< 0.02	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	< 0.5	
	22B-MW06-3B-82607	2007 08 26	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	< 0.05	< 0.01	< 0.01	< 0.01	< 0.01	-	< 0.01	< 0.01	< 0.01	< 0.02	< 0.02	< 0.02	< 0.05	
22B-MW06-3C	22B-MW06-3B	2009 08 12	< 0.3	-	< 0.1	< 0.1	< 0.05	< 0.05	< 0.01	< 0.05	< 0.04	< 0.02	0.01	0.01	< 0.01	-	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	< 0.5	
	22B-MW06-3C	2009 08 12	< 0.3	-	< 0.1	< 0.1	< 0.05	< 0.05	< 0.01	< 0.05	< 0.04	< 0.02	0.01	< 0.01	< 0.01	-	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	< 0.5	
MW09-22B-4	MW09-22B-4	2009 09 28	< 0.3	-	< 0.1	< 0.1	< 0.05	< 0.05	< 0.01	< 0.05	< 0.04	< 0.02	< 0.01	< 0.01	< 0.01	-	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	< 0.5	
MW09-22B-5	MW09-22B-5	2009 09 28	< 0.3	-	< 0.1	< 0.1	< 0.05	< 0.05	< 0.01	< 0.05	< 0.04	< 0.02	< 0.01	< 0.01	< 0.01	-	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	< 0.5	
MW09-22B-6	MW09-22B-6	2009 09 28	< 0.3	-	< 0.1	< 0.1	< 0.05	< 0.05	< 0.01	< 0.05	< 0.04	< 0.02	< 0.01	< 0.01	< 0.01	-	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	< 0.5	
MW09-22B-7	MW09-22B-7	2009 09 28	< 0.3	-	< 0.1	< 0.1	< 0.05	< 0.05	< 0.01	< 0.05	< 0.04	< 0.02	< 0.01	< 0.01	< 0.01	-	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	< 0.5	
	MW09-22B-7	2014 06 02	< 0.05	-	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05	< 0.02	< 0.05	< 0.05	< 0.05	-	< 0.05	< 0.01	< 0.05	< 0.05	< 0.05	< 0.1	
22B-BH11-9	22B-BH11-9	2013 08 19	< 0.1	< 0.1	< 0.05	< 0.05	< 0.05	< 0.05	< 0.01	< 0.05	< 0.02	< 0.02	< 0.01	< 0.05	-	< 0.05	< 0.05	< 0.009	< 0.05	< 0.05	< 0.05	< 0.5	
<b>AEC 22E</b>																							
MW09-22E-3	MW09-22E-3	2009 08 21	< 0.3	-	< 0.1	< 0.1	< 0.05	< 0.05	< 0.01	< 0.05	< 0.04	< 0.02	< 0.01	< 0.01	< 0.01	-	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	< 0.5	
MW09-22E-4	MW09-22E-4	2009 08 21	< 0.3	-	< 0.1	< 0.1	< 0.05	< 0.05	< 0.01	< 0.05	< 0.04	< 0.02	< 0.01	< 0.01	< 0.01	-	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	< 0.5	
22E-MW16-6	22E-MW16-6-161215	2016 12 15	0.15	2.4	< 0.050	0.20	0.45	0.066	< 0.010	< 0.050	< 0.020	< 0.020	< 0.010	< 0.050	-	< 0.050	< 0.050	< 0.0090	< 0.050	< 0.050	< 0.050	< 0.24	
<b>Yukon Standards</b>																							
Yukon CSR Drinking Water (DW)			n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	0.01	n/a	n/a	n/a	n/a	
Yukon CSR Aquatic Life (AW) <sup>b</sup>			10	n/a	n/a	60	120	3	1	0.5	2	0.2	1	n/a	n/a	n/a	n/a	0.1	n/a	n/a	n/a	34	

Associated Maxxam file(s): B6B2850.

All terms defined within the body of SNC-Lavalin's report.

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- Denotes analysis not conducted.

n/a Denotes no applicable standard.

\* RPDs are not normally calculated where one or more concentrations are less than five times MDL.

**BOLD** Concentration greater than or equal to Yukon CSR Drinking Water (DW) standard.

**SHADOW** Concentration greater than or equal to Yukon CSR Aquatic Life (AW) standard.

<sup>a</sup> Laboratory detection limit exceeds regulatory standard.

<sup>b</sup> Standard to protect freshwater aquatic life.



**TABLE 7b: Summary of Analytical Results for Groundwater - Inorganics (AEC 22A, AEC 22C)**

Sample Location	Sample ID	Sample Date (yyyy mm dd)	Ammonia Nitrogen	Nitrate+Nitrite Nitrogen
			(µg/L)	(µg/L)
<b>AEC 22A</b>				
22A-MW06-2	22A-MW06-2	2006 07 22	14	110
<b>AEC 22C</b>				
22C-MW06-2	22C-MW06-2	2006 07 23	89	< 20
<b>Yukon Standards</b>				
Yukon CSR Aquatic Life (AW) <sup>a</sup>			1,310-18,400 <sup>b</sup>	400,000

All terms defined within the body of SNC-Lavalin's report.

- < Denotes concentration less than indicated detection limit or RPD less than indicated value.
- Denotes analysis not conducted.
- n/a Denotes no applicable standard.

**SHADOW** Concentration greater than or equal to Yukon CSR Aquatic Life (AW) standard.

- <sup>a</sup> Standard to protect freshwater aquatic life.
- <sup>b</sup> Standard varies with pH.
- <sup>c</sup> Standard varies with chloride.

TABLE 8a: Summary of Analytical Results for Groundwater - Dissolved Metals (AEC 22B, AEC 22E)

Sample Location	Sample ID	Sample Date (yyyy mm dd)	Physical Hardness (mg/L)	Geochemical Indicators								Dissolved Metals																			
				Dissolved Aluminum (µg/L)	Dissolved Calcium (mg/L)	Dissolved Iron (µg/L)	Dissolved Magnesium (mg/L)	Dissolved Manganese (µg/L)	Dissolved Potassium (mg/L)	Dissolved Sodium (mg/L)	Antimony (µg/L)	Arsenic (µg/L)	Barium (µg/L)	Beryllium (µg/L)	Boron (µg/L)	Cadmium (µg/L)	Chromium (µg/L)	Cobalt (µg/L)	Copper (µg/L)	Lead (µg/L)	Lithium (µg/L)	Mercury (µg/L)	Molybdenum (µg/L)	Nickel (µg/L)	Selenium (µg/L)	Silver (µg/L)	Thallium (µg/L)	Titanium (µg/L)	Uranium (µg/L)	Vanadium (µg/L)	Zinc (µg/L)
<b>AEC 22B</b>																															
22B-BH11-9	22B-BH11-9	2013 08 19	92.7	5.3	27.9	5.8	5.55	< 1	1	3	< 0.5	0.19	128	< 0.1	< 50	0.016	< 1	< 0.5	0.66	< 0.2	< 5	< 0.05	< 1	< 1	0.5	< 0.02	< 0.05	< 5	< 0.1	< 5	< 5
22B-MW06-2	22B-MW06-02	2013 08 19	103	< 3	30.9	< 5	6.25	35.6	0.84	2.05	< 0.5	0.12	204	< 0.1	< 50	0.066	< 1	< 0.5	0.78	< 0.2	< 5	< 0.05	< 1	7.3	1.08	< 0.02	< 0.05	< 5	< 0.1	< 5	7
22B-MW06-3	22B-MW06-3-82607	2007 08 26	114	< 20	35.2	52	6.26	39	< 1	2.13	< 1	2	154	< 0.2	31	0.1	< 5	< 0.5	< 5	< 0.5	-	< 0.05	< 5	< 8	1	< 0.1	< 0.1	< 3	< 0.1	< 5	11
22B-MW06-3A	22B-MW06-3A-82607	2007 08 26	131	< 20	40.4	< 5	7.22	25	1.43	2.72	< 1	1	150	< 0.2	18	< 0.1	< 5	< 0.5	< 5	< 0.5	-	< 0.05	< 5	< 8	< 1	< 0.1	< 0.1	< 3	< 0.1	< 5	< 5
22B-MW06-3B	22B-MW06-3B-82607	2007 08 26	113	< 20	35.1	< 5	6.13	12	1.11	1.94	< 1	2	138	< 0.2	13	< 0.1	< 5	< 0.5	< 5	< 0.5	-	< 0.05	< 5	< 8	2	< 0.1	< 0.1	< 3	< 0.1	< 5	< 5
MW09-22B-7	MW09-22B-7	2011 02 11	121	< 3	37.2	6	6.75	<b>1,480</b>	0.62	1.69	< 0.5	0.1	309	< 0.1	< 50	0.23	< 1	< 0.5	0.7	< 0.2	< 5	< 0.02	1	6	< 0.1	< 0.02	< 0.05	< 5	< 0.1	< 5	< 5
	MW09-22B-7	2014 06 02	104	< 2	32.5	< 10	5.47	<b>1,680</b>	-	2.12	< 0.2	0.2	338	< 0.01	7	0.29	< 0.5	0.08	2.4	0.15	< 0.5	< 0.01	0.14	8.9	0.8	< 0.02	0.01	0.9	0.01	< 0.5	5
	MW09-22B-7-161106	2016 11 06	126	< 3.0	39.1	10.9	6.83	<b>900</b>	0.691	1.61	< 0.50	0.17	294	< 0.10	< 50	0.172	< 1.0	< 0.50	0.61	< 0.20	< 5.0		1.1	4.9	< 0.10	< 0.020	< 0.050	< 5.0	< 0.10	< 5.0	< 5.0
<b>AEC 22E</b>																															
MW09-22E-4	MW09-22E-4	2009 08 21	110	7	33.2	< 50	6.53	<b>300</b>	1.2	1.88	< 1	< 1	140	< 1	< 50	< 0.2 <sup>a</sup>	< 1	2	< 1	< 1	< 1	< 0.02	0.7	4	< 1	< 0.25	< 0.1	< 1	< 0.5	< 1	< 5
22E-MW16-6	22E-MW16-6-161215	2016 12 15	125	-	-	-	-	-	-	-	-	0.47	-	-	-	< 0.010	< 1.0	-	< 0.20	< 0.20	-	< 0.010	-	2.0	0.47	-	-	-	-	-	< 5.0
<b>Yukon Standards</b>																															
Yukon CSR Drinking Water (DW)			n/a	200	n/a	300	100	50	n/a	200	6	25	1,000	n/a	5,000	5	50	n/a	1,000	10	n/a	1	250	n/a	10	n/a	100	n/a	5,000		
Yukon CSR Aquatic Life (AW) <sup>b</sup>			n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	200	50	10,000	53	n/a	0.1-0.6 <sup>c</sup>	10 <sup>d</sup>	9	20-90 <sup>c</sup>	40-160 <sup>c</sup>	n/a	1	10,000	250-1,500 <sup>c</sup>	10	0.5-15 <sup>c</sup>	3	1,000	3,000	n/a	75-2,400 <sup>c</sup>

Associated Maxxam file(s): B6A0649, B6B2850.

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- Denotes analysis not conducted.

n/a Denotes no applicable standard.

\* RPDs are not normally calculated where one or more concentrations are less than five times MDL.

<b>BOLD</b>	Concentration greater than or equal to Yukon CSR Drinking Water (DW) standard.
<b>SHADOW</b>	Concentration greater than or equal to Yukon CSR Aquatic Life (AW) standard.

<sup>a</sup> Laboratory detection limit exceeds regulatory standard.

<sup>b</sup> Standard to protect freshwater aquatic life.

<sup>c</sup> Standard varies with hardness

<sup>d</sup> Individual standards exist for Cr +3 and Cr +6. Reported value represents more stringent standard.

TABLE 8b: Summary of Analytical Results for Groundwater - Dissolved Metals (AEC 22A, AEC 22C, AEC 22D)

Sample Location	Sample ID	Sample Date (yyyy mm dd)	Physical Hardness (mg/L)	Geochemical Indicators								Dissolved Metals																									
				Dissolved Aluminum (µg/L)	Dissolved Calcium (mg/L)	Dissolved Iron (µg/L)	Dissolved Magnesium (mg/L)	Dissolved Manganese (µg/L)	Dissolved Potassium (mg/L)	Dissolved Sodium (mg/L)	Antimony (µg/L)	Arsenic (µg/L)	Barium (µg/L)	Beryllium (µg/L)	Boron (µg/L)	Cadmium (µg/L)	Chromium (µg/L)	Cobalt (µg/L)	Copper (µg/L)	Lead (µg/L)	Lithium (µg/L)	Mercury (µg/L)	Molybdenum (µg/L)	Nickel (µg/L)	Selenium (µg/L)	Silver (µg/L)	Thallium (µg/L)	Titanium (µg/L)	Uranium (µg/L)	Vanadium (µg/L)	Zinc (µg/L)						
<b>AEC 22A</b>																																					
22A-MW06-2	22A-MW06-2	2006 07 22	-	-	-	< 5	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
MW09-22A-16	MW09-22A-16	2009 09 26	87	< 5	25	60	6.04	231	0.81	1.88	< 0.5	< 1	160	< 0.5	150	0.06	< 1	0.9	0.5	< 0.25	0.9	< 0.02	0.6	5	< 1	< 0.2	< 0.1	< 1	< 0.25	< 0.5	< 0.01	< 0.5	< 5	< 5	5		
	MW09-22A-16	2014 06 02	95.5	< 2	28.4	53	5.98	17	-	1.54	< 0.2	< 0.1	146	< 0.01	< 2	< 0.01	< 0.5	0.1	1.7	0.15	< 0.5	< 0.01	< 0.05	0.4	0.5	< 0.02	< 0.01	< 0.5	< 0.01	< 0.5	< 0.01	< 0.5	< 5	< 5	5		
MW09-22A-18	MW09-22A-18	2009 09 26	81	5	23.1	80	5.59	227	1.36	2.19	< 0.5	< 1	180	< 0.5	360	0.14	< 1	1.9	1.2	< 0.25	0.9	< 0.02	1	6	< 1	< 0.2	< 0.1	< 1	< 0.25	< 0.5	< 0.01	< 0.5	< 5	< 5	7		
MW09-22A-19	MW09-22A-19	2014 06 02	57.4	11	16.8	<b>3,320</b>	3.76	<b>313</b>	-	1.48	< 0.2	1.5	129	< 0.01	4	0.03	< 0.5	0.68	1.6	0.15	< 0.5	< 0.01	0.09	1.5	1.3	< 0.02	< 0.01	1.3	0.01	< 0.5	< 0.01	< 0.5	< 5	< 5	7		
MW09-22A-21	MW09-22A-21	2014 06 02	61.8	< 2	18	88	4.1	44	-	1.18	< 0.2	0.6	146	< 0.01	3	< 0.01	< 0.5	0.22	0.4	< 0.05	< 0.5	< 0.01	0.06	0.9	0.5	< 0.02	< 0.01	< 0.5	< 0.01	< 0.5	< 0.01	< 0.5	< 5	< 5	< 2		
22A-MW16-25	22A-MW16-25-161214	2016 12 14	118	-	-	-	-	-	-	-	-	0.49	-	-	-	0.033	< 1.0	-	< 0.20	< 0.20	-	< 0.010	-	7.0	0.24	-	-	-	-	-	-	-	-	< 5.0			
22A-MW16-30	22A-MW16-30-161214	2016 12 14	115	-	-	-	-	-	-	-	-	1.72	-	-	-	< 0.010	< 1.0	-	< 0.20	< 0.20	-	< 0.010	-	< 1.0	< 0.10	-	-	-	-	-	-	-	< 5.0				
22A-MW16-32	22A-MW16-32-161214	2016 12 14	124	-	-	-	-	-	-	-	-	0.52	-	-	-	0.010	< 1.0	-	< 0.20	< 0.20	-	< 0.010	-	1.6	< 0.10	-	-	-	-	-	-	-	< 5.0				
<b>AEC 22C</b>																																					
22C-MW06-2	22C-MW06-2	2006 07 23	-	-	-	<b>909</b>	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-		
MW09-22C-9	MW09-22C-9	2011 02 12	80.7	6	26.1	11	3.77	< 1	1.32	1.43	< 0.5	0.1	117	< 0.1	< 50	0.16	< 1	< 0.5	2.6	< 0.2	< 5	< 0.02	< 1	2	0.5	< 0.02	< 0.05	< 5	< 0.1	< 0.5	< 1	< 0.5	< 1	< 5	18		
MW09-22C-11	MW09-22C-11	2009 08 19	130	7	39.8	< 50	7.36	1,240	0.9	2.56	< 1	< 1	210	< 1	< 50	< 0.2	< 1	< 1	< 1	< 1	< 1	< 0.02	< 0.5	2	< 1	< 0.25	< 0.1	< 1	< 0.5	< 1	< 0.5	< 1	< 5	< 5	< 5		
MW09-22C-12	MW09-22C-12	2009 08 19	87	8	27.7	50	4.2	190	1.1	1.79	< 1	< 1	120	< 1	< 50	< 0.2	< 1	< 1	2	< 1	< 1	< 0.02	< 0.5	1	< 1	< 0.25	< 0.1	< 1	< 0.5	< 1	< 0.5	< 1	< 5	13			
22C-MW16-26	22C-MW16-26-161215	2016 12 15	93.1	-	-	-	-	-	-	-	-	0.59	-	-	-	0.039	< 1.0	-	0.21	< 0.20	-	< 0.010	-	3.1	0.62	-	-	-	-	-	-	-	< 5.0				
22C-MW16-29	22C-MW16-29-161215	2016 12 15	74.0	-	-	-	-	-	-	-	-	0.16	-	-	-	0.022	< 1.0	-	0.26	< 0.20	-	< 0.010	-	1.2	0.37	-	-	-	-	-	-	-	7.8				
22C-MW16-30	22C-MW16-30-161215	2016 12 15	89.2	-	-	-	-	-	-	-	-	0.53	-	-	-	0.028	< 1.0	-	< 0.20	< 0.20	-	< 0.010	-	3.9	< 0.10	-	-	-	-	-	-	< 5.0					
22C-MW16-38	22C-MW16-38-161214	2016 12 14	119	-	-	-	-	-	-	-	-	0.67	-	-	-	< 0.010	< 1.0	-	< 0.20	< 0.20	-	< 0.010	-	2.0	< 0.10	-	-	-	-	-	-	< 5.0					
	22C-MW16-A-161214	Duplicate	120	-	-	-	-	-	-	-	-	0.68	-	-	-	< 0.010	< 1.0	-	< 0.20	< 0.20	-	< 0.010	-	2.0	< 0.10	-	-	-	-	-	-	< 5.0					
<b>QA/QC RPD%</b>			1	-	-	-	-	-	-	-	-	1	-	-	-	*	*	-	*	*	-	*	-	*	*	-	-	-	-	-	-	-	-	*			
<b>AEC 22D</b>																																					
Mw09-22D-6	Mw09-22D-6	2009 09 27	78	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	< 0.02	-	-	-	-	-	-	-	-	-	-	-	-			
22D-MW16-7	22D-MW16-7-161216	2016 12 16	78.2	-	-	-	-	-	-	-	-	1.82	-	-	-	0.016	< 1.0	-	< 0.20	< 0.20	-	< 0.010	-	2.1	< 0.10	-	-	-	-	-	-	< 5.0					
	22D-MW16-B-161216	Duplicate	76.7	-	-	-	-	-	-	-	-	1.72	-	-	-	0.014	< 1.0	-	< 0.20	< 0.20	-	< 0.010	-	1.9	< 0.10	-	-	-	-	-	-	< 5.0					
<b>QA/QC RPD%</b>			2	-	-	-	-	-	-	-	-	6	-	-	-	*	*	-	*	*	-	*	-	*	*	-	-	-	-	-	-	-	*				
22D-MW16-8	22D-MW16-8-161216	2016 12 16	71.3	-	-	-	-	-	-	-	-	3.52	-	-	-	< 0.010	< 1.0	-	< 0.20	< 0.20	-	< 0.010	-	6.0	< 0.10	-	-	-	-	-	< 5.0						
22D-MW16-9	22D-MW16-9-161216	2016 12 16	90.1	-	-	-	-	-	-	-	-	0.13	-	-	-	0.047	< 1.0	-	< 0.20	< 0.20	-	< 0.010	-	4.1	0.24	-	-	-	-	-	-	< 5.0					
<b>Yukon Standards</b>																																					
Yukon CSR Drinking Water (DW)			n/a	200	n/a	300	100	50	n/a	200	6	25	1,000	n/a	5,000	5	50	n/a	1,000	10	n/a	1	250	n/a	10	n/a	n/a	n/a	n/a	100	n/a	5,000					
Yukon CSR Aquatic Life (AW) <sup>a</sup>			n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	200	50	10,000	53	n/a	0.1-0.6 <sup>c</sup>	10 <sup>b</sup>	9	20-90 <sup>c</sup>	40-160 <sup>c</sup>	n/a	1	10,000	250-1,500 <sup>c</sup>	10	0.5-15 <sup>c</sup>	3	1,000	3,000	n/a	75-2,400 <sup>c</sup>						

Associated Maxxam file(s): B6B2798, B6B2838, B6B2856.  
 All terms defined within the body of SNC-Lavalin's report.  
 < Denotes concentration less than indicated detection limit or RPD less than indicated value.  
 - Denotes analysis not conducted.  
 n/a Denotes no applicable standard.  
 \* RPDs are not normally calculated where one or more concentrations are less than five times MDL.

**BOLD** Concentration greater than or equal to Yukon CSR Drinking Water (DW) standard.

**SHADOW** Concentration greater than or equal to Yukon CSR Aquatic Life (AW) standard.

<sup>a</sup> Standard to protect freshwater aquatic life.  
<sup>b</sup> Individual standards exist for Cr +3 and Cr +6. Reported value represents more stringent standard.  
<sup>c</sup> Standard varies with hardness

**TABLE 9a: Summary of Analytical Results for Groundwater - Total Metals (AEC 22B)**

Sample Location	Sample ID	Sample Date (yyyy mm dd)	Physical	Total Metals																													
			Total Hardness (mg/L)	Aluminum (mg/L)	Antimony (mg/L)	Arsenic (mg/L)	Barium (mg/L)	Beryllium (mg/L)	Boron (mg/L)	Cadmium (mg/L)	Calcium (mg/L)	Chromium (mg/L)	Cobalt (mg/L)	Copper (mg/L)	Iron (mg/L)	Lead (mg/L)	Lithium (mg/L)	Magnesium (mg/L)	Manganese (mg/L)	Mercury (mg/L)	Molybdenum (mg/L)	Nickel (mg/L)	Potassium (mg/L)	Selenium (mg/L)	Silver (mg/L)	Sodium (mg/L)	Thallium (mg/L)	Titanium (mg/L)	Uranium (mg/L)	Vanadium (mg/L)	Zinc (mg/L)		
<b>AEC 22B</b>																																	
MW09-22B-4	MW09-22B-4	2009 09 28	98	< 0.005	< 0.0005	< 0.001	0.12	< 0.0005	< 0.025	< 0.00005	28.3	< 0.001	< 0.0005	< 0.0005	0.05	0.0003	0.0008	6.69	0.018	< 0.00002	< 0.0005	0.002	0.78	0.001	< 0.0002	1.71	< 0.0001	< 0.001	< 0.00025	< 0.0005	< 0.005		
MW09-22B-7	MW09-22B-7	2009 09 28	120	0.012	< 0.0005	< 0.001	0.36	< 0.0005	< 0.025	0.00025	35.7	< 0.001	< 0.0005	0.0007	< 0.05	0.0004	0.0008	7.47	<b>0.28</b>	< 0.00002	0.0012	0.002	0.8	< 0.001	< 0.0002	2.2	< 0.0001	< 0.001	< 0.00025	< 0.0005	0.008		
<b>Yukon Standards</b>																																	
Yukon CSR Drinking Water (DW)			n/a	0.2	0.006	0.025	1	n/a	5	0.005	n/a	0.05	n/a	1	0.3	0.01	n/a	100	0.05	0.001	0.25	n/a	n/a	0.01	n/a	200	n/a	n/a	0.1	n/a	5		
Yukon CSR Aquatic Life (AW) <sup>a,d</sup>			n/a	n/a	0.2	0.05	10	0.053	n/a	0.0001-0.0006 <sup>b</sup>	n/a	0.01 <sup>c</sup>	0.009	0.02-0.09 <sup>b</sup>	n/a	0.04-0.16 <sup>b</sup>	n/a	n/a	n/a	0.001	10	0.25-1.5 <sup>b</sup>	n/a	0.01	0.0005-0.015 <sup>b</sup>	n/a	0.003	1	3	n/a	0.075-2.4 <sup>b</sup>		

All terms defined within the body of SNC-Lavalin's report.

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- Denotes analysis not conducted.

n/a Denotes no applicable standard.

**BOLD** Concentration greater than or equal to Yukon CSR Drinking Water (DW) standard.

**SHADOW** Concentration greater than or equal to Yukon CSR Aquatic Life (AW) standard.

<sup>a</sup> Standard to protect freshwater aquatic life.

<sup>b</sup> Standard varies with hardness

<sup>c</sup> Individual standards exist for Cr +3 and Cr +6. Reported value represents more stringent standard.

<sup>d</sup> Standards are for dissolved metals. Total concentrations are compared to standards.

**TABLE 9b: Summary of Analytical Results for Groundwater - Total Metals (AEC 22C)**

Sample Location	Sample ID	Sample Date (yyyy mm dd)	Physical Total Hardness (mg/L)	Total Metals																											
				Aluminum (mg/L)	Antimony (mg/L)	Arsenic (mg/L)	Barium (mg/L)	Beryllium (mg/L)	Boron (mg/L)	Cadmium (mg/L)	Calcium (mg/L)	Chromium (mg/L)	Cobalt (mg/L)	Copper (mg/L)	Iron (mg/L)	Lead (mg/L)	Lithium (mg/L)	Magnesium (mg/L)	Manganese (mg/L)	Mercury (mg/L)	Molybdenum (mg/L)	Nickel (mg/L)	Potassium (mg/L)	Selenium (mg/L)	Silver (mg/L)	Sodium (mg/L)	Thallium (mg/L)	Titanium (mg/L)	Uranium (mg/L)	Vanadium (mg/L)	Zinc (mg/L)
<b>AEC 22C</b>																															
MW09-22C-14	MW09-22C-14	2009 09 28	97	0.014	< 0.0005	< 0.001	0.16	< 0.0005	< 0.025	0.00007	29	< 0.001	0.0014	0.0005	0.07	< 0.00025	0.0006	6.06	<b>0.228</b>	< 0.00002	0.001	0.003	0.91	< 0.001	< 0.0002	2.39	< 0.0001	< 0.001	< 0.00025	< 0.0005	< 0.005
MW09-22C-22	MW09-22C-22	2009 09 28	107	< 0.005	< 0.0005	0.004	0.23	< 0.0005	< 0.025	0.00006	31.4	< 0.001	< 0.0005	< 0.0005	3.56	< 0.00025	0.001	6.98	<b>0.256</b>	< 0.00002	< 0.0005	< 0.001	0.56	< 0.001	< 0.0002	1.8	< 0.0001	< 0.001	< 0.00025	< 0.0005	< 0.005
<b>Yukon Standards</b>																															
Yukon CSR Drinking Water (DW)			n/a	0.2	0.006	0.025	1	n/a	5	0.005	n/a	0.05	n/a	1	0.3	0.01	n/a	100	0.05	0.001	0.25	n/a	n/a	0.01	n/a	200	n/a	n/a	0.1	n/a	5
Yukon CSR Aquatic Life (AW) <sup>a,d</sup>			n/a	n/a	0.2	0.05	10	0.053	n/a	0.0001-0.0006 <sup>b</sup>	n/a	0.01 <sup>c</sup>	0.009	0.02-0.09 <sup>b</sup>	n/a	0.04-0.16 <sup>b</sup>	n/a	n/a	n/a	0.001	10	0.25-1.5 <sup>b</sup>	n/a	0.01	0.0005-0.015 <sup>b</sup>	n/a	0.003	1	3	n/a	0.075-2.4 <sup>b</sup>

All terms defined within the body of SNC-Lavalin's report.

< Denotes concentration less than indicated detection limit or RPD less than indicated value.

- Denotes analysis not conducted.

n/a Denotes no applicable standard.

**BOLD** Concentration greater than or equal to Yukon CSR Drinking Water (DW) standard.

**SHADOW** Concentration greater than or equal to Yukon CSR Aquatic Life (AW) standard.

<sup>a</sup> Standard to protect freshwater aquatic life.

<sup>b</sup> Standard varies with hardness

<sup>c</sup> Individual standards exist for Cr +3 and Cr +6. Reported value represents more stringent standard.

<sup>d</sup> Standards are for dissolved metals. Total concentrations are compared to standards.

**TABLE 10a: Summary of Analytical Results for Groundwater - Volatile Organic Compounds (AEC 22B)**

Parameter	Units	AEC 22B		Yukon Standards		
		Sample Location	MW09-22B-4	MW09-22B-7	Yukon CSR	Yukon CSR
		Sample ID	MW09-22B-4	MW09-22B-7	Drinking Water	Aquatic Life <sup>a</sup>
		Sample Date (yyyy mm dd)	2009 09 28	2009 09 28	(DW)	(AW)
Analytical Results						
<b>Volatile Organic Compounds</b>						
Bromodichloromethane	µg/L	< 0.1	< 0.1	n/a	n/a	
Bromoform	µg/L	< 0.2	< 0.2	n/a	n/a	
Bromomethane	µg/L	< 0.8	< 0.8	n/a	n/a	
Carbon tetrachloride	µg/L	< 0.1	< 0.1	5	130	
Chlorobenzene	µg/L	< 0.1	< 0.1	30	13	
Chloroethane	µg/L	< 0.4	< 0.4	n/a	n/a	
Chloroform	µg/L	< 0.3	< 0.3	100	20	
Chloromethane	µg/L	< 0.4	< 0.4	n/a	n/a	
Dibromochloromethane	µg/L	< 0.1	< 0.1	n/a	n/a	
1,2-Dibromoethane	µg/L	< 0.1	< 0.1	n/a	n/a	
1,2-Dichlorobenzene	µg/L	< 0.1	< 0.1	3	n/a	
1,3-Dichlorobenzene	µg/L	< 0.1	< 0.1	n/a	1,500	
1,4-Dichlorobenzene	µg/L	< 0.1	< 0.1	1	260	
Dichlorodifluoromethane	µg/L	< 0.2	< 0.2	n/a	n/a	
1,1-Dichloroethane	µg/L	< 0.1	< 0.1	n/a	n/a	
1,2-Dichloroethane	µg/L	< 0.4	< 0.4	5	1,000	
1,1-Dichloroethylene	µg/L	< 0.1	< 0.1	14	n/a	
cis-1,2-Dichloroethylene	µg/L	< 0.1	< 0.1	n/a	n/a	
trans-1,2-Dichloroethylene	µg/L	< 0.1	< 0.1	n/a	n/a	
Dichloromethane	µg/L	< 6	< 6	50	980	
1,2-Dichloropropane	µg/L	< 0.1	< 0.1	n/a	n/a	
cis-1,3-Dichloropropylene	µg/L	< 0.1	< 0.1	n/a	n/a	
trans-1,3-Dichloropropylene	µg/L	< 0.1	< 0.1	n/a	n/a	
2-Hexanone	µg/L	< 20	< 20	n/a	n/a	
Methyl ethyl ketone	µg/L	< 5	< 5	n/a	n/a	
Methyl isobutyl ketone	µg/L	< 2	< 2	n/a	n/a	
Methylene bromide	µg/L	< 0.2	< 0.2	n/a	n/a	
1,1,2,2-Tetrachloroethane	µg/L	< 0.2	< 0.2	n/a	n/a	
Tetrachloroethylene	µg/L	< 0.1	< 0.1	30	1,100	
1,1,1-Trichloroethane	µg/L	< 0.1	< 0.1	n/a	n/a	
1,1,2-Trichloroethane	µg/L	< 0.1	< 0.1	n/a	n/a	
Trichloroethylene	µg/L	< 0.1	< 0.1	50	200	
Trichlorofluoromethane	µg/L	< 0.2	< 0.2	n/a	n/a	
Vinyl chloride	µg/L	< 0.2	< 0.2	2	n/a	

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n/a Denotes no applicable standard.

**BOLD** Concentration greater than or equal to Yukon CSR Drinking Water (DW) standard.

**SHADOW** Concentration greater than or equal to Yukon CSR Aquatic Life (AW) standard.

<sup>a</sup> Standard to protect freshwater aquatic life.



**TABLE 10b: Summary of Analytical Results for Groundwater - Volatile Organic Compounds (AEC 22A, AEC 22C, AEC 22D)**

Parameter	Units	AEC 22A		AEC 22C				AEC 22D				Yukon Standards				
		Sample Location	Sample ID	MW09-22A-16	MW09-22A-18	MW09-22C-9	MW09-22C-12	MW09-22C-14	MW09-22C-19	22C-MW16-26	Mw09-22D-6	22D-MW16-7		22D-MW16-8	Yukon CSR	Yukon CSR
		Sample Date (yyyy mm dd)	Sample ID	MW09-22A-16	MW09-22A-18	MW09-22C-9	MW09-22C-12	MW09-22C-14	MW09-22C-19	22C-MW16-26-161215	Mw09-22D-6	22D-MW16-7-161216	22D-MW16-B-161216	QA/QC RPD %	22D-MW16-8-161216	Drinking Water
		2009 09 26	2009 09 26	2011 02 13	2009 08 19	2009 09 28	2009 09 28	2016 12 15	2009 09 27	2016 12 16	Duplicate		2016 12 16	(DW)	(AW)	
<b>Analytical Results</b>																
<b>Volatile Organic Compounds</b>																
Bromodichloromethane	µg/L	< 0.1	< 0.1	< 1	< 0.1	< 0.1	< 0.1	< 1.0	< 0.1	< 1.0	< 1.0	*	< 1.0	n/a	n/a	
Bromoform	µg/L	< 0.2	< 0.2	< 1	< 0.2	< 0.2	< 0.2	< 1.0	< 0.2	< 1.0	< 1.0	*	< 1.0	n/a	n/a	
Bromomethane	µg/L	< 0.8	< 0.8	< 1	< 0.8	< 0.8	< 0.8	< 1.0	< 0.8	< 1.0	< 1.0	*	< 1.0	n/a	n/a	
Carbon tetrachloride	µg/L	< 0.1	< 0.1	< 1	< 0.1	< 0.1	< 0.1	< 0.50	< 0.1	< 0.50	< 0.50	*	< 0.50	5	130	
Chlorobenzene	µg/L	< 0.1	< 0.1	< 0.5	< 0.1	< 0.1	< 0.1	< 0.50	< 0.1	< 0.50	< 0.50	*	< 0.50	30	13	
Chloroethane	µg/L	< 0.4	< 0.4	< 1	< 0.4	< 0.4	< 0.4	< 1.0	< 0.4	< 1.0	< 1.0	*	< 1.0	n/a	n/a	
Chloroform	µg/L	< 0.3	< 0.3	< 1	< 0.3	< 0.3	< 0.3	< 1.0	< 0.3	< 1.0	< 1.0	*	< 1.0	100	20	
Chloromethane	µg/L	< 0.4	< 0.4	< 1	< 0.4	< 0.4	< 0.4	< 1.0	< 0.4	< 1.0	< 1.0	*	< 1.0	n/a	n/a	
Dibromochloromethane	µg/L	< 0.1	< 0.1	< 1	< 0.1	< 0.1	< 0.1	< 1.0	< 0.1	< 1.0	< 1.0	*	< 1.0	n/a	n/a	
1,2-Dibromoethane	µg/L	< 0.1	< 0.1	< 0.2	< 0.1	< 0.1	< 0.1	< 0.20	< 0.1	< 0.20	< 0.20	*	< 0.20	n/a	n/a	
1,2-Dichlorobenzene	µg/L	< 0.1	< 0.1	< 0.5	< 0.1	< 0.1	< 0.1	< 0.50	< 0.1	< 0.50	< 0.50	*	< 0.50	3	n/a	
1,3-Dichlorobenzene	µg/L	< 0.1	< 0.1	< 0.5	< 0.1	< 0.1	< 0.1	< 0.50	< 0.1	< 0.50	< 0.50	*	< 0.50	n/a	1,500	
1,4-Dichlorobenzene	µg/L	< 0.1	< 0.1	< 0.5	< 0.1	< 0.1	< 0.1	< 0.50	< 0.1	< 0.50	< 0.50	*	< 0.50	1	260	
Dichlorodifluoromethane	µg/L	< 0.2	< 0.2	-	< 0.2	< 0.2	< 0.2	< 2.0	< 0.2	< 2.0	< 2.0	*	< 2.0	n/a	n/a	
1,1-Dichloroethane	µg/L	< 0.1	< 0.1	< 0.5	< 0.1	< 0.1	< 0.1	< 0.50	< 0.1	< 0.50	< 0.50	*	< 0.50	n/a	n/a	
1,2-Dichloroethane	µg/L	< 0.4	< 0.4	< 0.5	< 0.4	< 0.4	< 0.4	< 0.50	< 0.4	< 0.50	< 0.50	*	< 0.50	5	1,000	
1,1-Dichloroethylene	µg/L	< 0.1	< 0.1	< 0.5	< 0.1	< 0.1	< 0.1	< 0.50	< 0.1	< 0.50	< 0.50	*	< 0.50	14	n/a	
cis-1,2-Dichloroethylene	µg/L	< 0.1	< 0.1	< 1	< 0.1	< 0.1	< 0.1	< 1.0	< 0.1	< 1.0	< 1.0	*	< 1.0	n/a	n/a	
trans-1,2-Dichloroethylene	µg/L	< 0.1	< 0.1	< 1	< 0.1	< 0.1	< 0.1	< 1.0	< 0.1	< 1.0	< 1.0	*	< 1.0	n/a	n/a	
Dichloromethane	µg/L	< 6	< 6	< 2	< 6	< 6	< 6	< 2.0	< 6	< 2.0	< 2.0	*	< 2.0	50	980	
1,2-Dichloropropane	µg/L	< 0.1	< 0.1	< 0.5	< 0.1	< 0.1	< 0.1	< 0.50	< 0.1	< 0.50	< 0.50	*	< 0.50	n/a	n/a	
cis-1,3-Dichloropropylene	µg/L	< 0.1	< 0.1	< 1	< 0.1	< 0.1	< 0.1	< 1.0	< 0.1	< 1.0	< 1.0	*	< 1.0	n/a	n/a	
trans-1,3-Dichloropropylene	µg/L	< 0.1	< 0.1	< 1	< 0.1	< 0.1	< 0.1	< 1.0	< 0.1	< 1.0	< 1.0	*	< 1.0	n/a	n/a	
Freon 113	µg/L	-	-	-	-	-	-	< 2.0	-	< 2.0	< 2.0	*	< 2.0	n/a	n/a	
2-Hexanone	µg/L	< 20	< 20	-	< 20	< 20	< 20	-	< 20	-	-	-	-	n/a	n/a	
Hexachlorobutadiene	µg/L	-	-	-	-	-	-	< 0.50	-	< 0.50	< 0.50	*	< 0.50	n/a	1	
Methyl ethyl ketone	µg/L	< 5	< 5	-	< 5	< 5	< 5	-	< 5	-	-	-	-	n/a	n/a	
Methyl isobutyl ketone	µg/L	< 2	< 2	-	< 2	< 2	< 2	-	< 2	-	-	-	-	n/a	n/a	
Methylene bromide	µg/L	< 0.2	< 0.2	-	< 0.2	< 0.2	< 0.2	-	< 0.2	-	-	-	-	n/a	n/a	
1,1,1,2-Tetrachloroethane	µg/L	-	-	< 0.5	-	-	-	< 0.50	-	< 0.50	< 0.50	*	< 0.50	n/a	n/a	
1,1,2,2-Tetrachloroethane	µg/L	< 0.2	< 0.2	< 0.5	< 0.2	< 0.2	< 0.2	< 0.50	< 0.2	< 0.50	< 0.50	*	< 0.50	n/a	n/a	
Tetrachloroethylene	µg/L	< 0.1	< 0.1	< 0.5	< 0.1	< 0.1	< 0.1	< 0.50	< 0.1	< 0.50	< 0.50	*	< 0.50	n/a	1,100	
1,2,3-Trichlorobenzene	µg/L	-	-	-	-	-	-	< 2.0	-	< 2.0	< 2.0	*	< 2.0	n/a	80	
1,2,4-Trichlorobenzene	µg/L	-	-	-	-	-	-	< 2.0	-	< 2.0	< 2.0	*	< 2.0	n/a	240	
1,1,1-Trichloroethane	µg/L	< 0.1	< 0.1	< 0.5	< 0.1	< 0.1	< 0.1	< 0.50	< 0.1	< 0.50	< 0.50	*	< 0.50	n/a	n/a	
1,1,2-Trichloroethane	µg/L	< 0.1	< 0.1	< 0.5	< 0.1	< 0.1	< 0.1	< 0.50	< 0.1	< 0.50	< 0.50	*	< 0.50	n/a	n/a	
Trichloroethylene	µg/L	< 0.1	< 0.1	< 0.5	< 0.1	< 0.1	< 0.1	< 0.50	< 0.1	< 0.50	< 0.50	*	< 0.50	50	200	
Trichlorofluoromethane	µg/L	< 0.2	< 0.2	< 4	< 0.2	< 0.2	< 0.2	< 4.0	< 0.2	< 4.0	< 4.0	*	< 4.0	n/a	n/a	
Vinyl chloride	µg/L	< 0.2	< 0.2	< 0.5	< 0.2	< 0.2	< 0.2	< 0.50	< 0.2	< 0.50	< 0.50	*	< 0.50	2	n/a	

Associated Maxxam file(s): B6B2798.

All terms defined within the body of SNC-Lavalin's report.

< Denotes concentration less than indicated detection limit or RPD less than indicated value.

- Denotes analysis not conducted.

n/a Denotes no applicable standard.

\* RPDs are not normally calculated where one or more concentrations are less than five times MDL.

**BOLD** Concentration greater than or equal to Yukon CSR Drinking Water (DW) standard.

**SHADOW** Concentration greater than or equal to Yukon CSR Aquatic Life (AW) standard.

<sup>a</sup> Standard to protect freshwater aquatic life.

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# Drawings:

- › 640752-001 – Location Plan
- › 640752-002 – Areas of Potential Environmental Concern
- › 640752-003 – Summary of Soil Analytical Results – AEC 22A
- › 640752-004 – Summary of Groundwater Analytical Results – AEC 22A
- › 640752-005 – Summary of Soil Analytical Results – AEC 22B
- › 640752-006 – Summary of Groundwater Analytical Results – AEC 22B
- › 640752-007 – Summary of Soil Analytical Results – AEC 22C
- › 640752-008 – Summary of Groundwater Analytical Results – AEC 22C
- › 640752-009 – Summary of Soil Analytical Results – AEC 22D
- › 640752-010 – Summary of Groundwater Analytical Results – AEC 22D
- › 640752-011 – Summary of Soil Analytical Results – AEC 22E
- › 640752-012 – Summary of Groundwater Analytical Results – AEC 22E



**LEGEND**

**NOTES**

1. Original in colour.
2. Numerical scale reflects full-size print. Print scaling will distort this scale, however scale bar will remain accurate.
3. Intended for illustration purposes, accuracy has not been verified for construction or navigation purposes.

**REFERENCES**

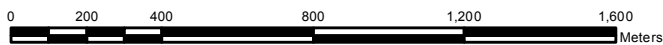
1. Service Layer Credits: Sources: Esri, HERE, DeLorme, Intermap, increment P Corp., GEBCO, USGS, FAO, NPS, NRCAN, GeoBase, IGN, Kadaster NL, Ordnance Survey, Esri Japan, METI, Esri China (Hong Kong), swisstopo, MapmyIndia, © OpenStreetMap contributors, and the GIS User Community  
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CLIENT NAME:  
Public Works and Government  
Services Canada

PROJECT LOCATION:  
Watson Lake Airport, Yukon

**Location Plan**



BY: DM

DATE: 2017-03-09

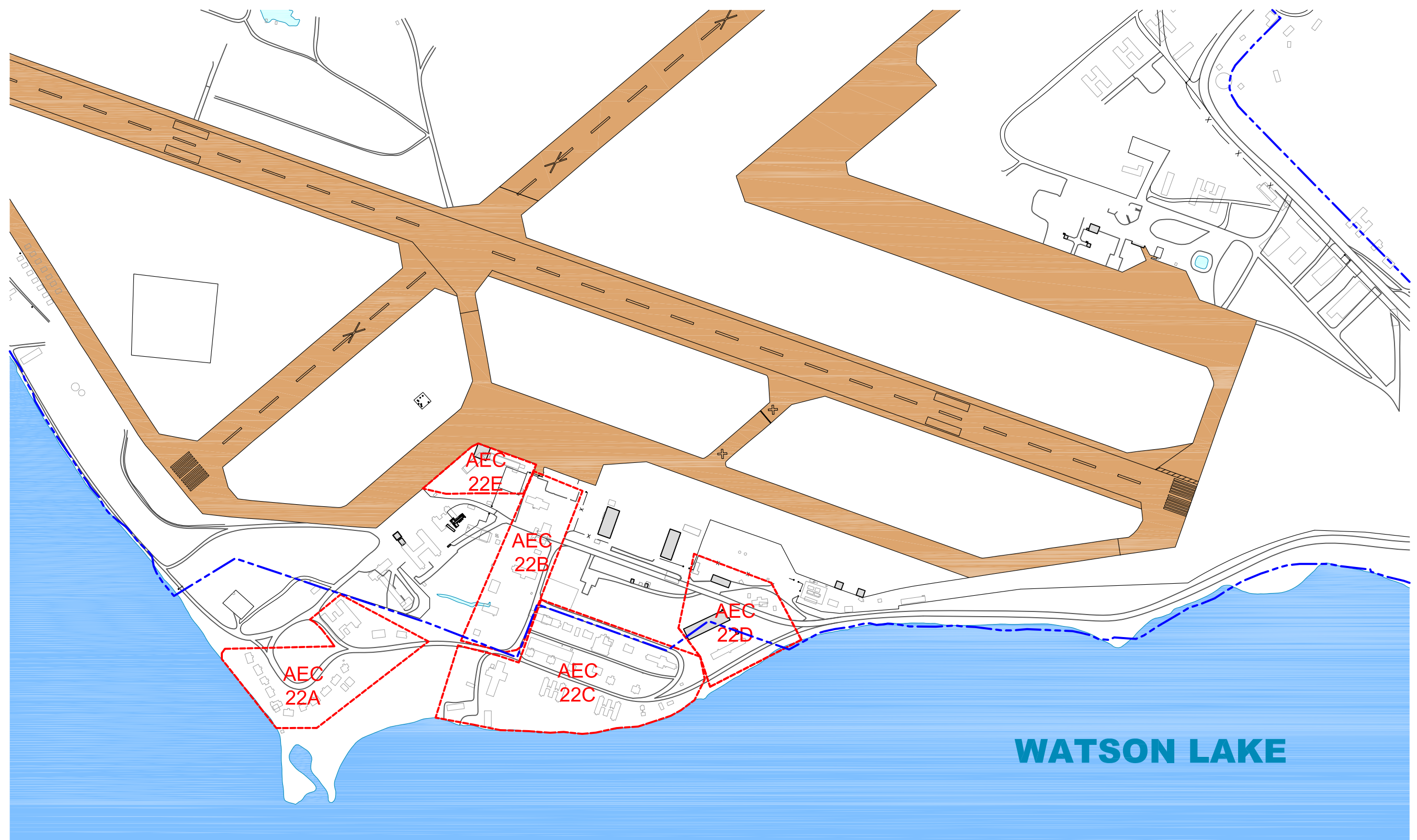
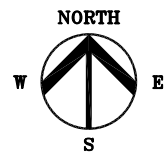
REF No:

REV: **0**

CHKD: MR

SCALE: 1:20,000

**640752-001**



**LEGEND** 0 50 250 METRES

- - - AIRPORT BOUNDARY
- - - AREA OF ENVIRONMENTAL CONCERN

**NOTES**

1. ORIGINAL DRAWING IN COLOUR.

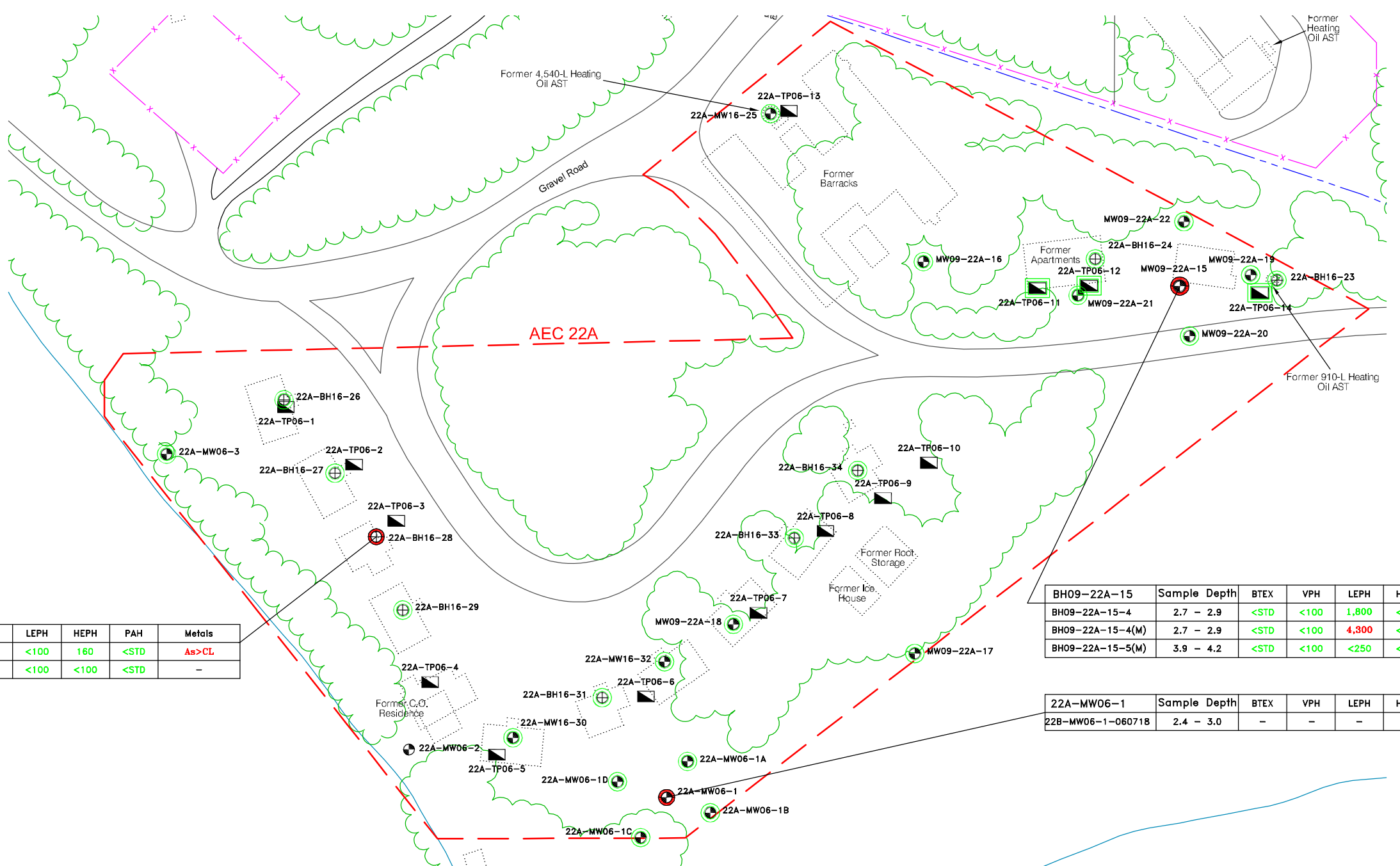
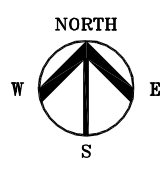
**REFERENCE DRAWINGS**

DWG. NO.	DATE	DESCRIPTION	BY	CHK
<b>REVISIONS</b>				



CLIENT NAME: PUBLIC WORKS AND GOVERNMENT SERVICES CANADA		PROJECT LOCATION: WATSON LAKE AIRPORT YUKON, YT	
<b>TITLE:</b> <b>AREAS OF ENVIRONMENTAL CONCERN 22A-E</b>			
DWN BY: PES	SCALE: 1:5,000	DATE: 2017-01-03	DWG No: REV: <b>0</b>
CHK'D: MR	PLOT: 20170317.1327	CADFILE: 640752-002	<b>640752-002</b>





Sample ID	Sample Depth	BTEX	VPH	LEPH	HEPH	PAH	Metals
22A-BH16-28							
22A-BH16-28-1	0.3 - 0.5	<STD	<10	<100	160	<STD	As > CL
22A-BH16-28-2	3.0 - 3.2	<STD	<10	<100	<100	<STD	-

Sample ID	Sample Depth	BTEX	VPH	LEPH	HEPH	PAH	Metals	VOC
BH09-22A-15								
BH09-22A-15-4	2.7 - 2.9	<STD	<100	1,800	<250	<STD	<STD	<STD
BH09-22A-15-4(M)	2.7 - 2.9	<STD	<100	4,300	<250	-	-	-
BH09-22A-15-5(M)	3.9 - 4.2	<STD	<100	<250	<250	-	-	-

Sample ID	Sample Depth	BTEX	VPH	LEPH	HEPH	PAH	F1-F4	Metals	VOC
22A-MW06-1									
22B-MW06-1-060718	2.4 - 3.0	-	-	-	-	-	F4 > CWS	-	-

LOCATION	ANALYTICAL SOIL RESULTS
BH09-22A-15	Sample Depth: 2.7 - 2.9, BTEX: <STD, VPH: <100, LEPH: 4,300, HEPH: <250, PAH: -, Metals: -, VOC: -
BH09-22A-15-4(M)	Sample Depth: 2.7 - 2.9, BTEX: <STD, VPH: <100, LEPH: 4,300, HEPH: <250, PAH: -, Metals: -, VOC: -

SAMPLE ID: \_\_\_\_\_  
DEPTH OF SAMPLE (m): \_\_\_\_\_

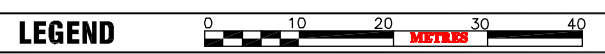
**RED** - CONCENTRATION GREATER THAN THE APPLICABLE YUKON CSR CL STANDARDS AND/OR CWS GUIDELINES  
**GREEN** - CONCENTRATION LESS THAN OR EQUAL TO THE APPLICABLE YUKON CSR CL STANDARDS AND/OR CWS GUIDELINES

YUKON CSR CL STANDARDS (µg/g)	VPH	LEPH	HEPH	PAH	Metals	VOC
	200	2,000	5,000	SEE TABLES	SEE TABLES	SEE TABLES

CWS GUIDELINES (µg/g)	F4
	3,300

- B BENZENE
- T TOLUENE
- E ETHYLBENZENE
- X XYLENES
- VPH VOLATILE PETROLEUM HYDROCARBONS (C6-C10)
- LEPH LIGHT EXTRACTABLE PETROLEUM HYDROCARBONS (C10-C19)
- HEPH HEAVY EXTRACTABLE PETROLEUM HYDROCARBONS (C19-C32)
- PAH POLYCYCLIC AROMATIC HYDROCARBONS
- VOC VOLATILE ORGANIC COMPOUNDS
- As ARSENIC
- < DENOTES CONCENTRATION LESS THAN INDICATED DETECTION LIMIT
- NOT ANALYZED FOR



- LEGEND**
- AIRPORT BOUNDARY
  - AREA OF ENVIRONMENTAL CONCERN
  - ~ FOREST (TREE LINE)
  - FORMER STRUCTURE
  - x CURRENT FENCE
  - ⊕ BOREHOLE
  - ⊙ MONITORING WELL
  - ▣ TEST PIT

- ⊕ CONCENTRATION(S) LESS THAN OR EQUAL TO THE APPLICABLE YUKON CSR CL STANDARDS AND/OR CWS GUIDELINES
- ⊕ CONCENTRATION(S) ARE GREATER THAN THE APPLICABLE YUKON CSR CL STANDARDS AND/OR CWS GUIDELINES

**NOTES**

- ORIGINAL DRAWING IN COLOUR.
- YUKON CSR PL STANDARDS ONLY APPLIED TO AEC 22A, 22C AND 22D.
- (M) INDICATES SAMPLE ANALYZED AT MOBILE LABORATORY.

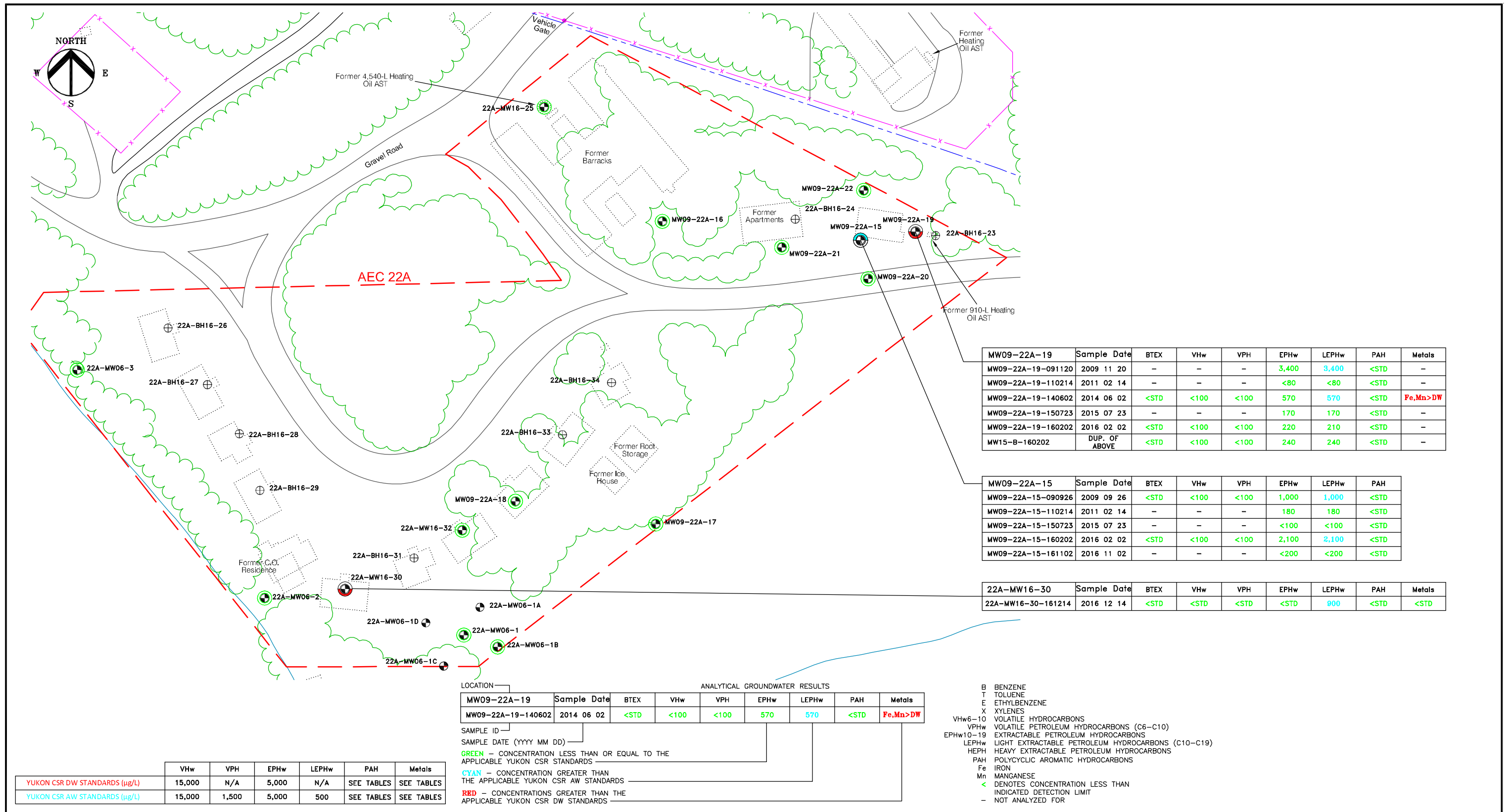
**REFERENCE DRAWINGS**

DWG. NO.	DATE	DESCRIPTION	BY	CHK
1	2017-03-23	ISSUED TO CLIENT	PES	MR
0	2017-01-04	ISSUED TO CLIENT AS DRAFT	PES	MR

**REVISIONS**



CLIENT NAME: PUBLIC WORKS AND GOVERNMENT SERVICES CANADA		PROJECT LOCATION: WATSON LAKE AIRPORT YUKON, YT	
<b>SUMMARY OF SOIL ANALYTICAL RESULTS - AEC 22A</b>			
DWN BY: PES	SCALE: 1:800	DATE: 2017-01-03	DWG No: REV.: <b>1</b>
CHK'D: MR	PLOT: 20170323.1006	CADFILE: 640752-R3	<b>640752-003</b>



MW09-22A-19	Sample Date	BTEX	VHw	VPH	EPHw	LEPHw	PAH	Metals
MW09-22A-19-091120	2009 11 20	-	-	-	3,400	3,400	<STD	-
MW09-22A-19-110214	2011 02 14	-	-	-	<80	<80	<STD	-
MW09-22A-19-140602	2014 06 02	<STD	<100	<100	570	570	<STD	Fe,Mn>DW
MW09-22A-19-150723	2015 07 23	-	-	-	170	170	<STD	-
MW09-22A-19-160202	2016 02 02	<STD	<100	<100	220	210	<STD	-
MW15-B-160202	DUP. OF ABOVE	<STD	<100	<100	240	240	<STD	-

MW09-22A-15	Sample Date	BTEX	VHw	VPH	EPHw	LEPHw	PAH
MW09-22A-15-090926	2009 09 26	<STD	<100	<100	1,000	1,000	<STD
MW09-22A-15-110214	2011 02 14	-	-	-	180	180	<STD
MW09-22A-15-150723	2015 07 23	-	-	-	<100	<100	<STD
MW09-22A-15-160202	2016 02 02	<STD	<100	<100	2,100	2,100	<STD
MW09-22A-15-161102	2016 11 02	-	-	-	<200	<200	<STD

22A-MW16-30	Sample Date	BTEX	VHw	VPH	EPHw	LEPHw	PAH	Metals
22A-MW16-30-161214	2016 12 14	<STD	<STD	<STD	<STD	900	<STD	<STD

ANALYTICAL GROUNDWATER RESULTS

LOCATION	Sample ID	Sample Date	BTEX	VHw	VPH	EPHw	LEPHw	PAH	Metals
MW09-22A-19	MW09-22A-19-140602	2014 06 02	<STD	<100	<100	570	570	<STD	Fe,Mn>DW

SAMPLE ID: \_\_\_\_\_  
 SAMPLE DATE (YYYY MM DD): \_\_\_\_\_  
**GREEN** - CONCENTRATION LESS THAN OR EQUAL TO THE APPLICABLE YUKON CSR STANDARDS  
**CYAN** - CONCENTRATION GREATER THAN THE APPLICABLE YUKON CSR AW STANDARDS  
**RED** - CONCENTRATIONS GREATER THAN THE APPLICABLE YUKON CSR DW STANDARDS

- B BENZENE
- T TOLUENE
- E ETHYLBENZENE
- X XYLENES
- VHw6-10 VOLATILE HYDROCARBONS
- VPHw VOLATILE PETROLEUM HYDROCARBONS (C6-C10)
- EPHw10-19 EXTRACTABLE PETROLEUM HYDROCARBONS
- LEPHw LIGHT EXTRACTABLE PETROLEUM HYDROCARBONS (C10-C19)
- HEPH HEAVY EXTRACTABLE PETROLEUM HYDROCARBONS
- PAH POLYCYCLIC AROMATIC HYDROCARBONS
- Fe IRON
- Mn MANGANESE
- < DENOTES CONCENTRATION LESS THAN INDICATED DETECTION LIMIT
- NOT ANALYZED FOR

YUKON CSR DW STANDARDS (µg/L)	VHw	VPH	EPHw	LEPHw	PAH	Metals
YUKON CSR DW STANDARDS (µg/L)	15,000	N/A	5,000	N/A	SEE TABLES	SEE TABLES
YUKON CSR AW STANDARDS (µg/L)	15,000	1,500	5,000	500	SEE TABLES	SEE TABLES

### LEGEND

- AIRPORT BOUNDARY
- AREA OF ENVIRONMENTAL CONCERN
- ~ FOREST (TREE LINE)
- FORMER STRUCTURE
- CURRENT FENCE
- BOREHOLE
- MONITORING WELL
- CONCENTRATION(S) LESS THAN OR EQUAL TO THE APPLICABLE YUKON CSR STANDARDS
- CONCENTRATION(S) ARE GREATER THAN THE APPLICABLE YUKON CSR DW STANDARDS (µg/L)
- CONCENTRATION(S) ARE GREATER THAN THE APPLICABLE YUKON CSR AW STANDARDS (µg/L)

### NOTES

1. ORIGINAL DRAWING IN COLOUR.

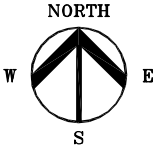
### REFERENCE DRAWINGS

DWG. NO.	DATE	DESCRIPTION	BY	CHK
1	2017-03-23	ISSUED TO CLIENT	PES	MR
0	2017-01-04	ISSUED TO CLIENT AS DRAFT	PES	MR

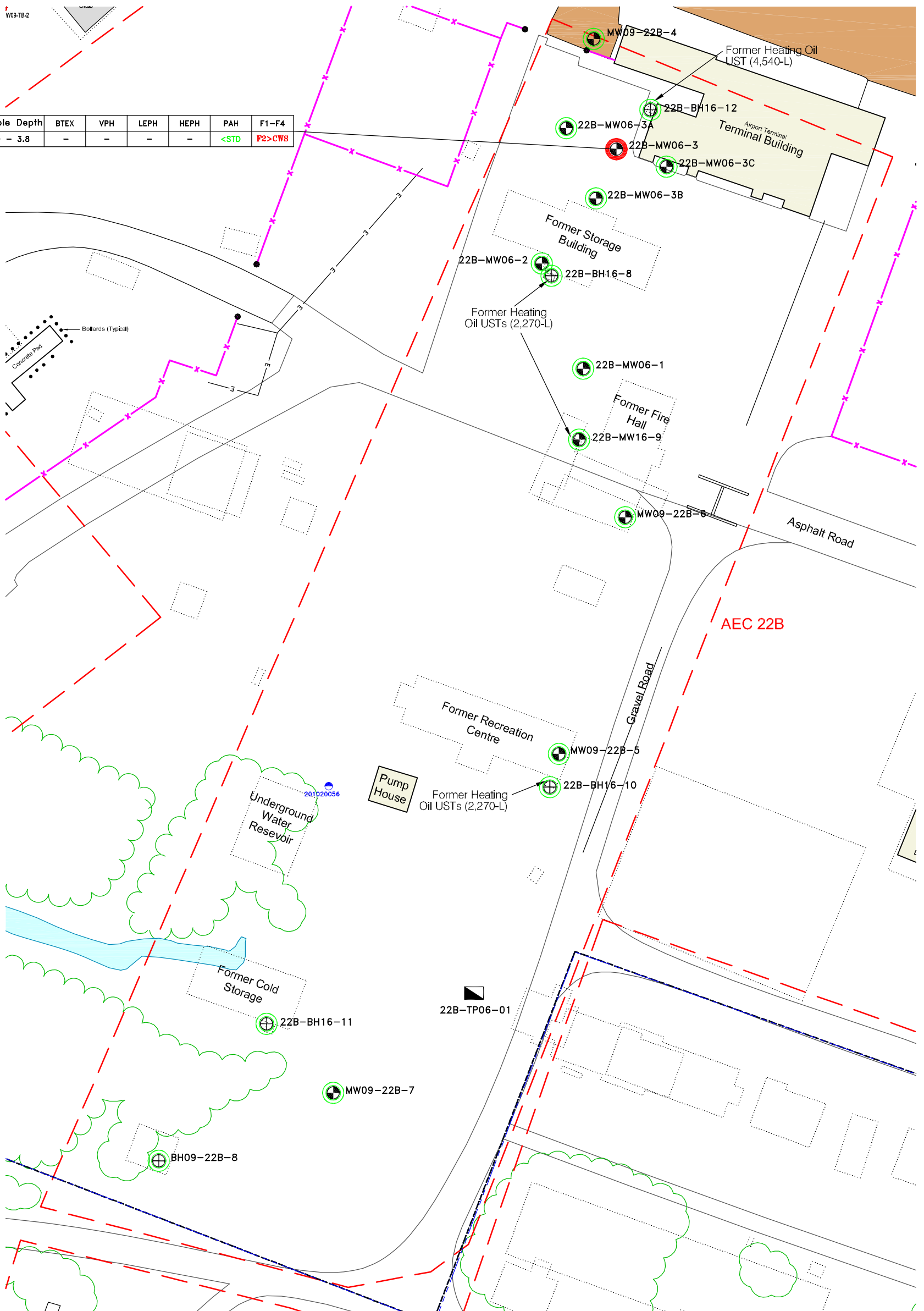
CLIENT NAME: PUBLIC WORKS AND GOVERNMENT SERVICES CANADA  
 PROJECT LOCATION: WATSON LAKE AIRPORT YUKON, YT

## SUMMARY OF GROUNDWATER ANALYTICAL RESULTS - AEC 22A

DWN BY: PES    SCALE: 1:800    DATE: 2017-01-03    DWG No:    REV.: **1**  
 CHK'D: MR    PLOT: 20170323.1007    CADFILE: 640752-R3    **640752-004**



22B-MW06-3	Sample Depth	BTEX	VPH	LEPH	HEPH	PAH	F1-F4
22B-MW06-3-6-060716	3.0 - 3.8	-	-	-	-	<STD	F2>CWS



LOCATION	ANALYTICAL SOIL RESULTS
22B-MW06-3	Sample Depth BTEX VPH LEPH HEPH PAH F1-F4
22B-MW06-3-6-060716	3.0 - 3.8 <STD <STD <STD <STD <STD F2>CWS

SAMPLE ID \_\_\_\_\_  
 DEPTH OF SAMPLE (m) \_\_\_\_\_

**RED** - CONCENTRATION GREATER THAN THE APPLICABLE YUKON CSR CL STANDARDS AND/OR CWS GUIDELINES

**GREEN** - CONCENTRATION LESS THAN OR EQUAL TO THE APPLICABLE YUKON CSR CL STANDARDS AND/OR CWS GUIDELINES

**B** BENZENE  
**T** TOLUENE  
**E** ETHYLBENZENE  
**X** XYLENES  
**VPH** VOLATILE PETROLEUM HYDROCARBONS (C6-C10)  
**LEPH** LIGHT EXTRACTABLE PETROLEUM HYDROCARBONS (C10-C19)  
**HEPH** HEAVY EXTRACTABLE PETROLEUM HYDROCARBONS (C19-C32)  
**PAH** POLYCYCLIC AROMATIC HYDROCARBONS  
**<** DENOTES CONCENTRATION LESS THAN INDICATED DETECTION LIMIT  
**-** NOT ANALYZED FOR

YUKON CSR CL STANDARDS (µg/g)	VPH	LEPH	HEPH	PAH
	200	2,000	5,000	SEE TABLES

CWS GUIDELINES (µg/g)	F2
	760

**LEGEND**

	AIRPORT BOUNDARY		WATER WELL
	AREA OF ENVIRONMENTAL CONCERN		BOREHOLE
	FOREST (TREE LINE)		MONITORING WELL
	FORMER STRUCTURE		TEST PIT
	CURRENT FENCE		
	CONCENTRATION(S) LESS THAN OR EQUAL TO THE APPLICABLE YUKON CSR CL STANDARDS AND/OR CWS GUIDELINES		
	CONCENTRATION(S) ARE GREATER THAN THE APPLICABLE YUKON CSR CL STANDARDS AND/OR CWS GUIDELINES		

**REFERENCE DRAWINGS**

DWG. NO.	DATE	DESCRIPTION

**REVISIONS**

REV.	DATE	DESCRIPTION	BY	CHK
1	2017-03-23	ISSUED TO CLIENT	PES	MR
0	2017-01-04	ISSUED TO CLIENT AS DRAFT	PES	MR

**SNC • LAVALIN**

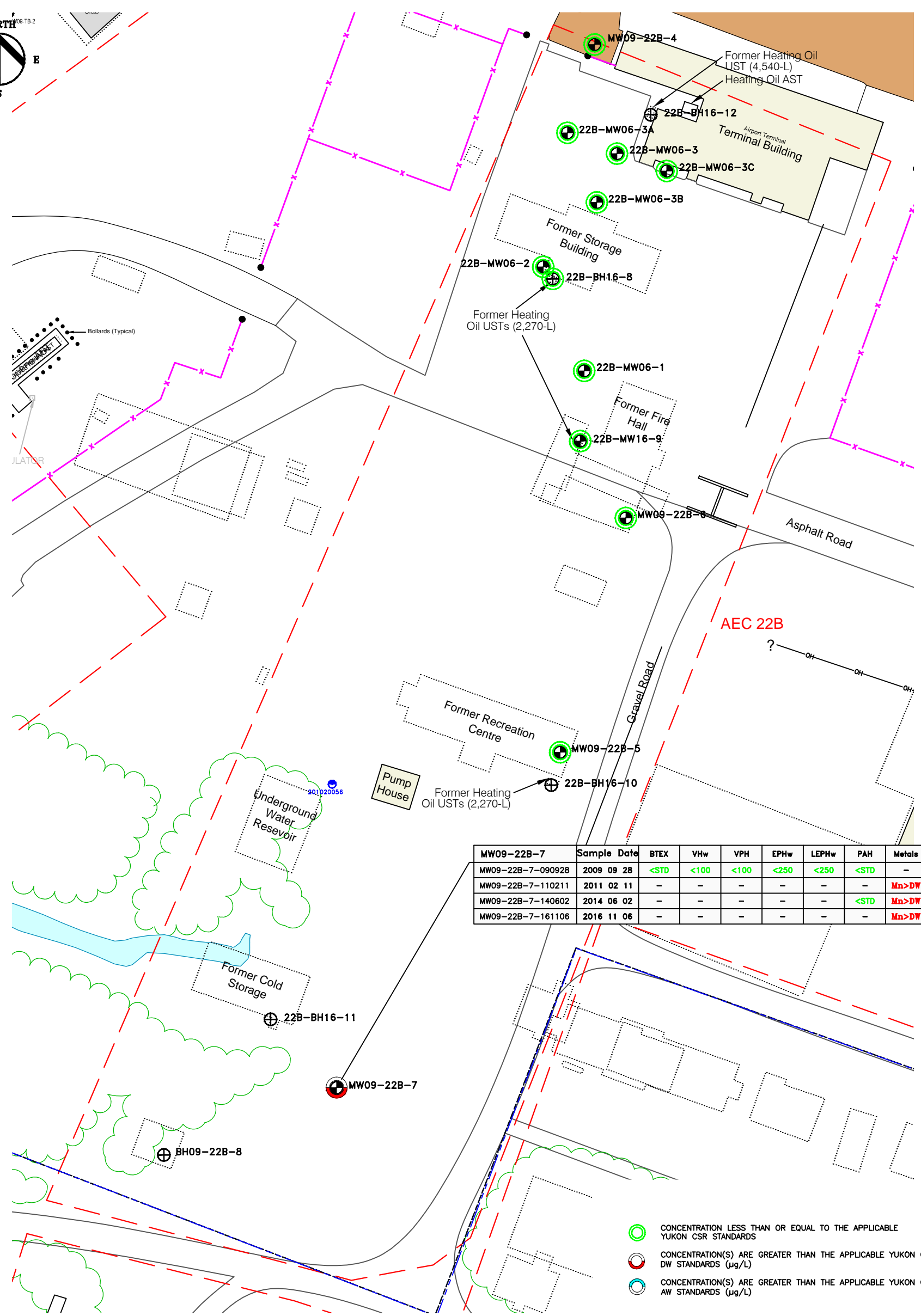
CLIENT NAME: PUBLIC WORKS AND GOVERNMENT SERVICES CANADA  
 PROJECT LOCATION: WATSON LAKE AIRPORT YUKON, YT

TITLE: **SUMMARY OF SOIL ANALYTICAL RESULTS - AEC 22B**

DWN BY: PES	SCALE: 1:750	DATE: 2017-01-03	DWG No: REV: <b>1</b>
CHK'D: MR	PLOT: 20170323.1009	CADFILE: 640752-R3	<b>640752-005</b>

**NOTES**  
 1. ORIGINAL DRAWING IN COLOUR.





MW09-22B-7	Sample Date	BTEX	VHw	VPH	EPHw	LEPHw	PAH	Metals	VOC
MW09-22B-7-090928	2009 09 28	<STD	<100	<100	<250	<250	<STD	-	<STD
MW09-22B-7-110211	2011 02 11	-	-	-	-	-	-	Mn>DW	-
MW09-22B-7-140602	2014 06 02	-	-	-	-	-	<STD	Mn>DW	-
MW09-22B-7-161106	2016 11 06	-	-	-	-	-	-	Mn>DW	-

22C-MW06-2	Sample Date	BTEX	VHw	VPH	EPHw	LEPHw	PAH	Metals	VOC
22C-MW06-2-060723	2006 07 23	<STD	<100	<100	<250	<250	-	Fe>DW	-

DATE OF SAMPLE \_\_\_\_\_

GREEN - CONCENTRATION LESS THAN OR EQUAL TO THE APPLICABLE STANDARD

RED - CONCENTRATION GREATER THAN THE APPLICABLE STANDARD

	VHw	VPH	EPHw	LEPHw
YUKON CSR DW STANDARDS (µg/L)	15000	N/A	5000	N/A
YUKON CSR AW STANDARDS (µg/L)	15000	1500	5000	500

**NOTES**

1. ORIGINAL DRAWING IN COLOUR.

**LEGEND**

- AIRPORT BOUNDARY
- AREA OF ENVIRONMENTAL CONCERN
- FOREST (TREE LINE)
- FORMER STRUCTURE
- x CURRENT FENCE
- BOREHOLE
- + MONITORING WELL

**REFERENCE DRAWINGS**

DWG. NO.	DATE	DESCRIPTION
-	-	-

**REVISIONS**

REV.	DATE	DESCRIPTION	BY	CHK
0	2017-01-04	ISSUED TO CLIENT AS DRAFT	PES	MR

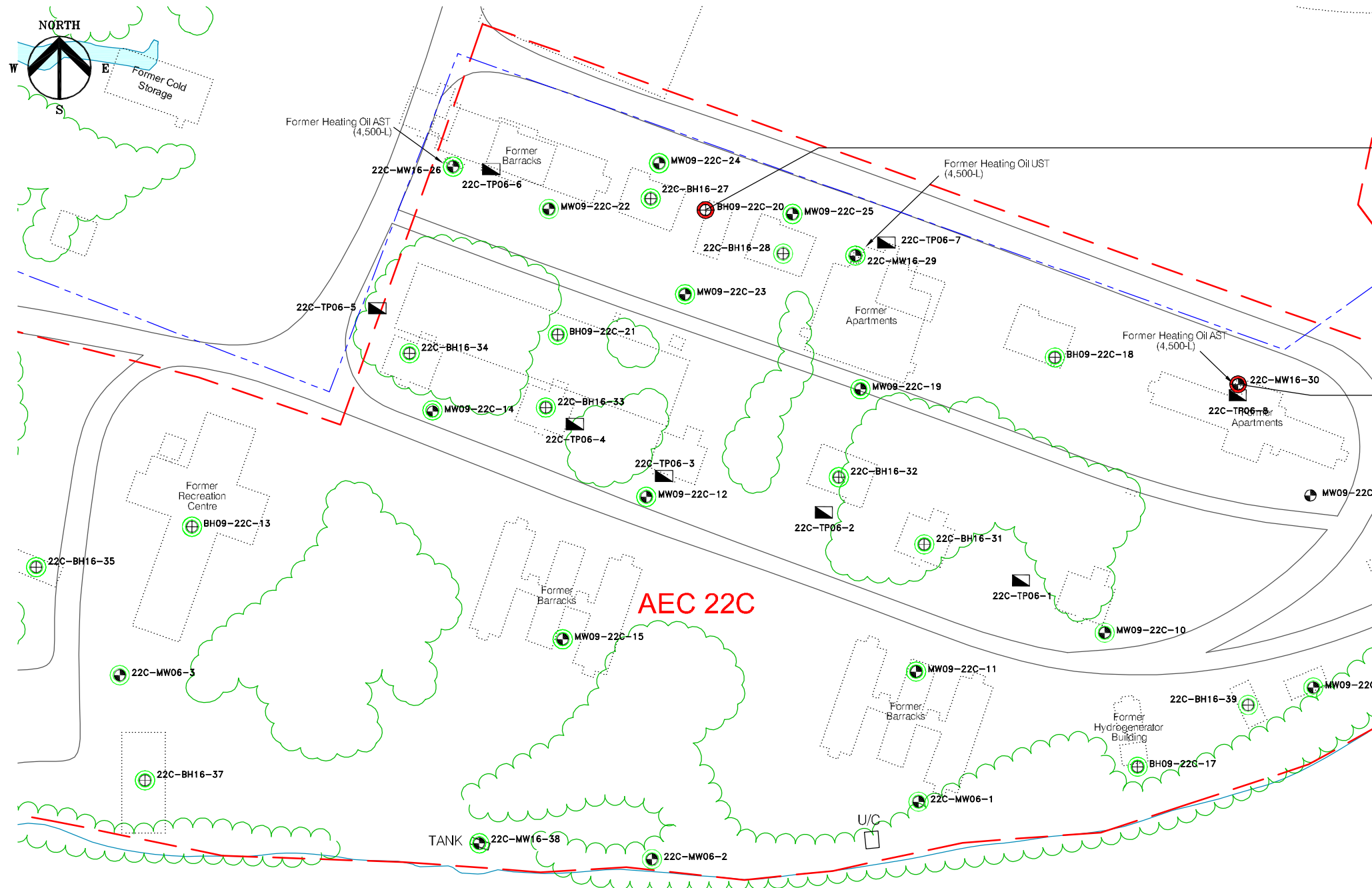
**SNC • LAVALIN**

CLIENT NAME: PUBLIC WORKS AND GOVERNMENT SERVICES CANADA  
PROJECT LOCATION: WATSON LAKE AIRPORT YUKON, YT

TITLE: **SUMMARY OF GROUNDWATER ANALYTICAL RESULTS - AEC 22B**

DWN BY: PES    SCALE: 1:750    DATE: 2017-01-03    DWG No: 640752-006  
CHK'D: MR    PLOT: 20170317.1424    CADFILE: 640752-R2





BH09-22C-20	Sample Depth	BTEX	VPH	LEPH	HEPH	PAH	Metals	VOC
BH09-22C-20-4	2.7 - 2.9	<STD	<100	<250	<250	<STD	As>CL	<STD
BH09-22C-20-4(M)	DUP. OF ABOVE	<STD	<100	<250	<250	-	-	-
BH09-22C-20-6(M)	4.2 - 4.4	<STD	<100	<250	<250	-	-	-
BH09-22C-20-6	4.2 - 4.5	<STD	<100	<250	<250	-	-	-

22C-BH16-30	Sample Depth	BTEX	VPH	LEPH	HEPH	PAH	Metals
22C-BH16-30-1	0.9 - 1.2	<STD	<10	<100	<100	<STD	<STD
22C-BH16-30-2	2.9 - 3.2	<STD	160	5,400	220	<STD	-
22C-BH16-30-3	DUP. OF ABOVE	<STD	60	4,400	200	<STD	-

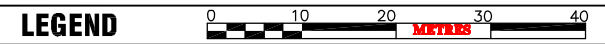
LOCATION	SAMPLE ID	DEPTH OF SAMPLE (m)	ANALYTICAL SOIL RESULTS
BH09-22A-15	BH09-22A-15-4(M)	2.7 - 2.9	BTEX <STD, VPH <100, LEPH 4,300, HEPH <250, PAH -, Metals -, VOC -

YUKON CSR CL STANDARDS (µg/g)	VPH	LEPH	HEPH	PAH	Metals	VOC
	200	2,000	5,000	SEE TABLES	SEE TABLES	SEE TABLES

CWS GUIDELINES (µg/g)	F4
	3,300

- B BENZENE
- T TOLUENE
- E ETHYLBENZENE
- X XYLENES
- VPH VOLATILE PETROLEUM HYDROCARBONS (C6-C10)
- LEPH LIGHT EXTRACTABLE PETROLEUM HYDROCARBONS (C10-C19)
- HEPH HEAVY EXTRACTABLE PETROLEUM HYDROCARBONS (C19-C32)
- PAH POLYCYCLIC AROMATIC HYDROCARBONS
- VOC VOLATILE ORGANIC COMPOUNDS
- As ARSENIC
- < DENOTES CONCENTRATION LESS THAN INDICATED DETECTION LIMIT
- NOT ANALYZED FOR



LEGEND	DESCRIPTION
	AIRPORT BOUNDARY
	AREA OF ENVIRONMENTAL CONCERN
	FOREST (TREE LINE)
	FORMER STRUCTURE
	CURRENT FENCE
	BOREHOLE
	MONITORING WELL
	TEST PIT
	CONCENTRATION(S) LESS THAN OR EQUAL TO THE APPLICABLE YUKON CSR CL STANDARDS AND/OR CWS GUIDELINES
	CONCENTRATION(S) ARE GREATER THAN THE APPLICABLE YUKON CSR CL STANDARDS AND/OR CWS GUIDELINES

### NOTES

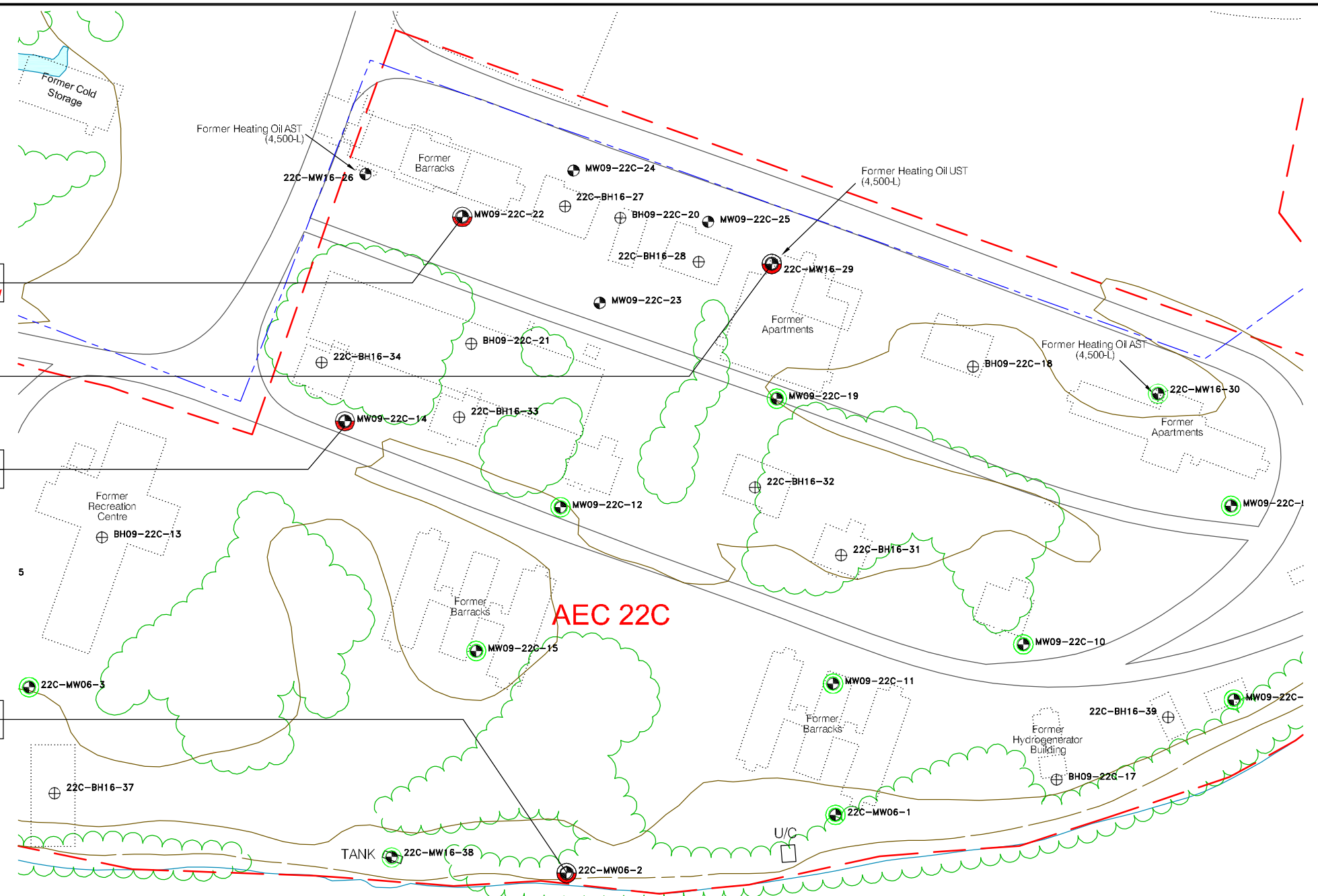
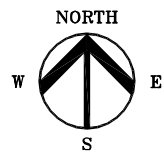
- ORIGINAL DRAWING IN COLOUR.
- YUKON CSR PL STANDARDS ONLY APPLIED TO AEC 22A, 22C AND 22D.
- (M) INDICATES SAMPLE ANALYZED AT MOBILE LABORATORY.

### REFERENCE DRAWINGS

DWG. NO.	DATE	DESCRIPTION	BY	CHK
1	2017-03-23	ISSUED TO CLIENT	PES	MR
0	2017-01-04	ISSUED TO CLIENT AS DRAFT	PES	MR



CLIENT NAME: PUBLIC WORKS AND GOVERNMENT SERVICES CANADA	PROJECT LOCATION: WATSON LAKE AIRPORT YUKON, YT			
TITLE: <b>SUMMARY OF SOIL ANALYTICAL RESULTS - AEC 22C</b>				
DWN BY: PES	SCALE: 1:800	DATE: 2017-01-03	DWG No: 640752-007	REV.: 1
CHK'D: MR	PLOT: 20170323.1013	CADFILE: 640752-R3		



MW09-22C-22	Sample Date	BTEX	VHw	VPH	EPHw	LEPHw	PAH	Metals
MW09-22C-22-090928	2009 09 28	<STD	<100	<100	<250	<250	<STD	Total Mn>DW

22C-MW16-29	Sample Date	BTEX	VHw	VPH	EPHw	LEPHw	PAH
22C-MW16-29-161215	2016 12 15	<STD	<300	<300	<200	<200	B(a)P>DW

MW09-22C-14	Sample Date	BTEX	VHw	VPH	EPHw	LEPHw	PAH	Metals	VOC
MW09-22C-14-090928	2009 09 28	<STD	<100	<100	<250	<250	<STD	Total Mn>DW	<STD

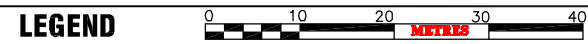
22C-MW06-2	Sample Date	BTEX	VHw	VPH	EPHw	LEPHw	Metals
22C-MW06-2-060723	2006 07 23	<STD	<100	<100	<250	<250	Fe>DW

LOCATION	Sample Date	BTEX	VHw	VPH	EPHw	LEPHw	PAH	Metals
MW09-22A-19	2014 06 02	<STD	<100	<100	570	570	<STD	Fe, Mn>DW

ANALYTICAL GROUNDWATER RESULTS  
 SAMPLE ID: \_\_\_\_\_  
 SAMPLE DATE (YYYY MM DD): \_\_\_\_\_  
**GREEN** - CONCENTRATION LESS THAN OR EQUAL TO THE APPLICABLE YUKON CSR STANDARDS  
**CYAN** - CONCENTRATION GREATER THAN THE APPLICABLE YUKON CSR AW STANDARDS  
**RED** - CONCENTRATIONS GREATER THAN THE APPLICABLE YUKON CSR DW STANDARDS

- B BENZENE
- T TOLUENE
- E ETHYLBENZENE
- X XYLENES
- VHw6-10 VOLATILE HYDROCARBONS
- VPHw VOLATILE PETROLEUM HYDROCARBONS (C6-C10)
- EPHw10-19 EXTRACTABLE PETROLEUM HYDROCARBONS
- LEPHw LIGHT EXTRACTABLE PETROLEUM HYDROCARBONS (C10-C19)
- HEPHw HEAVY EXTRACTABLE PETROLEUM HYDROCARBONS
- PAH POLYCYCLIC AROMATIC HYDROCARBONS
- B(A)P BENZO(A)PYRENE
- Fe IRON
- Mn MANGANESE
- VOC VOLATILE ORGANIC COMPOUNDS
- < DENOTES CONCENTRATION LESS THAN INDICATED DETECTION LIMIT
- NOT ANALYZED FOR

YUKON CSR DW STANDARDS (µg/L)	VHw	VPH	EPHw	LEPHw	PAH	Metals	VOC
15,000	15,000	N/A	5,000	N/A	SEE TABLES	SEE TABLES	SEE TABLES
15,000	1,500	5,000	500	SEE TABLES	SEE TABLES	SEE TABLES	SEE TABLES



- LEGEND**
- AIRPORT BOUNDARY
  - AREA OF ENVIRONMENTAL CONCERN
  - FOREST (TREE LINE)
  - FORMER STRUCTURE
  - CURRENT FENCE
  - ⊕ BOREHOLE
  - ⊙ MONITORING WELL

- ⊙ CONCENTRATION(S) LESS THAN OR EQUAL TO THE APPLICABLE YUKON CSR STANDARDS
- ⊙ CONCENTRATION(S) ARE GREATER THAN THE APPLICABLE YUKON CSR DW STANDARDS (µg/L)
- ⊙ CONCENTRATION(S) ARE GREATER THAN THE APPLICABLE YUKON CSR AW STANDARDS (µg/L)

**NOTES**

1. ORIGINAL DRAWING IN COLOUR.

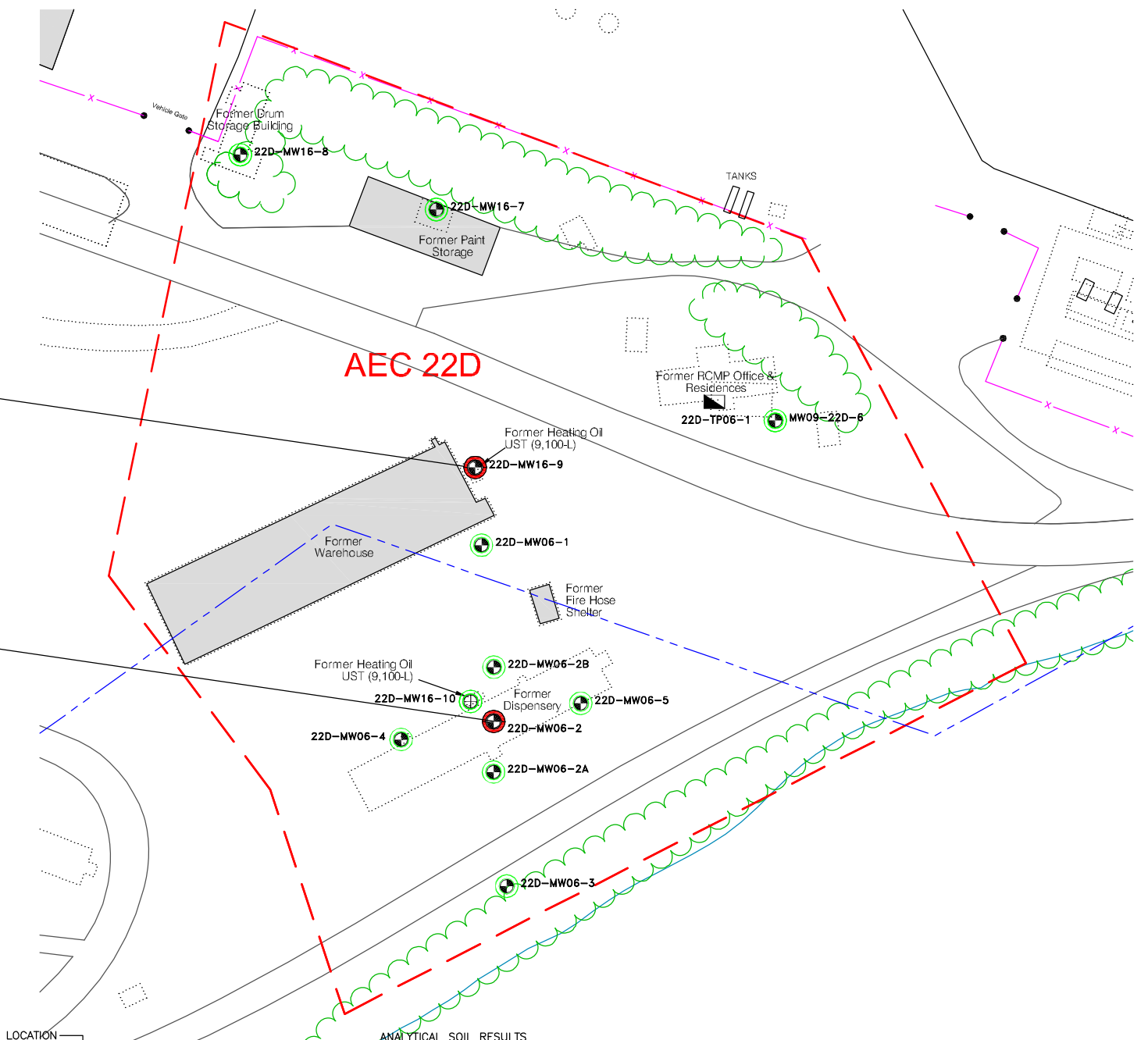
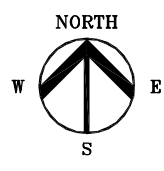
**REFERENCE DRAWINGS**

DWG. NO.	DATE	DESCRIPTION	BY	CHK
1	2017-03-23	ISSUED TO CLIENT	PES	MR
0	2017-01-04	ISSUED TO CLIENT AS DRAFT	PES	MR
REV.	DATE	DESCRIPTION	BY	CHK

CLIENT NAME: PUBLIC WORKS AND GOVERNMENT SERVICES CANADA  
 PROJECT LOCATION: WATSON LAKE AIRPORT YUKON, YT

TITLE: **SUMMARY OF GROUNDWATER ANALYTICAL RESULTS - AEC 22C**

DWN BY: PES SCALE: 1:800 DATE: 2017-01-03 DWG No: 640752-008 REV.: 1  
 CHK'D: MR PLOT: 20170323.1015 CADFILE: 640752-R3



22D-BH16-9	Sample Depth	BTEX	VPH	LEPH	HEPH	PAH	Metals
22D-BH16-9-2	1.2 - 1.5	<STD	79	3,600	150	<STD	<STD
22D-BH16-9-3	2.6 - 2.7	<STD	<10	<100	<100	<STD	-

22D-MW06-2	Sample Depth	BTEX	VPH	LEPH	HEPH	PAH	F1-F4	Metals
22D-MW06-2-4-060718	2.1 - 3.0	<STD	<STD	-	-	<STD	F2>CWS	<STD
22D-MW06-2-6-060718	4.0 - 4.6	<STD	<STD	-	-	<STD	<STD	-

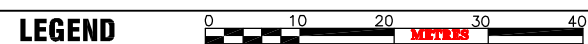
LOCATION	ANALYTICAL SOIL RESULTS						
BH09-22A-15	Sample Depth	BTEX	VPH	LEPH	HEPH	PAH	Metals
BH09-22A-15-4(M)	2.7 - 2.9	<STD	<100	4,300	<250	-	-

YUKON CSR CL STANDARDS (µg/g)	VPH	LEPH	HEPH	PAH	Metals	VOC
	200	2,000	5,000	SEE TABLES	SEE TABLES	SEE TABLES

CWS GUIDELINES (µg/g)	F2
	760

- B BENZENE
- T TOLUENE
- E ETHYLBENZENE
- X XYLENES
- VPH VOLATILE PETROLEUM HYDROCARBONS (C6-C10)
- LEPH LIGHT EXTRACTABLE PETROLEUM HYDROCARBONS (C10-C19)
- HEPH HEAVY EXTRACTABLE PETROLEUM HYDROCARBONS (C19-C32)
- PAH POLYCYCLIC AROMATIC HYDROCARBONS
- < DENOTES CONCENTRATION LESS THAN INDICATED DETECTION LIMIT
- NOT ANALYZED FOR



LEGEND	
	AIRPORT BOUNDARY
	AREA OF ENVIRONMENTAL CONCERN
	FOREST (TREE LINE)
	FORMER STRUCTURE
	CURRENT FENCE
	BOREHOLE
	MONITORING WELL
	TEST PIT
	CONCENTRATION(S) LESS THAN OR EQUAL TO THE APPLICABLE YUKON CSR CL STANDARDS AND/OR CWS GUIDELINES
	CONCENTRATION(S) ARE GREATER THAN THE APPLICABLE YUKON CSR CL STANDARDS AND/OR CWS GUIDELINES

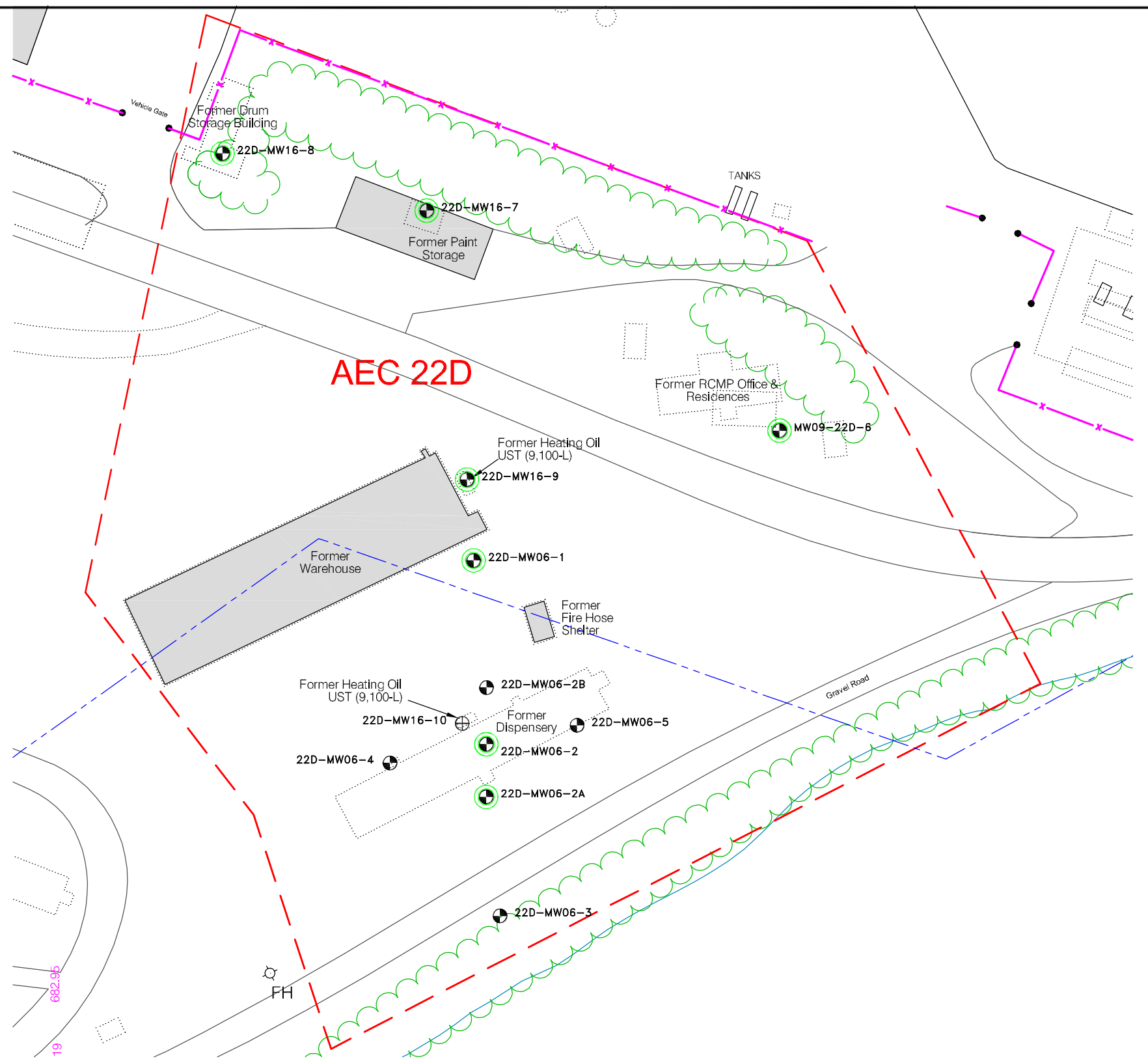
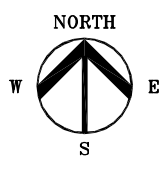
- NOTES**
- ORIGINAL DRAWING IN COLOUR.
  - YUKON CSR PL STANDARDS ONLY APPLIED TO AEC 22A, 22C AND 22D.
  - (M) INDICATES SAMPLE ANALYZED AT MOBILE LABORATORY.

REFERENCE DRAWINGS				
DWG. NO.	DATE	DESCRIPTION	PES	MR
-	-	-	-	-

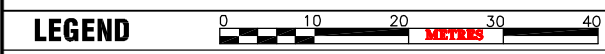
  

REVISIONS				
REV.	DATE	DESCRIPTION	BY	CHK
1	2017-03-23	ISSUED TO CLIENT	PES	MR
0	2017-03-01	ISSUED TO CLIENT AS DRAFT	DM	MR

CLIENT NAME: PUBLIC WORKS AND GOVERNMENT SERVICES CANADA		PROJECT LOCATION: WATSON LAKE AIRPORT YUKON, YT	
<b>TITLE: SUMMARY OF SOIL ANALYTICAL RESULTS - AEC 22D</b>			
DWN BY: PES	SCALE: 1:800	DATE: 2017-01-03	DWG No: REV.: <b>1</b>
CHK'D: MR	PLOT: 20170323.1018	CADFILE: 640752-R3	<b>640752-009</b>



**AEC 22D**



**LEGEND**

	AIRPORT BOUNDARY		CONCENTRATION(S) LESS THAN OR EQUAL TO THE APPLICABLE YUKON CSR STANDARDS
	AREA OF ENVIRONMENTAL CONCERN		CONCENTRATION(S) ARE GREATER THAN THE APPLICABLE YUKON CSR DW STANDARDS (µg/L)
	FOREST (TREE LINE)		CONCENTRATION(S) ARE GREATER THAN THE APPLICABLE YUKON CSR AW STANDARDS (µg/L)
	FORMER STRUCTURE		
	CURRENT FENCE		
	BOREHOLE		
	MONITORING WELL		

**NOTES**

1. ORIGINAL DRAWING IN COLOUR.

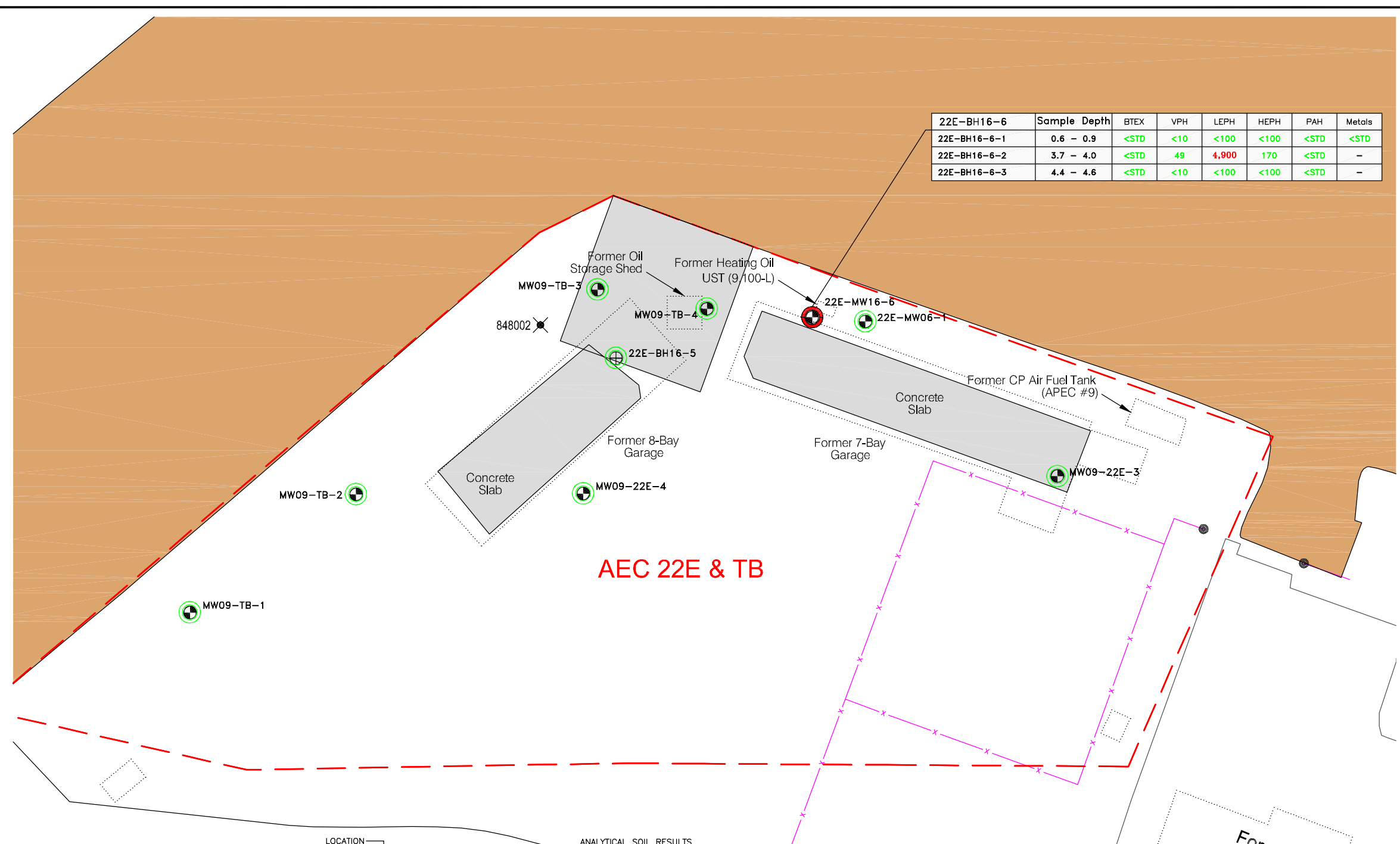
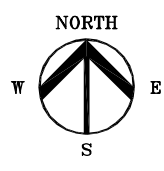
**REFERENCE DRAWINGS**

DWG. NO.	DATE	DESCRIPTION	BY	CHK
-	-	-	-	-
<b>REVISIONS</b>				
1	2017-03-23	ISSUED TO CLIENT	PES	MR
0	2017-01-04	ISSUED TO CLIENT AS DRAFT	PES	MR
REV.	DATE	DESCRIPTION	BY	CHK



CLIENT NAME: PUBLIC WORKS AND GOVERNMENT SERVICES CANADA		PROJECT LOCATION: WATSON LAKE AIRPORT YUKON, YT	
<b>SUMMARY OF GROUNDWATER ANALYTICAL RESULTS - AEC 22D</b>			
DWN BY: PES	SCALE: 1:800	DATE: 2017-01-03	DWG No: REV.: <b>1</b>
CHK'D: MR	PLOT: 20170323.1019	CADFILE: 640752-R3	<b>640752-010</b>





22E-BH16-6	Sample Depth	BTEX	VPH	LEPH	HEPH	PAH	Metals
22E-BH16-6-1	0.6 - 0.9	<STD	<10	<100	<100	<STD	<STD
22E-BH16-6-2	3.7 - 4.0	<STD	49	4,900	170	<STD	-
22E-BH16-6-3	4.4 - 4.6	<STD	<10	<100	<100	<STD	-

**AEC 22E & TB**

LOCATION	ANALYTICAL SOIL RESULTS						
BH09-22A-15	Sample Depth	BTEX	VPH	LEPH	HEPH	PAH	Metals
BH09-22A-15-4(M)	2.7 - 2.9	<STD	<100	4,300	<250	-	-

SAMPLE ID: \_\_\_\_\_  
 DEPTH OF SAMPLE (m): \_\_\_\_\_

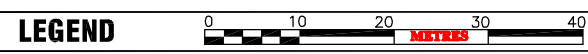
**RED** - CONCENTRATION GREATER THAN THE APPLICABLE YUKON CSR CL STANDARDS AND/OR CWS GUIDELINES  
**GREEN** - CONCENTRATION LESS THAN OR EQUAL TO THE APPLICABLE YUKON CSR CL STANDARDS AND/OR CWS GUIDELINES

- B BENZENE
- T TOLUENE
- E ETHYLBENZENE
- X XYLENES
- VPH VOLATILE PETROLEUM HYDROCARBONS (C6-C10)
- LEPH LIGHT EXTRACTABLE PETROLEUM HYDROCARBONS (C10-C19)
- HEPH HEAVY EXTRACTABLE PETROLEUM HYDROCARBONS (C19-C32)
- PAH POLYCYCLIC AROMATIC HYDROCARBONS
- < DENOTES CONCENTRATION LESS THAN INDICATED DETECTION LIMIT
- NOT ANALYZED FOR

YUKON CSR CL STANDARDS (µg/g)	VPH	LEPH	HEPH	PAH	Metals
	200	2,000	5,000	SEE TABLES	SEE TABLES

CWS GUIDELINES (µg/g)	F4
	3,300



- LEGEND**
- AIRPORT BOUNDARY
  - AREA OF ENVIRONMENTAL CONCERN
  - FOREST (TREE LINE)
  - FORMER STRUCTURE
  - CURRENT FENCE
  - + BOREHOLE
  - ⊕ MONITORING WELL
  - ⊕ CONCENTRATION(S) LESS THAN OR EQUAL TO THE APPLICABLE YUKON CSR CL STANDARDS AND/OR CWS GUIDELINES
  - ⊕ CONCENTRATION(S) ARE GREATER THAN THE APPLICABLE YUKON CSR CL STANDARDS AND/OR CWS GUIDELINES

**NOTES**

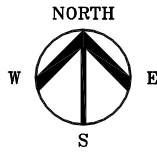
1. ORIGINAL DRAWING IN COLOUR.

**REFERENCE DRAWINGS**

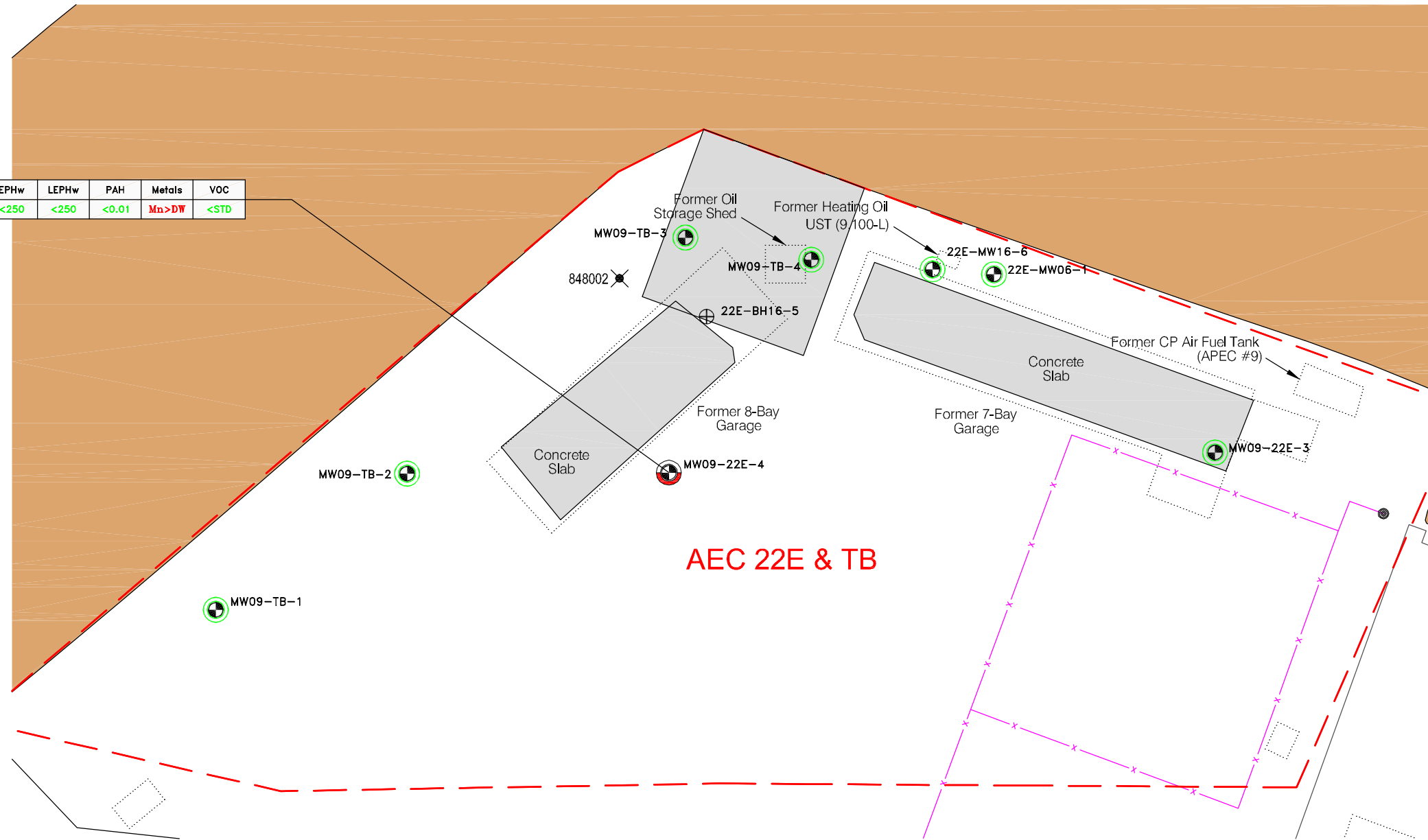
DWG. NO.	DATE	DESCRIPTION	BY	CHK
<b>REVISIONS</b>				
1	2017-03-23	ISSUED TO CLIENT	PES	MR
0	2017-03-01	ISSUED TO CLIENT AS DRAFT	DM	MR
REV.	DATE	DESCRIPTION	BY	CHK

**SNC • LAVALIN**

CLIENT NAME: PUBLIC WORKS AND GOVERNMENT SERVICES CANADA	PROJECT LOCATION: WATSON LAKE AIRPORT YUKON, YT			
<b>TITLE: SUMMARY OF SOIL ANALYTICAL RESULTS - AEC 22E</b>				
DWN BY: PES	SCALE: 1:800	DATE: 2017-01-03	DWG No: <b>640752-011</b>	REV.: <b>1</b>
CHK'D: MR	PLOT: 20170323.1020	CADFILE: 640752-R3		



MW09-22E-4	Sample Date	BTEX	VHw	VPH	EPHw	LEPHw	PAH	Metals	VOC
MW09-22E-4-090821	2009 08 21	<STD	<100	<100	<250	<250	<0.01	Mn>DW	<STD



LOCATION	ANALYTICAL GROUNDWATER RESULTS								
MW09-22A-19	Sample Date	BTEX	VHw	VPH	EPHw	LEPHw	PAH	Metals	
MW09-22A-19-140602	2014 06 02	<STD	<100	<100	570	570	<STD	Fe,Mn>DW	

SAMPLE ID: \_\_\_\_\_  
 SAMPLE DATE (YYYY MM DD): \_\_\_\_\_

**GREEN** - CONCENTRATION LESS THAN OR EQUAL TO THE APPLICABLE YUKON CSR STANDARDS  
**CYAN** - CONCENTRATION GREATER THAN THE APPLICABLE YUKON CSR STANDARDS  
**RED** - CONCENTRATIONS GREATER THAN THE APPLICABLE YUKON CSR DW STANDARDS

- B BENZENE
- T TOLUENE
- E ETHYLBENZENE
- X XYLENES
- VHw6-10 VOLATILE HYDROCARBONS
- VPHw VOLATILE PETROLEUM HYDROCARBONS (C6-C10)
- EPHw10-19 EXTRACTABLE PETROLEUM HYDROCARBONS
- LEPHw LIGHT EXTRACTABLE PETROLEUM HYDROCARBONS (C10-C19)
- HEPH HEAVY EXTRACTABLE PETROLEUM HYDROCARBONS
- PAH POLYCYCLIC AROMATIC HYDROCARBONS
- Mn MANGANESE
- VOC VOLATILE ORGANIC COMPOUNDS
- < DENOTES CONCENTRATION LESS THAN INDICATED DETECTION LIMIT
- NOT ANALYZED FOR

	VHw	VPH	EPHw	LEPHw	PAH	Metals	VOC
YUKON CSR DW STANDARDS (µg/L)	15,000	N/A	5,000	N/A	SEE TABLES	SEE TABLES	SEE TABLES
YUKON CSR AW STANDARDS (µg/L)	15,000	1,500	5,000	500	SEE TABLES	SEE TABLES	SEE TABLES

**LEGEND**

- AIRPORT BOUNDARY
- AREA OF ENVIRONMENTAL CONCERN
- FOREST (TREE LINE)
- FORMER STRUCTURE
- CURRENT FENCE
- BOREHOLE
- MONITORING WELL
- CONCENTRATION(S) LESS THAN OR EQUAL TO THE APPLICABLE YUKON CSR STANDARDS
- CONCENTRATION(S) ARE GREATER THAN THE APPLICABLE YUKON CSR DW STANDARDS (µg/L)
- CONCENTRATION(S) ARE GREATER THAN THE APPLICABLE YUKON CSR AW STANDARDS (µg/L)

**NOTES**

1. ORIGINAL DRAWING IN COLOUR.

**REFERENCE DRAWINGS**

DWG. NO.	DATE	DESCRIPTION	BY	CHK
1	2017-03-23	ISSUED TO CLIENT	PES	MR
0	2017-03-01	ISSUED TO CLIENT AS DRAFT	DM	MR

**REVISIONS**

REV.	DATE	DESCRIPTION	BY	CHK
1	2017-03-23	ISSUED TO CLIENT	PES	MR
0	2017-03-01	ISSUED TO CLIENT AS DRAFT	DM	MR

**SNC • LAVALIN**

CLIENT NAME: PUBLIC WORKS AND GOVERNMENT SERVICES CANADA  
 PROJECT LOCATION: WATSON LAKE AIRPORT YUKON, YT

TITLE: **SUMMARY OF GROUNDWATER ANALYTICAL RESULTS - AEC 22E&TB**

DWN BY: PES    SCALE: 1:500    DATE: 2017-01-03    DWG No:    REV.: **1**

CHK'D: MR    PLOT: 20170323.1022    CADFILE: 640752-R3    **640752-012**



# Appendix I:

Borehole Logs



Client  
Public Works and Gov't Services Canada

Location  
Watson Lake Airport, Watson Lake, YT

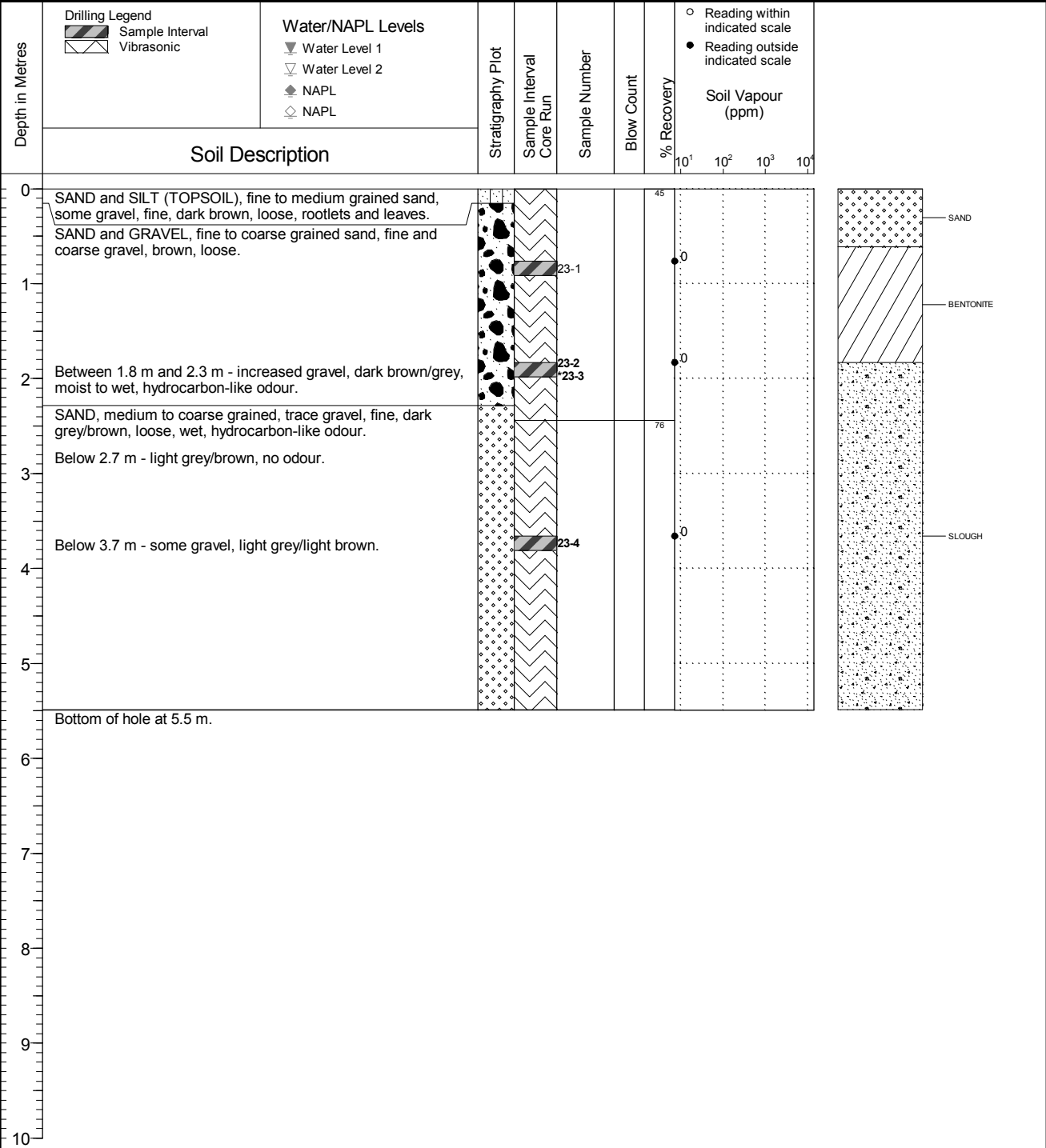
Borehole No. : 22A-BH16-23

PAGE 1 OF 1

Drilling Contractor: Omega Environmental Drilling Ltd.  
 Drilling Method: Vibratory Sonic  
 Borehole Dia. (m): 0.20  
 Pipe/Slotted Pipe Dia. (m): none/none

Date Monitored: n/a  
 Ground Surface Elev. (m): n/a  
 Top of Casing Elev. (m): n/a  
 Northing: 6663940.037  
 Easting: 509676.007

Project Number: 640752  
 Borehole Logged By: MLC  
 Date Drilled: 2016 11 03  
 Log Typed By: HDM



**NOTES**  
 Bolded sample denotes sample analyzed. \n\*23-3 is a blind field duplicate of 23-2.





Client  
Public Works and Gov't Services Canada

Location  
Watson Lake Airport, Watson Lake, YT

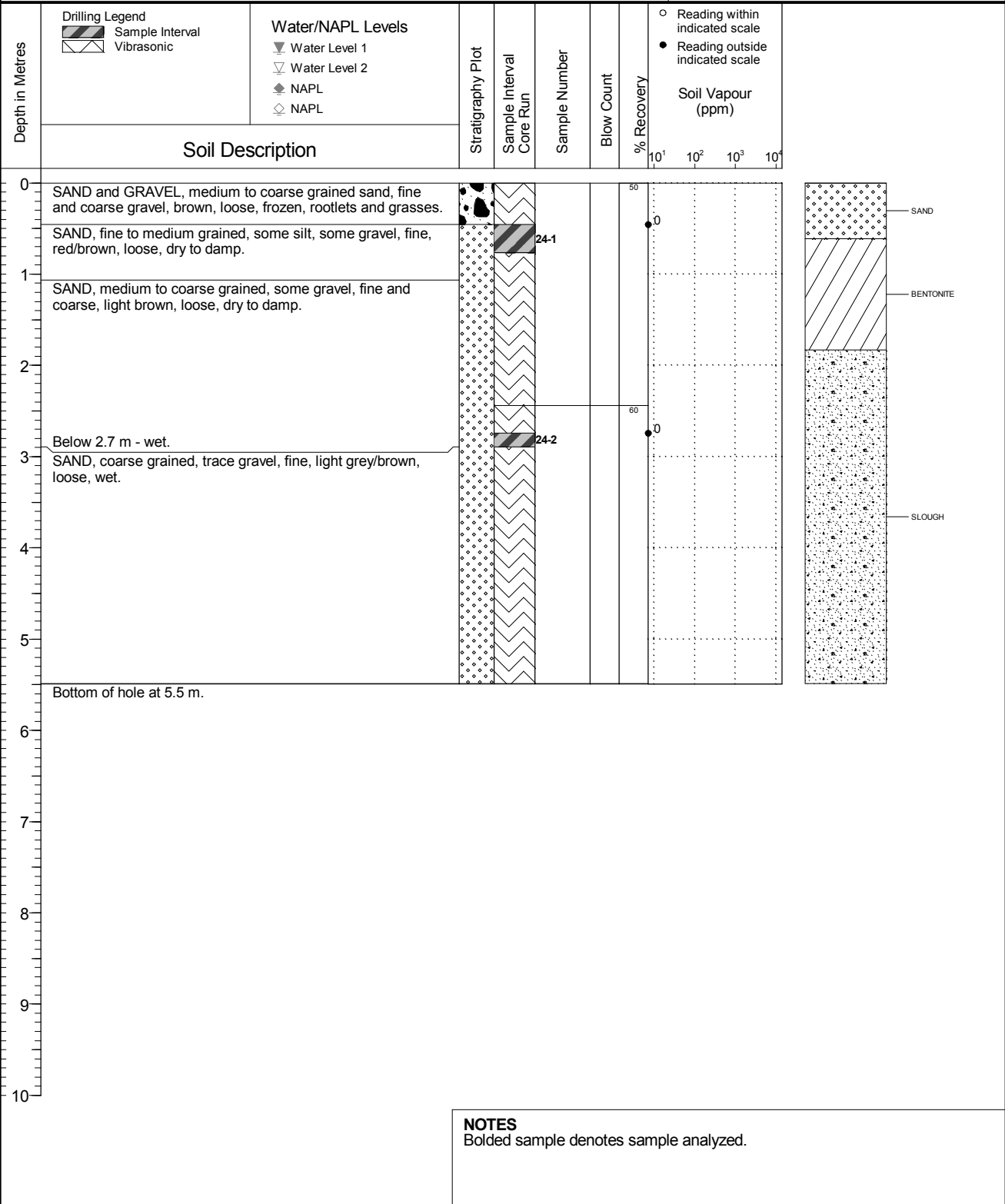
Borehole No. : 22A-BH16-24

PAGE 1 OF 1

Drilling Contractor: Omega Environmental Drilling Ltd.  
Drilling Method: Vibratory Sonic  
Borehole Dia. (m): 0.20  
Pipe/Slotted Pipe Dia. (m): none/none

Date Monitored: n/a  
Ground Surface Elev. (m): n/a  
Top of Casing Elev. (m): n/a  
Northing: 6663944.421  
Easting: 509638.477

Project Number: 640752  
Borehole Logged By: MLC  
Date Drilled: 2016 11 03  
Log Typed By: HDM



**NOTES**  
Bolded sample denotes sample analyzed.



Client  
Public Works and Gov't Services Canada

Location  
Watson Lake Airport, Watson Lake, YT

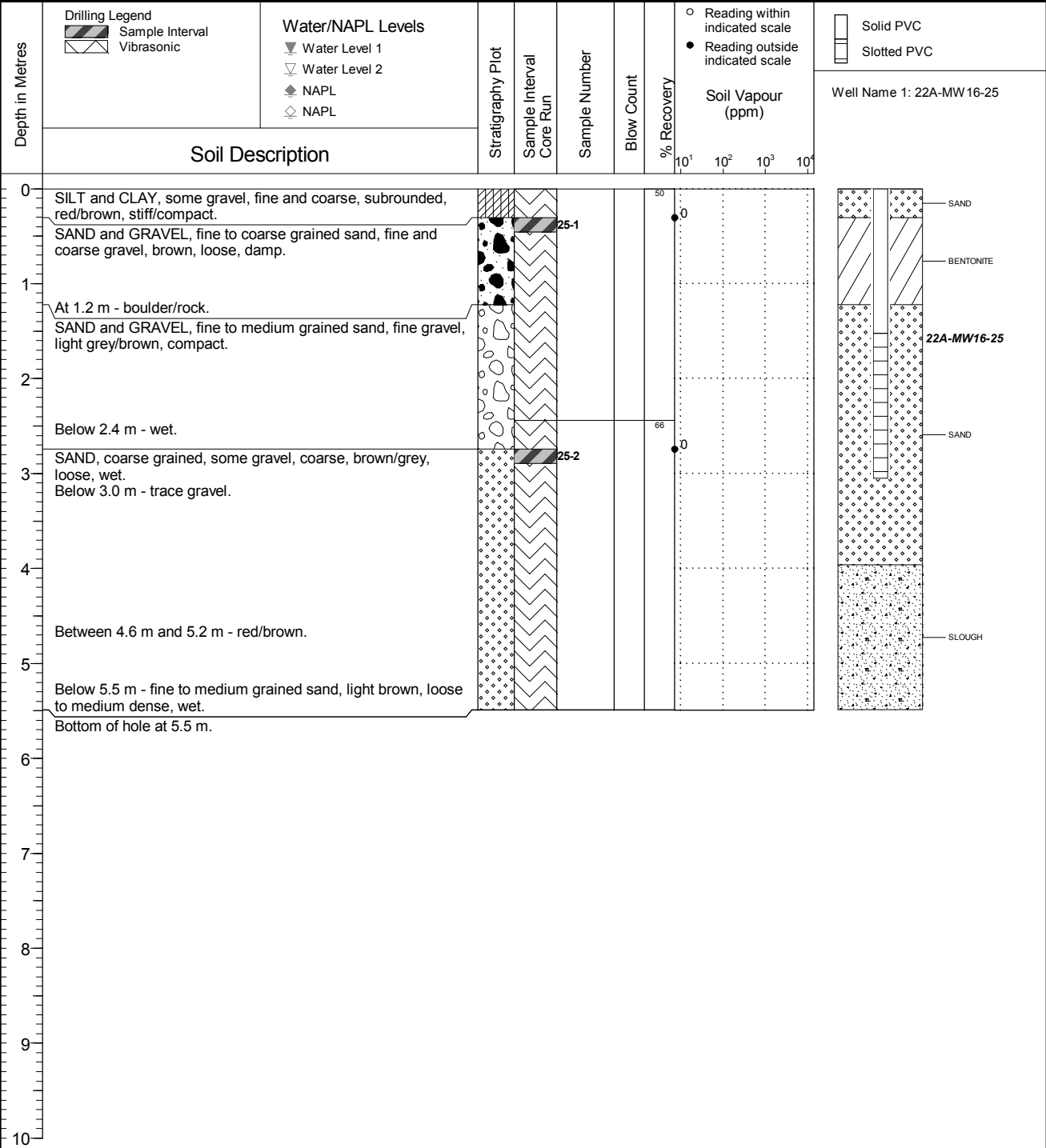
Borehole No. : 22A-BH16-25

PAGE 1 OF 1

Drilling Contractor: Omega Environmental Drilling Ltd.  
Drilling Method: Vibratory Sonic  
Borehole Dia. (m): 0.20  
Pipe/Slotted Pipe Dia. (m): 0.05/0.05

Date Monitored: n/a  
Ground Surface Elev. (m): n/a  
Top of Casing Elev. (m): n/a  
Northing: 6663974.428  
Easting: 509571.363

Project Number: 640752  
Borehole Logged By: MLC  
Date Drilled: 2016 11 03  
Log Typed By: HDM



**NOTES**  
Bolded sample denotes sample analyzed.



Client  
Public Works and Gov't Services Canada

Location  
Watson Lake Airport, Watson Lake, YT

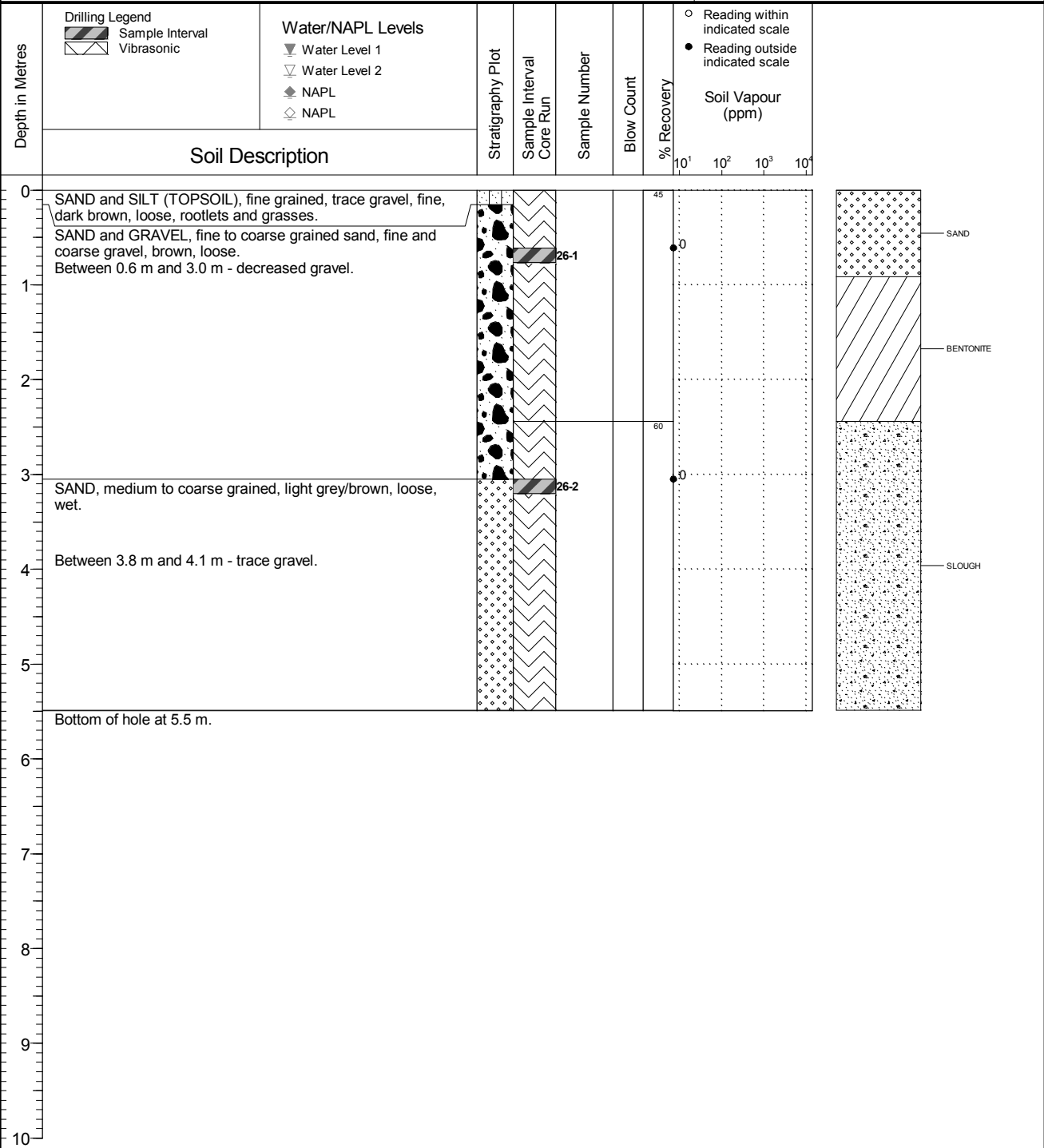
Borehole No. : 22A-BH16-26

PAGE 1 OF 1

Drilling Contractor: Omega Environmental Drilling Ltd.  
 Drilling Method: Vibratory Sonic  
 Borehole Dia. (m): 0.20  
 Pipe/Slotted Pipe Dia. (m): none/none

Date Monitored: n/a  
 Ground Surface Elev. (m): n/a  
 Top of Casing Elev. (m): n/a  
 Northing: 6663915.319  
 Easting: 509470.809

Project Number: 640752  
 Borehole Logged By: MLC  
 Date Drilled: 2016 11 03  
 Log Typed By: HDM



**NOTES**  
 Bolded sample denotes sample analyzed.



Client  
Public Works and Gov't Services Canada

Location  
Watson Lake Airport, Watson Lake, YT

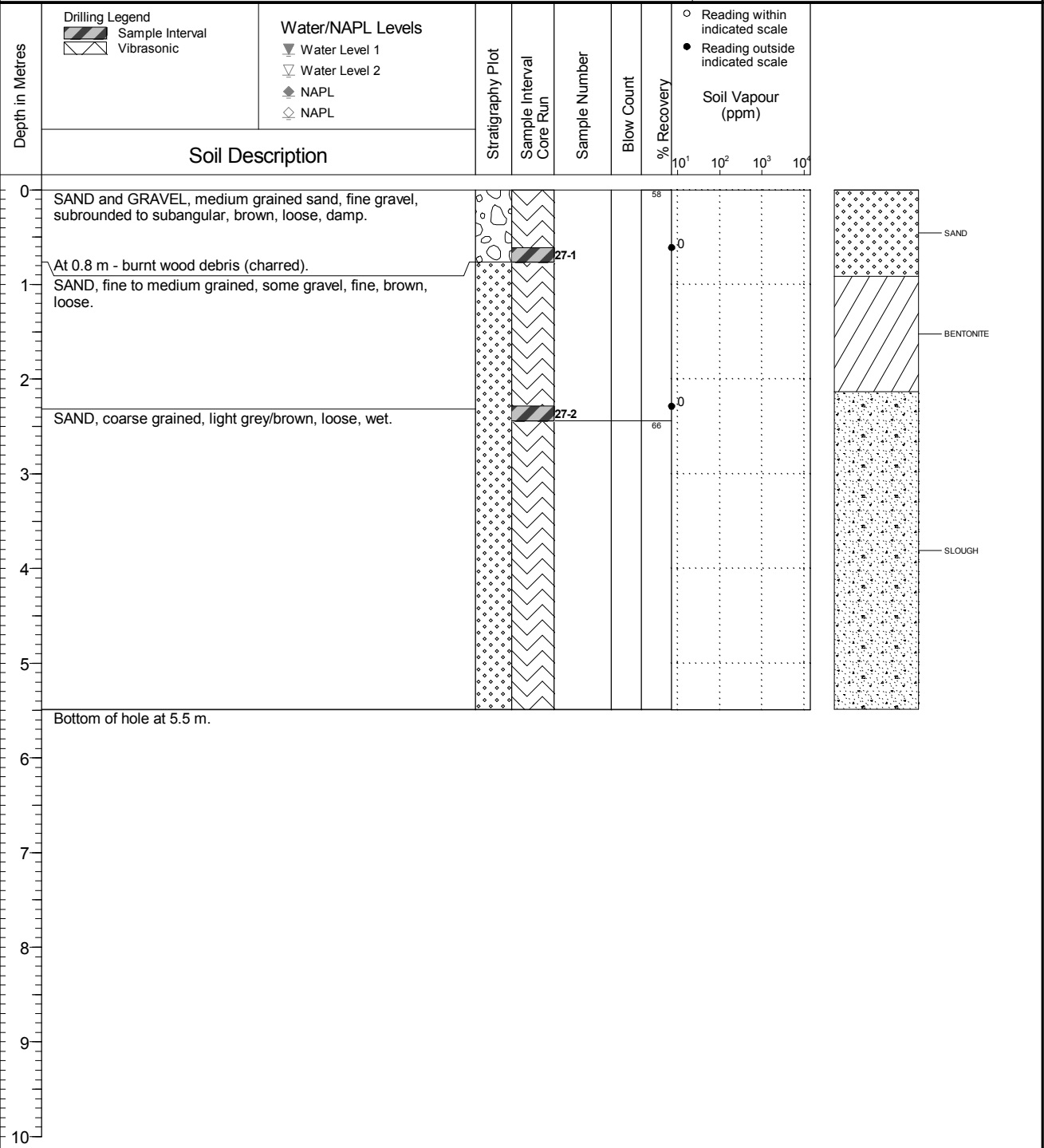
Borehole No. : 22A-BH16-27

PAGE 1 OF 1

Drilling Contractor: Omega Environmental Drilling Ltd.  
 Drilling Method: Vibratory Sonic  
 Borehole Dia. (m): 0.20  
 Pipe/Slotted Pipe Dia. (m): none/none

Date Monitored: n/a  
 Ground Surface Elev. (m): n/a  
 Top of Casing Elev. (m): n/a  
 Northing: 6663900.157  
 Easting: 509481.345

Project Number: 640752  
 Borehole Logged By: MLC  
 Date Drilled: 2016 11 03  
 Log Typed By: HDM

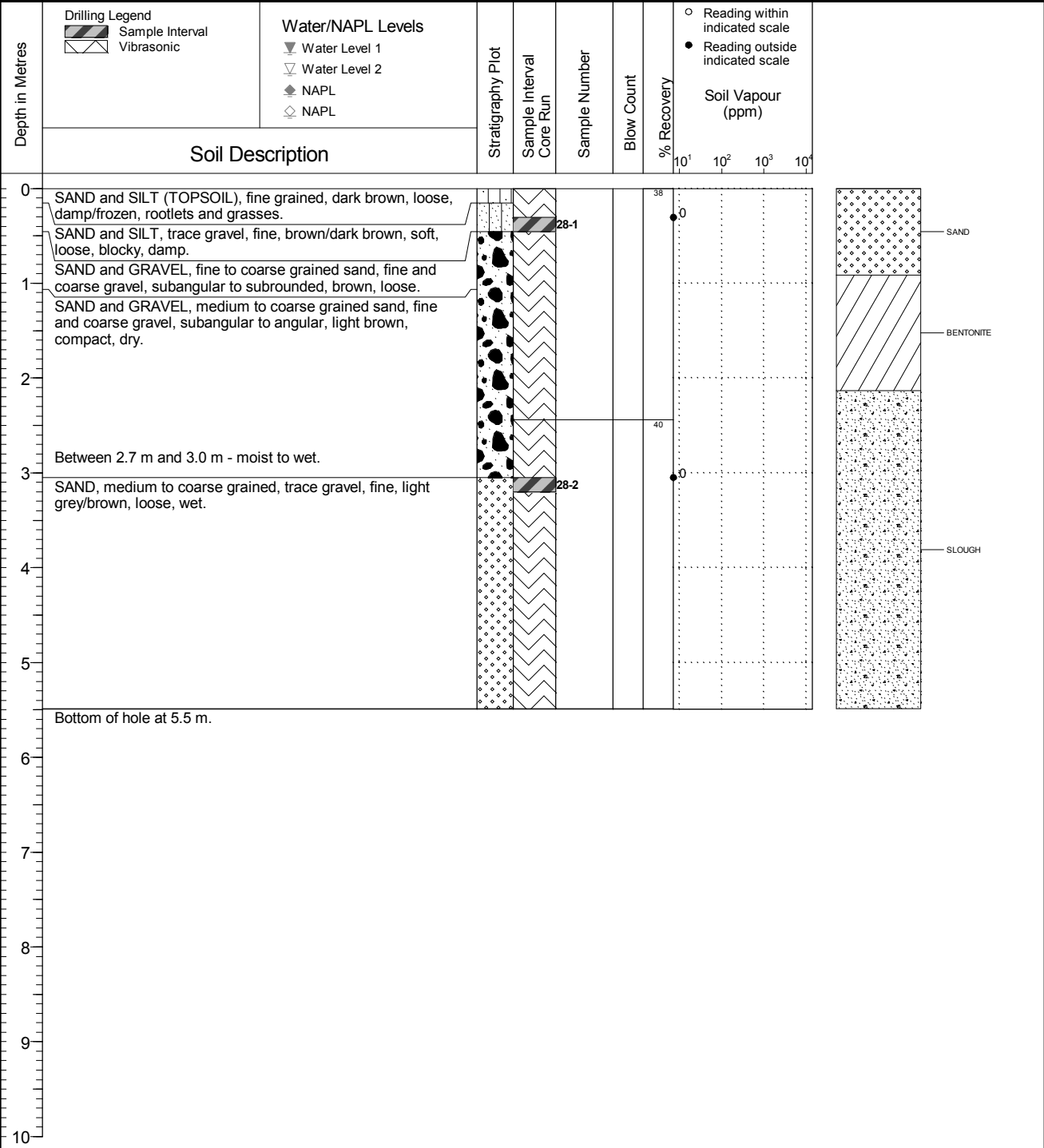


**NOTES**  
 Bolded sample denotes sample analyzed.

Drilling Contractor: Omega Environmental Drilling Ltd.  
 Drilling Method: Vibratory Sonic  
 Borehole Dia. (m): 0.20  
 Pipe/Slotted Pipe Dia. (m): none/none

Date Monitored: n/a  
 Ground Surface Elev. (m): n/a  
 Top of Casing Elev. (m): n/a  
 Northing: 6663887.036  
 Easting: 509489.875

Project Number: 640752  
 Borehole Logged By: MLC  
 Date Drilled: 2016 11 04  
 Log Typed By: HDM



**NOTES**  
 Bolded sample denotes sample analyzed.



Client  
Public Works and Gov't Services Canada

Location  
Watson Lake Airport, Watson Lake, YT

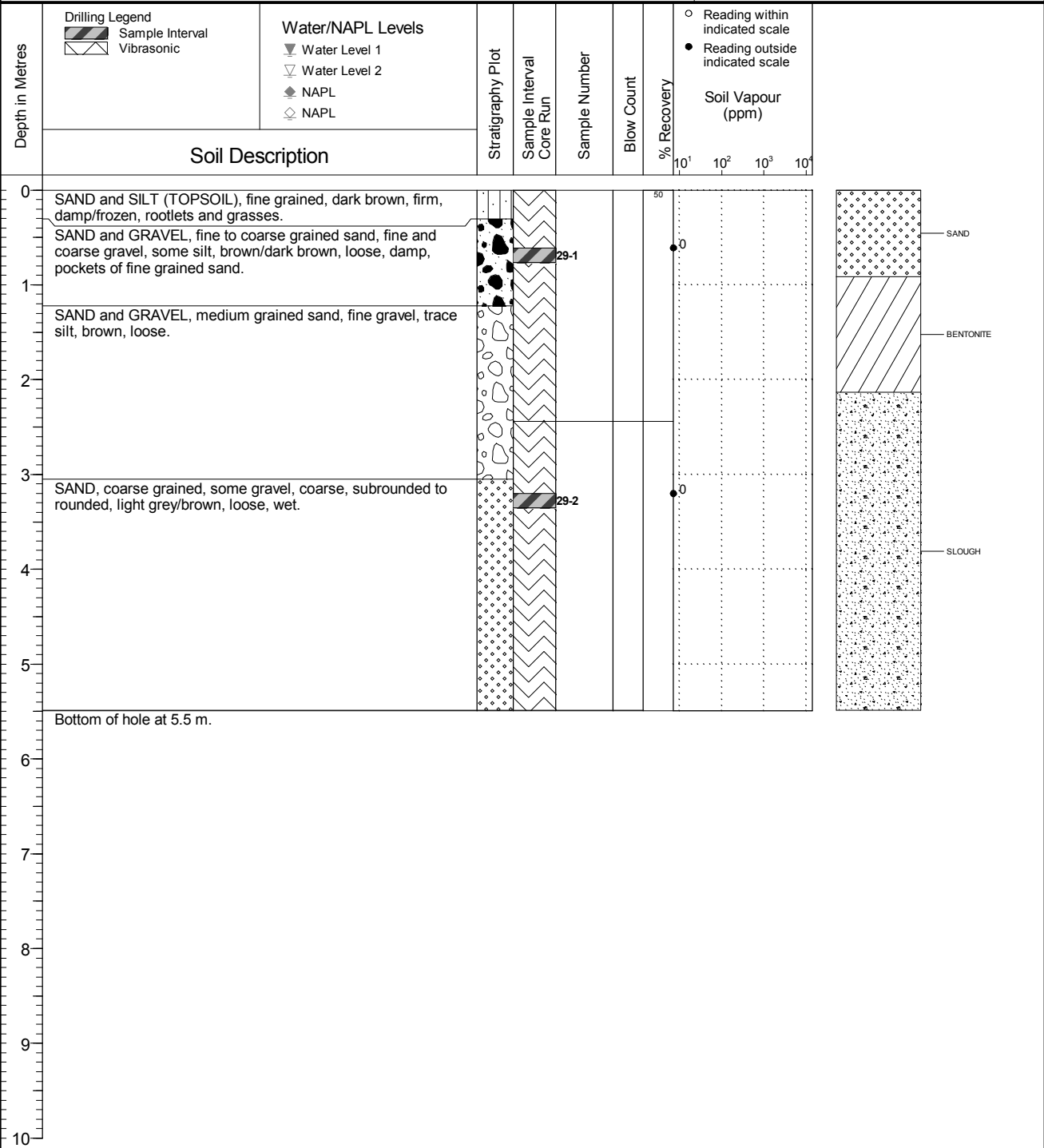
Borehole No. : 22A-BH16-29

PAGE 1 OF 1

Drilling Contractor: Omega Environmental Drilling Ltd.  
Drilling Method: Vibratory Sonic  
Borehole Dia. (m): 0.20  
Pipe/Slotted Pipe Dia. (m): none/none

Date Monitored: n/a  
Ground Surface Elev. (m): n/a  
Top of Casing Elev. (m): n/a  
Northing: 6663871.868  
Easting: 509495.362

Project Number: 640752  
Borehole Logged By: MLC  
Date Drilled: 2016 11 04  
Log Typed By: HDM



**NOTES**  
Bolded sample denotes sample analyzed.



Client  
Public Works and Gov't Services Canada

Location  
Watson Lake Airport, Watson Lake, YT

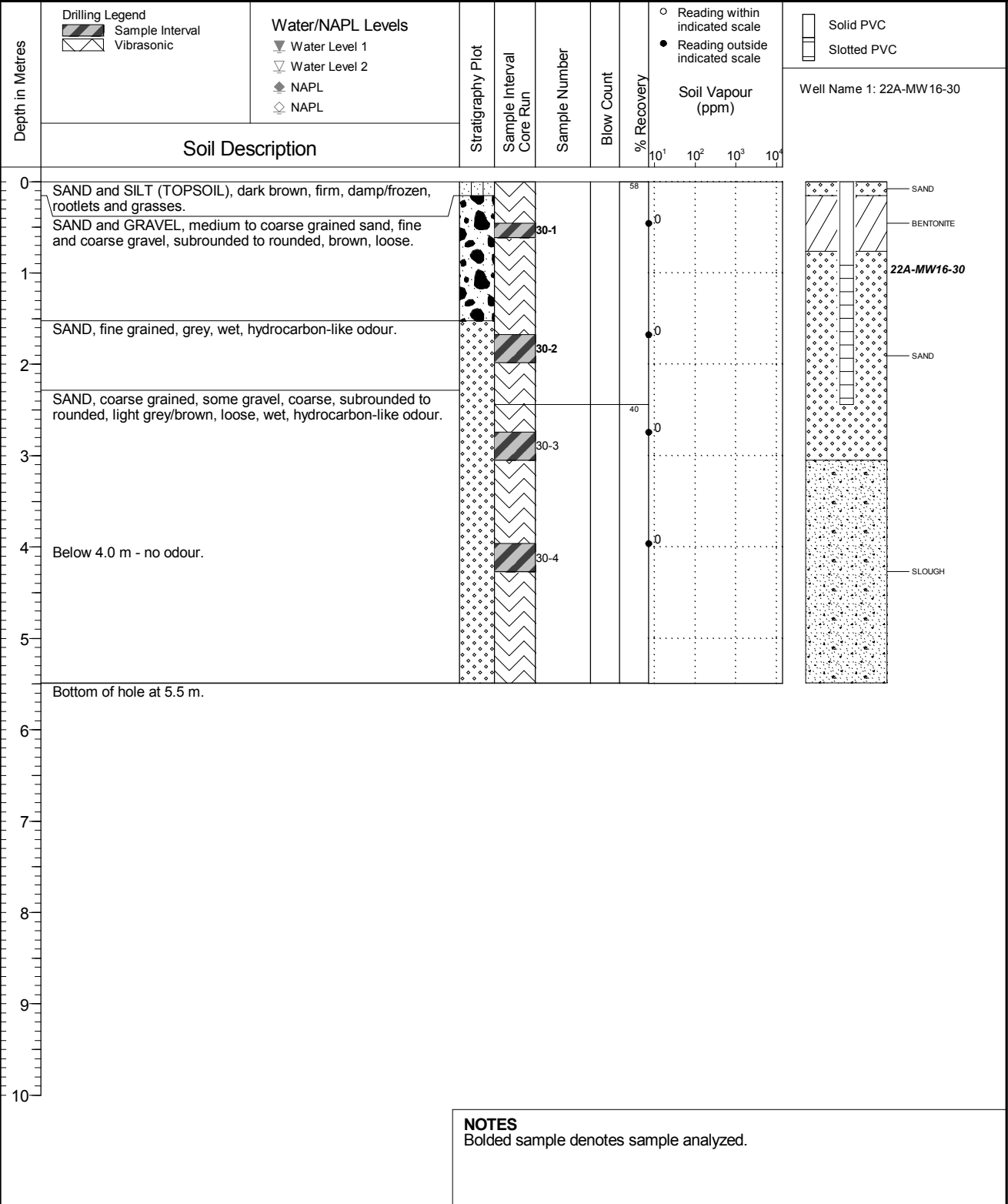
Borehole No. : 22A-BH16-30

PAGE 1 OF 1

Drilling Contractor: Omega Environmental Drilling Ltd.  
Drilling Method: Vibratory Sonic  
Borehole Dia. (m): 0.20  
Pipe/Slotted Pipe Dia. (m): 0.05/0.05

Date Monitored: n/a  
Ground Surface Elev. (m): n/a  
Top of Casing Elev. (m): n/a  
Northing: 6663845.491  
Easting: 509518.125

Project Number: 640752  
Borehole Logged By: MLC  
Date Drilled: 2016 11 04  
Log Typed By: HDM



QA MR 2017 03 22 Print Date: 2017-03-22

**NOTES**  
Bolded sample denotes sample analyzed.



Client  
Public Works and Gov't Services Canada

Location  
Watson Lake Airport, Watson Lake, YT

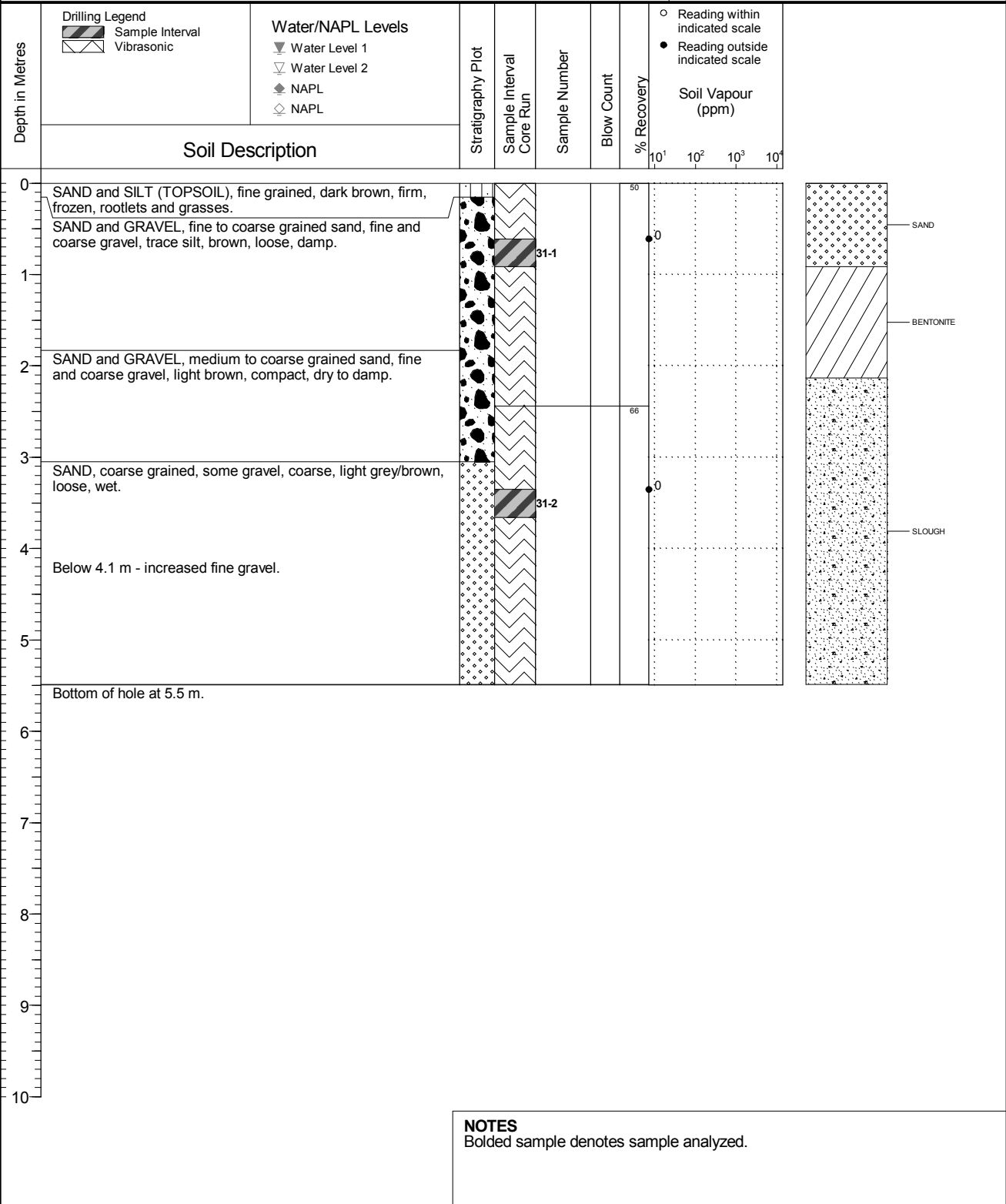
Borehole No. : 22A-BH16-31

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Drilling Contractor: Omega Environmental Drilling Ltd.  
 Drilling Method: Vibratory Sonic  
 Borehole Dia. (m): 0.20  
 Pipe/Slotted Pipe Dia. (m): none/none

Date Monitored: n/a  
 Ground Surface Elev. (m): n/a  
 Top of Casing Elev. (m): n/a  
 Northing: 6663853.779  
 Easting: 509536.573

Project Number: 640752  
 Borehole Logged By: MLC  
 Date Drilled: 2016 11 04  
 Log Typed By: HDM



**NOTES**  
 Bolded sample denotes sample analyzed.





Client  
Public Works and Gov't Services Canada

Location  
Watson Lake Airport, Watson Lake, YT

Borehole No. : 22A-BH16-32

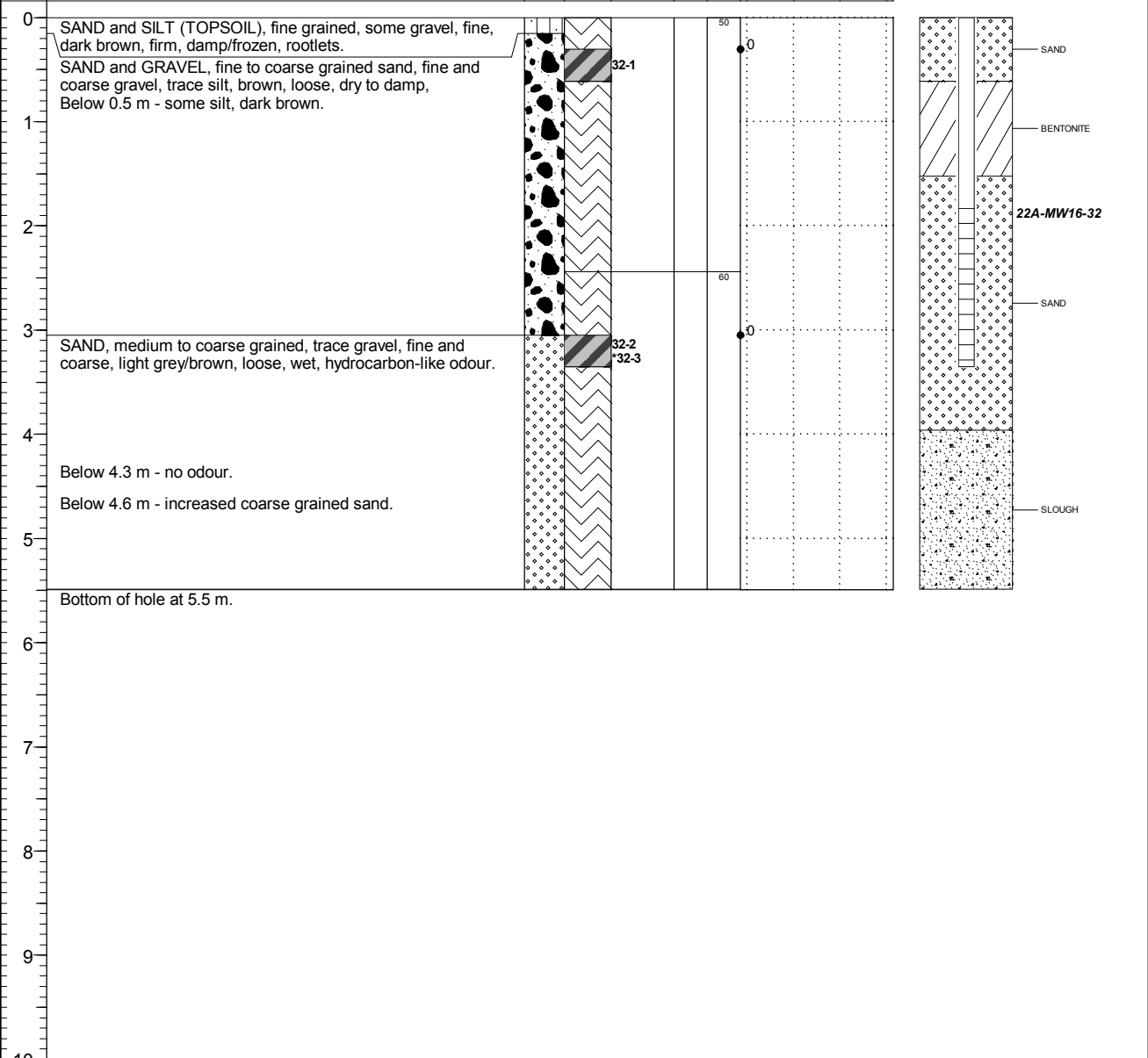
PAGE 1 OF 1

Drilling Contractor: Omega Environmental Drilling Ltd.  
Drilling Method: Vibratory Sonic  
Borehole Dia. (m): 0.20  
Pipe/Slotted Pipe Dia. (m): 0.05/0.05

Date Monitored: n/a  
Ground Surface Elev. (m): n/a  
Top of Casing Elev. (m): n/a  
Northing: 6663861.206  
Easting: 509549.449

Project Number: 640752  
Borehole Logged By: MLC  
Date Drilled: 2016 11 04  
Log Typed By: HDM

Depth in Metres	<b>Drilling Legend</b> Sample Interval Vibrasonic	<b>Water/NAPL Levels</b> Water Level 1 Water Level 2 NAPL NAPL	Stratigraphy Plot	Sample Interval Core Run	Sample Number	Blow Count	% Recovery	○ Reading within indicated scale ● Reading outside indicated scale	Solid PVC Slotted PVC
	Soil Description							Soil Vapour (ppm)	Well Name 1: 22A-MW16-32



**NOTES**  
 Bolded sample denotes sample analyzed. \n\*32-3 is a blind field duplicate of 32-2.

QA MR 2017 03 22 Print Date: 2017-03-22



Client  
Public Works and Gov't Services Canada

Location  
Watson Lake Airport, Watson Lake, YT

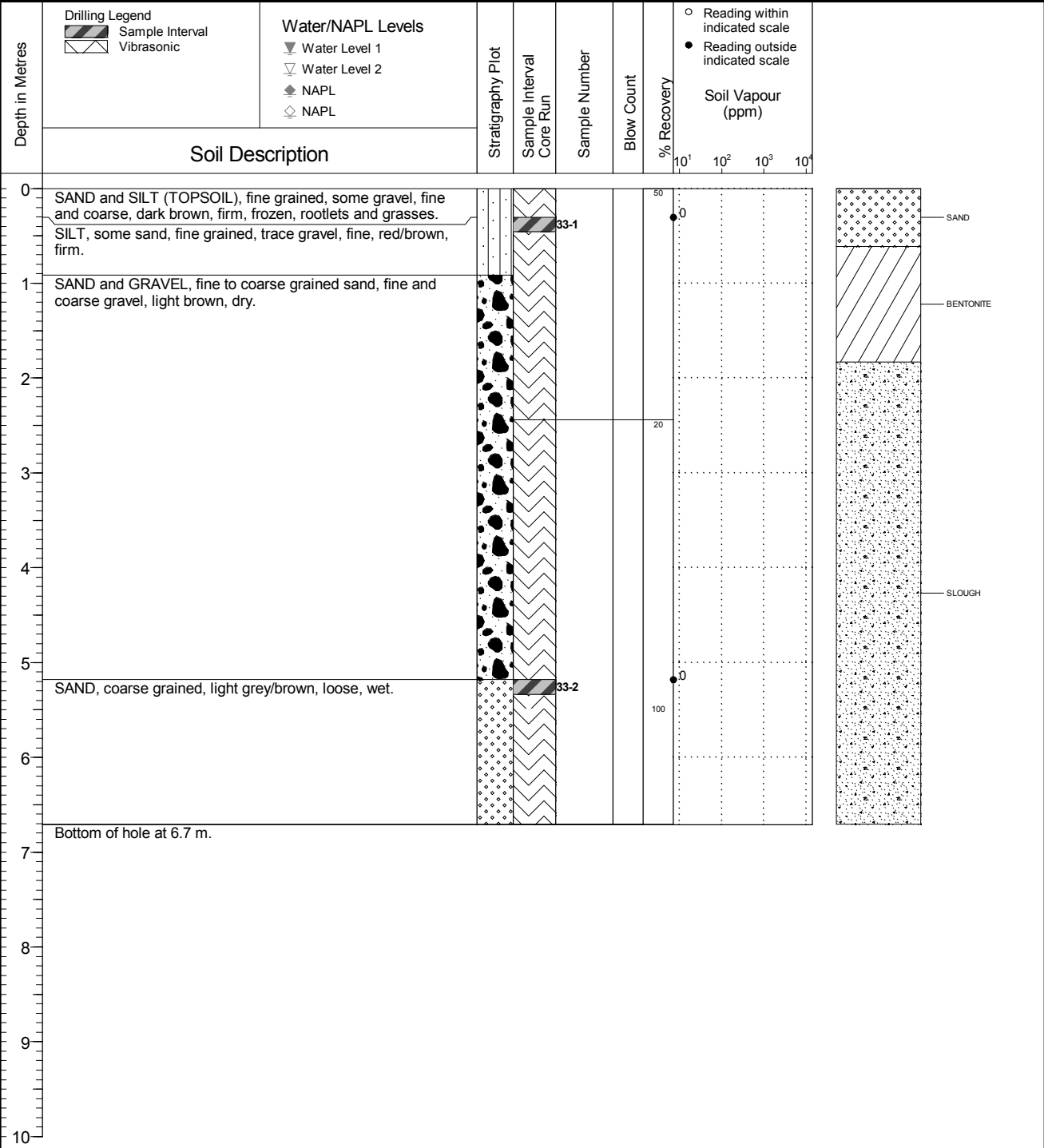
Borehole No. : 22A-BH16-33

PAGE 1 OF 1

Drilling Contractor: Omega Environmental Drilling Ltd.  
 Drilling Method: Vibratory Sonic  
 Borehole Dia. (m): 0.20  
 Pipe/Slotted Pipe Dia. (m): none/none

Date Monitored: n/a  
 Ground Surface Elev. (m): n/a  
 Top of Casing Elev. (m): n/a  
 Northing: 6663886.754  
 Easting: 509576.254

Project Number: 640752  
 Borehole Logged By: MLC  
 Date Drilled: 2016 11 04  
 Log Typed By: HDM



**NOTES**  
 Bolded sample denotes sample analyzed.



Client  
Public Works and Gov't Services Canada

Location  
Watson Lake Airport, Watson Lake, YT

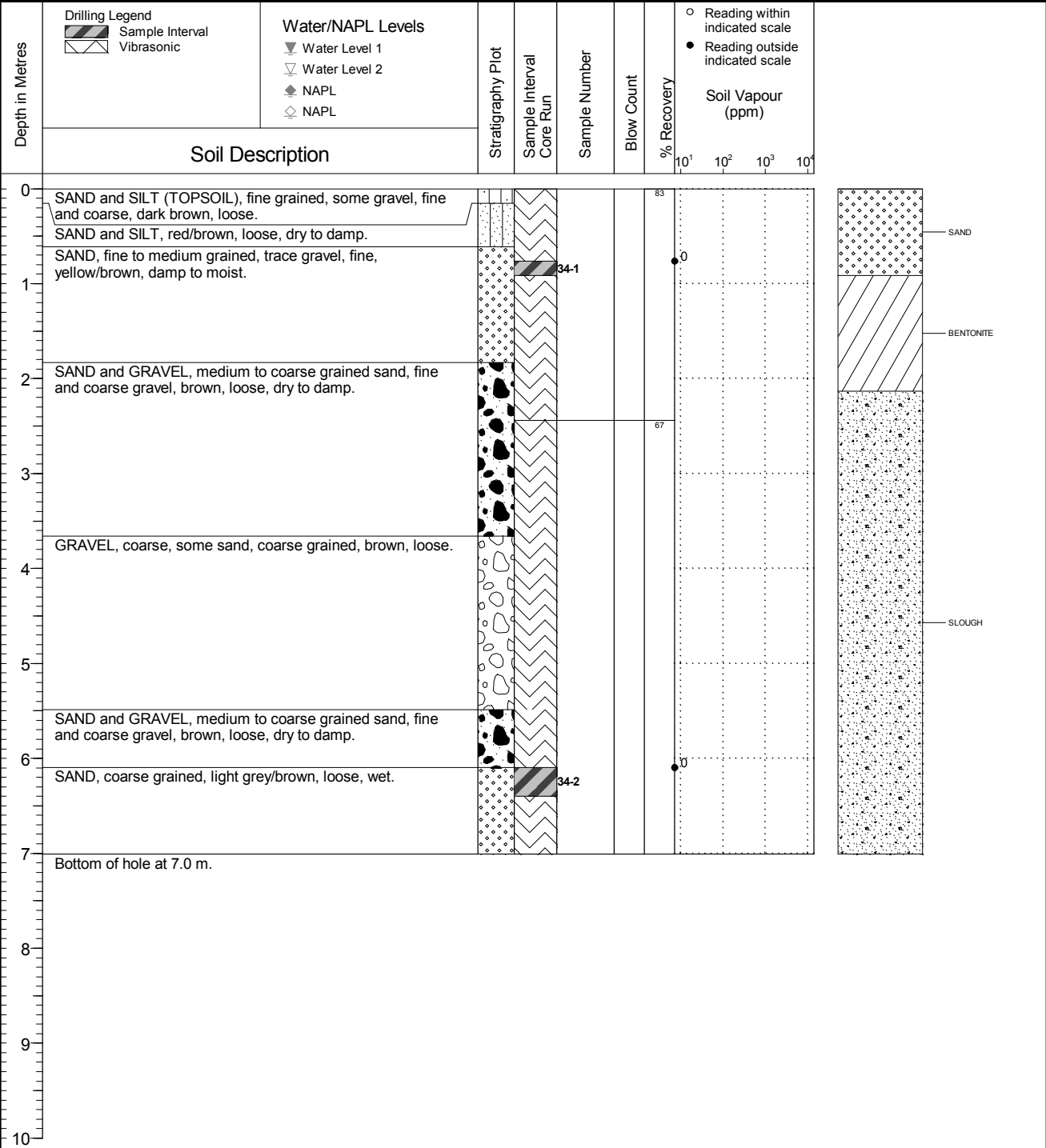
Borehole No. : 22A-BH16-34

PAGE 1 OF 1

Drilling Contractor: Omega Environmental Drilling Ltd.  
 Drilling Method: Vibratory Sonic  
 Borehole Dia. (m): 0.20  
 Pipe/Slotted Pipe Dia. (m): none/none

Date Monitored: n/a  
 Ground Surface Elev. (m): n/a  
 Top of Casing Elev. (m): n/a  
 Northing: 6663900.709  
 Easting: 509589.374

Project Number: 640752  
 Borehole Logged By: MLC  
 Date Drilled: 2016 11 04  
 Log Typed By: HDM



**NOTES**  
 Bolded sample denotes sample analyzed.



Client  
Public Works and Gov't Services Canada

Location  
Watson Lake Airport, Watson Lake, YT

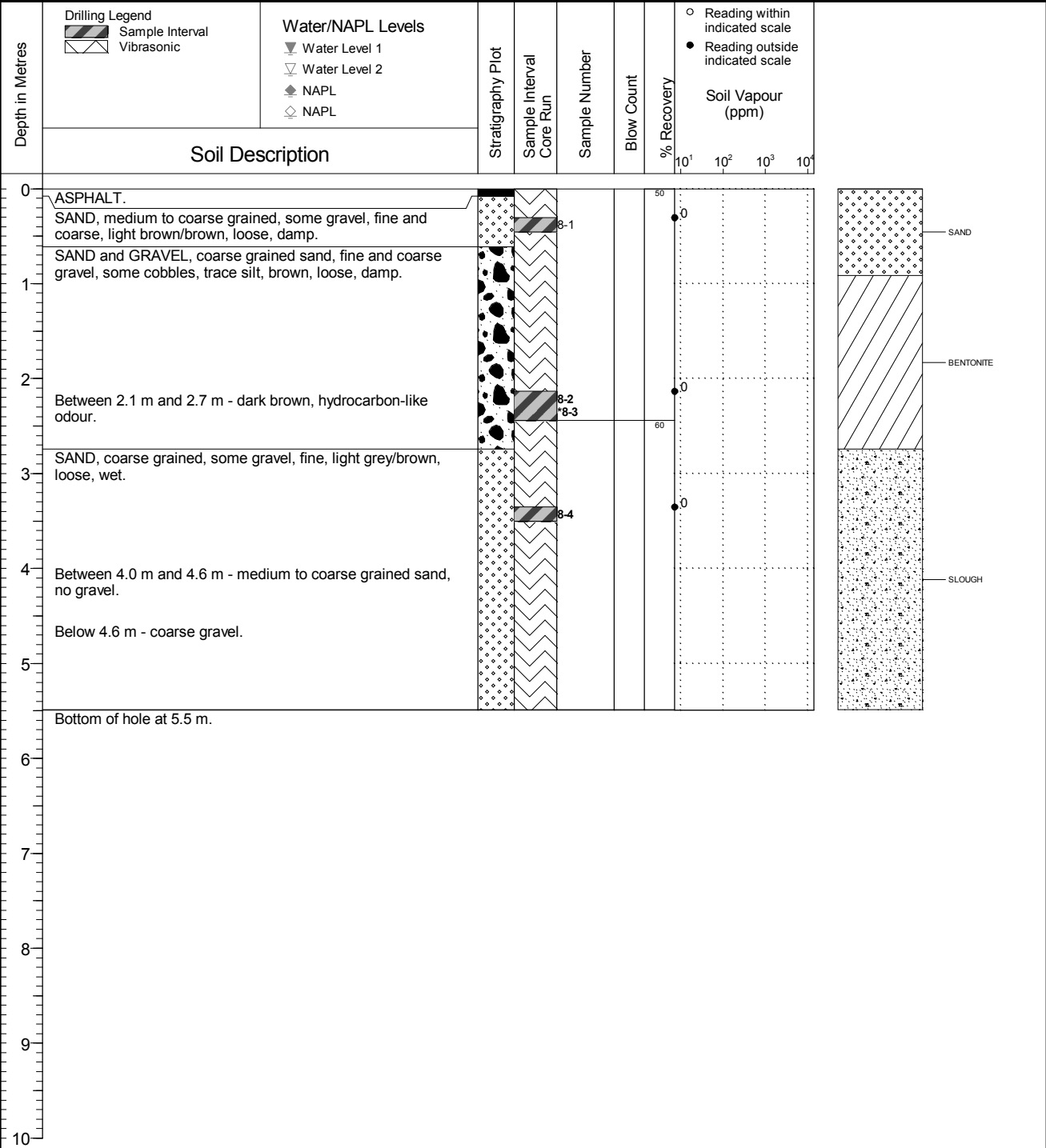
Borehole No. : 22B-BH16-8

PAGE 1 OF 1

Drilling Contractor: Omega Environmental Drilling Ltd.  
Drilling Method: Vibratory Sonic  
Borehole Dia. (m): 0.20  
Pipe/Slotted Pipe Dia. (m): none/none

Date Monitored: n/a  
Ground Surface Elev. (m): n/a  
Top of Casing Elev. (m): n/a  
Northing: 6664103.072  
Easting: 509828.164

Project Number: 640752  
Borehole Logged By: MLC  
Date Drilled: 2016 11 06  
Log Typed By: HDM



**NOTES**  
Bolded sample denotes sample analyzed. \n\*8-3 is a blind field duplicate of 8-2.



Client  
Public Works and Gov't Services Canada

Location  
Watson Lake Airport, Watson Lake, YT

Borehole No. : 22B-BH16-9

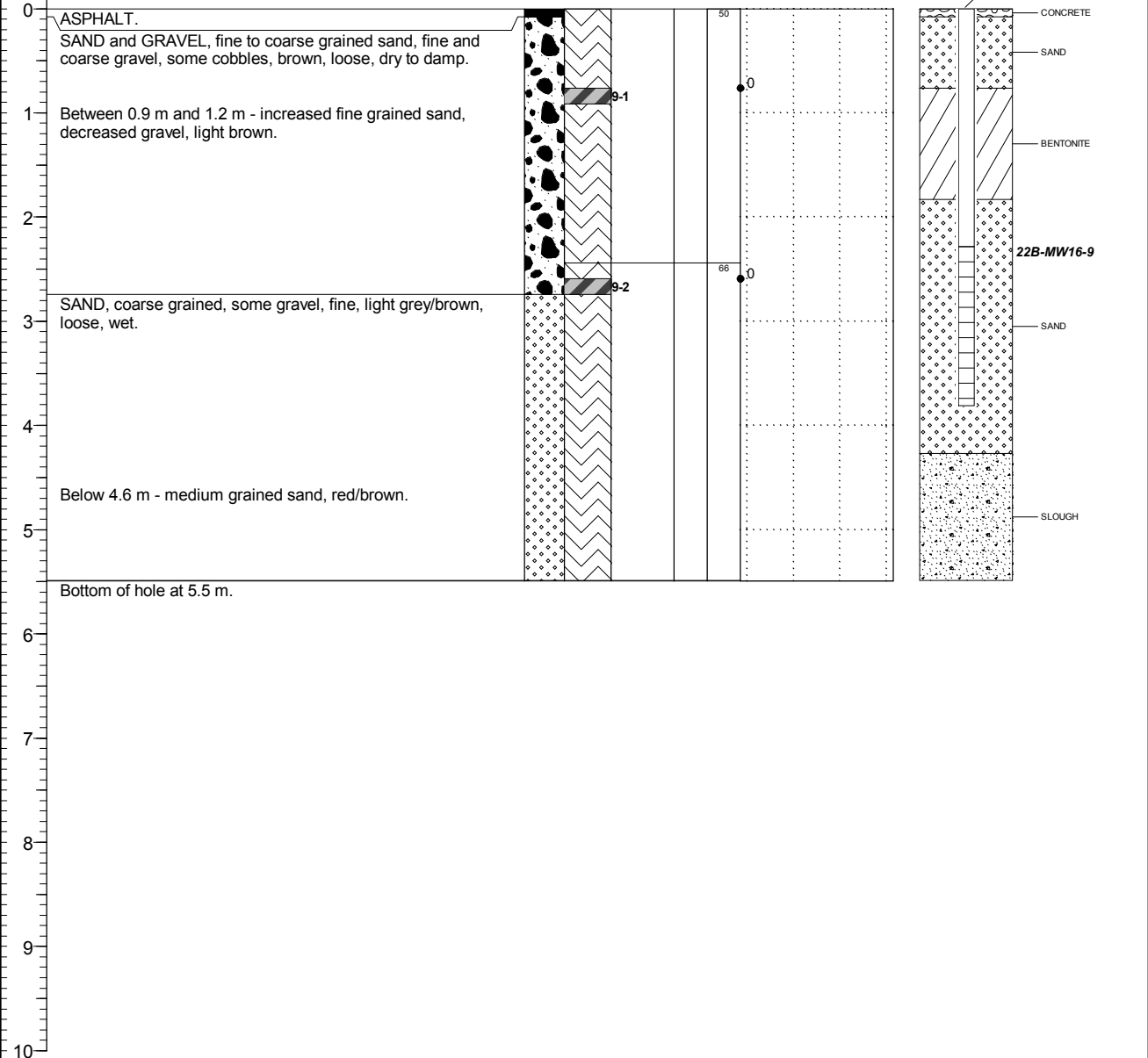
PAGE 1 OF 1

Drilling Contractor: Omega Environmental Drilling Ltd.  
Drilling Method: Vibratory Sonic  
Borehole Dia. (m): 0.20  
Pipe/Slotted Pipe Dia. (m): 0.05/0.05

Date Monitored: n/a  
Ground Surface Elev. (m): n/a  
Top of Casing Elev. (m): n/a  
Northing: 6664073.517  
Easting: 509833.164

Project Number: 640752  
Borehole Logged By: MLC  
Date Drilled: 2016 11 06  
Log Typed By: HDM

Depth in Metres	<b>Drilling Legend</b> Sample Interval Vibrasonic	<b>Water/NAPL Levels</b> Water Level 1 Water Level 2 NAPL NAPL	Stratigraphy Plot	Sample Interval Core Run	Sample Number	Blow Count	% Recovery	○ Reading within indicated scale ● Reading outside indicated scale	Solid PVC Slotted PVC
	Soil Description							Soil Vapour (ppm)	Well Name 1: 22B-MW16-9



**NOTES**  
 Bolded sample denotes sample analyzed.



Client  
Public Works and Gov't Services Canada

Location  
Watson Lake Airport, Watson Lake, YT

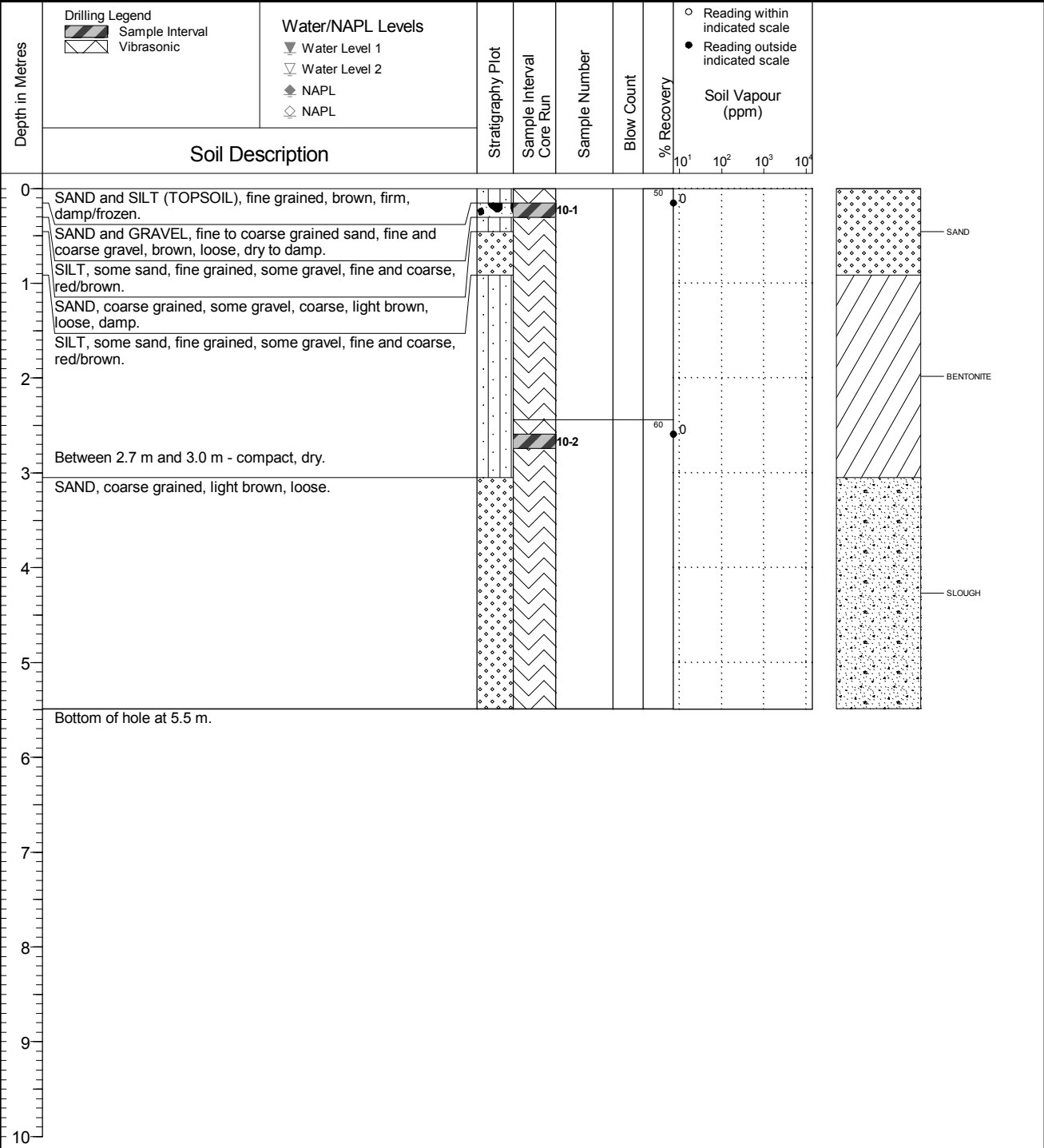
Borehole No. : 22B-BH16-10

PAGE 1 OF 1

Drilling Contractor: Omega Environmental Drilling Ltd.  
 Drilling Method: Vibratory Sonic  
 Borehole Dia. (m): 0.20  
 Pipe/Slotted Pipe Dia. (m): none/none

Date Monitored: n/a  
 Ground Surface Elev. (m): n/a  
 Top of Casing Elev. (m): n/a  
 Northing: 6664010.838  
 Easting: 509827.886

Project Number: 640752  
 Borehole Logged By: MLC  
 Date Drilled: 2016 11 06  
 Log Typed By: HDM



**NOTES**  
 Bolded sample denotes sample analyzed.



Client  
Public Works and Gov't Services Canada

Location  
Watson Lake Airport, Watson Lake, YT

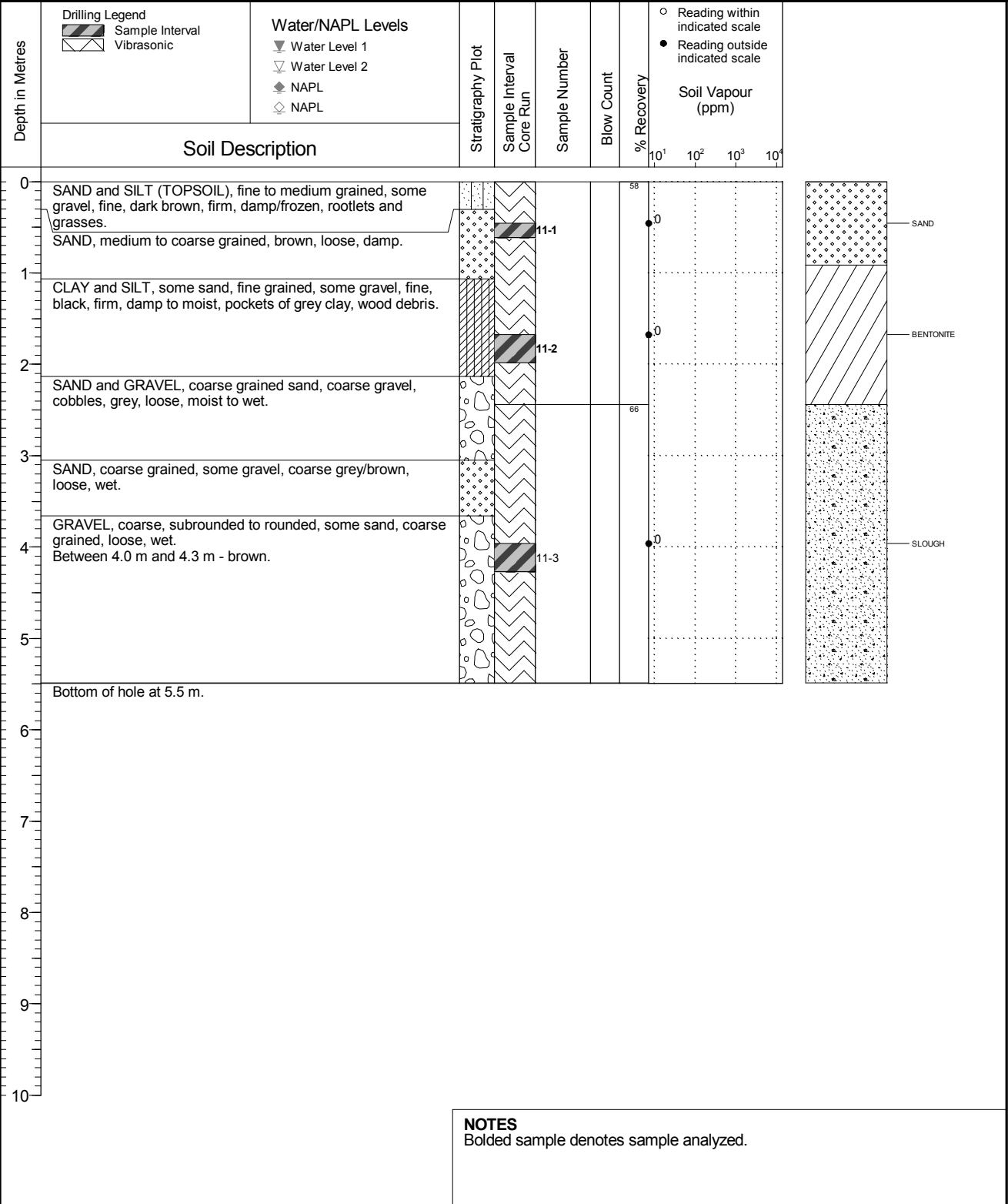
Borehole No. : 22B-BH16-11

PAGE 1 OF 1

Drilling Contractor: Omega Environmental Drilling Ltd.  
 Drilling Method: Vibratory Sonic  
 Borehole Dia. (m): 0.20  
 Pipe/Slotted Pipe Dia. (m): none/none

Date Monitored: n/a  
 Ground Surface Elev. (m): n/a  
 Top of Casing Elev. (m): n/a  
 Northing: 6663968.142  
 Easting: 509776.759

Project Number: 640752  
 Borehole Logged By: MLC  
 Date Drilled: 2016 11 06  
 Log Typed By: HDM



**NOTES**  
 Bolded sample denotes sample analyzed.

QA MR 2017 03 22 Print Date: 2017-03-22



Client  
Public Works and Gov't Services Canada

Location  
Watson Lake Airport, Watson Lake, YT

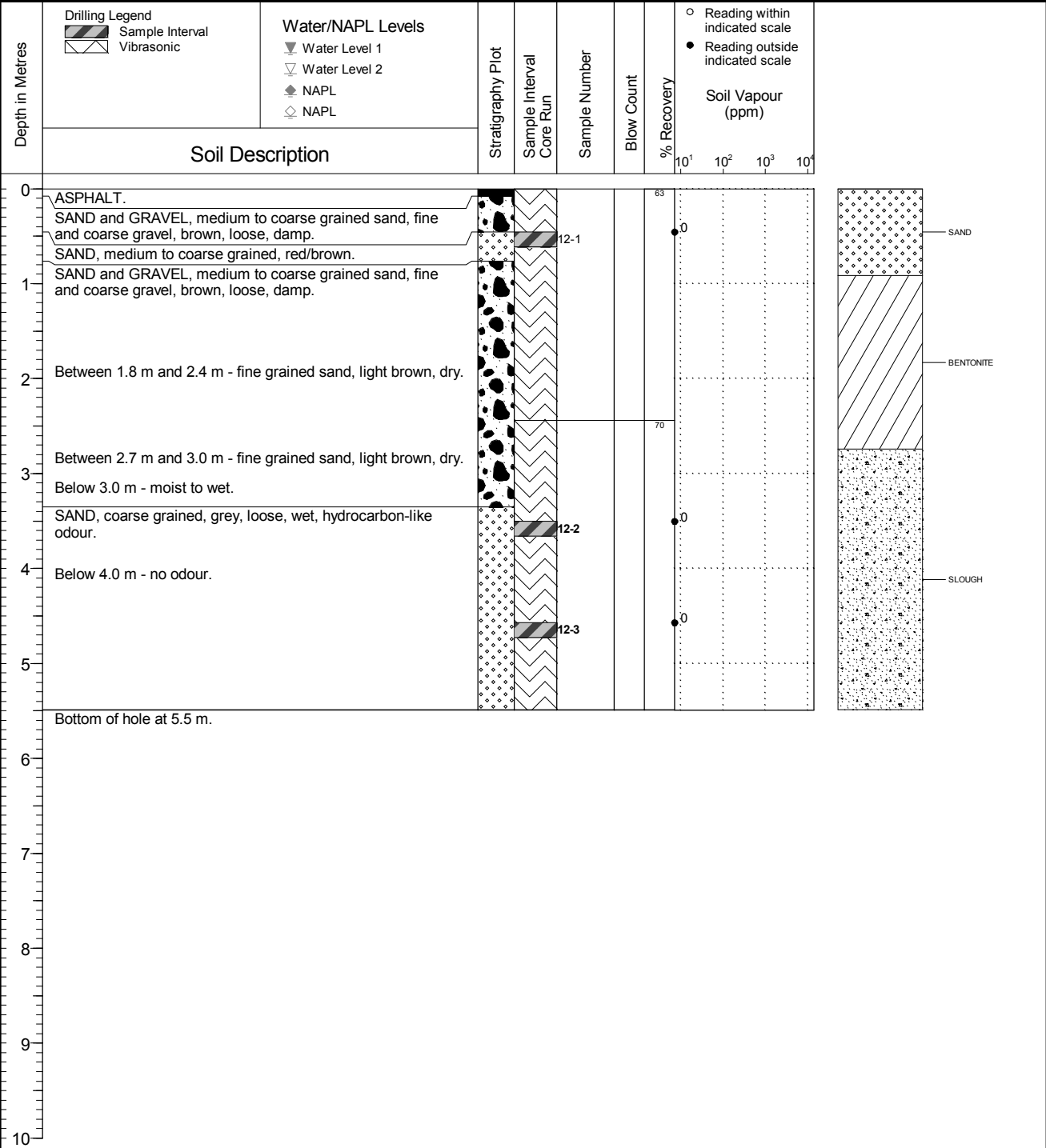
Borehole No. : 22B-BH16-12

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Drilling Contractor: Omega Environmental Drilling Ltd.  
Drilling Method: Vibratory Sonic  
Borehole Dia. (m): 0.20  
Pipe/Slotted Pipe Dia. (m): none/none

Date Monitored: n/a  
Ground Surface Elev. (m): n/a  
Top of Casing Elev. (m): n/a  
Northing: 6664132.999  
Easting: 509846.009

Project Number: 640752  
Borehole Logged By: MLC  
Date Drilled: 2016 11 06  
Log Typed By: HDM



**NOTES**  
Bolded sample denotes sample analyzed.





Client  
Public Works and Gov't Services Canada

Location  
Watson Lake Airport, Watson Lake, YT

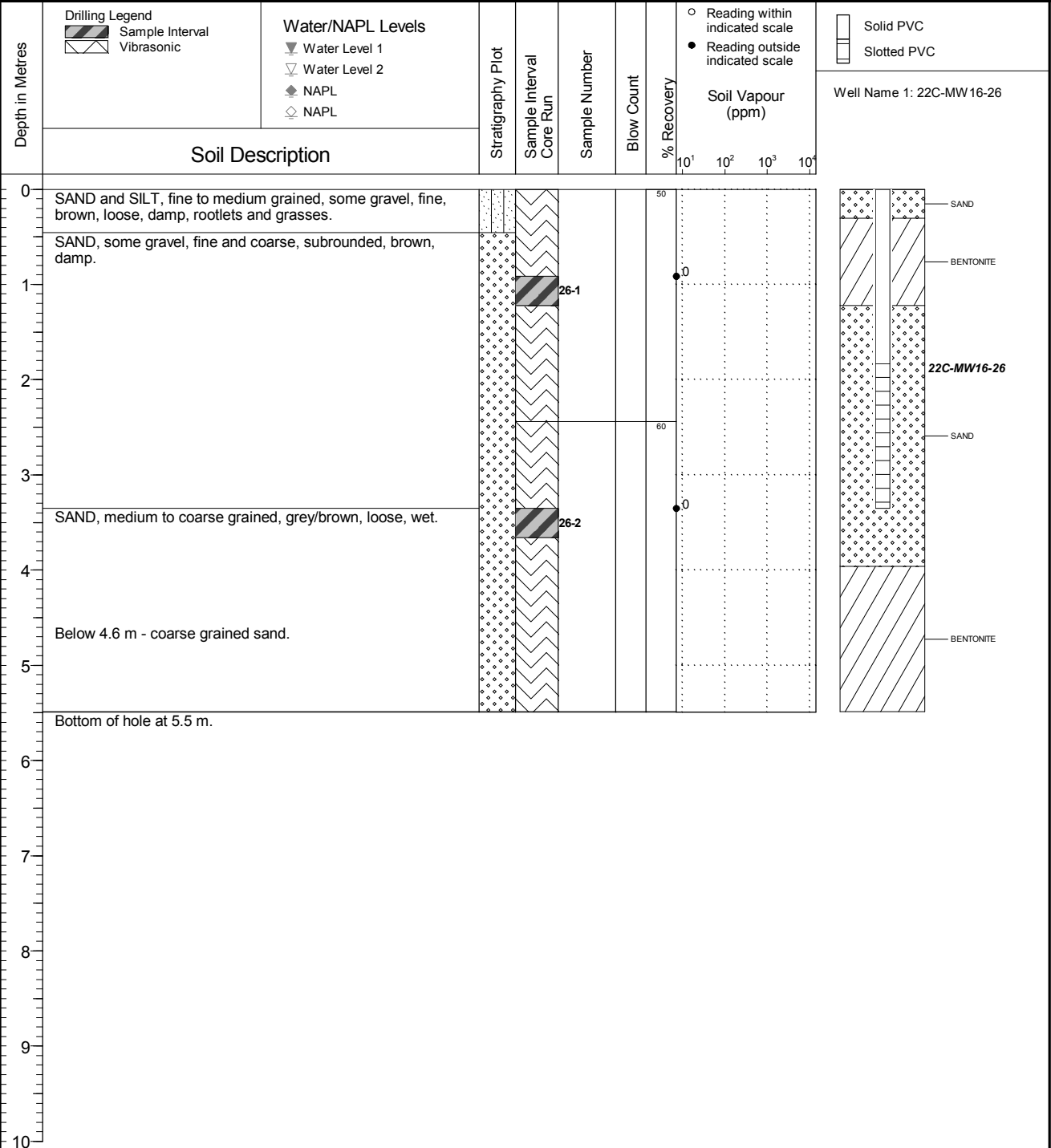
Borehole No. : 22C-BH16-26

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Drilling Contractor: Omega Environmental Drilling Ltd.  
 Drilling Method: Vibratory Sonic  
 Borehole Dia. (m): 0.20  
 Pipe/Slotted Pipe Dia. (m): 0.05/0.05

Date Monitored: n/a  
 Ground Surface Elev. (m): n/a  
 Top of Casing Elev. (m): n/a  
 Northing: 6663957.445  
 Easting: 509832.199

Project Number: 640752  
 Borehole Logged By: MLC  
 Date Drilled: 2016 11 01  
 Log Typed By: HDM



**NOTES**  
 Bolded sample denotes sample analyzed.



Client  
Public Works and Gov't Services Canada

Location  
Watson Lake Airport, Watson Lake, YT

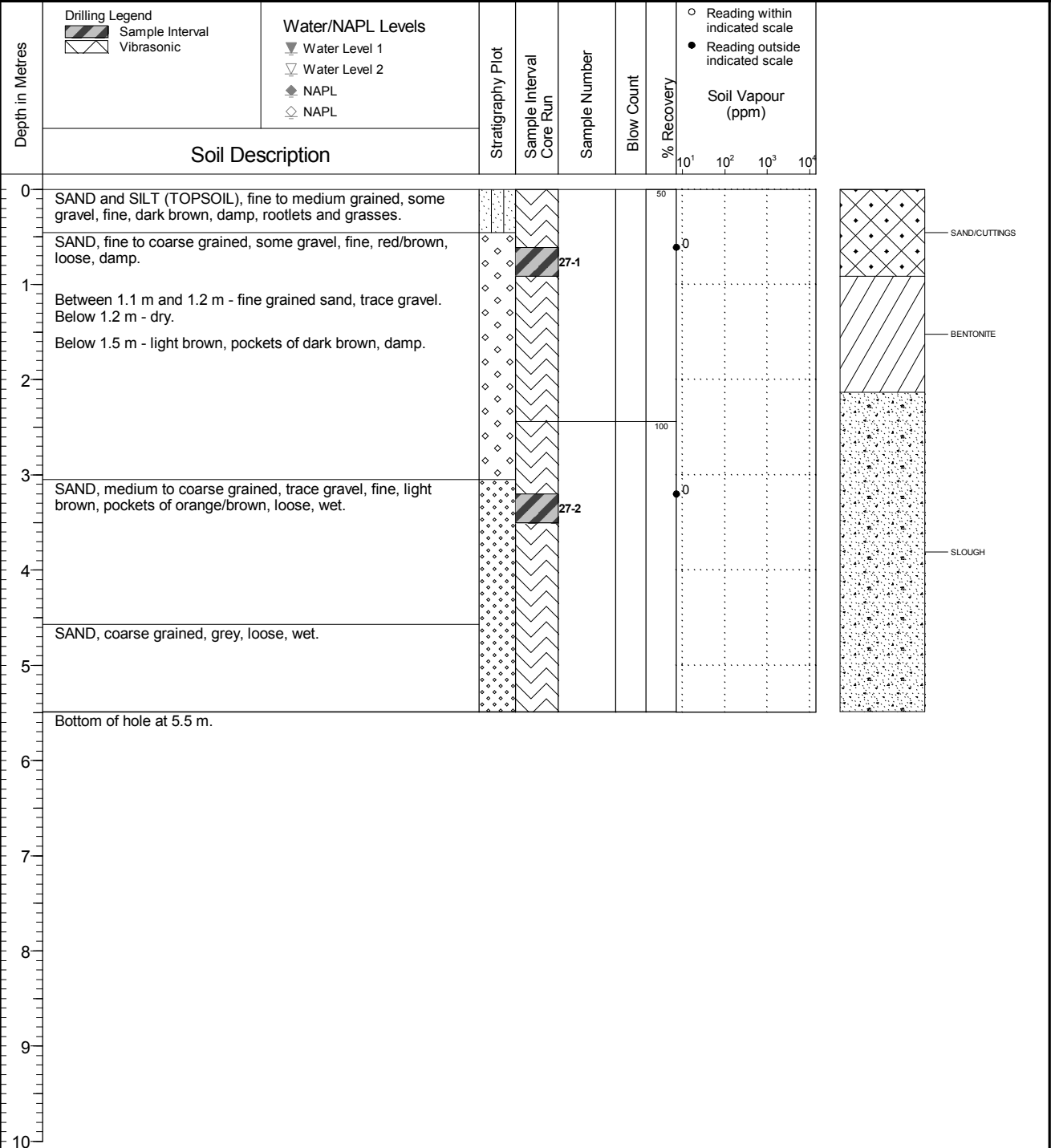
Borehole No. : 22C-BH16-27

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Drilling Contractor: Omega Environmental Drilling Ltd.  
 Drilling Method: Vibratory Sonic  
 Borehole Dia. (m): 0.20  
 Pipe/Slotted Pipe Dia. (m): none/none

Date Monitored: n/a  
 Ground Surface Elev. (m): n/a  
 Top of Casing Elev. (m): n/a  
 Northing: 6663952.339  
 Easting: 509870.748

Project Number: 640752  
 Borehole Logged By: MLC  
 Date Drilled: 2016 11 01  
 Log Typed By: HDM



**NOTES**  
 Bolded sample denotes sample analyzed.



Client  
Public Works and Gov't Services Canada

Location  
Watson Lake Airport, Watson Lake, YT

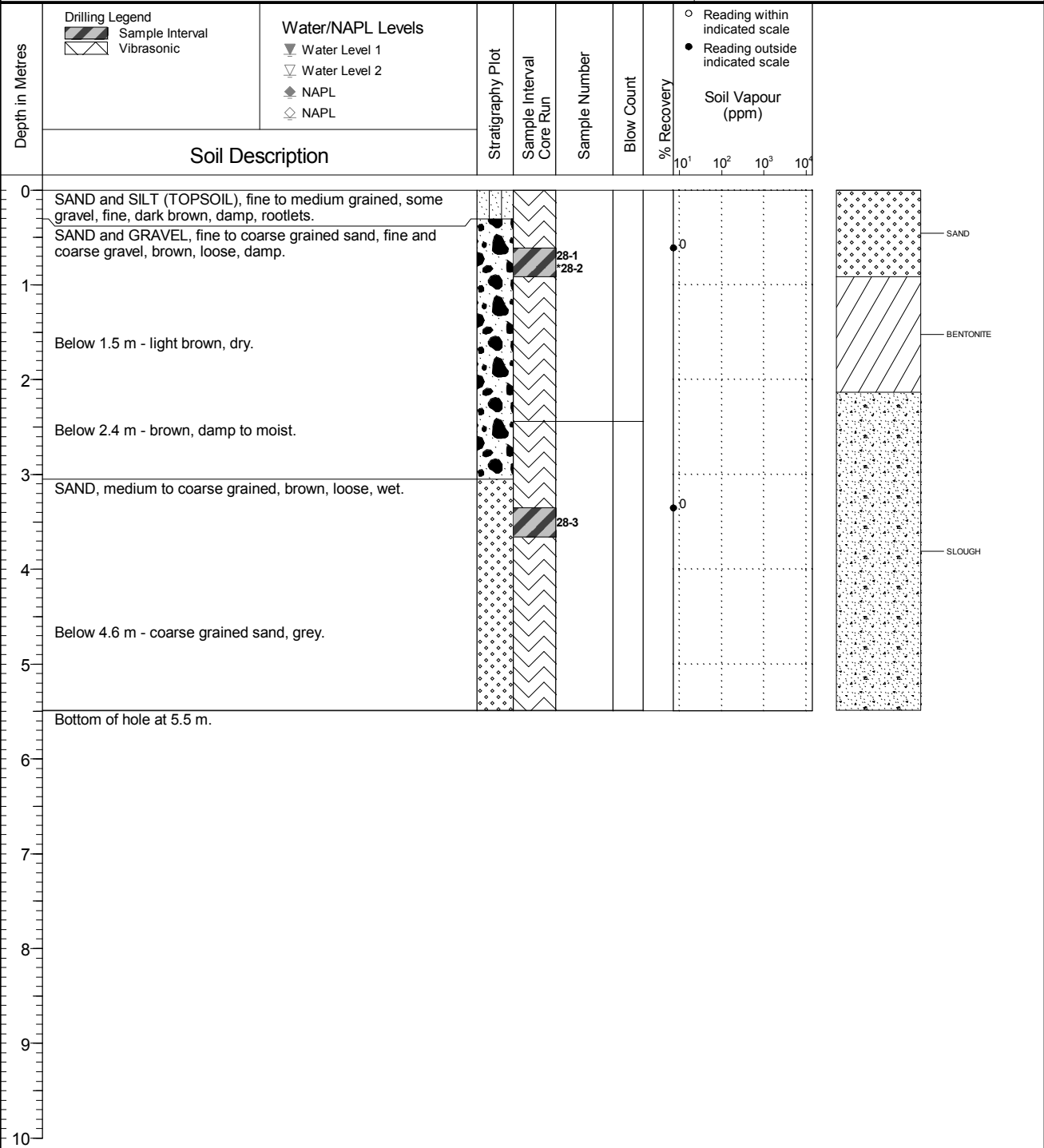
Borehole No. : 22C-BH16-28

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Drilling Contractor: Omega Environmental Drilling Ltd.  
Drilling Method: Vibratory Sonic  
Borehole Dia. (m): 0.20  
Pipe/Slotted Pipe Dia. (m): none/none

Date Monitored: n/a  
Ground Surface Elev. (m): n/a  
Top of Casing Elev. (m): n/a  
Northing: 6663941.420  
Easting: 509897.025

Project Number: 640752  
Borehole Logged By: MLC  
Date Drilled: 2016 11 01  
Log Typed By: HDM



**NOTES**  
 Bolded sample denotes sample analyzed. \n\*28-2 is a blind field duplicate of 28-1.



Client  
Public Works and Gov't Services Canada

Location  
Watson Lake Airport, Watson Lake, YT

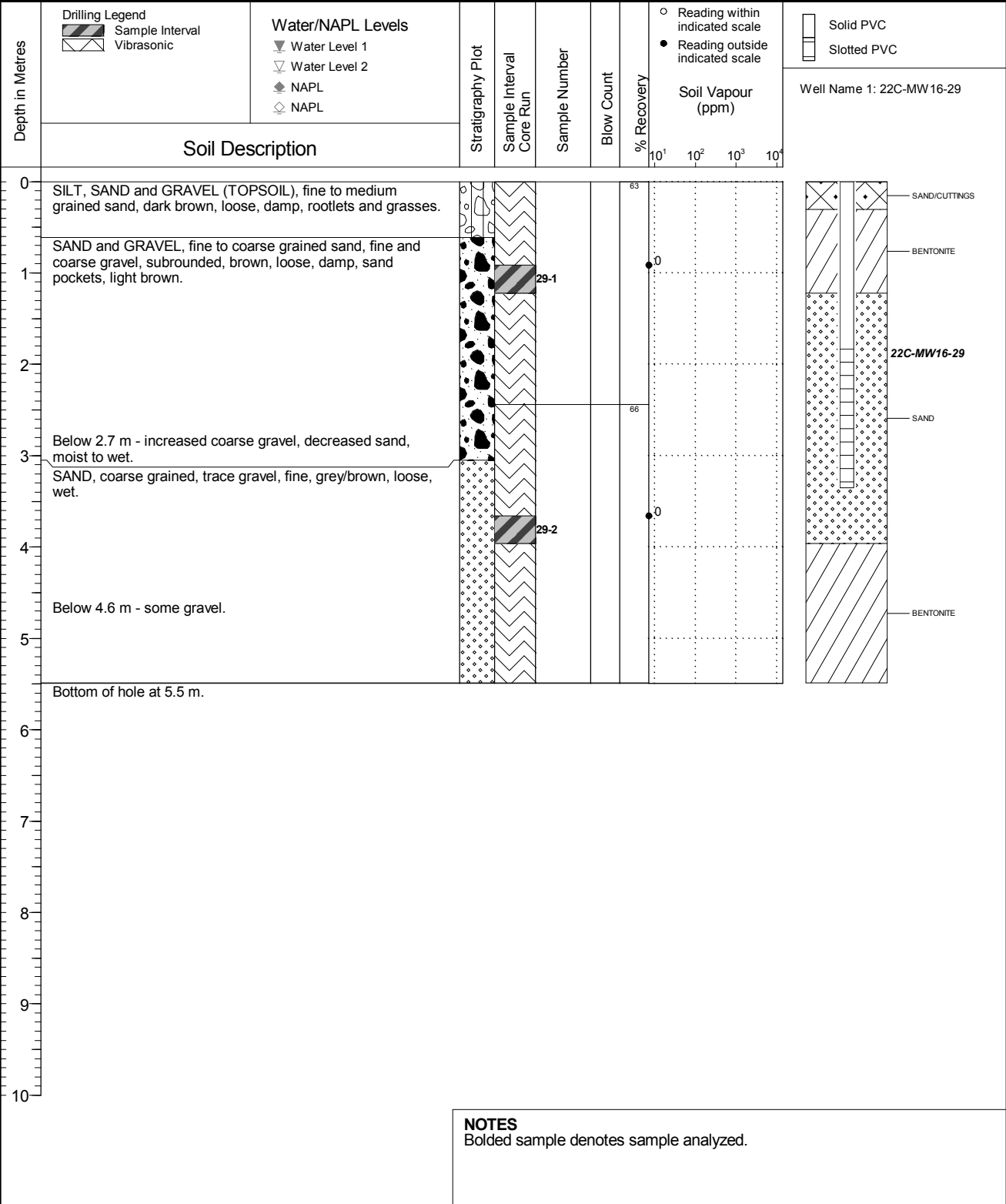
Borehole No. : 22C-BH16-29

PAGE 1 OF 1

Drilling Contractor: Omega Environmental Drilling Ltd.  
Drilling Method: Vibratory Sonic  
Borehole Dia. (m): 0.20  
Pipe/Slotted Pipe Dia. (m): 0.05/0.05

Date Monitored: n/a  
Ground Surface Elev. (m): n/a  
Top of Casing Elev. (m): n/a  
Northing: 6663941.031  
Easting: 509911.360

Project Number: 640752  
Borehole Logged By: MLC  
Date Drilled: 2016 11 02  
Log Typed By: HDM



**NOTES**  
Bolded sample denotes sample analyzed.



Client  
Public Works and Gov't Services Canada

Location  
Watson Lake Airport, Watson Lake, YT

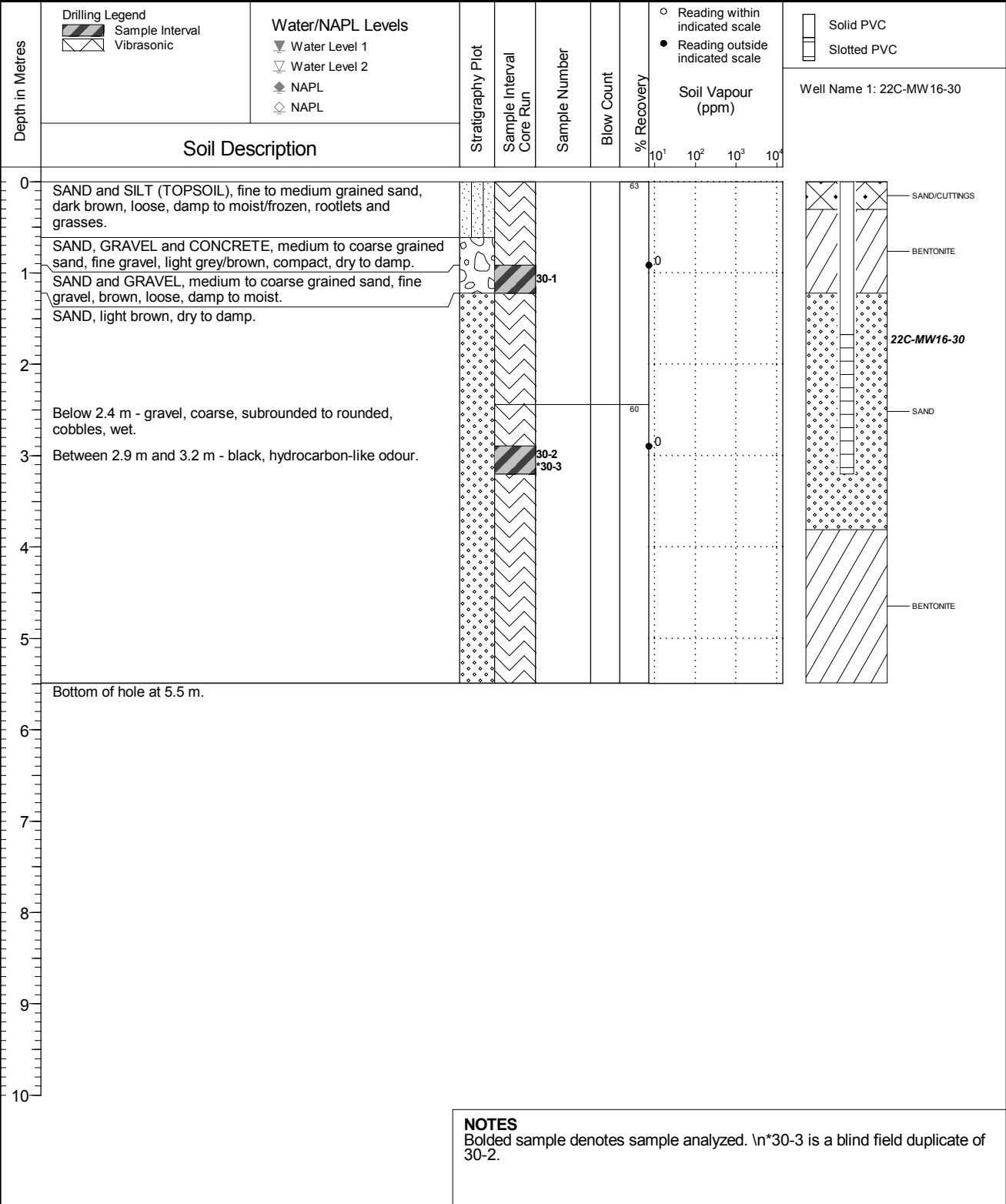
Borehole No. : 22C-BH16-30

PAGE 1 OF 1

Drilling Contractor: Omega Environmental Drilling Ltd.  
Drilling Method: Vibratory Sonic  
Borehole Dia. (m): 0.20  
Pipe/Slotted Pipe Dia. (m): 0.05/0.05

Date Monitored: n/a  
Ground Surface Elev. (m): n/a  
Top of Casing Elev. (m): n/a  
Northing: 6663915.786  
Easting: 509994.686

Project Number: 640752  
Borehole Logged By: MLC  
Date Drilled: 2016 11 02  
Log Typed By: HDM



QA MR 2017 03 22 Print Date: 2017-03-22

**NOTES**  
Bolded sample denotes sample analyzed. \n\*30-3 is a blind field duplicate of 30-2.



Client  
Public Works and Gov't Services Canada

Location  
Watson Lake Airport, Watson Lake, YT

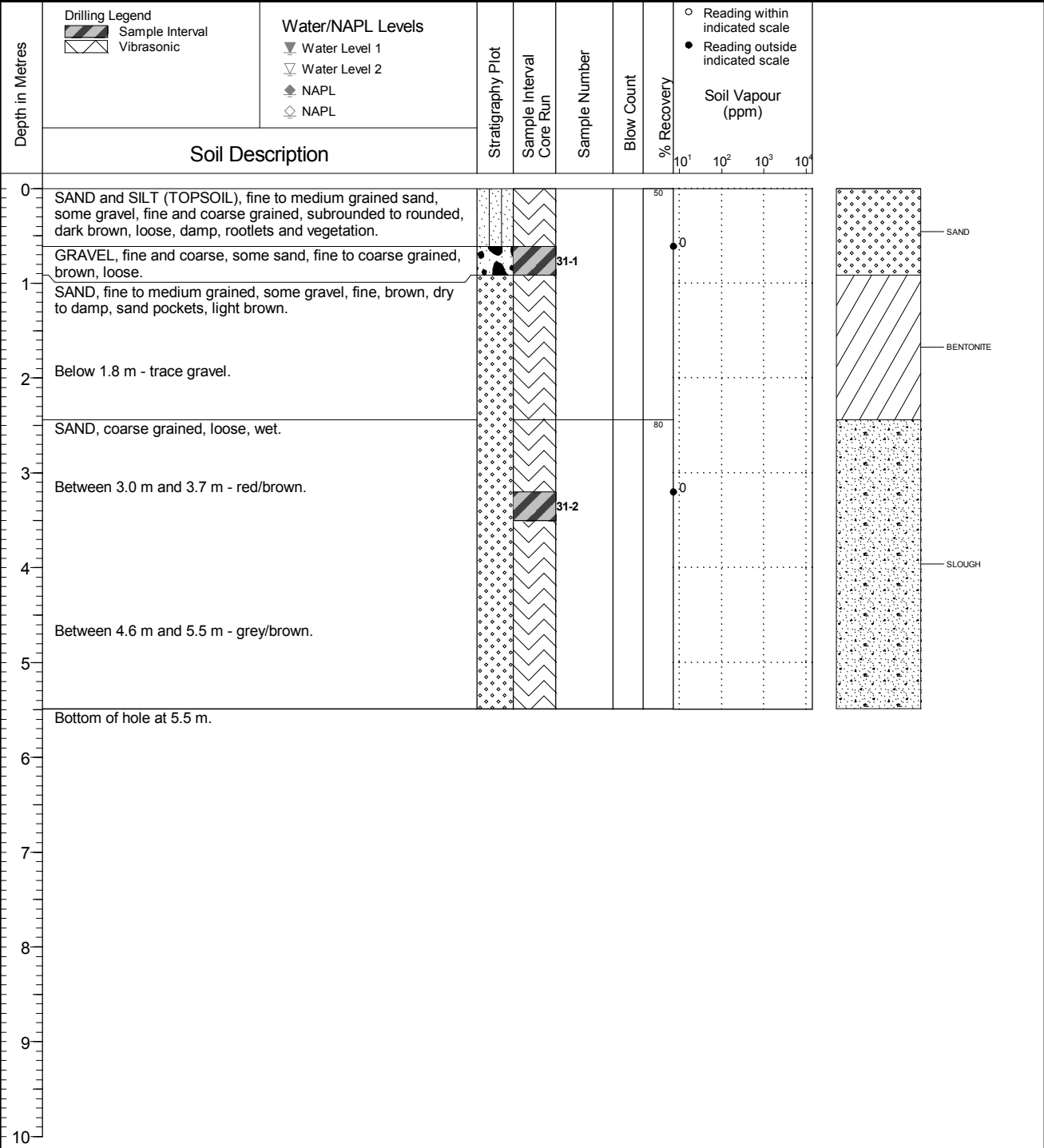
Borehole No. : 22C-BH16-31

PAGE 1 OF 1

Drilling Contractor: Omega Environmental Drilling Ltd.  
Drilling Method: Vibratory Sonic  
Borehole Dia. (m): 0.20  
Pipe/Slotted Pipe Dia. (m): none/none

Date Monitored: n/a  
Ground Surface Elev. (m): n/a  
Top of Casing Elev. (m): n/a  
Northing: 6663883.741  
Easting: 509925.028

Project Number: 640752  
Borehole Logged By: MLC  
Date Drilled: 2016 11 02  
Log Typed By: HDM



**NOTES**  
Bolded sample denotes sample analyzed.



Client  
Public Works and Gov't Services Canada

Location  
Watson Lake Airport, Watson Lake, YT

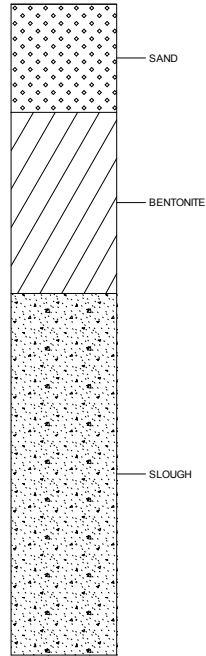
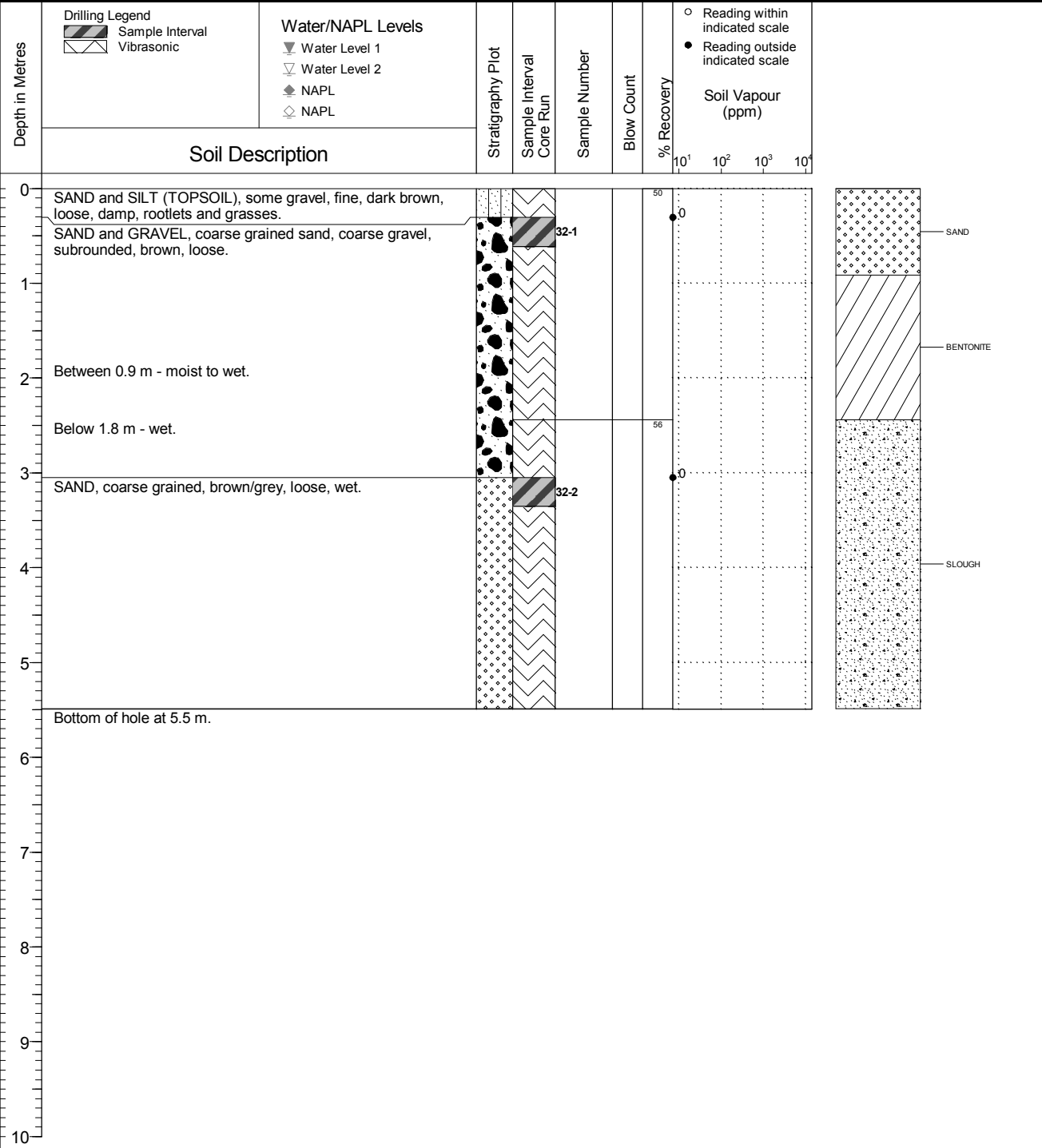
Borehole No. : 22C-BH16-32

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Drilling Contractor: Omega Environmental Drilling Ltd.  
 Drilling Method: Vibratory Sonic  
 Borehole Dia. (m): 0.20  
 Pipe/Slotted Pipe Dia. (m): none/none

Date Monitored: n/a  
 Ground Surface Elev. (m): n/a  
 Top of Casing Elev. (m): n/a  
 Northing: 6663897.080  
 Easting: 509908.076

Project Number: 640752  
 Borehole Logged By: MLC  
 Date Drilled: 2016 11 02  
 Log Typed By: HDM



**NOTES**  
 Bolded sample denotes sample analyzed.



Client  
Public Works and Gov't Services Canada

Location  
Watson Lake Airport, Watson Lake, YT

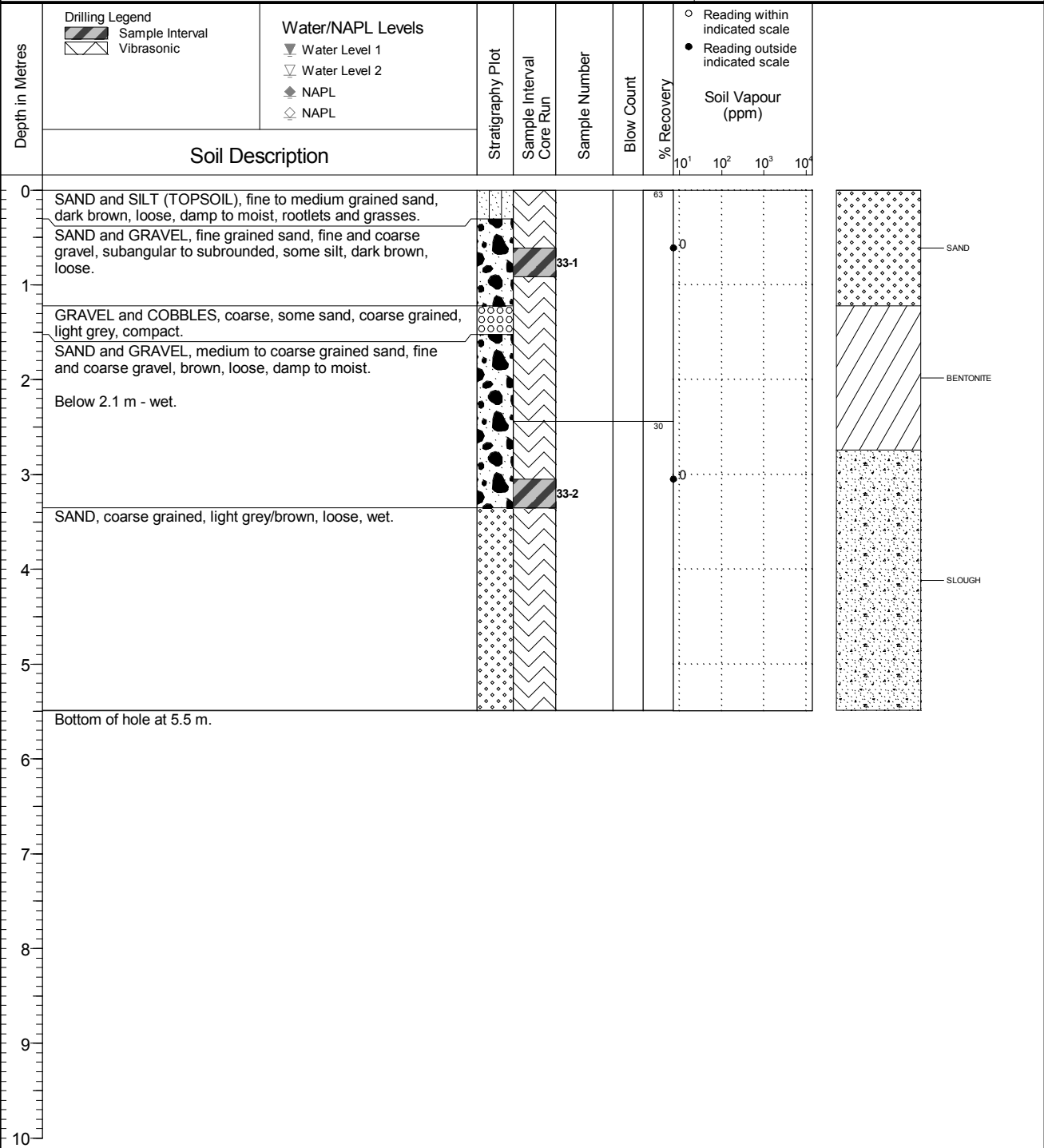
Borehole No. : 22C-BH16-33

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Drilling Contractor: Omega Environmental Drilling Ltd.  
Drilling Method: Vibratory Sonic  
Borehole Dia. (m): 0.20  
Pipe/Slotted Pipe Dia. (m): none/none

Date Monitored: n/a  
Ground Surface Elev. (m): n/a  
Top of Casing Elev. (m): n/a  
Northing: 6663910.887  
Easting: 509849.934

Project Number: 640752  
Borehole Logged By: MLC  
Date Drilled: 2016 11 02  
Log Typed By: HDM



**NOTES**  
Bolded sample denotes sample analyzed.





Client  
Public Works and Gov't Services Canada

Location  
Watson Lake Airport, Watson Lake, YT

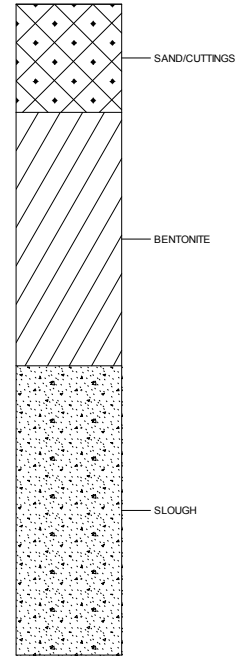
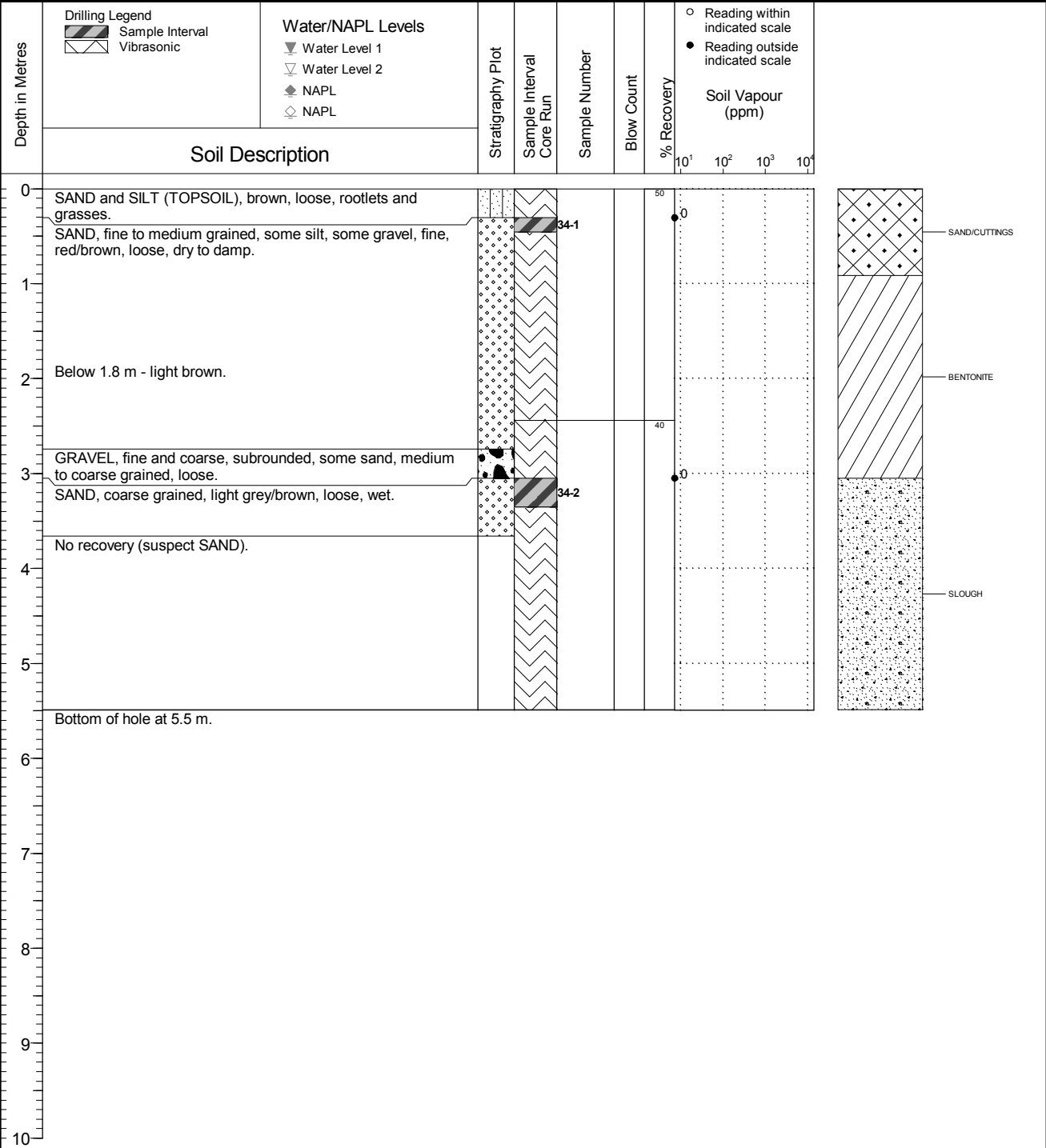
Borehole No. : 22C-BH16-34

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Drilling Contractor: Omega Environmental Drilling Ltd.  
 Drilling Method: Vibratory Sonic  
 Borehole Dia. (m): 0.20  
 Pipe/Slotted Pipe Dia. (m): none/none

Date Monitored: n/a  
 Ground Surface Elev. (m): n/a  
 Top of Casing Elev. (m): n/a  
 Northing: 6663921.650  
 Easting: 509822.895

Project Number: 640752  
 Borehole Logged By: MLC  
 Date Drilled: 2016 11 02  
 Log Typed By: HDM



**NOTES**  
 Bolded sample denotes sample analyzed.



Client  
Public Works and Gov't Services Canada

Location  
Watson Lake Airport, Watson Lake, YT

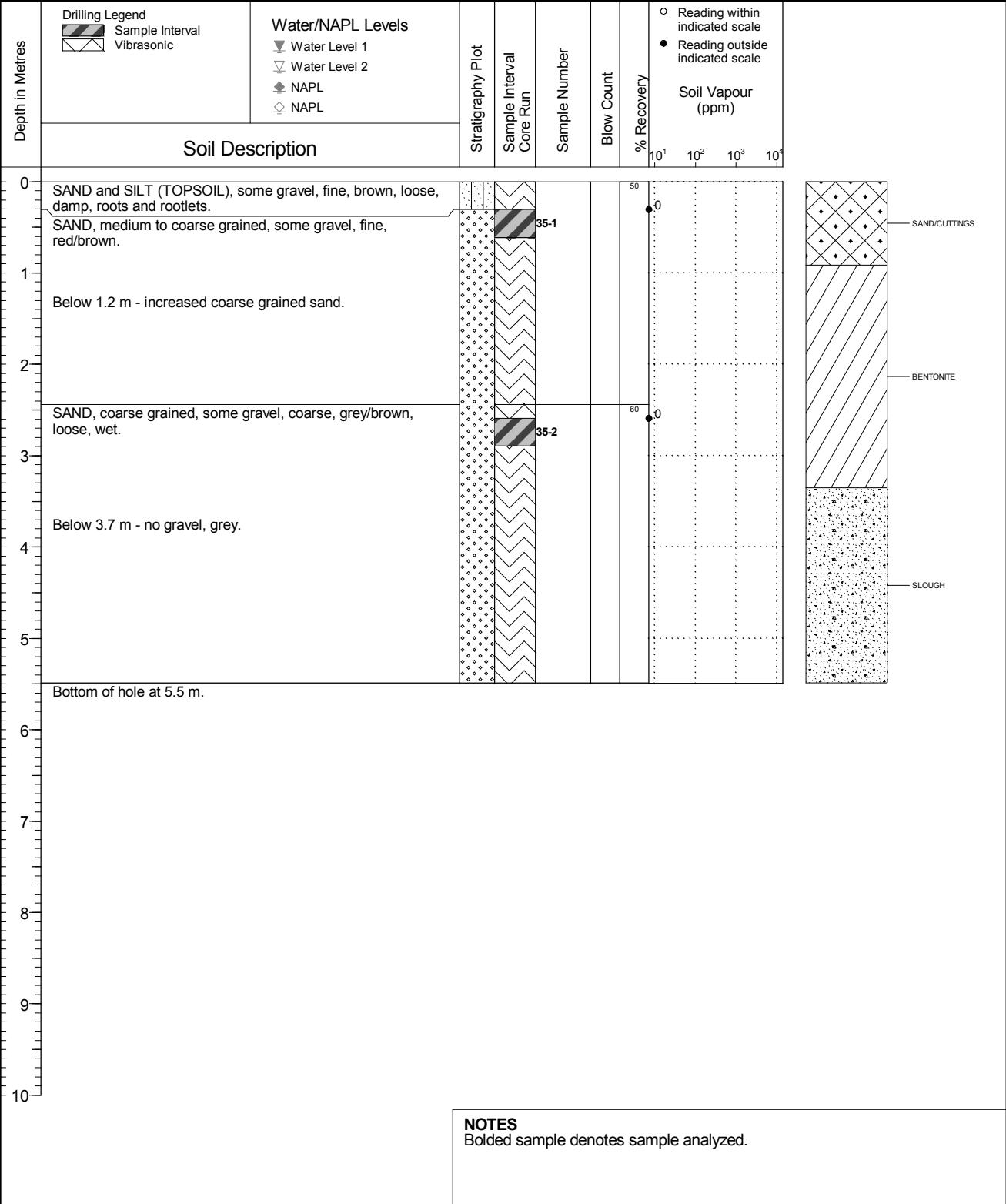
Borehole No. : 22C-BH16-35

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Drilling Contractor: Omega Environmental Drilling Ltd.  
Drilling Method: Vibratory Sonic  
Borehole Dia. (m): 0.20  
Pipe/Slotted Pipe Dia. (m): none/none

Date Monitored: n/a  
Ground Surface Elev. (m): n/a  
Top of Casing Elev. (m): n/a  
Northing: 6663879.238  
Easting: 509748.821

Project Number: 640752  
Borehole Logged By: MLC  
Date Drilled: 2016 11 02  
Log Typed By: HDM



**NOTES**  
Bolded sample denotes sample analyzed.



Client  
Public Works and Gov't Services Canada

Location  
Watson Lake Airport, Watson Lake, YT

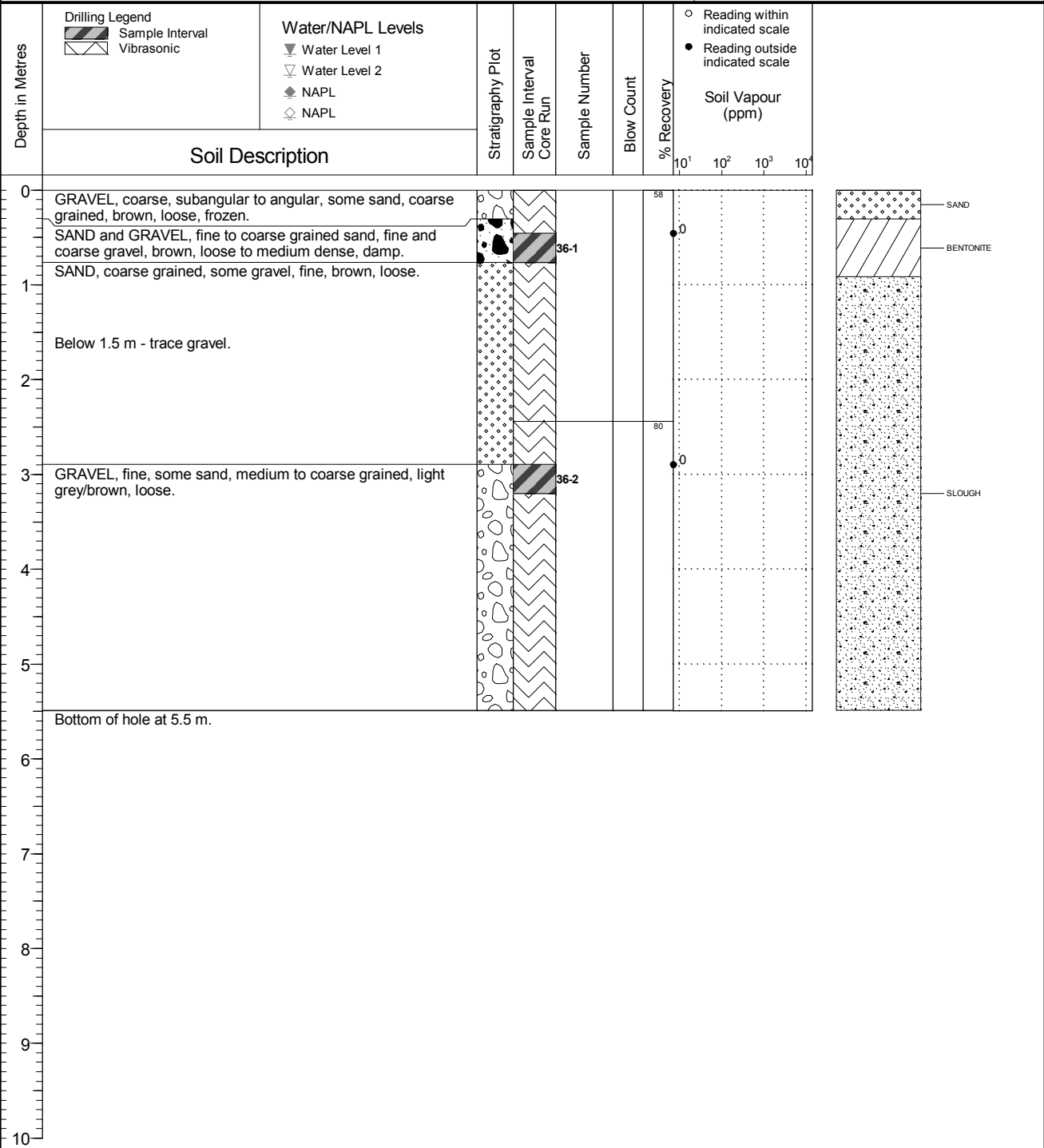
Borehole No. : 22C-BH16-36

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Drilling Contractor: Omega Environmental Drilling Ltd.  
 Drilling Method: Vibratory Sonic  
 Borehole Dia. (m): 0.20  
 Pipe/Slotted Pipe Dia. (m): none/none

Date Monitored: n/a  
 Ground Surface Elev. (m): n/a  
 Top of Casing Elev. (m): n/a  
 Northing: 6663850.483  
 Easting: 509725.305

Project Number: 640752  
 Borehole Logged By: MLC  
 Date Drilled: 2016 11 03  
 Log Typed By: HDM



**NOTES**  
 Bolded sample denotes sample analyzed.



Client  
Public Works and Gov't Services Canada

Location  
Watson Lake Airport, Watson Lake, YT

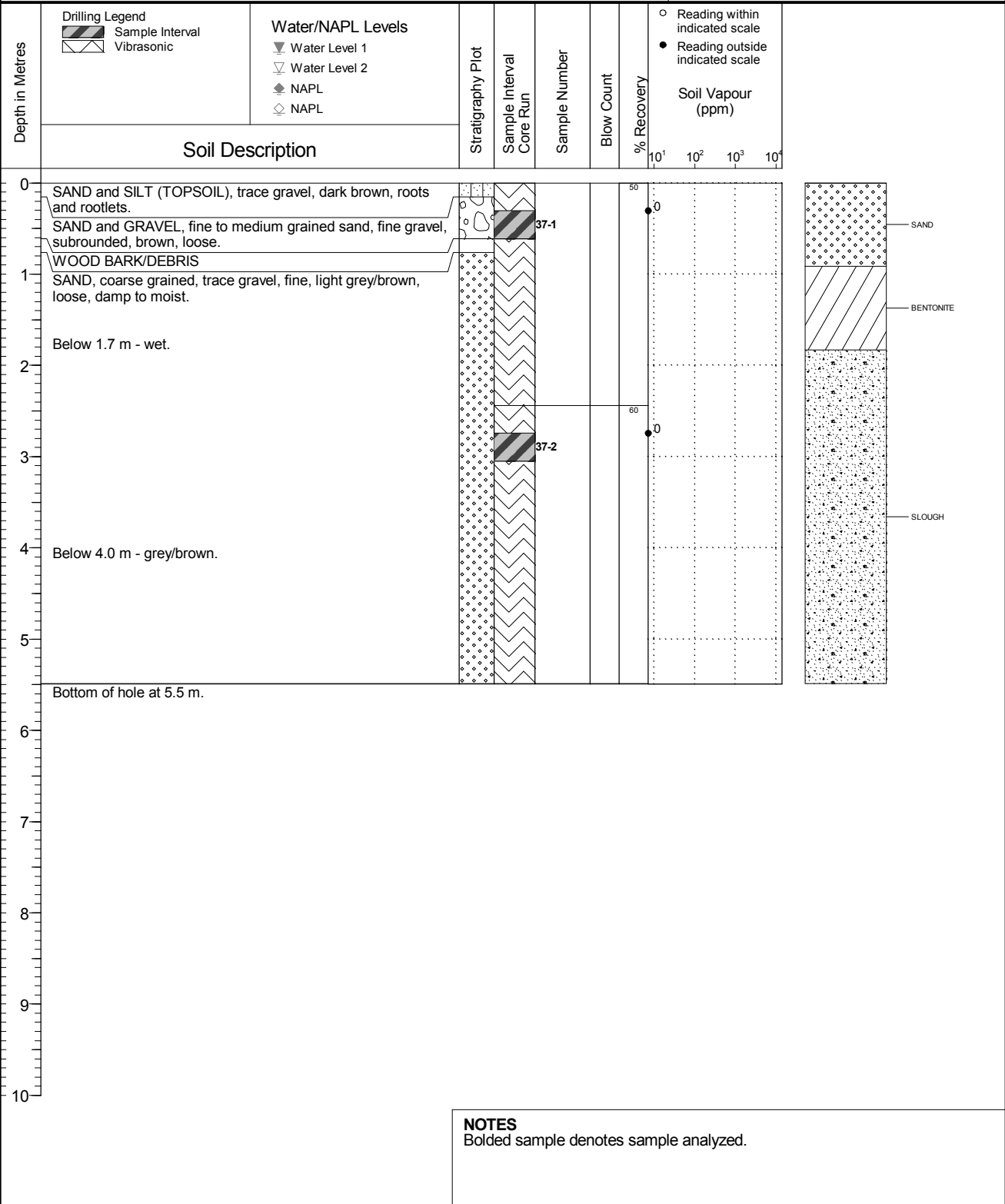
Borehole No. : 22C-BH16-37

PAGE 1 OF 1

Drilling Contractor: Omega Environmental Drilling Ltd.  
Drilling Method: Vibratory Sonic  
Borehole Dia. (m): 0.20  
Pipe/Slotted Pipe Dia. (m): none/none

Date Monitored: n/a  
Ground Surface Elev. (m): n/a  
Top of Casing Elev. (m): n/a  
Northing: 6663836.938  
Easting: 509770.407

Project Number: 640752  
Borehole Logged By: MLC  
Date Drilled: 2016 11 03  
Log Typed By: HDM



**NOTES**  
Bolded sample denotes sample analyzed.



Client  
Public Works and Gov't Services Canada

Location  
Watson Lake Airport, Watson Lake, YT

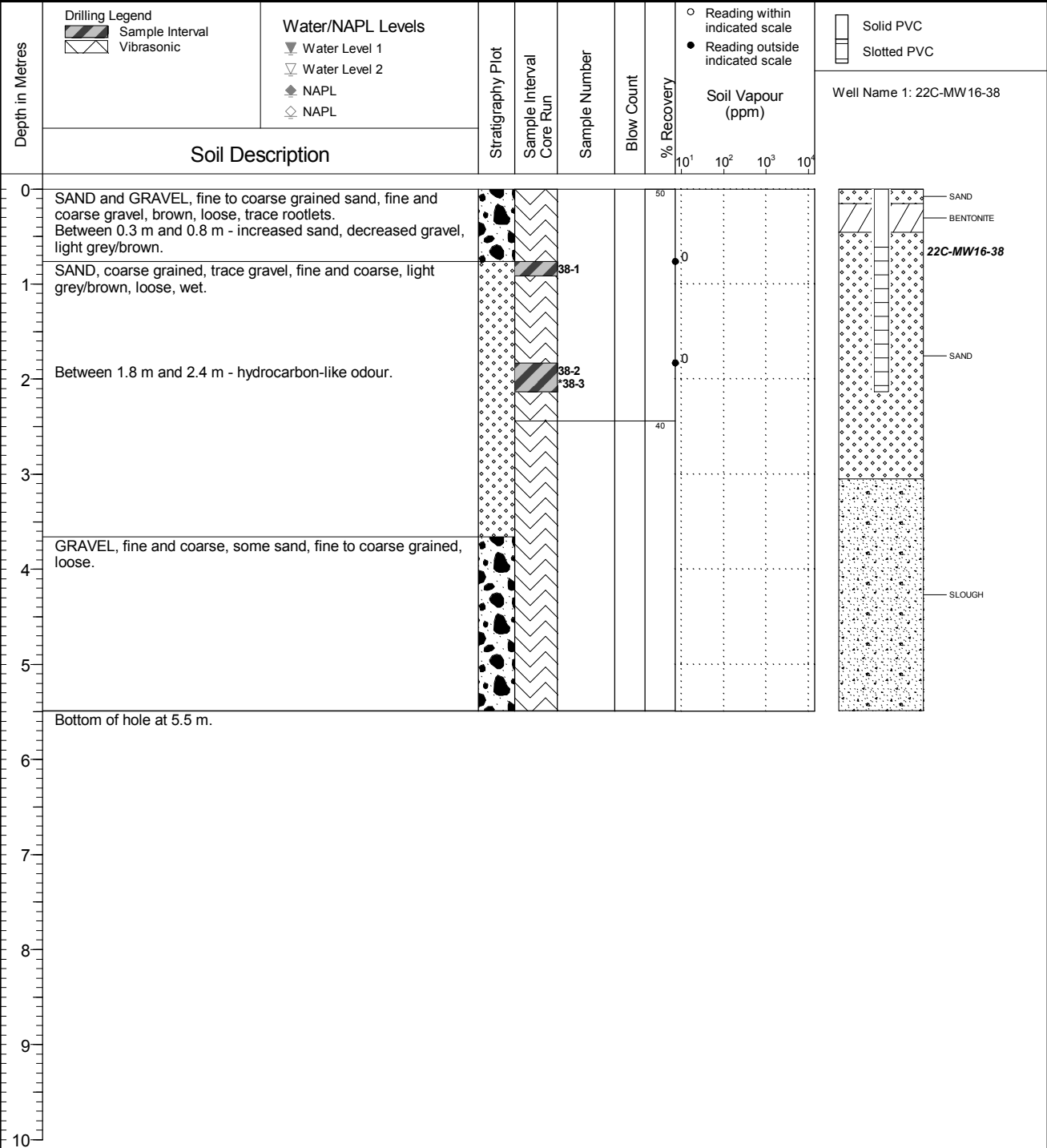
Borehole No. : 22C-BH16-38

PAGE 1 OF 1

Drilling Contractor: Omega Environmental Drilling Ltd.  
Drilling Method: Vibratory Sonic  
Borehole Dia. (m): 0.20  
Pipe/Slotted Pipe Dia. (m): 0.05/0.05

Date Monitored: n/a  
Ground Surface Elev. (m): n/a  
Top of Casing Elev. (m): n/a  
Northing: 6663826.153  
Easting: 509837.220

Project Number: 640752  
Borehole Logged By: MLC  
Date Drilled: 2016 11 03  
Log Typed By: HDM



**NOTES**  
 Bolded sample denotes sample analyzed. \n\*38-3 is a blind field duplicate of 38-2.



Client  
Public Works and Gov't Services Canada

Location  
Watson Lake Airport, Watson Lake, YT

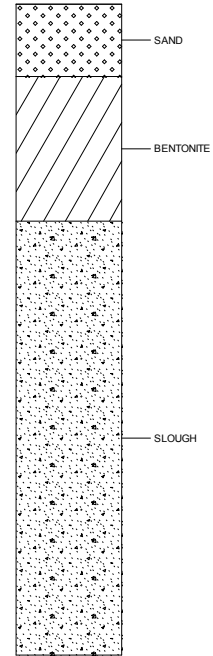
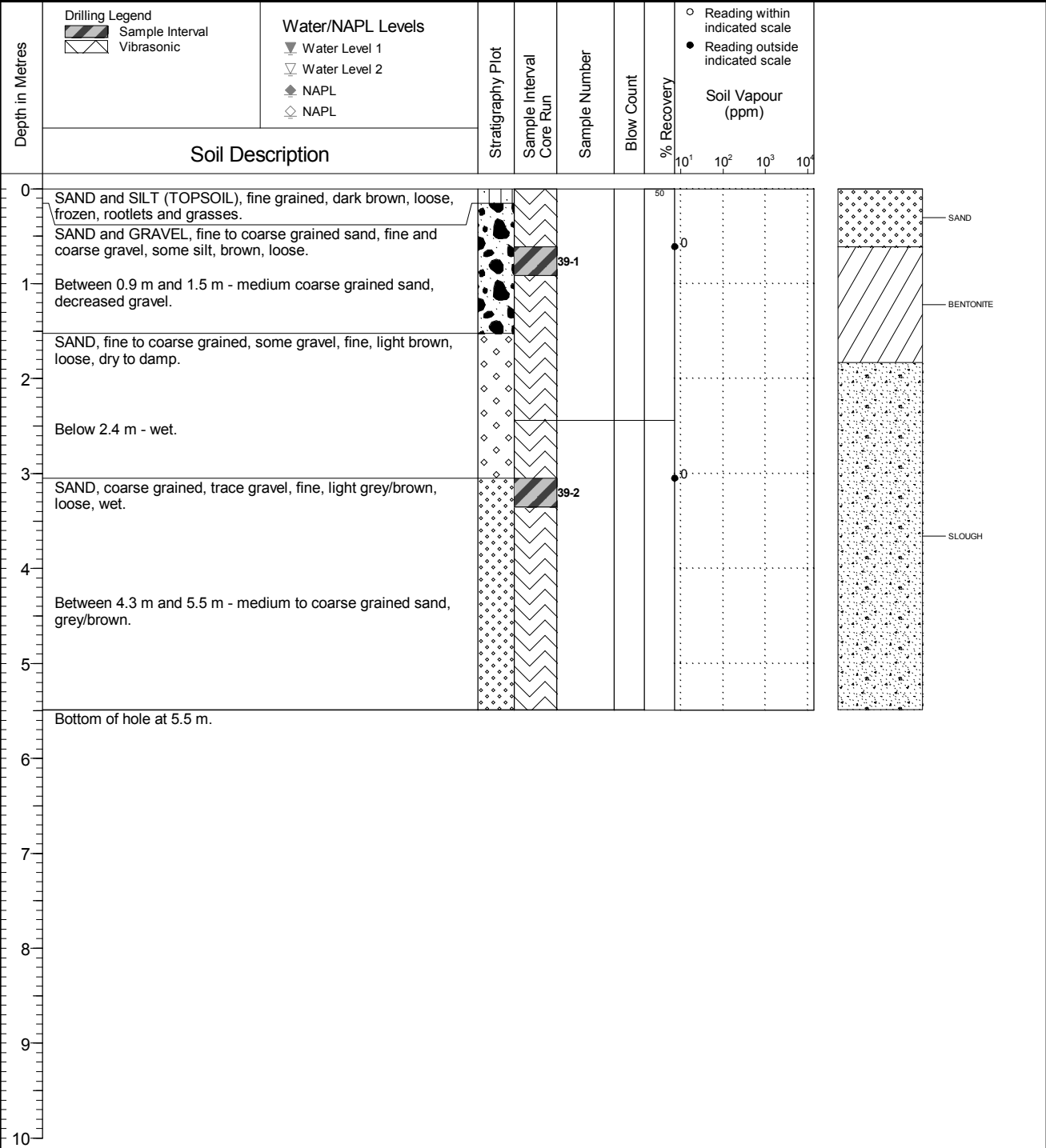
Borehole No. : 22C-BH16-39

PAGE 1 OF 1

Drilling Contractor: Omega Environmental Drilling Ltd.  
Drilling Method: Vibratory Sonic  
Borehole Dia. (m): 0.20  
Pipe/Slotted Pipe Dia. (m): none/none

Date Monitored: n/a  
Ground Surface Elev. (m): n/a  
Top of Casing Elev. (m): n/a  
Northing: 6663851.884  
Easting: 509989.284

Project Number: 640752  
Borehole Logged By: MLC  
Date Drilled: 2016 11 03  
Log Typed By: HDM



**NOTES**  
Bolded sample denotes sample analyzed.



Client  
Public Works and Gov't Services Canada

Location  
Watson Lake Airport, Watson Lake, YT

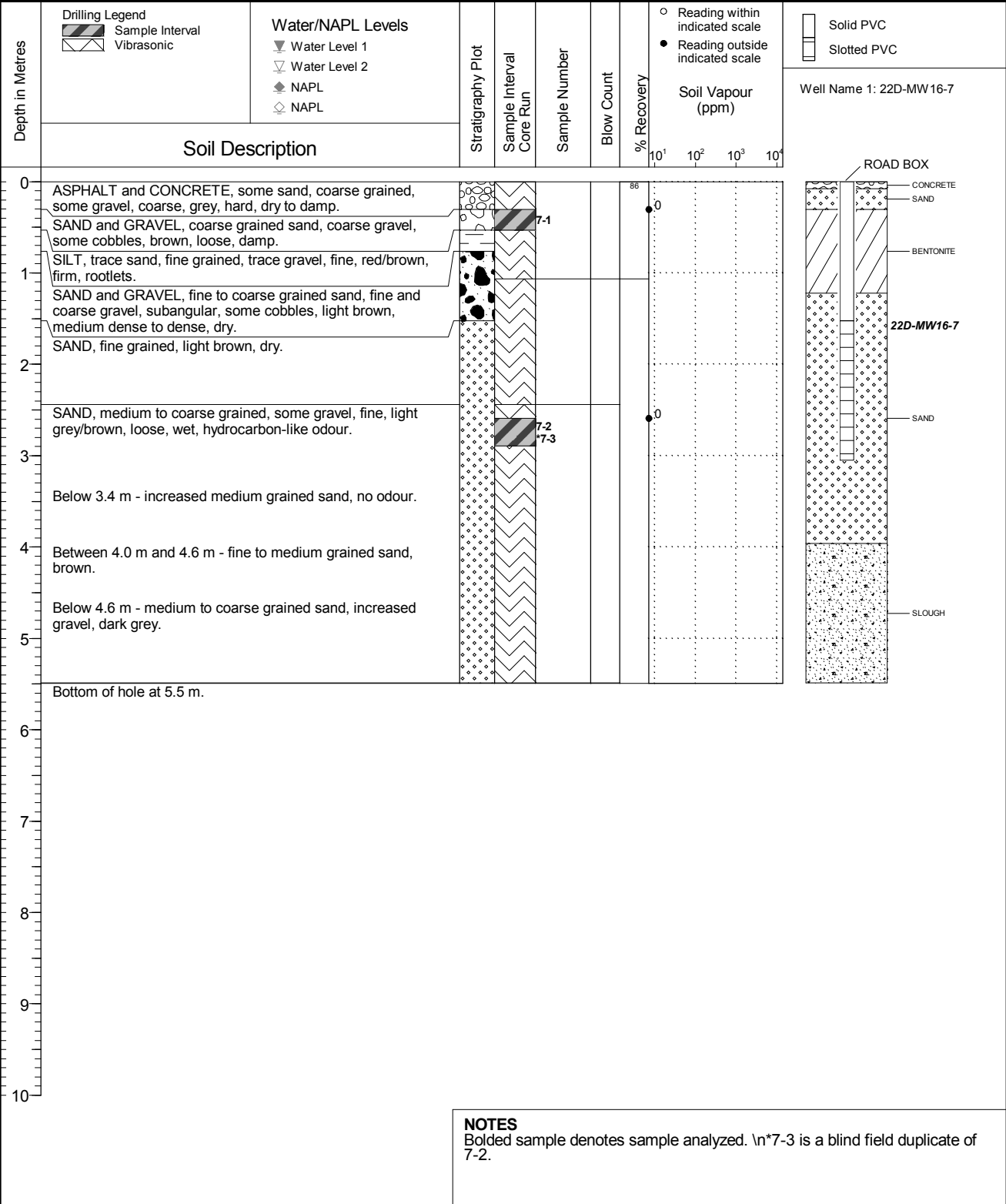
Borehole No. : 22D-BH16-7

PAGE 1 OF 1

Drilling Contractor: Omega Environmental Drilling Ltd.  
Drilling Method: Vibratory Sonic  
Borehole Dia. (m): 0.20  
Pipe/Slotted Pipe Dia. (m): 0.05/0.05

Date Monitored: n/a  
Ground Surface Elev. (m): n/a  
Top of Casing Elev. (m): n/a  
Northing: 6664023.265  
Easting: 510037.975

Project Number: 640752  
Borehole Logged By: MLC  
Date Drilled: 2016 11 05  
Log Typed By: HDM



**NOTES**  
Bolded sample denotes sample analyzed. \n\*7-3 is a blind field duplicate of 7-2.



Client  
Public Works and Gov't Services Canada

Location  
Watson Lake Airport, Watson Lake, YT

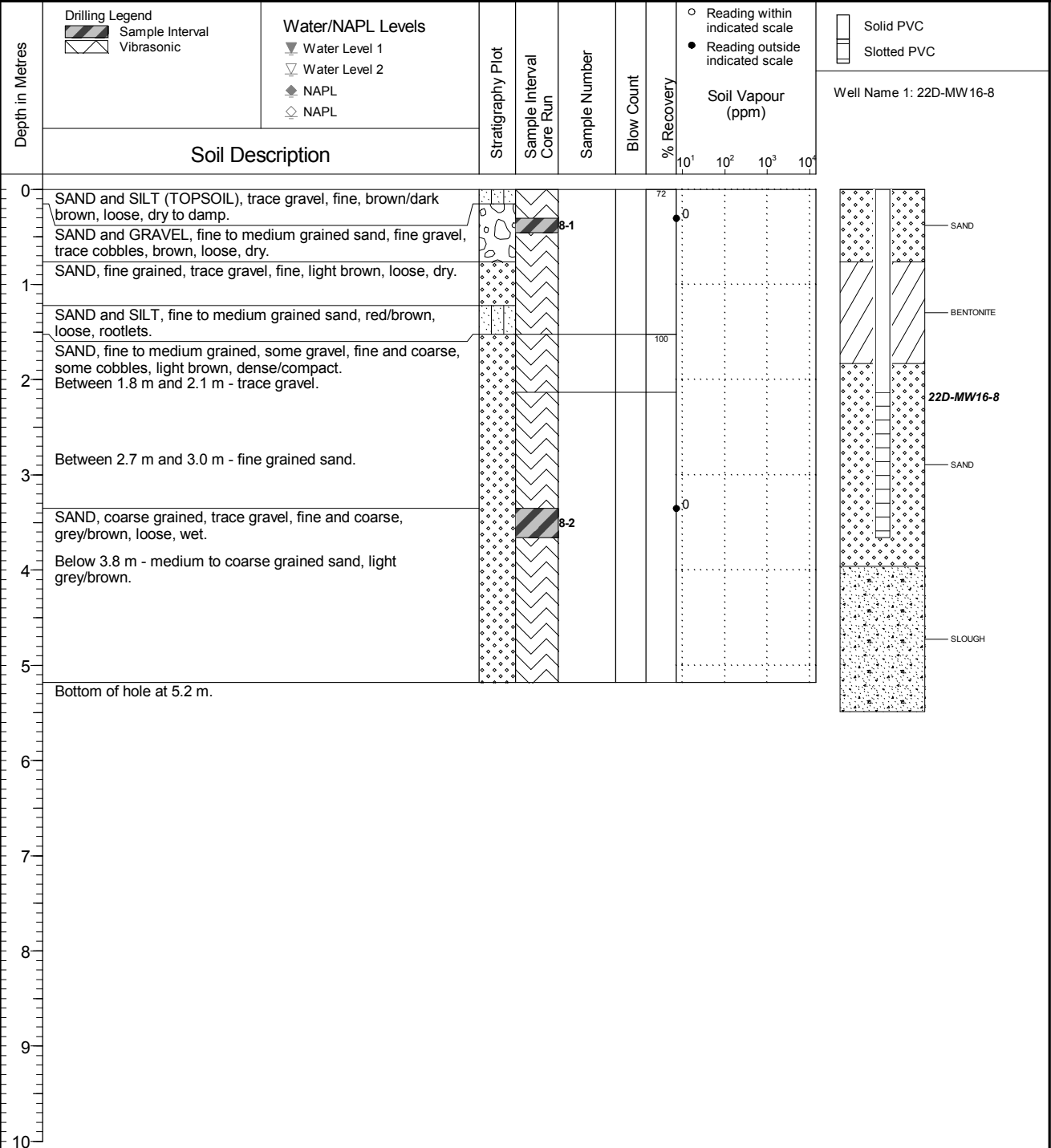
Borehole No. : 22D-BH16-8

PAGE 1 OF 1

Drilling Contractor: Omega Environmental Drilling Ltd.  
 Drilling Method: Vibratory Sonic  
 Borehole Dia. (m): 0.20  
 Pipe/Slotted Pipe Dia. (m): 0.05/0.05

Date Monitored: n/a  
 Ground Surface Elev. (m): n/a  
 Top of Casing Elev. (m): n/a  
 Northing: 6664012.305  
 Easting: 510062.241

Project Number: 640752  
 Borehole Logged By: MLC  
 Date Drilled: 2016 11 04  
 Log Typed By: HDM



**NOTES**  
 Bolded sample denotes sample analyzed.





Client  
Public Works and Gov't Services Canada

Location  
Watson Lake Airport, Watson Lake, YT

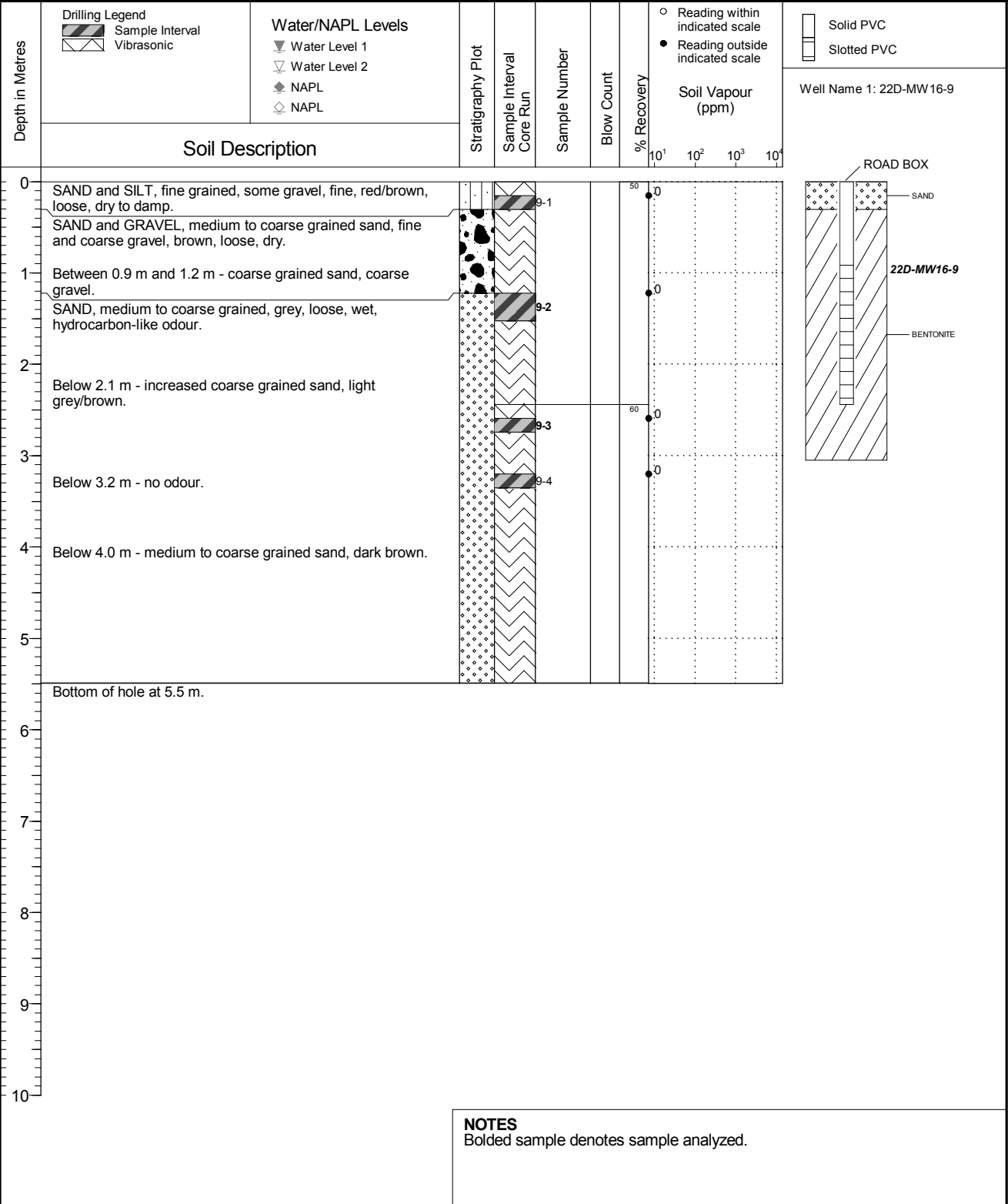
Borehole No. : 22D-BH16-9

PAGE 1 OF 1

Drilling Contractor: Omega Environmental Drilling Ltd.  
Drilling Method: Vibratory Sonic  
Borehole Dia. (m): 0.20  
Pipe/Slotted Pipe Dia. (m): 0.05/0.05

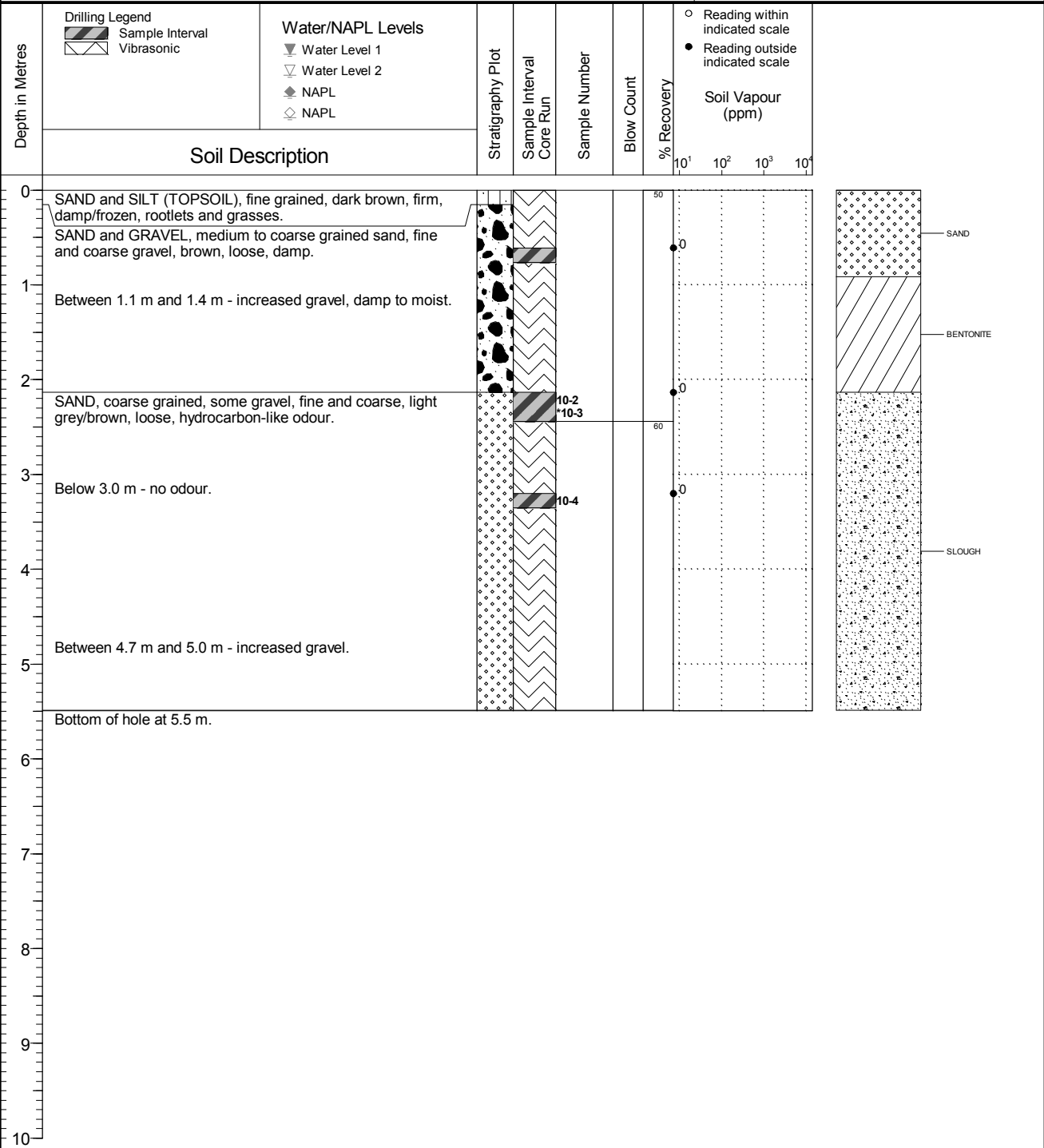
Date Monitored: n/a  
Ground Surface Elev. (m): n/a  
Top of Casing Elev. (m): n/a  
Northing: 6663969.901  
Easting: 510072.363

Project Number: 640752  
Borehole Logged By: MLC  
Date Drilled: 2016 11 05  
Log Typed By: HDM



**NOTES**  
Bolded sample denotes sample analyzed.

Drilling Contractor: Omega Environmental Drilling Ltd.	Date Monitored: n/a	Project Number: 640752
Drilling Method: Vibratory Sonic	Ground Surface Elev. (m): n/a	Borehole Logged By: MLC
Borehole Dia. (m): 0.20	Top of Casing Elev. (m): n/a	Date Drilled: 2016 11 05
Pipe/Slotted Pipe Dia. (m): none/none	Northing: 6663925.903	Easting: 510070.037
		Log Typed By: HDM



**NOTES**  
 Bolded sample denotes sample analyzed. \n\*10-3 is a blind field duplicate of 10-2.



Client  
Public Works and Gov't Services Canada

Location  
Watson Lake Airport, Watson Lake, YT

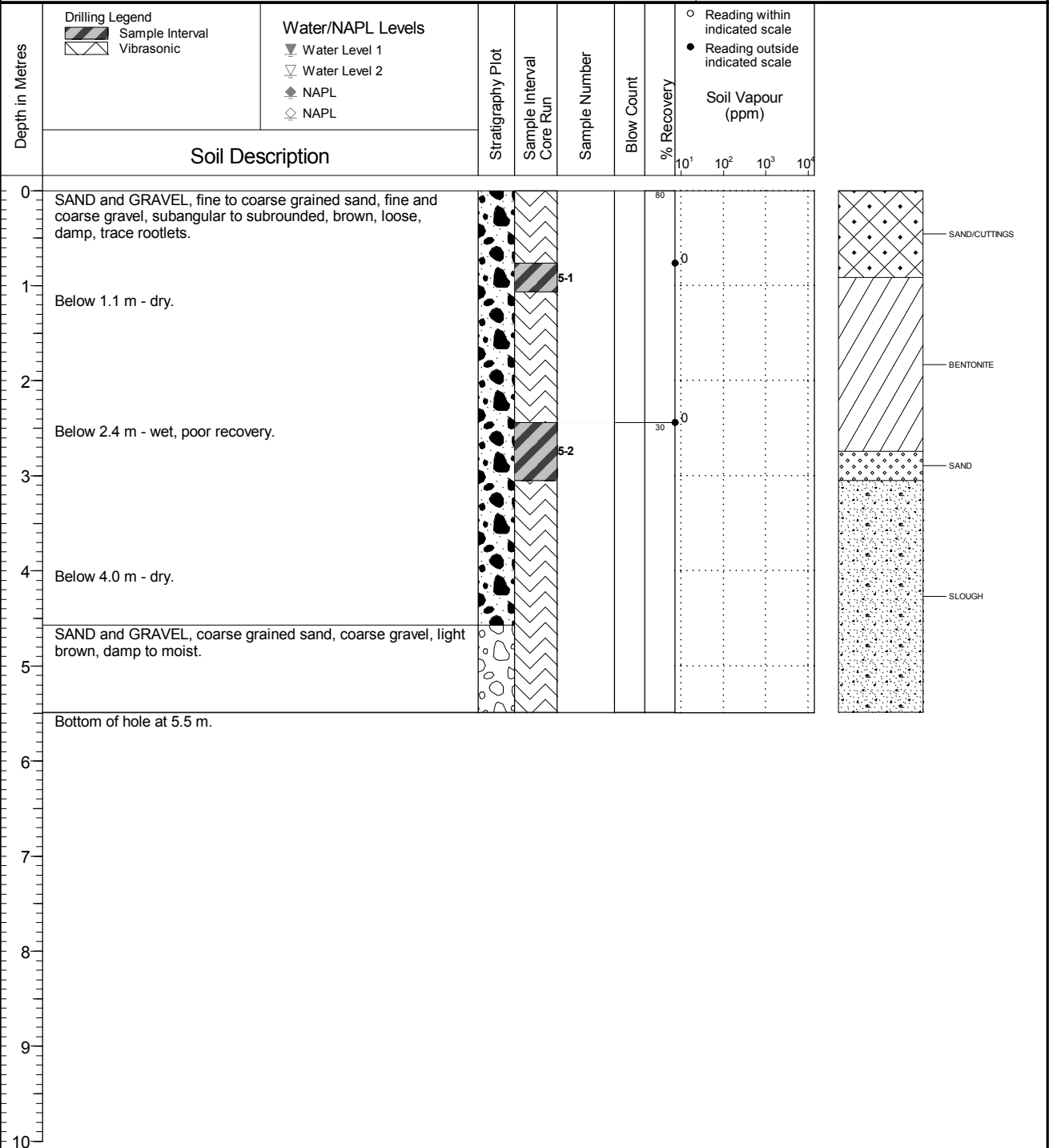
Borehole No. : 22E-BH16-5

PAGE 1 OF 1

Drilling Contractor: Omega Environmental Drilling Ltd.  
Drilling Method: Vibratory Sonic  
Borehole Dia. (m): 0.20  
Pipe/Slotted Pipe Dia. (m): none/none

Date Monitored: n/a  
Ground Surface Elev. (m): n/a  
Top of Casing Elev. (m): n/a  
Northing: 6664163.407  
Easting: 509762.945

Project Number: 640752  
Borehole Logged By: MLC  
Date Drilled: 2016 11 01  
Log Typed By: HDM



**NOTES**  
Bolded sample denotes sample analyzed.



Client  
Public Works and Gov't Services Canada

Location  
Watson Lake Airport, Watson Lake, YT

Borehole No. : 22E-BH16-6

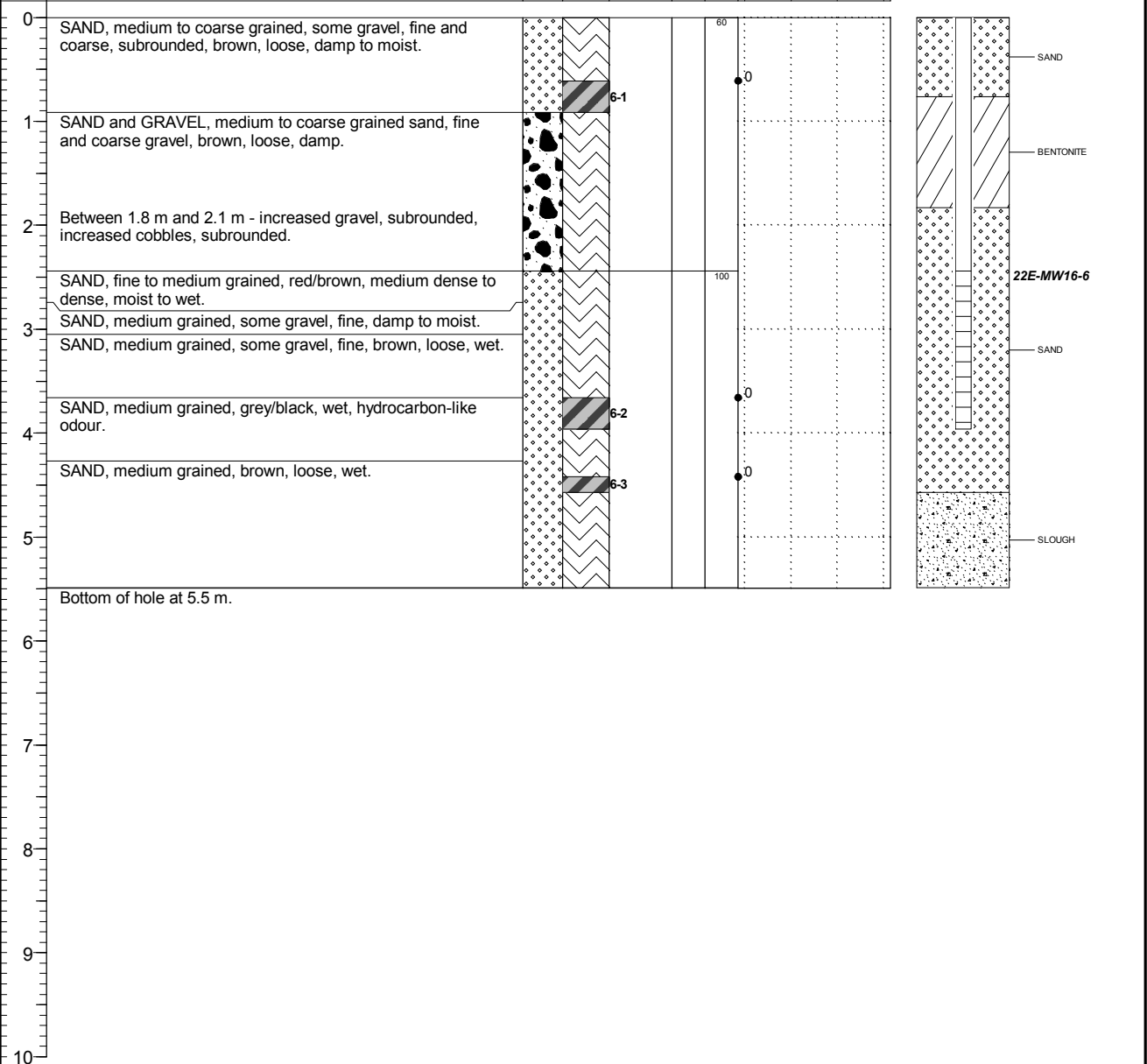
PAGE 1 OF 1

Drilling Contractor: Omega Environmental Drilling Ltd.  
Drilling Method: Vibratory Sonic  
Borehole Dia. (m): 0.20  
Pipe/Slotted Pipe Dia. (m): 0.05/0.05

Date Monitored: n/a  
Ground Surface Elev. (m): n/a  
Top of Casing Elev. (m): n/a  
Northing: 6664171.068  
Easting: 509779.937

Project Number: 640752  
Borehole Logged By: MLC  
Date Drilled: 2016 11 01  
Log Typed By: HDM

Depth in Metres	<b>Drilling Legend</b> Sample Interval Vibrasonic	<b>Water/NAPL Levels</b> Water Level 1 Water Level 2 NAPL NAPL	Stratigraphy Plot	Sample Interval Core Run	Sample Number	Blow Count	% Recovery	○ Reading within indicated scale ● Reading outside indicated scale	Solid PVC Slotted PVC
	Soil Description							Soil Vapour (ppm)	Well Name 1: 22E-MW16-6



**NOTES**  
 Bolded sample denotes sample analyzed.



# Appendix II:

Groundwater Monitoring Report



## MONITORING REPORT

# SNC • LAVALIN

Project No.: 631841  
Date: 2016-10-19  
Observer: MLC  
Weather:  
Time: 10:00:00  
Approved by:

Public Works and Gov't Services Canada  
Watson Lake Airport  
Watson Lake, YT

Monitoring Well No.	Reference Elevation <sup>1</sup> (m)	Depth to NAPL <sup>2</sup> (m)	Apparent NAPL Thickness <sup>3</sup> (mm)	Depth to Water (m)	Potentiometric Elevation <sup>3</sup> (m)	Depth to Bottom (m)	Calculated Vapour Conc. <sup>4</sup> (ppm)	Time	Comments
<b>AEC 22A</b>									
MW09-22A-15	-	-	0	1.760	-	4.16	-	10:45	2016 11 02
MW09-22A-20	-	-	0	1.575	-	2.46	-	10:00	2016 11 02
<b>AEC 22B</b>									
MW09-22B-7	683.396	-	0	2.210	681.19	4.15	-	9:45	2016 11 06

<sup>1</sup> Reference Elevation is a mark on the rim of the monitoring well standpipe surveyed with respect to Geodetic Datum.

<sup>2</sup> Non-Aqueous Phase Liquid

<sup>3</sup> NAPL specific gravity assumed to be 0.8

<sup>4</sup> 1% LEL is approximately equivalent to 110 ppm.



## MONITORING REPORT

# SNC • LAVALIN

Project No.: 640752  
Date: 2016-12-14  
Observer: MLC  
Weather:  
Time: 09:15:00  
Approved by:

Public Works and Gov't Services Canada  
Watson Lake Airport  
Watson Lake, YT

Monitoring Well No.	Reference Elevation <sup>1</sup> (m)	Depth to NAPL <sup>2</sup> (m)	Apparent NAPL Thickness <sup>3</sup> (mm)	Depth to Water (m)	Potentiometric Elevation <sup>3</sup> (m)	Depth to Bottom (m)	Calculated Vapour Conc. <sup>4</sup> (ppm)	Time	Comments
<b>AEC 22A</b>									
22A-MW16-25	-	-	0	2.545	-	3.14	-	10:08	
22A-MW16-30	-	-	0	2.075	-	3.50	-	11:15	
22A-MW16-32	-	-	0	3.111	-	4.36	-	12:27	
<b>AEC 22B</b>									
22B-MW16-9	-	-	0	2.700	-	3.76	-	13:10	
<b>APEC 22C</b>									
22C-MW16-38	-	-	0	1.745	-	3.06	-	14:38	
22C-MW16-26	-	-	0	2.075	-	3.24	0	10:07	2016 12 15
22C-MW16-29	-	-	0	2.320	-	3.36	0	11:17	2016 12 15
22C-MW16-30	-	-	0	1.710	-	3.24	0	12:05	2016 12 15
<b>AEC 22D</b>									
22D-MW16-7	-	-	0	1.635	-	3.02	0	10:26	2016 12 16
22D-MW16-8	-	-	0	3.809	-	4.68	0	11:37	2016 12 16
22D-MW16-9	-	-	0	1.295	-	2.31	0	12:29	2016 12 16
<b>APEC 22E</b>									
22E-MW16-6	-	-	0	2.770	-	3.93	0	13:52	2016 12 15

<sup>1</sup> Reference Elevation is a mark on the rim of the monitoring well standpipe surveyed with respect to Geodetic Datum.

<sup>2</sup> Non-Aqueous Phase Liquid

<sup>3</sup> NAPL specific gravity assumed to be 0.8

<sup>4</sup> 1% LEL is approximately equivalent to 110 ppm.

---

# Appendix III:

Laboratory Reports



Your P.O. #: 700365225  
 Your Project #: 640752  
 Site#: AEC 22B  
 Site Location: Watson Lake Airport  
 Your C.O.C. #: 508615-15-01

**Attention: Michael Chao**

SNC LAVALIN ENVIRONMENT INC.  
 8648 COMMERCE COURT  
 BURNABY, BC  
 CANADA V5A 4N6

**Report Date: 2016/11/16**

Report #: R2301618

Version: 1 - Final

**CERTIFICATE OF ANALYSIS**

**MAXXAM JOB #: B6A0649**

**Received: 2016/11/08, 09:30**

Sample Matrix: GROUND WATER  
 # Samples Received: 1

Analyses	Date		Laboratory Method	Analytical Method
	Quantity	Extracted		
Hardness (calculated as CaCO3)	1	N/A	2016/11/16 BBY WI-00033	Auto Calc
Na, K, Ca, Mg, S by CRC ICPMS (diss.)	1	N/A	2016/11/16 BBY7SOP-00002	EPA 6020A R1 m
Elements by CRC ICPMS (dissolved)	1	N/A	2016/11/16 BBY7SOP-00002	EPA 6020B R2 m
Filter and HNO3 Preserve for Metals	1	N/A	2016/11/16 BBY7 WI-00004	BCMOC Reqs 08/14

**Remarks:**

Maxxam Analytics' laboratories are accredited to ISO/IEC 17025:2005 for specific parameters on scopes of accreditation. Unless otherwise noted, procedures used by Maxxam are based upon recognized Provincial, Federal or US method compendia such as CCME, MDDELCC, EPA, APHA.

All work recorded herein has been done in accordance with procedures and practices ordinarily exercised by professionals in Maxxam's profession using accepted testing methodologies, quality assurance and quality control procedures (except where otherwise agreed by the client and Maxxam in writing). All data is in statistical control and has met quality control and method performance criteria unless otherwise noted. All method blanks are reported: unless indicated otherwise, associated sample data are not blank corrected.

Maxxam Analytics' liability is limited to the actual cost of the requested analyses, unless otherwise agreed in writing. There is no other warranty expressed or implied. Maxxam has been retained to provide analysis of samples provided by the Client using the testing methodology referenced in this report. Interpretation and use of test results are the sole responsibility of the Client and are not within the scope of services provided by Maxxam, unless otherwise agreed in writing.

Solid sample results, except biota, are based on dry weight unless otherwise indicated. Organic analyses are not recovery corrected except for isotope dilution methods. Results relate to samples tested.

This Certificate shall not be reproduced except in full, without the written approval of the laboratory.

Reference Method suffix "m" indicates test methods incorporate validated modifications from specific reference methods to improve performance.

\* RPDs calculated using raw data. The rounding of final results may result in the apparent difference.

**Encryption Key**

Please direct all questions regarding this Certificate of Analysis to your Project Manager.  
 Samantha Fregien, Project Manager  
 Email: SFregien@maxxam.ca  
 Phone# (604)639-8418

Maxxam has procedures in place to guard against improper use of the electronic signature and have the required "signatories", as per section 5.10.2 of ISO/IEC 17025:2005(E), signing the reports. For Service Group specific validation please refer to the Validation Signature Page.

Maxxam Job #: B6A0649  
Report Date: 2016/11/16

SNC LAVALIN ENVIRONMENT INC.  
Client Project #: 640752  
Site Location: Watson Lake Airport  
Your P.O. #: 700365225  
Sampler Initials: JC

**RESULTS OF CHEMICAL ANALYSES OF GROUND WATER**

Maxxam ID		PZ7677	
Sampling Date		2016/11/06 10:01	
COC Number		508615-15-01	
	<b>UNITS</b>	<b>MW09-22B-7-161106</b>	<b>QC Batch</b>
<b>Calculated Parameters</b>			
Filter and HNO3 Preservation	N/A	FIELD	ONSITE

Maxxam Job #: B6A0649  
Report Date: 2016/11/16

SNC LAVALIN ENVIRONMENT INC.  
Client Project #: 640752  
Site Location: Watson Lake Airport  
Your P.O. #: 700365225  
Sampler Initials: JC

**CSR/CCME DISS. METALS IN WATER W/ CV HG (GROUND WATER)**

Maxxam ID		PZ7677		
Sampling Date		2016/11/06 10:01		
COC Number		508615-15-01		
	<b>UNITS</b>	<b>MW09-22B-7-161106</b>	<b>RDL</b>	<b>QC Batch</b>
<b>Misc. Inorganics</b>				
Dissolved Hardness (CaCO3)	mg/L	126	0.50	8466351
<b>Dissolved Metals by ICPMS</b>				
Dissolved Aluminum (Al)	ug/L	<3.0	3.0	8469461
Dissolved Antimony (Sb)	ug/L	<0.50	0.50	8469461
Dissolved Arsenic (As)	ug/L	0.17	0.10	8469461
Dissolved Barium (Ba)	ug/L	294	1.0	8469461
Dissolved Beryllium (Be)	ug/L	<0.10	0.10	8469461
Dissolved Bismuth (Bi)	ug/L	<1.0	1.0	8469461
Dissolved Boron (B)	ug/L	<50	50	8469461
Dissolved Cadmium (Cd)	ug/L	0.172	0.010	8469461
Dissolved Chromium (Cr)	ug/L	<1.0	1.0	8469461
Dissolved Cobalt (Co)	ug/L	<0.50	0.50	8469461
Dissolved Copper (Cu)	ug/L	0.61	0.20	8469461
Dissolved Iron (Fe)	ug/L	10.9	5.0	8469461
Dissolved Lead (Pb)	ug/L	<0.20	0.20	8469461
Dissolved Lithium (Li)	ug/L	<5.0	5.0	8469461
Dissolved Manganese (Mn)	ug/L	900	1.0	8469461
Dissolved Molybdenum (Mo)	ug/L	1.1	1.0	8469461
Dissolved Nickel (Ni)	ug/L	4.9	1.0	8469461
Dissolved Selenium (Se)	ug/L	<0.10	0.10	8469461
Dissolved Silicon (Si)	ug/L	5610	100	8469461
Dissolved Silver (Ag)	ug/L	<0.020	0.020	8469461
Dissolved Strontium (Sr)	ug/L	154	1.0	8469461
Dissolved Thallium (Tl)	ug/L	<0.050	0.050	8469461
Dissolved Tin (Sn)	ug/L	<5.0	5.0	8469461
Dissolved Titanium (Ti)	ug/L	<5.0	5.0	8469461
Dissolved Uranium (U)	ug/L	<0.10	0.10	8469461
Dissolved Vanadium (V)	ug/L	<5.0	5.0	8469461
Dissolved Zinc (Zn)	ug/L	<5.0	5.0	8469461
Dissolved Zirconium (Zr)	ug/L	<0.50	0.50	8469461
RDL = Reportable Detection Limit				

Maxxam Job #: B6A0649  
Report Date: 2016/11/16

SNC LAVALIN ENVIRONMENT INC.  
Client Project #: 640752  
Site Location: Watson Lake Airport  
Your P.O. #: 700365225  
Sampler Initials: JC

**CSR/CCME DISS. METALS IN WATER W/ CV HG (GROUND WATER)**

Maxxam ID		PZ7677		
Sampling Date		2016/11/06 10:01		
COC Number		508615-15-01		
	<b>UNITS</b>	<b>MW09-22B-7-161106</b>	<b>RDL</b>	<b>QC Batch</b>
Dissolved Calcium (Ca)	mg/L	39.1	0.050	8466352
Dissolved Magnesium (Mg)	mg/L	6.83	0.050	8466352
Dissolved Potassium (K)	mg/L	0.691	0.050	8466352
Dissolved Sodium (Na)	mg/L	1.61	0.050	8466352
Dissolved Sulphur (S)	mg/L	<3.0	3.0	8466352
RDL = Reportable Detection Limit				

Maxxam Job #: B6A0649  
Report Date: 2016/11/16

SNC LAVALIN ENVIRONMENT INC.  
Client Project #: 640752  
Site Location: Watson Lake Airport  
Your P.O. #: 700365225  
Sampler Initials: JC

### GENERAL COMMENTS

Each temperature is the average of up to three cooler temperatures taken at receipt

Package 1	9.7°C
-----------	-------

**Results relate only to the items tested.**

Maxxam Job #: B6A0649  
Report Date: 2016/11/16

**QUALITY ASSURANCE REPORT**

SNC LAVALIN ENVIRONMENT INC.  
Client Project #: 640752  
Site Location: Watson Lake Airport  
Your P.O. #: 700365225  
Sampler Initials: JC

QC Batch	Parameter	Date	Matrix Spike		Spiked Blank		Method Blank		RPD	
			% Recovery	QC Limits	% Recovery	QC Limits	Value	UNITS	Value (%)	QC Limits
8469461	Dissolved Aluminum (Al)	2016/11/16	107	80 - 120	108	80 - 120	<3.0	ug/L	NC	20
8469461	Dissolved Antimony (Sb)	2016/11/16	100	80 - 120	99	80 - 120	<0.50	ug/L	NC	20
8469461	Dissolved Arsenic (As)	2016/11/16	103	80 - 120	101	80 - 120	<0.10	ug/L	NC	20
8469461	Dissolved Barium (Ba)	2016/11/16	NC	80 - 120	98	80 - 120	<1.0	ug/L	3.3	20
8469461	Dissolved Beryllium (Be)	2016/11/16	95	80 - 120	100	80 - 120	<0.10	ug/L	NC	20
8469461	Dissolved Bismuth (Bi)	2016/11/16	96	80 - 120	102	80 - 120	<1.0	ug/L	NC	20
8469461	Dissolved Boron (B)	2016/11/16	105	80 - 120	105	80 - 120	<50	ug/L	NC	20
8469461	Dissolved Cadmium (Cd)	2016/11/16	97	80 - 120	99	80 - 120	<0.010	ug/L	1.7	20
8469461	Dissolved Chromium (Cr)	2016/11/16	100	80 - 120	102	80 - 120	<1.0	ug/L	NC	20
8469461	Dissolved Cobalt (Co)	2016/11/16	95	80 - 120	98	80 - 120	<0.50	ug/L	NC	20
8469461	Dissolved Copper (Cu)	2016/11/16	93	80 - 120	101	80 - 120	<0.20	ug/L	NC	20
8469461	Dissolved Iron (Fe)	2016/11/16	98	80 - 120	104	80 - 120	<5.0	ug/L	NC	20
8469461	Dissolved Lead (Pb)	2016/11/16	100	80 - 120	105	80 - 120	<0.20	ug/L	NC	20
8469461	Dissolved Lithium (Li)	2016/11/16	93	80 - 120	100	80 - 120	<5.0	ug/L	NC	20
8469461	Dissolved Manganese (Mn)	2016/11/16	NC	80 - 120	102	80 - 120	<1.0	ug/L	3.7	20
8469461	Dissolved Molybdenum (Mo)	2016/11/16	NC	80 - 120	101	80 - 120	<1.0	ug/L	NC	20
8469461	Dissolved Nickel (Ni)	2016/11/16	96	80 - 120	101	80 - 120	<1.0	ug/L	NC	20
8469461	Dissolved Selenium (Se)	2016/11/16	103	80 - 120	103	80 - 120	<0.10	ug/L	NC	20
8469461	Dissolved Silicon (Si)	2016/11/16					<100	ug/L	0.63	20
8469461	Dissolved Silver (Ag)	2016/11/16	101	80 - 120	103	80 - 120	<0.020	ug/L	NC	20
8469461	Dissolved Strontium (Sr)	2016/11/16	NC	80 - 120	101	80 - 120	<1.0	ug/L	1.5	20
8469461	Dissolved Thallium (Tl)	2016/11/16	96	80 - 120	105	80 - 120	<0.050	ug/L	NC	20
8469461	Dissolved Tin (Sn)	2016/11/16	106	80 - 120	108	80 - 120	<5.0	ug/L	NC	20
8469461	Dissolved Titanium (Ti)	2016/11/16	105	80 - 120	114	80 - 120	<5.0	ug/L	NC	20
8469461	Dissolved Uranium (U)	2016/11/16	104	80 - 120	109	80 - 120	<0.10	ug/L	NC	20
8469461	Dissolved Vanadium (V)	2016/11/16	105	80 - 120	104	80 - 120	<5.0	ug/L	NC	20
8469461	Dissolved Zinc (Zn)	2016/11/16	98	80 - 120	102	80 - 120	<5.0	ug/L	NC	20

Maxxam Job #: B6A0649  
Report Date: 2016/11/16

**QUALITY ASSURANCE REPORT(CONT'D)**

SNC LAVALIN ENVIRONMENT INC.  
Client Project #: 640752  
Site Location: Watson Lake Airport  
Your P.O. #: 700365225  
Sampler Initials: JC

QC Batch	Parameter	Date	Matrix Spike		Spiked Blank		Method Blank		RPD	
			% Recovery	QC Limits	% Recovery	QC Limits	Value	UNITS	Value (%)	QC Limits
8469461	Dissolved Zirconium (Zr)	2016/11/16					<0.50	ug/L	NC	20

Duplicate: Paired analysis of a separate portion of the same sample. Used to evaluate the variance in the measurement.

Matrix Spike: A sample to which a known amount of the analyte of interest has been added. Used to evaluate sample matrix interference.

Spiked Blank: A blank matrix sample to which a known amount of the analyte, usually from a second source, has been added. Used to evaluate method accuracy.

Method Blank: A blank matrix containing all reagents used in the analytical procedure. Used to identify laboratory contamination.

NC (Matrix Spike): The recovery in the matrix spike was not calculated. The relative difference between the concentration in the parent sample and the spiked amount was too small to permit a reliable recovery calculation (matrix spike concentration was less than 2x that of the native sample concentration).

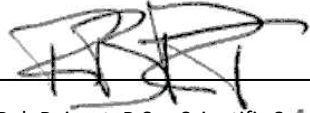
NC (Duplicate RPD): The duplicate RPD was not calculated. The concentration in the sample and/or duplicate was too low to permit a reliable RPD calculation (one or both samples < 5x RDL).

Maxxam Job #: B6A0649  
Report Date: 2016/11/16

SNC LAVALIN ENVIRONMENT INC.  
Client Project #: 640752  
Site Location: Watson Lake Airport  
Your P.O. #: 700365225  
Sampler Initials: JC

### VALIDATION SIGNATURE PAGE

The analytical data and all QC contained in this report were reviewed and validated by the following individual(s).



Rob Reinert, B.Sc., Scientific Spécialist

---

Maxxam has procedures in place to guard against improper use of the electronic signature and have the required "signatories", as per section 5.10.2 of ISO/IEC 17025:2005(E), signing the reports. For Service Group specific validation please refer to the Validation Signature Page.



**Chain Of Custody Record**

Page 1 of 1

Maxxam Analyticals International Corporation or its Maxxam Analyticals  
 4805 Canada Way, Burnaby, British Columbia Canada V5G 1K5 Tel:(604) 734 7276 Toll-Free 800-563-5265 Fax: (604) 731 2366 www.maxxam.ca

**INVOICE TO:**

Company Name: #1756 PUBLIC WORKS & GOVERNMENT SERVICE  
 Contact Name: Robert Price  
 Address: 841-800 BURRARD STREET  
 VANCOUVER BC V6Z 2V6  
 Phone: (604) 775-6810 Fax: (604) 775-6650  
 Email: robert.price@pwgsc-tpsgc.gc.ca

Company Name: #26479 SNC LAVALIN ENVIRONMENT INC.  
 Contact Name: Michael Chao, Marta Rosa  
 Address: 8648 COMMERCE COURT  
 BURNABY BC V5A 4N6  
 Phone: (604) 515-5151 Fax: (604) 515-5151  
 Email: Michael.Chao@snc-lavalin.com, Marta.Rosa@snc-lavalin.com

Project Information  
 B61631  
 Quotation #  
 Pending  
 P.O.#  
 Project #  
 LAKESIDE LAKE ALPAC  
 AEC 223  
 Chain Of Custody Record  
 Project Manager  
 Samantha Fregien

Maxxam Job #  
 B6A0649  
 Bottle Order #  
 509515

Turnaround Time (TAT) Required

**Regulatory Criteria**

Yukon CSR Water  
 Drinking/Freshwater

**Special Instructions**

Regular (Standard) TAT (we do not accept a longer TAT for most tests)  
 Standard TAT = 5-7 Working days for most tests  
 Please note: Standard TAT for certain tests such as DOC and Dissolved/Filtered urea are > 5 days - contact your Project Manager for details  
 Job Specific Rush TAT (if applies to entire submission)  
 Date Required: \_\_\_\_\_ Time Required: \_\_\_\_\_  
 Rush Confirmation Number: \_\_\_\_\_ (cell lab #)

Note: For regulated drinking water samples - please use the Drinking Water Chain of Custody Form  
 Samples must be kept cool (< 10°C) from time of sampling until delivery to maxxam

Sample Barcode Label	Sample (Location) Identification	Date Sampled	Time Sampled	Mean	Comments
1	MWA-22B-7-161106	16/11/06	10:01	GW	FF/P
2					
3					
4					
5					
6					
7					
8					
9					
10					

**Relinquished By:** (Signature/Print)  
 Jillian Campbell  
 Date: (YY/MM/DD) 16/11/06  
 Time: 13:00

**Received By:** (Signature/Print)  
 William The Miller  
 Date: (YY/MM/DD) 2016/11/09  
 Time: 13:00

**Lab Use Only**

Temperature (°C) on Receipt: 22.3  
 Custody Contact on Cooler? Yes  No

White Maxxam Yellow Client

RECEIVED IN WHITEHORSE  
 BY: *Sydney [Signature]*  
 2016-11-08

TEMP: 9/9/11

B6A0649\_COC

Maxxam Analyticals International Corporation or its Maxxam Analyticals

**Attention: Michael Chao**

SNC LAVALIN ENVIRONMENT INC.  
8648 COMMERCE COURT  
BURNABY, BC  
CANADA V5A 4N6

Your P.O. #: 700365225  
Your Project #: 640752  
Site#: AEC 22B  
Site Location: Watson Lake Airport  
Your C.O.C. #: 510054-06-01, 510054-05-01

**Report Date: 2016/11/16**  
Report #: R2301785  
Version: 1 - Final

**CERTIFICATE OF ANALYSIS**

**MAXXAM JOB #: B6A0684**

**Received: 2016/11/08, 09:30**

Sample Matrix: Soil  
# Samples Received: 11

Analyses	Quantity	Date		Laboratory Method	Analytical Method
		Extracted	Analyzed		
BTEX/MTBE Soil LH, VH, F1 SIM/MS	11	2016/11/10	2016/11/12	BBY8SOP-00010/11/12	EPA 8260c R3 m
Elements by ICPMS (total)	6	2016/11/11	2016/11/14	BBY7SOP-00017,	BC SALM, EPA 6020bR2m
Moisture	11	2016/11/10	2016/11/11	BBY8SOP-00017	BCMOE BCLM Dec2000 m
PAH in Soil by GC/MS (SIM)	10	2016/11/10	2016/11/15	BBY8SOP-00022	EPA 8270d R5 m
PAH in Soil by GC/MS (SIM)	1	2016/11/10	2016/11/16	BBY8SOP-00022	EPA 8270d R5 m
Total PAH and B(a)P Calculation	11	N/A	2016/11/16	BBY WI-00033	Auto Calc
pH (2:1 DI Water Extract)	6	2016/11/11	2016/11/14	BBY6SOP-00028	BCMOE BCLM Mar2005 m
EPH less PAH in Soil By GC/FID	11	N/A	2016/11/16	BBY WI-00033	Auto Calc
EPH in Soil by GC/FID	11	2016/11/10	2016/11/15	BBY8SOP-00029	BCMOE EPH s 07/99 m
Volatile HC-BTEX for Soil	7	N/A	2016/11/13	BBY WI-00033	Auto Calc
Volatile HC-BTEX for Soil	4	N/A	2016/11/15	BBY WI-00033	Auto Calc

**Remarks:**

Maxxam Analytics' laboratories are accredited to ISO/IEC 17025:2005 for specific parameters on scopes of accreditation. Unless otherwise noted, procedures used by Maxxam are based upon recognized Provincial, Federal or US method compendia such as CCME, MDDELCC, EPA, APHA.

All work recorded herein has been done in accordance with procedures and practices ordinarily exercised by professionals in Maxxam's profession using accepted testing methodologies, quality assurance and quality control procedures (except where otherwise agreed by the client and Maxxam in writing). All data is in statistical control and has met quality control and method performance criteria unless otherwise noted. All method blanks are reported: unless indicated otherwise, associated sample data are not blank corrected.

Maxxam Analytics' liability is limited to the actual cost of the requested analyses, unless otherwise agreed in writing. There is no other warranty expressed or implied. Maxxam has been retained to provide analysis of samples provided by the Client using the testing methodology referenced in this report. Interpretation and use of test results are the sole responsibility of the Client and are not within the scope of services provided by Maxxam, unless otherwise agreed in writing.

Solid sample results, except biota, are based on dry weight unless otherwise indicated. Organic analyses are not recovery corrected except for isotope dilution methods. Results relate to samples tested.

This Certificate shall not be reproduced except in full, without the written approval of the laboratory.

Reference Method suffix "m" indicates test methods incorporate validated modifications from specific reference methods to improve performance.

\* RPDs calculated using raw data. The rounding of final results may result in the apparent difference.

**Attention: Michael Chao**

SNC LAVALIN ENVIRONMENT INC.  
8648 COMMERCE COURT  
BURNABY, BC  
CANADA V5A 4N6

Your P.O. #: 700365225  
Your Project #: 640752  
Site#: AEC 22B  
Site Location: Watson Lake Airport  
Your C.O.C. #: 510054-06-01, 510054-05-01

**Report Date: 2016/11/16**  
Report #: R2301785  
Version: 1 - Final

**CERTIFICATE OF ANALYSIS**

**MAXXAM JOB #: B6A0684**

**Received: 2016/11/08, 09:30**

Encryption Key

Please direct all questions regarding this Certificate of Analysis to your Project Manager.  
Samantha Fregien, Project Manager  
Email: SFregien@maxxam.ca  
Phone# (604)639-8418

=====  
Maxxam has procedures in place to guard against improper use of the electronic signature and have the required "signatories", as per section 5.10.2 of ISO/IEC 17025:2005(E), signing the reports. For Service Group specific validation please refer to the Validation Signature Page.

Maxxam Job #: B6A0684  
Report Date: 2016/11/16

SNC LAVALIN ENVIRONMENT INC.  
Client Project #: 640752  
Site Location: Watson Lake Airport  
Your P.O. #: 700365225  
Sampler Initials: MLC

**PHYSICAL TESTING (SOIL)**

Maxxam ID		PZ7851		PZ7852	PZ7853	PZ7854	PZ7855		
Sampling Date		2016/11/06 08:10		2016/11/06 08:20	2016/11/06 08:30	2016/11/06 09:00	2016/11/06 09:10		
COC Number		510054-06-01		510054-06-01	510054-06-01	510054-06-01	510054-06-01		
	<b>UNITS</b>	<b>22B-BH16-8-2</b>	<b>QC Batch</b>	<b>22B-BH16-8-3</b>	<b>22B-BH16-8-4</b>	<b>22B-BH16-9-1</b>	<b>22B-BH16-9-2</b>	<b>RDL</b>	<b>QC Batch</b>

<b>Physical Properties</b>									
Moisture	%	6.5	8467188	5.2	9.0	3.2	6.7	0.30	8467184
RDL = Reportable Detection Limit									

Maxxam ID		PZ7856	PZ7857	PZ7858	PZ7859	PZ7874		
Sampling Date		2016/11/06 10:00	2016/11/06 10:10	2016/11/06 10:20	2016/11/06 10:30	2016/11/06 12:10		
COC Number		510054-06-01	510054-06-01	510054-06-01	510054-06-01	510054-05-01		
	<b>UNITS</b>	<b>22B-BH16-10-1</b>	<b>22B-BH16-10-2</b>	<b>22B-BH16-11-1</b>	<b>22B-BH16-11-2</b>	<b>22B-BH16-12-2</b>	<b>RDL</b>	<b>QC Batch</b>

<b>Physical Properties</b>									
Moisture	%	5.9	5.4	3.2	12	10	0.30	8467184	
RDL = Reportable Detection Limit									

Maxxam ID		PZ7875		
Sampling Date		2016/11/06 12:20		
COC Number		510054-05-01		
	<b>UNITS</b>	<b>22B-BH16-12-3</b>	<b>RDL</b>	<b>QC Batch</b>

<b>Physical Properties</b>				
Moisture	%	8.0	0.30	8467184
RDL = Reportable Detection Limit				

Maxxam Job #: B6A0684  
Report Date: 2016/11/16

SNC LAVALIN ENVIRONMENT INC.  
Client Project #: 640752  
Site Location: Watson Lake Airport  
Your P.O. #: 700365225  
Sampler Initials: MLC

**CSR BTEX/VPH BY HS IN SOIL (SOIL)**

Maxxam ID		PZ7851		PZ7852		PZ7853	PZ7854		
Sampling Date		2016/11/06 08:10		2016/11/06 08:20		2016/11/06 08:30	2016/11/06 09:00		
COC Number		510054-06-01		510054-06-01		510054-06-01	510054-06-01		
	<b>UNITS</b>	<b>22B-BH16-8-2</b>	<b>QC Batch</b>	<b>22B-BH16-8-3</b>	<b>QC Batch</b>	<b>22B-BH16-8-4</b>	<b>22B-BH16-9-1</b>	<b>RDL</b>	<b>QC Batch</b>

<b>Volatiles</b>									
VPH (VH6 to 10 - BTEX)	mg/kg	61	8466396	39	8466396	<10	<10	10	8466396
Methyl-tert-butylether (MTBE)	mg/kg	<0.10	8468163	<0.10	8468164	<0.10	<0.10	0.10	8468163
Benzene	mg/kg	<0.0050	8468163	<0.0050	8468164	<0.0050	<0.0050	0.0050	8468163
Toluene	mg/kg	0.039	8468163	0.043	8468164	<0.020	<0.020	0.020	8468163
Ethylbenzene	mg/kg	0.35	8468163	0.20	8468164	<0.010	<0.010	0.010	8468163
m & p-Xylene	mg/kg	1.1	8468163	0.62	8468164	<0.040	<0.040	0.040	8468163
o-Xylene	mg/kg	0.15	8468163	0.10	8468164	<0.040	<0.040	0.040	8468163
Styrene	mg/kg	<0.030	8468163	<0.030	8468164	<0.030	<0.030	0.030	8468163
Xylenes (Total)	mg/kg	1.2	8468163	0.73	8468164	<0.040	<0.040	0.040	8468163
VH C6-C10	mg/kg	63	8468163	40	8468164	<10	<10	10	8468163
<b>Surrogate Recovery (%)</b>									
1,4-Difluorobenzene (sur.)	%	98	8468163	99	8468164	100	98		8468163
4-Bromofluorobenzene (sur.)	%	103	8468163	108	8468164	106	103		8468163
D10-ETHYLBENZENE (sur.)	%	102	8468163	99	8468164	102	103		8468163
D4-1,2-Dichloroethane (sur.)	%	106	8468163	107	8468164	116	114		8468163
RDL = Reportable Detection Limit									

Maxxam Job #: B6A0684  
Report Date: 2016/11/16

SNC LAVALIN ENVIRONMENT INC.  
Client Project #: 640752  
Site Location: Watson Lake Airport  
Your P.O. #: 700365225  
Sampler Initials: MLC

**CSR BTEX/VPH BY HS IN SOIL (SOIL)**

Maxxam ID		PZ7855	PZ7856	PZ7857	PZ7858	PZ7859		
Sampling Date		2016/11/06 09:10	2016/11/06 10:00	2016/11/06 10:10	2016/11/06 10:20	2016/11/06 10:30		
COC Number		510054-06-01	510054-06-01	510054-06-01	510054-06-01	510054-06-01		
	<b>UNITS</b>	<b>22B-BH16-9-2</b>	<b>22B-BH16-10-1</b>	<b>22B-BH16-10-2</b>	<b>22B-BH16-11-1</b>	<b>22B-BH16-11-2</b>	<b>RDL</b>	<b>QC Batch</b>
<b>Volatiles</b>								
VPH (VH6 to 10 - BTEX)	mg/kg	<10	<10	<10	<10	<10	10	8466396
Methyl-tert-butylether (MTBE)	mg/kg	<0.10	<0.10	<0.10	<0.10	<0.10	0.10	8468164
Benzene	mg/kg	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	0.0050	8468164
Toluene	mg/kg	<0.020	<0.020	<0.020	<0.020	<0.020	0.020	8468164
Ethylbenzene	mg/kg	<0.010	<0.010	<0.010	<0.010	<0.010	0.010	8468164
m & p-Xylene	mg/kg	<0.040	<0.040	<0.040	<0.040	<0.040	0.040	8468164
o-Xylene	mg/kg	<0.040	<0.040	<0.040	<0.040	<0.040	0.040	8468164
Styrene	mg/kg	<0.030	<0.030	<0.030	<0.030	<0.030	0.030	8468164
Xylenes (Total)	mg/kg	<0.040	<0.040	<0.040	<0.040	<0.040	0.040	8468164
VH C6-C10	mg/kg	<10	<10	<10	<10	<10	10	8468164
<b>Surrogate Recovery (%)</b>								
1,4-Difluorobenzene (sur.)	%	99	99	100	96	107		8468164
4-Bromofluorobenzene (sur.)	%	107	108	107	107	102		8468164
D10-ETHYLBENZENE (sur.)	%	103	105	109	106	84		8468164
D4-1,2-Dichloroethane (sur.)	%	108	108	111	110	98		8468164
RDL = Reportable Detection Limit								

Maxxam Job #: B6A0684  
Report Date: 2016/11/16

SNC LAVALIN ENVIRONMENT INC.  
Client Project #: 640752  
Site Location: Watson Lake Airport  
Your P.O. #: 700365225  
Sampler Initials: MLC

**CSR BTEX/VPH BY HS IN SOIL (SOIL)**

Maxxam ID		PZ7874		PZ7875		
Sampling Date		2016/11/06 12:10		2016/11/06 12:20		
COC Number		510054-05-01		510054-05-01		
	<b>UNITS</b>	<b>22B-BH16-12-2</b>	<b>QC Batch</b>	<b>22B-BH16-12-3</b>	<b>RDL</b>	<b>QC Batch</b>
<b>Volatiles</b>						
VPH (VH6 to 10 - BTEX)	mg/kg	<10	8466396	<10	10	8466396
Methyl-tert-butylether (MTBE)	mg/kg	<0.10	8468163	<0.10	0.10	8468164
Benzene	mg/kg	<0.0050	8468163	<0.0050	0.0050	8468164
Toluene	mg/kg	<0.020	8468163	<0.020	0.020	8468164
Ethylbenzene	mg/kg	<0.010	8468163	<0.010	0.010	8468164
m & p-Xylene	mg/kg	<0.040	8468163	<0.040	0.040	8468164
o-Xylene	mg/kg	<0.040	8468163	<0.040	0.040	8468164
Styrene	mg/kg	<0.030	8468163	<0.030	0.030	8468164
Xylenes (Total)	mg/kg	<0.040	8468163	<0.040	0.040	8468164
VH C6-C10	mg/kg	<10	8468163	<10	10	8468164
<b>Surrogate Recovery (%)</b>						
1,4-Difluorobenzene (sur.)	%	88	8468163	108		8468164
4-Bromofluorobenzene (sur.)	%	92	8468163	103		8468164
D10-ETHYLBENZENE (sur.)	%	105	8468163	85		8468164
D4-1,2-Dichloroethane (sur.)	%	105	8468163	96		8468164
RDL = Reportable Detection Limit						



Maxxam Job #: B6A0684  
Report Date: 2016/11/16

SNC LAVALIN ENVIRONMENT INC.  
Client Project #: 640752  
Site Location: Watson Lake Airport  
Your P.O. #: 700365225  
Sampler Initials: MLC

**LEPH & HEPH WITH PAH FOR CSR IN SOIL (SOIL)**

Maxxam ID		PZ7851		PZ7852	PZ7853	PZ7854	PZ7855		
Sampling Date		2016/11/06 08:10		2016/11/06 08:20	2016/11/06 08:30	2016/11/06 09:00	2016/11/06 09:10		
COC Number		510054-06-01		510054-06-01	510054-06-01	510054-06-01	510054-06-01		
	UNITS	22B-BH16-8-2	QC Batch	22B-BH16-8-3	22B-BH16-8-4	22B-BH16-9-1	22B-BH16-9-2	RDL	QC Batch
<b>Polycyclic Aromatics</b>									
Naphthalene	mg/kg	2.5	8471158	1.7	<0.050	<0.050	<0.050	0.050	8470052
2-Methylnaphthalene	mg/kg	2.9	8471158	1.6	<0.050	<0.050	<0.050	0.050	8470052
Acenaphthylene	mg/kg	<0.050	8471158	<0.050	<0.050	<0.050	<0.050	0.050	8470052
Acenaphthene	mg/kg	<0.050	8471158	<0.050	<0.050	<0.050	<0.050	0.050	8470052
Fluorene	mg/kg	<0.050	8471158	<0.050	<0.050	<0.050	<0.050	0.050	8470052
Phenanthrene	mg/kg	<0.050	8471158	<0.050	<0.050	<0.050	<0.050	0.050	8470052
Anthracene	mg/kg	<0.050	8471158	<0.050	<0.050	<0.050	<0.050	0.050	8470052
Fluoranthene	mg/kg	<0.050	8471158	<0.050	<0.050	<0.050	<0.050	0.050	8470052
Pyrene	mg/kg	<0.050	8471158	<0.050	<0.050	<0.050	<0.050	0.050	8470052
Benzo(a)anthracene	mg/kg	<0.050	8471158	<0.050	<0.050	<0.050	<0.050	0.050	8470052
Chrysene	mg/kg	<0.050	8471158	<0.050	<0.050	<0.050	<0.050	0.050	8470052
Benzo(b&j)fluoranthene	mg/kg	<0.050	8471158	<0.050	<0.050	<0.050	<0.050	0.050	8470052
Benzo(b)fluoranthene	mg/kg	<0.050	8471158	<0.050	<0.050	<0.050	<0.050	0.050	8470052
Benzo(k)fluoranthene	mg/kg	<0.050	8471158	<0.050	<0.050	<0.050	<0.050	0.050	8470052
Benzo(a)pyrene	mg/kg	<0.050	8471158	<0.050	<0.050	<0.050	<0.050	0.050	8470052
Indeno(1,2,3-cd)pyrene	mg/kg	<0.050	8471158	<0.050	<0.050	<0.050	<0.050	0.050	8470052
Dibenz(a,h)anthracene	mg/kg	<0.050	8471158	<0.050	<0.050	<0.050	<0.050	0.050	8470052
Benzo(g,h,i)perylene	mg/kg	<0.050	8471158	<0.050	<0.050	<0.050	<0.050	0.050	8470052
Low Molecular Weight PAH's	mg/kg	5.4	8466392	3.2	<0.050	<0.050	<0.050	0.050	8466392
High Molecular Weight PAH's	mg/kg	<0.050	8466392	<0.050	<0.050	<0.050	<0.050	0.050	8466392
Total PAH	mg/kg	5.4	8466392	3.2	<0.050	<0.050	<0.050	0.050	8466392
<b>Calculated Parameters</b>									
LEPH (C10-C19 less PAH)	mg/kg	280	8466394	160	<100	<100	<100	100	8466394
HEPH (C19-C32 less PAH)	mg/kg	<100	8466394	<100	<100	<100	<100	100	8466394
<b>Hydrocarbons</b>									
EPH (C10-C19)	mg/kg	280	8471153	160	<100	<100	<100	100	8470047
EPH (C19-C32)	mg/kg	<100	8471153	<100	<100	<100	<100	100	8470047
<b>Surrogate Recovery (%)</b>									
D10-ANTHRACENE (sur.)	%	100	8471158	96	102	101	96		8470052
D8-ACENAPHTHYLENE (sur.)	%	91	8471158	88	93	91	88		8470052
RDL = Reportable Detection Limit									



Maxxam Job #: B6A0684  
Report Date: 2016/11/16

SNC LAVALIN ENVIRONMENT INC.  
Client Project #: 640752  
Site Location: Watson Lake Airport  
Your P.O. #: 700365225  
Sampler Initials: MLC

**LEPH & HEPH WITH PAH FOR CSR IN SOIL (SOIL)**

Maxxam ID		PZ7851		PZ7852	PZ7853	PZ7854	PZ7855		
Sampling Date		2016/11/06 08:10		2016/11/06 08:20	2016/11/06 08:30	2016/11/06 09:00	2016/11/06 09:10		
COC Number		510054-06-01		510054-06-01	510054-06-01	510054-06-01	510054-06-01		
	<b>UNITS</b>	<b>22B-BH16-8-2</b>	<b>QC Batch</b>	<b>22B-BH16-8-3</b>	<b>22B-BH16-8-4</b>	<b>22B-BH16-9-1</b>	<b>22B-BH16-9-2</b>	<b>RDL</b>	<b>QC Batch</b>
D8-NAPHTHALENE (sur.)	%	84	8471158	87	91	91	86		8470052
TERPHENYL-D14 (sur.)	%	80	8471158	80	83	82	79		8470052
O-TERPHENYL (sur.)	%	98	8471153	101	100	100	101		8470047
RDL = Reportable Detection Limit									

Maxxam Job #: B6A0684  
Report Date: 2016/11/16

SNC LAVALIN ENVIRONMENT INC.  
Client Project #: 640752  
Site Location: Watson Lake Airport  
Your P.O. #: 700365225  
Sampler Initials: MLC

**LEPH & HEPH WITH PAH FOR CSR IN SOIL (SOIL)**

Maxxam ID		PZ7856	PZ7857	PZ7858	PZ7859	PZ7874		
Sampling Date		2016/11/06 10:00	2016/11/06 10:10	2016/11/06 10:20	2016/11/06 10:30	2016/11/06 12:10		
COC Number		510054-06-01	510054-06-01	510054-06-01	510054-06-01	510054-05-01		
	UNITS	22B-BH16-10-1	22B-BH16-10-2	22B-BH16-11-1	22B-BH16-11-2	22B-BH16-12-2	RDL	QC Batch
<b>Polycyclic Aromatics</b>								
Naphthalene	mg/kg	<0.050	<0.050	<0.050	<0.050	<0.050	0.050	8470052
2-Methylnaphthalene	mg/kg	<0.050	<0.050	<0.050	<0.050	<0.050	0.050	8470052
Acenaphthylene	mg/kg	<0.050	<0.050	<0.050	<0.050	<0.050	0.050	8470052
Acenaphthene	mg/kg	<0.050	<0.050	<0.050	<0.050	<0.050	0.050	8470052
Fluorene	mg/kg	<0.050	<0.050	<0.050	<0.050	<0.050	0.050	8470052
Phenanthrene	mg/kg	<0.050	<0.050	<0.050	<0.050	<0.050	0.050	8470052
Anthracene	mg/kg	<0.050	<0.050	<0.050	<0.050	<0.050	0.050	8470052
Fluoranthene	mg/kg	<0.050	<0.050	<0.050	<0.050	<0.050	0.050	8470052
Pyrene	mg/kg	<0.050	<0.050	<0.050	<0.050	<0.050	0.050	8470052
Benzo(a)anthracene	mg/kg	<0.050	<0.050	<0.050	<0.050	<0.050	0.050	8470052
Chrysene	mg/kg	<0.050	<0.050	<0.050	<0.050	<0.050	0.050	8470052
Benzo(b&j)fluoranthene	mg/kg	<0.050	<0.050	<0.050	<0.050	<0.050	0.050	8470052
Benzo(b)fluoranthene	mg/kg	<0.050	<0.050	<0.050	<0.050	<0.050	0.050	8470052
Benzo(k)fluoranthene	mg/kg	<0.050	<0.050	<0.050	<0.050	<0.050	0.050	8470052
Benzo(a)pyrene	mg/kg	<0.050	<0.050	<0.050	<0.050	<0.050	0.050	8470052
Indeno(1,2,3-cd)pyrene	mg/kg	<0.050	<0.050	<0.050	<0.050	<0.050	0.050	8470052
Dibenz(a,h)anthracene	mg/kg	<0.050	<0.050	<0.050	<0.050	<0.050	0.050	8470052
Benzo(g,h,i)perylene	mg/kg	<0.050	<0.050	<0.050	<0.050	<0.050	0.050	8470052
Low Molecular Weight PAH's	mg/kg	<0.050	<0.050	<0.050	<0.050	<0.050	0.050	8466392
High Molecular Weight PAH's	mg/kg	<0.050	<0.050	<0.050	<0.050	<0.050	0.050	8466392
Total PAH	mg/kg	<0.050	<0.050	<0.050	<0.050	<0.050	0.050	8466392
<b>Calculated Parameters</b>								
LEPH (C10-C19 less PAH)	mg/kg	<100	<100	<100	<100	<100	100	8466394
HEPH (C19-C32 less PAH)	mg/kg	<100	<100	<100	<100	<100	100	8466394
<b>Hydrocarbons</b>								
EPH (C10-C19)	mg/kg	<100	<100	<100	<100	<100	100	8470047
EPH (C19-C32)	mg/kg	<100	<100	<100	<100	<100	100	8470047
<b>Surrogate Recovery (%)</b>								
D10-ANTHRACENE (sur.)	%	97	96	98	94	98		8470052
D8-ACENAPHTHYLENE (sur.)	%	91	88	89	87	90		8470052
RDL = Reportable Detection Limit								

Maxxam Job #: B6A0684  
Report Date: 2016/11/16

SNC LAVALIN ENVIRONMENT INC.  
Client Project #: 640752  
Site Location: Watson Lake Airport  
Your P.O. #: 700365225  
Sampler Initials: MLC

**LEPH & HEPH WITH PAH FOR CSR IN SOIL (SOIL)**

Maxxam ID		PZ7856	PZ7857	PZ7858	PZ7859	PZ7874		
Sampling Date		2016/11/06 10:00	2016/11/06 10:10	2016/11/06 10:20	2016/11/06 10:30	2016/11/06 12:10		
COC Number		510054-06-01	510054-06-01	510054-06-01	510054-06-01	510054-05-01		
	<b>UNITS</b>	<b>22B-BH16-10-1</b>	<b>22B-BH16-10-2</b>	<b>22B-BH16-11-1</b>	<b>22B-BH16-11-2</b>	<b>22B-BH16-12-2</b>	<b>RDL</b>	<b>QC Batch</b>
D8-NAPHTHALENE (sur.)	%	90	90	88	89	88		8470052
TERPHENYL-D14 (sur.)	%	82	81	80	80	80		8470052
O-TERPHENYL (sur.)	%	101	101	106	103	103		8470047
RDL = Reportable Detection Limit								

Maxxam Job #: B6A0684  
Report Date: 2016/11/16

SNC LAVALIN ENVIRONMENT INC.  
Client Project #: 640752  
Site Location: Watson Lake Airport  
Your P.O. #: 700365225  
Sampler Initials: MLC

**LEPH & HEPH WITH PAH FOR CSR IN SOIL (SOIL)**

Maxxam ID		P27875		
Sampling Date		2016/11/06 12:20		
COC Number		510054-05-01		
	<b>UNITS</b>	<b>22B-BH16-12-3</b>	<b>RDL</b>	<b>QC Batch</b>
<b>Polycyclic Aromatics</b>				
Naphthalene	mg/kg	<0.050	0.050	8470052
2-Methylnaphthalene	mg/kg	<0.050	0.050	8470052
Acenaphthylene	mg/kg	<0.050	0.050	8470052
Acenaphthene	mg/kg	<0.050	0.050	8470052
Fluorene	mg/kg	<0.050	0.050	8470052
Phenanthrene	mg/kg	<0.050	0.050	8470052
Anthracene	mg/kg	<0.050	0.050	8470052
Fluoranthene	mg/kg	<0.050	0.050	8470052
Pyrene	mg/kg	<0.050	0.050	8470052
Benzo(a)anthracene	mg/kg	<0.050	0.050	8470052
Chrysene	mg/kg	<0.050	0.050	8470052
Benzo(b&j)fluoranthene	mg/kg	<0.050	0.050	8470052
Benzo(b)fluoranthene	mg/kg	<0.050	0.050	8470052
Benzo(k)fluoranthene	mg/kg	<0.050	0.050	8470052
Benzo(a)pyrene	mg/kg	<0.050	0.050	8470052
Indeno(1,2,3-cd)pyrene	mg/kg	<0.050	0.050	8470052
Dibenz(a,h)anthracene	mg/kg	<0.050	0.050	8470052
Benzo(g,h,i)perylene	mg/kg	<0.050	0.050	8470052
Low Molecular Weight PAH`s	mg/kg	<0.050	0.050	8466392
High Molecular Weight PAH`s	mg/kg	<0.050	0.050	8466392
Total PAH	mg/kg	<0.050	0.050	8466392
<b>Calculated Parameters</b>				
LEPH (C10-C19 less PAH)	mg/kg	<100	100	8466394
HEPH (C19-C32 less PAH)	mg/kg	<100	100	8466394
<b>Hydrocarbons</b>				
EPH (C10-C19)	mg/kg	<100	100	8470047
EPH (C19-C32)	mg/kg	<100	100	8470047
<b>Surrogate Recovery (%)</b>				
D10-ANTHRACENE (sur.)	%	101		8470052
D8-ACENAPHTHYLENE (sur.)	%	91		8470052
RDL = Reportable Detection Limit				

Maxxam Job #: B6A0684  
Report Date: 2016/11/16

SNC LAVALIN ENVIRONMENT INC.  
Client Project #: 640752  
Site Location: Watson Lake Airport  
Your P.O. #: 700365225  
Sampler Initials: MLC

**LEPH & HEPH WITH PAH FOR CSR IN SOIL (SOIL)**

Maxxam ID		P27875		
Sampling Date		2016/11/06 12:20		
COC Number		510054-05-01		
	<b>UNITS</b>	<b>22B-BH16-12-3</b>	<b>RDL</b>	<b>QC Batch</b>
D8-NAPHTHALENE (sur.)	%	91		8470052
TERPHENYL-D14 (sur.)	%	82		8470052
O-TERPHENYL (sur.)	%	102		8470047
RDL = Reportable Detection Limit				

Maxxam Job #: B6A0684  
Report Date: 2016/11/16

SNC LAVALIN ENVIRONMENT INC.  
Client Project #: 640752  
Site Location: Watson Lake Airport  
Your P.O. #: 700365225  
Sampler Initials: MLC

**CSR/CCME METALS IN SOIL (SOIL)**

Maxxam ID		PZ7851	PZ7852	PZ7854	PZ7856	PZ7858	PZ7874		
Sampling Date		2016/11/06 08:10	2016/11/06 08:20	2016/11/06 09:00	2016/11/06 10:00	2016/11/06 10:20	2016/11/06 12:10		
COC Number		510054-06-01	510054-06-01	510054-06-01	510054-06-01	510054-06-01	510054-05-01		
	<b>UNITS</b>	<b>22B-BH16-8-2</b>	<b>22B-BH16-8-3</b>	<b>22B-BH16-9-1</b>	<b>22B-BH16-10-1</b>	<b>22B-BH16-11-1</b>	<b>22B-BH16-12-2</b>	<b>RDL</b>	<b>QC Batch</b>

**Physical Properties**

Soluble (2:1) pH	pH	8.22	8.29	8.12	6.65	6.54	6.90	N/A	8467959
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**Total Metals by ICPMS**

Total Aluminum (Al)	mg/kg	6660	5990	4600	4620	3450	1990	100	8467958
Total Antimony (Sb)	mg/kg	1.07	0.72	0.59	0.40	0.61	0.20	0.10	8467958
Total Arsenic (As)	mg/kg	5.07	4.71	4.94	4.49	4.39	2.46	0.50	8467958
Total Barium (Ba)	mg/kg	117	117	95.0	96.5	89.3	38.7	0.10	8467958
Total Beryllium (Be)	mg/kg	<0.40	<0.40	<0.40	<0.40	<0.40	<0.40	0.40	8467958
Total Bismuth (Bi)	mg/kg	0.10	0.11	<0.10	<0.10	<0.10	<0.10	0.10	8467958
Total Cadmium (Cd)	mg/kg	0.288	0.243	0.151	0.123	0.206	0.071	0.050	8467958
Total Calcium (Ca)	mg/kg	4040	3550	1940	1320	1060	765	100	8467958
Total Chromium (Cr)	mg/kg	19.6	16.8	13.9	15.1	11.6	5.4	1.0	8467958
Total Cobalt (Co)	mg/kg	8.85	6.73	5.01	5.27	4.34	2.55	0.30	8467958
Total Copper (Cu)	mg/kg	12.3	11.0	12.1	10.2	19.5	5.52	0.50	8467958
Total Iron (Fe)	mg/kg	15300	12900	10300	10700	10400	5310	100	8467958
Total Lead (Pb)	mg/kg	13.4	13.3	12.0	5.96	30.1	2.91	0.10	8467958
Total Lithium (Li)	mg/kg	6.3	6.1	5.5	5.3	<5.0	<5.0	5.0	8467958
Total Magnesium (Mg)	mg/kg	4780	3200	2090	2130	1490	1070	100	8467958
Total Manganese (Mn)	mg/kg	335	303	277	227	556	66.5	0.20	8467958
Total Mercury (Hg)	mg/kg	<0.050	<0.050	0.074	0.184	0.076	<0.050	0.050	8467958
Total Molybdenum (Mo)	mg/kg	0.56	0.55	0.60	0.44	0.49	0.36	0.10	8467958
Total Nickel (Ni)	mg/kg	30.0	21.3	16.6	17.8	14.9	7.51	0.80	8467958
Total Phosphorus (P)	mg/kg	468	403	348	438	309	190	10	8467958
Total Potassium (K)	mg/kg	541	530	468	410	332	207	100	8467958
Total Selenium (Se)	mg/kg	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	0.50	8467958
Total Silver (Ag)	mg/kg	0.068	0.057	0.070	<0.050	0.050	<0.050	0.050	8467958
Total Sodium (Na)	mg/kg	259	218	<100	<100	<100	<100	100	8467958
Total Strontium (Sr)	mg/kg	19.8	18.7	12.1	11.9	6.55	5.56	0.10	8467958
Total Thallium (Tl)	mg/kg	0.060	0.058	<0.050	<0.050	0.052	<0.050	0.050	8467958
Total Tin (Sn)	mg/kg	0.26	0.24	0.17	0.17	0.14	<0.10	0.10	8467958
Total Titanium (Ti)	mg/kg	352	272	186	164	148	93.0	1.0	8467958

RDL = Reportable Detection Limit

N/A = Not Applicable

Maxxam Job #: B6A0684  
Report Date: 2016/11/16

SNC LAVALIN ENVIRONMENT INC.  
Client Project #: 640752  
Site Location: Watson Lake Airport  
Your P.O. #: 700365225  
Sampler Initials: MLC

**CSR/CCME METALS IN SOIL (SOIL)**

Maxxam ID		PZ7851	PZ7852	PZ7854	PZ7856	PZ7858	PZ7874		
Sampling Date		2016/11/06 08:10	2016/11/06 08:20	2016/11/06 09:00	2016/11/06 10:00	2016/11/06 10:20	2016/11/06 12:10		
COC Number		510054-06-01	510054-06-01	510054-06-01	510054-06-01	510054-06-01	510054-05-01		
	<b>UNITS</b>	<b>22B-BH16-8-2</b>	<b>22B-BH16-8-3</b>	<b>22B-BH16-9-1</b>	<b>22B-BH16-10-1</b>	<b>22B-BH16-11-1</b>	<b>22B-BH16-12-2</b>	<b>RDL</b>	<b>QC Batch</b>
Total Uranium (U)	mg/kg	0.436	0.365	0.359	0.423	0.419	0.377	0.050	8467958
Total Vanadium (V)	mg/kg	18.3	16.1	16.0	16.1	11.8	6.9	2.0	8467958
Total Zinc (Zn)	mg/kg	49.0	44.9	32.8	30.0	39.2	16.0	1.0	8467958
Total Zirconium (Zr)	mg/kg	3.02	2.36	1.36	0.80	0.58	0.74	0.50	8467958
RDL = Reportable Detection Limit									

Maxxam Job #: B6A0684  
Report Date: 2016/11/16

SNC LAVALIN ENVIRONMENT INC.  
Client Project #: 640752  
Site Location: Watson Lake Airport  
Your P.O. #: 700365225  
Sampler Initials: MLC

### GENERAL COMMENTS

Each temperature is the average of up to three cooler temperatures taken at receipt

Package 1	2.7°C
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**Results relate only to the items tested.**



Maxxam Job #: B6A0684  
Report Date: 2016/11/16

**QUALITY ASSURANCE REPORT**

SNC LAVALIN ENVIRONMENT INC.  
Client Project #: 640752  
Site Location: Watson Lake Airport  
Your P.O. #: 700365225  
Sampler Initials: MLC

QC Batch	Parameter	Date	Matrix Spike		Spiked Blank		Method Blank		RPD		QC Standard	
			% Recovery	QC Limits	% Recovery	QC Limits	Value	UNITS	Value (%)	QC Limits	% Recovery	QC Limits
8468163	1,4-Difluorobenzene (sur.)	2016/11/12	101	60 - 140	97	60 - 140	98	%				
8468163	4-Bromofluorobenzene (sur.)	2016/11/12	102	70 - 140	107	70 - 140	102	%				
8468163	D10-ETHYLBENZENE (sur.)	2016/11/12	106	60 - 130	89	60 - 130	98	%				
8468163	D4-1,2-Dichloroethane (sur.)	2016/11/12	114	60 - 140	106	60 - 140	112	%				
8468164	1,4-Difluorobenzene (sur.)	2016/11/12	93	60 - 140	98	60 - 140	105	%				
8468164	4-Bromofluorobenzene (sur.)	2016/11/12	107	70 - 140	102	70 - 140	106	%				
8468164	D10-ETHYLBENZENE (sur.)	2016/11/12	106	60 - 130	83	60 - 130	94	%				
8468164	D4-1,2-Dichloroethane (sur.)	2016/11/12	106	60 - 140	97	60 - 140	103	%				
8470047	O-TERPHENYL (sur.)	2016/11/15	104	50 - 130	104	50 - 130	100	%				
8470052	D10-ANTHRACENE (sur.)	2016/11/15	95	60 - 130	96	60 - 130	97	%				
8470052	D8-ACENAPHTHYLENE (sur.)	2016/11/15	90	50 - 130	88	50 - 130	88	%				
8470052	D8-NAPHTHALENE (sur.)	2016/11/15	91	50 - 130	89	50 - 130	90	%				
8470052	TERPHENYL-D14 (sur.)	2016/11/15	80	60 - 130	80	60 - 130	79	%				
8471153	O-TERPHENYL (sur.)	2016/11/15	98	50 - 130	96	50 - 130	94	%				
8471158	D10-ANTHRACENE (sur.)	2016/11/15	76	60 - 130	95	60 - 130	99	%				
8471158	D8-ACENAPHTHYLENE (sur.)	2016/11/15	90	50 - 130	94	50 - 130	94	%				
8471158	D8-NAPHTHALENE (sur.)	2016/11/15	98	50 - 130	99	50 - 130	98	%				
8471158	TERPHENYL-D14 (sur.)	2016/11/15	79	60 - 130	80	60 - 130	81	%				
8467184	Moisture	2016/11/11					<0.30	%	7.1	20		
8467188	Moisture	2016/11/11					<0.30	%	1.5	20		
8467958	Total Aluminum (Al)	2016/11/14					<100	mg/kg	5.2	35	79	70 - 130
8467958	Total Antimony (Sb)	2016/11/14	98	75 - 125	97	75 - 125	<0.10	mg/kg	NC	30	111	70 - 130
8467958	Total Arsenic (As)	2016/11/14	99	75 - 125	101	75 - 125	<0.50	mg/kg	0.062	30	92	70 - 130
8467958	Total Barium (Ba)	2016/11/14	NC	75 - 125	99	75 - 125	<0.10	mg/kg	7.3	35	96	70 - 130
8467958	Total Beryllium (Be)	2016/11/14	97	75 - 125	98	75 - 125	<0.40	mg/kg	NC	30	102	70 - 130
8467958	Total Bismuth (Bi)	2016/11/14					<0.10	mg/kg	NC	30		
8467958	Total Cadmium (Cd)	2016/11/14	112	75 - 125	113	75 - 125	<0.050	mg/kg	NC	30	125	70 - 130
8467958	Total Calcium (Ca)	2016/11/14					<100	mg/kg	8.4	30	88	70 - 130
8467958	Total Chromium (Cr)	2016/11/14	105	75 - 125	99	75 - 125	<1.0	mg/kg	13	30	98	70 - 130
8467958	Total Cobalt (Co)	2016/11/14	100	75 - 125	98	75 - 125	<0.30	mg/kg	2.2	30	95	70 - 130

Maxxam Job #: B6A0684  
Report Date: 2016/11/16

**QUALITY ASSURANCE REPORT(CONT'D)**

SNC LAVALIN ENVIRONMENT INC.  
Client Project #: 640752  
Site Location: Watson Lake Airport  
Your P.O. #: 700365225  
Sampler Initials: MLC

QC Batch	Parameter	Date	Matrix Spike		Spiked Blank		Method Blank		RPD		QC Standard	
			% Recovery	QC Limits	% Recovery	QC Limits	Value	UNITS	Value (%)	QC Limits	% Recovery	QC Limits
8467958	Total Copper (Cu)	2016/11/14	102	75 - 125	104	75 - 125	<0.50	mg/kg	5.0	30	100	70 - 130
8467958	Total Iron (Fe)	2016/11/14					<100	mg/kg	7.4	30	90	70 - 130
8467958	Total Lead (Pb)	2016/11/14	103	75 - 125	103	75 - 125	<0.10	mg/kg	3.8	35	104	70 - 130
8467958	Total Lithium (Li)	2016/11/14	100	75 - 125	101	75 - 125	<5.0	mg/kg	NC	30	97	70 - 130
8467958	Total Magnesium (Mg)	2016/11/14					<100	mg/kg	1.3	30	83	70 - 130
8467958	Total Manganese (Mn)	2016/11/14	NC	75 - 125	97	75 - 125	<0.20	mg/kg	2.8	30	96	70 - 130
8467958	Total Mercury (Hg)	2016/11/14	110	75 - 125	107	75 - 125	<0.050	mg/kg	NC	35	99	70 - 130
8467958	Total Molybdenum (Mo)	2016/11/14	100	75 - 125	98	75 - 125	<0.10	mg/kg	NC	35	117	70 - 130
8467958	Total Nickel (Ni)	2016/11/14	100	75 - 125	100	75 - 125	<0.80	mg/kg	3.6	30	104	70 - 130
8467958	Total Phosphorus (P)	2016/11/14					<10	mg/kg	7.8	30	96	70 - 130
8467958	Total Potassium (K)	2016/11/14					<100	mg/kg	NC	35	77	70 - 130
8467958	Total Selenium (Se)	2016/11/14	110	75 - 125	110	75 - 125	<0.50	mg/kg	NC	30		
8467958	Total Silver (Ag)	2016/11/14	78	75 - 125	77	75 - 125	<0.050	mg/kg	NC	35	84	70 - 130
8467958	Total Sodium (Na)	2016/11/14					<100	mg/kg	NC	35	74	70 - 130
8467958	Total Strontium (Sr)	2016/11/14	90	75 - 125	96	75 - 125	0.11, RDL=0.10	mg/kg	12	35	98	70 - 130
8467958	Total Thallium (Tl)	2016/11/14	101	75 - 125	104	75 - 125	<0.050	mg/kg	NC	30	96	70 - 130
8467958	Total Tin (Sn)	2016/11/14	94	75 - 125	91	75 - 125	<0.10	mg/kg	NC	35	92	70 - 130
8467958	Total Titanium (Ti)	2016/11/14	NC	75 - 125	95	75 - 125	<1.0	mg/kg	5.1	35		
8467958	Total Uranium (U)	2016/11/14	103	75 - 125	103	75 - 125	<0.050	mg/kg	NC	30	101	70 - 130
8467958	Total Vanadium (V)	2016/11/14	101	75 - 125	96	75 - 125	<2.0	mg/kg	NC	30	96	70 - 130
8467958	Total Zinc (Zn)	2016/11/14	114	75 - 125	114	75 - 125	<1.0	mg/kg	1.6	30	106	70 - 130
8467958	Total Zirconium (Zr)	2016/11/14					<0.50	mg/kg	NC	30		
8467959	Soluble (2:1) pH	2016/11/14			100	97 - 103			0.23	N/A		
8468163	Benzene	2016/11/13	124	60 - 140	100	60 - 140	<0.0050	mg/kg	NC	40		
8468163	Ethylbenzene	2016/11/13	121	60 - 140	103	60 - 140	<0.010	mg/kg	NC	40		
8468163	m & p-Xylene	2016/11/13	116	60 - 140	100	60 - 140	<0.040	mg/kg	NC	40		
8468163	Methyl-tert-butylether (MTBE)	2016/11/13					<0.10	mg/kg	NC	40		
8468163	o-Xylene	2016/11/13	105	60 - 140	90	60 - 140	<0.040	mg/kg	NC	40		
8468163	Styrene	2016/11/13					<0.030	mg/kg	NC	40		

Maxxam Job #: B6A0684  
Report Date: 2016/11/16

**QUALITY ASSURANCE REPORT(CONT'D)**

SNC LAVALIN ENVIRONMENT INC.  
Client Project #: 640752  
Site Location: Watson Lake Airport  
Your P.O. #: 700365225  
Sampler Initials: MLC

QC Batch	Parameter	Date	Matrix Spike		Spiked Blank		Method Blank		RPD		QC Standard	
			% Recovery	QC Limits	% Recovery	QC Limits	Value	UNITS	Value (%)	QC Limits	% Recovery	QC Limits
8468163	Toluene	2016/11/13	117	60 - 140	100	60 - 140	<0.020	mg/kg	NC	40		
8468163	VH C6-C10	2016/11/13			70	60 - 140	<10	mg/kg	NC	40		
8468163	Xylenes (Total)	2016/11/13					<0.040	mg/kg	NC	40		
8468164	Benzene	2016/11/12	108	60 - 140	92	60 - 140	<0.0050	mg/kg	NC	40		
8468164	Ethylbenzene	2016/11/12	109	60 - 140	92	60 - 140	<0.010	mg/kg	NC	40		
8468164	m & p-Xylene	2016/11/12	105	60 - 140	90	60 - 140	<0.040	mg/kg	NC	40		
8468164	Methyl-tert-butylether (MTBE)	2016/11/12					<0.10	mg/kg	NC	40		
8468164	o-Xylene	2016/11/12	105	60 - 140	89	60 - 140	<0.040	mg/kg	NC	40		
8468164	Styrene	2016/11/12					<0.030	mg/kg	NC	40		
8468164	Toluene	2016/11/12	104	60 - 140	89	60 - 140	<0.020	mg/kg	NC	40		
8468164	VH C6-C10	2016/11/12			84	60 - 140	<10	mg/kg	NC	40		
8468164	Xylenes (Total)	2016/11/12					<0.040	mg/kg	NC	40		
8470047	EPH (C10-C19)	2016/11/15	107	50 - 130	105	50 - 130	<100	mg/kg	NC	40		
8470047	EPH (C19-C32)	2016/11/15	106	50 - 130	106	50 - 130	<100	mg/kg	NC	40		
8470052	2-Methylnaphthalene	2016/11/15	86	50 - 130	85	50 - 130	<0.050	mg/kg	NC	50		
8470052	Acenaphthene	2016/11/15	88	50 - 130	89	50 - 130	<0.050	mg/kg	NC	50		
8470052	Acenaphthylene	2016/11/15	85	50 - 130	85	50 - 130	<0.050	mg/kg	NC	50		
8470052	Anthracene	2016/11/15	89	60 - 130	92	60 - 130	<0.050	mg/kg	NC	50		
8470052	Benzo(a)anthracene	2016/11/15	85	60 - 130	85	60 - 130	<0.050	mg/kg	NC	50		
8470052	Benzo(a)pyrene	2016/11/15	83	60 - 130	83	60 - 130	<0.050	mg/kg	NC	50		
8470052	Benzo(b&j)fluoranthene	2016/11/15	90	60 - 130	90	60 - 130	<0.050	mg/kg	NC	50		
8470052	Benzo(b)fluoranthene	2016/11/15	88	60 - 130	87	60 - 130	<0.050	mg/kg	NC	50		
8470052	Benzo(g,h,i)perylene	2016/11/15	82	60 - 130	76	60 - 130	<0.050	mg/kg	NC	50		
8470052	Benzo(k)fluoranthene	2016/11/15	88	60 - 130	85	60 - 130	<0.050	mg/kg	NC	50		
8470052	Chrysene	2016/11/15	88	60 - 130	89	60 - 130	<0.050	mg/kg	NC	50		
8470052	Dibenz(a,h)anthracene	2016/11/15	83	60 - 130	79	60 - 130	<0.050	mg/kg	NC	50		
8470052	Fluoranthene	2016/11/15	88	60 - 130	90	60 - 130	<0.050	mg/kg	NC	50		
8470052	Fluorene	2016/11/15	85	50 - 130	86	50 - 130	<0.050	mg/kg	NC	50		
8470052	Indeno(1,2,3-cd)pyrene	2016/11/15	84	60 - 130	79	60 - 130	<0.050	mg/kg	NC	50		
8470052	Naphthalene	2016/11/15	85	50 - 130	81	50 - 130	<0.050	mg/kg	NC	50		

Maxxam Job #: B6A0684  
Report Date: 2016/11/16

**QUALITY ASSURANCE REPORT(CONT'D)**

SNC LAVALIN ENVIRONMENT INC.  
Client Project #: 640752  
Site Location: Watson Lake Airport  
Your P.O. #: 700365225  
Sampler Initials: MLC

QC Batch	Parameter	Date	Matrix Spike		Spiked Blank		Method Blank		RPD		QC Standard	
			% Recovery	QC Limits	% Recovery	QC Limits	Value	UNITS	Value (%)	QC Limits	% Recovery	QC Limits
8470052	Phenanthrene	2016/11/15	85	60 - 130	86	60 - 130	<0.050	mg/kg	NC	50		
8470052	Pyrene	2016/11/15	87	60 - 130	90	60 - 130	<0.050	mg/kg	NC	50		
8471153	EPH (C10-C19)	2016/11/15	107	50 - 130	104	50 - 130	<100	mg/kg	NC	40		
8471153	EPH (C19-C32)	2016/11/15	107	50 - 130	106	50 - 130	<100	mg/kg	NC	40		
8471158	2-Methylnaphthalene	2016/11/15	87	50 - 130	94	50 - 130	<0.050	mg/kg	NC	50		
8471158	Acenaphthene	2016/11/15	91	50 - 130	95	50 - 130	<0.050	mg/kg	NC	50		
8471158	Acenaphthylene	2016/11/15	87	50 - 130	94	50 - 130	<0.050	mg/kg	NC	50		
8471158	Anthracene	2016/11/15	72	60 - 130	87	60 - 130	<0.050	mg/kg	NC	50		
8471158	Benzo(a)anthracene	2016/11/15	79	60 - 130	86	60 - 130	<0.050	mg/kg	NC	50		
8471158	Benzo(a)pyrene	2016/11/15	72	60 - 130	88	60 - 130	<0.050	mg/kg	NC	50		
8471158	Benzo(b&j)fluoranthene	2016/11/15	89	60 - 130	91	60 - 130	<0.050	mg/kg	NC	50		
8471158	Benzo(b)fluoranthene	2016/11/15	91	60 - 130	93	60 - 130	<0.050	mg/kg	NC	50		
8471158	Benzo(g,h,i)perylene	2016/11/15	84	60 - 130	85	60 - 130	<0.050	mg/kg	NC	50		
8471158	Benzo(k)fluoranthene	2016/11/15	83	60 - 130	91	60 - 130	<0.050	mg/kg	NC	50		
8471158	Chrysene	2016/11/15	86	60 - 130	90	60 - 130	<0.050	mg/kg	NC	50		
8471158	Dibenz(a,h)anthracene	2016/11/15	86	60 - 130	86	60 - 130	<0.050	mg/kg	NC	50		
8471158	Fluoranthene	2016/11/15	83	60 - 130	90	60 - 130	<0.050	mg/kg	NC	50		
8471158	Fluorene	2016/11/15	81	50 - 130	87	50 - 130	<0.050	mg/kg	NC	50		
8471158	Indeno(1,2,3-cd)pyrene	2016/11/15	86	60 - 130	87	60 - 130	<0.050	mg/kg	NC	50		
8471158	Naphthalene	2016/11/15	87	50 - 130	93	50 - 130	<0.050	mg/kg	NC	50		
8471158	Phenanthrene	2016/11/15	84	60 - 130	91	60 - 130	<0.050	mg/kg	NC	50		

Maxxam Job #: B6A0684  
Report Date: 2016/11/16

**QUALITY ASSURANCE REPORT(CONT'D)**

SNC LAVALIN ENVIRONMENT INC.  
Client Project #: 640752  
Site Location: Watson Lake Airport  
Your P.O. #: 700365225  
Sampler Initials: MLC

QC Batch	Parameter	Date	Matrix Spike		Spiked Blank		Method Blank		RPD		QC Standard	
			% Recovery	QC Limits	% Recovery	QC Limits	Value	UNITS	Value (%)	QC Limits	% Recovery	QC Limits
8471158	Pyrene	2016/11/15	84	60 - 130	91	60 - 130	<0.050	mg/kg	NC	50		

N/A = Not Applicable

Duplicate: Paired analysis of a separate portion of the same sample. Used to evaluate the variance in the measurement.

Matrix Spike: A sample to which a known amount of the analyte of interest has been added. Used to evaluate sample matrix interference.

QC Standard: A sample of known concentration prepared by an external agency under stringent conditions. Used as an independent check of method accuracy.

Spiked Blank: A blank matrix sample to which a known amount of the analyte, usually from a second source, has been added. Used to evaluate method accuracy.

Method Blank: A blank matrix containing all reagents used in the analytical procedure. Used to identify laboratory contamination.

Surrogate: A pure or isotopically labeled compound whose behavior mirrors the analytes of interest. Used to evaluate extraction efficiency.

NC (Matrix Spike): The recovery in the matrix spike was not calculated. The relative difference between the concentration in the parent sample and the spiked amount was too small to permit a reliable recovery calculation (matrix spike concentration was less than 2x that of the native sample concentration).

NC (Duplicate RPD): The duplicate RPD was not calculated. The concentration in the sample and/or duplicate was too low to permit a reliable RPD calculation (one or both samples < 5x RDL).

Maxxam Job #: B6A0684  
Report Date: 2016/11/16

SNC LAVALIN ENVIRONMENT INC.  
Client Project #: 640752  
Site Location: Watson Lake Airport  
Your P.O. #: 700365225  
Sampler Initials: MLC

### VALIDATION SIGNATURE PAGE

The analytical data and all QC contained in this report were reviewed and validated by the following individual(s).



Rob Reinert, B.Sc., Scientific Spécialist

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Maxxam has procedures in place to guard against improper use of the electronic signature and have the required "signatories", as per section 5.10.2 of ISO/IEC 17025:2005(E), signing the reports. For Service Group specific validation please refer to the Validation Signature Page.





Maxxam Analytics International Corporation o/a Maxxam Analytics  
 4606 Canada Way, Burnaby, British Columbia Canada V5G 1K5 Tel: (604) 734 7276 Toll-free 800-563-6266 Fax: (604) 731 2386 www.maxxam.ca

<b>INVOICE TO:</b>		<b>Report Information</b>		<b>Project Information</b>	
Company Name	#1756 PUBLIC WORKS & GOVERNMENT SERVICE	Company Name	#26479 SNC LAVALIN ENVIRONMENT INC.	Quotation #	B61631
Contact Name	Robert Price	Contact Name	Michael Chao	P.O. #	Pending
Address	641- 800 BURRARD STREET VANCOUVER BC V6Z 2V8	Address	8648 COMMERCE COURT BURNABY BC V5A 4N6	Project #	640752
Phone	(604) 775-6810 Fax (604) 775-6650	Phone	(604) 515-5151 Fax:	Project Name	AEC 228
Email	robert.price@pwgsc-tpsgc.gc.ca	Email	Michael.Chao@snc-lavalin.com	Site #	Watson Lake Airport
				Sampled By	MJC



B6A0684\_COC



C#510054-06-01

**only**

Bottle Order #:  
510054

Project Manager  
Samantha Fregien

Regulatory Criteria <b>Yukon CSR Soil</b>	Special Instructions	Analysis Requested	Turnaround Time (TAT) Required
		Regulated Drinking Water ? (Y/N) Metals Field Filtered ? (Y/N) CSR BTEX/VPH LEPH & HEPH with CSR PAH CSR/CCME Diss. Metals in Water w/ CV / Hg CSR VOC + VPH CSR/CCME Metals in Soil	Please provide advance notice for rush projects <input checked="" type="checkbox"/> Regular (Standard) TAT <small>(will be applied if Rush TAT is not specified)</small> Standard TAT = 5-7 Working days for most tests. Please note: Standard TAT for certain tests such as BOD and Dioxins/Furans are > 5 days - contact your Project Manager for details. Job Specific Rush TAT (if applies to entire submission) Date Required: _____ Time Required: _____ Rush Confirmation Number _____ (call lab for #)

Note: For regulated drinking water samples - please use the Drinking Water Chain of Custody Form

Samples must be kept cool (< 10°C) from time of sampling until delivery to maxxam

Sample Barcode Label	Sample (Location) Identification	Date Sampled	Time Sampled	Matrix	Regulated Drinking Water ? (Y/N)	Metals Field Filtered ? (Y/N)	CSR BTEX/VPH	LEPH & HEPH with CSR PAH	CSR/CCME Diss. Metals in Water w/ CV / Hg	CSR VOC + VPH	CSR/CCME Metals in Soil	# of Bottles	Comments
1	22B-BH16-8-1	16/11/06	8:00	Soil								2	
2	22B-BH16-8-2		8:10				X	X			X	2	RECEIVED IN WHITEHORSE
3	22B-BH16-8-3		8:20				X	X			X	2	BY: <u>Syomo @ 0930</u>
4	22B-BH16-8-4		8:30				X	X			X	2	2016-11-08
5	22B-BH16-9-1		9:00				X	X			X	2	TEMP: 3 / 2 / 3 → cooler #
6	22B-BH16-9-2		9:10				X	X			X	2	
7	22B-BH16-10-1		10:00				X	X			X	2	
8	22B-BH16-10-2		10:10				X	X			X	2	
9	22B-BH16-11-1		10:20				X	X			X	2	
10	22B-BH16-11-2		10:30				X	X			X	2	

HOLD

RELINQUISHED BY: (Signature/Print) <u>Michael Chao</u> Mike Chao	Date: (YY/MM/DD) 16/11/06	Time 17:00	RECEIVED BY: (Signature/Print) <u>Laurel Berthier</u>	Date: (YY/MM/DD) 2016/11/09	Time 13:00	# jars used and not submitted	Lab Use Only
							Time Sensitive <input type="checkbox"/> Temperature (°C) on Receipt <u>11</u> Custody Seal Intact on Cooler? <input checked="" type="checkbox"/> Yes <input type="checkbox"/> No

\* IT IS THE RESPONSIBILITY OF THE RELINQUISHER TO ENSURE THE ACCURACY OF THE CHAIN OF CUSTODY RECORD. AN INCOMPLETE CHAIN OF CUSTODY MAY RESULT IN ANALYTICAL TAT DELAYS.



Maxxam Analytics International Corporation c/o Maxxam Analytics  
 4606 Canada Way, Burnaby, British Columbia Canada V5G 1K5 Tel:(604) 734 7276 Toll-free:800-663-6266 Fax:(604) 731 2396 www.maxxam.ca

<b>INVOICE TO:</b>		<b>Report Information</b>		<b>Project Information</b>	
Company Name	#1756 PUBLIC WORKS & GOVERNMENT SERVICE	Company Name	#26479 SNC LAVALIN ENVIRONMENT INC.	Quotation #	B61631
Contact Name	Robert Price	Contact Name	Michael Chao, Marta Rosa	P.O.#	Pending
Address	641- 800 BURNARD STREET VANCOUVER BC V6Z 2V8	Address	8648 COMMERCE COURT BURNABY BC V5A 4N6	Project #	640752
Phone	(604) 775-6810	Phone	(604) 515-5151	Project Name	ARC 22B
Email	robert.price@pwgsc-tpsgc.gc.ca	Email	Michael.Chao@snc-lavalin.com	Site #	Watson Lake Airport
				Sampled By	MLC



B6A0684\_COC

510054  
 Project Manager  
 Samantha Fregien

Regulatory Criteria <i>Yukon CSR Soil</i>	Special Instructions	Analysis Requested	Turnaround Time (TAT) Required
<p>Note: For regulated drinking water samples - please use the Drinking Water Chain of Custody Form</p> <p>Samples must be kept cool (&lt; 10°C) from time of sampling until delivery to maxxam</p>		Regular (Standard) TAT (will be applied if Rush TAT is not specified) Standard TAT = 5-7 Working days for most tests. Please note: Standard TAT for certain tests such as BOD and Dioxins/Furans are > 5 days - contact your Project Manager for details.	<input checked="" type="checkbox"/> Regular (Standard) TAT <input type="checkbox"/> Job Specific Rush TAT (if applies to entire submission)

Sample Barcode Label	Sample (Location) Identification	Date Sampled	Time Sampled	Matrix	Regulated Drinking Water? (Y/N)	Metals Field Filtered? (Y/N)	CSR BTEX/PH	LEPH & HEPH with CSR PAH	CSR/CCME Diss. Metals in Water w/ CV Hg	CSR VOC + VPH	CSR/CCME Metals in Soil	# of Bottles	Comments
1	22B-BH16-11-3	16/11/06	10:40	Soil								2	X
2	22B-BH16-12-1	↓	12:00	↓								2	X
3	22B-BH16-12-2	↓	12:10	↓			X	X			X	2	
4	22B-BH16-12-3	↓	12:20	↓			X	X				2	
5													
6													
7													
8													
9													
10													

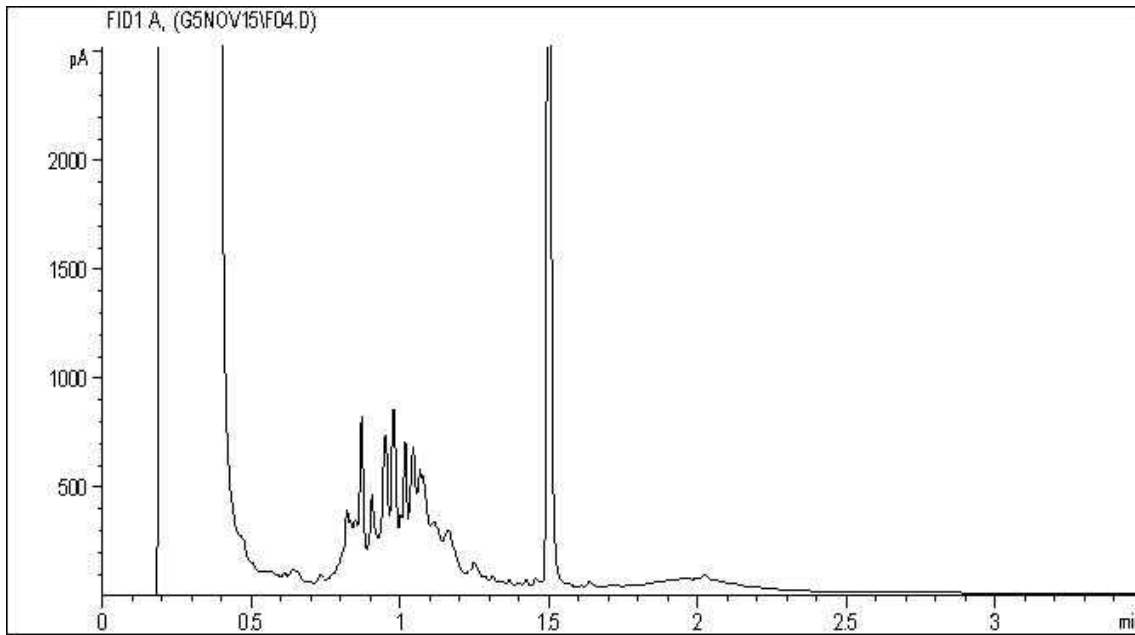
RECEIVED IN WHITEHORSE  
 BY: *Sydney@9937*  
 2016-11-08  
 cooler #  
 TEMP: 3 / 2 / 3 → 1

RELINQUISHED BY: (Signature/Print)	Date: (YY/MM/DD)	Time	RECEIVED BY: (Signature/Print)	Date: (YY/MM/DD)	Time	# Jars used and not submitted	Lab Use Only
<i>Mike Chao</i>	16/11/06	12:00	<i>Michael Chao</i>	2016/11/09	15:00		Time Sensitive <input type="checkbox"/> Temperature (°C) on Receipt: 111 Custody Contact on Cooler? <input type="checkbox"/> Yes <input type="checkbox"/> No

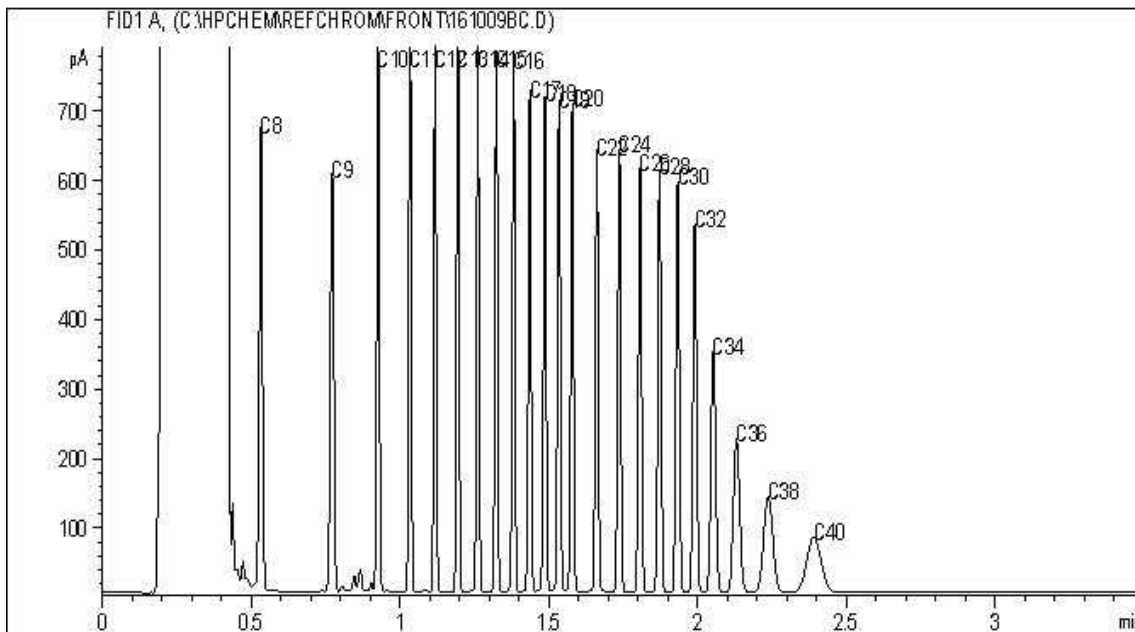
\* IT IS THE RESPONSIBILITY OF THE RELINQUISHER TO ENSURE THE ACCURACY OF THE CHAIN OF CUSTODY RECORD. AN INCOMPLETE CHAIN OF CUSTODY MAY RESULT IN ANALYTICAL TAT DELAYS.



EPH in Soil by GC/FID Chromatogram



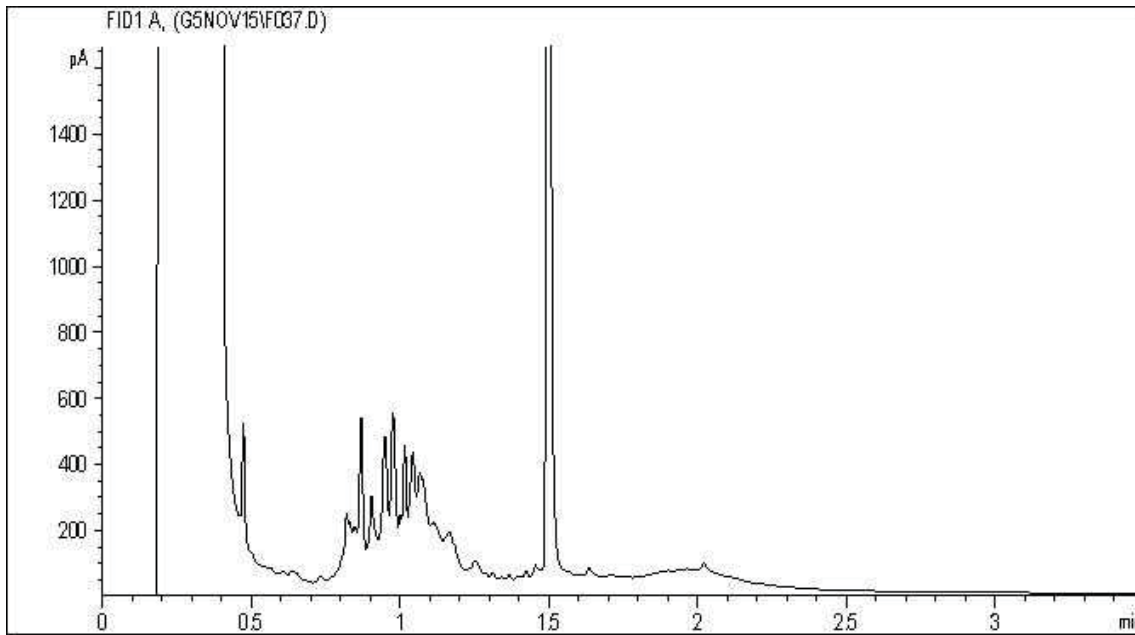
Carbon Range Distribution - Reference Chromatogram



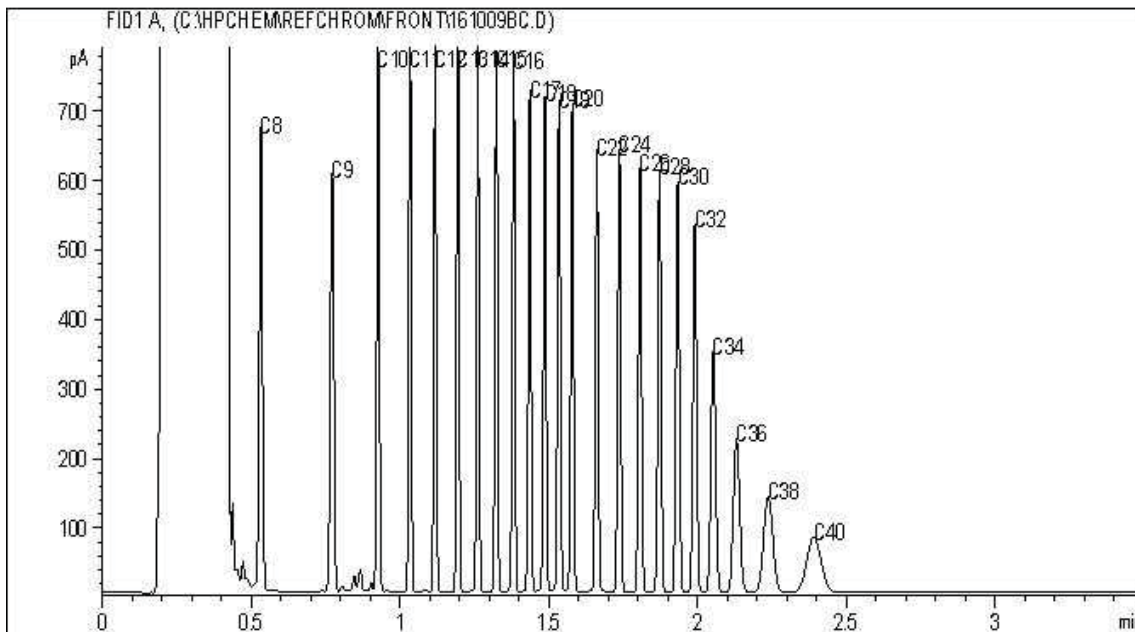
TYPICAL PRODUCT CARBON NUMBER RANGES

Note: This information is provided for reference purposes only. Should detailed chemist interpretation or fingerprinting be required, please contact the laboratory.

EPH in Soil by GC/FID Chromatogram



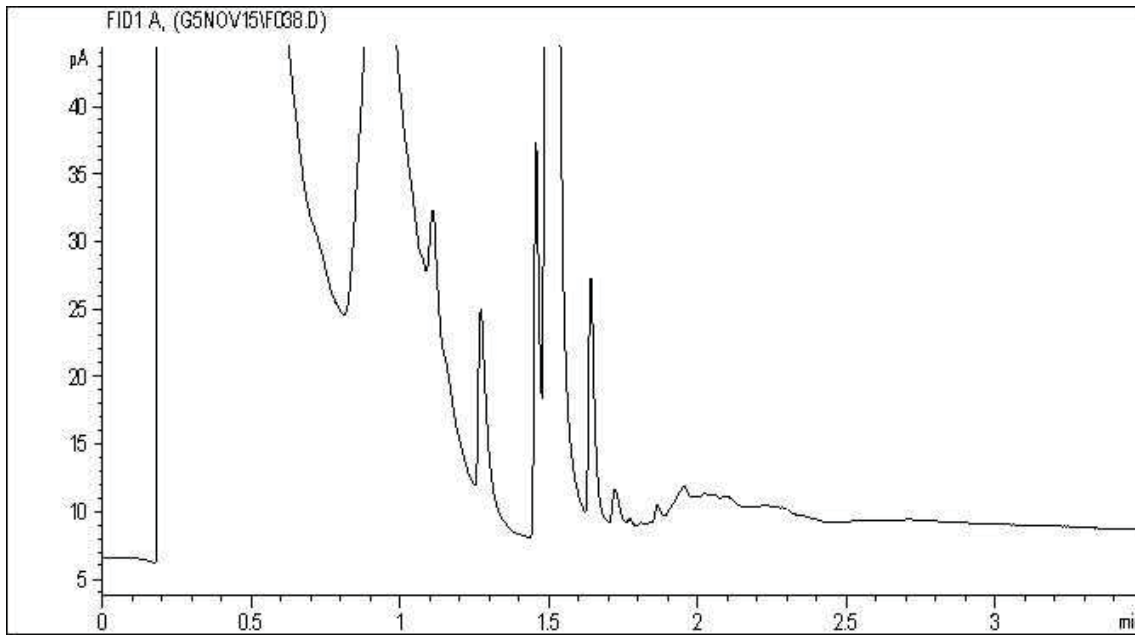
Carbon Range Distribution - Reference Chromatogram



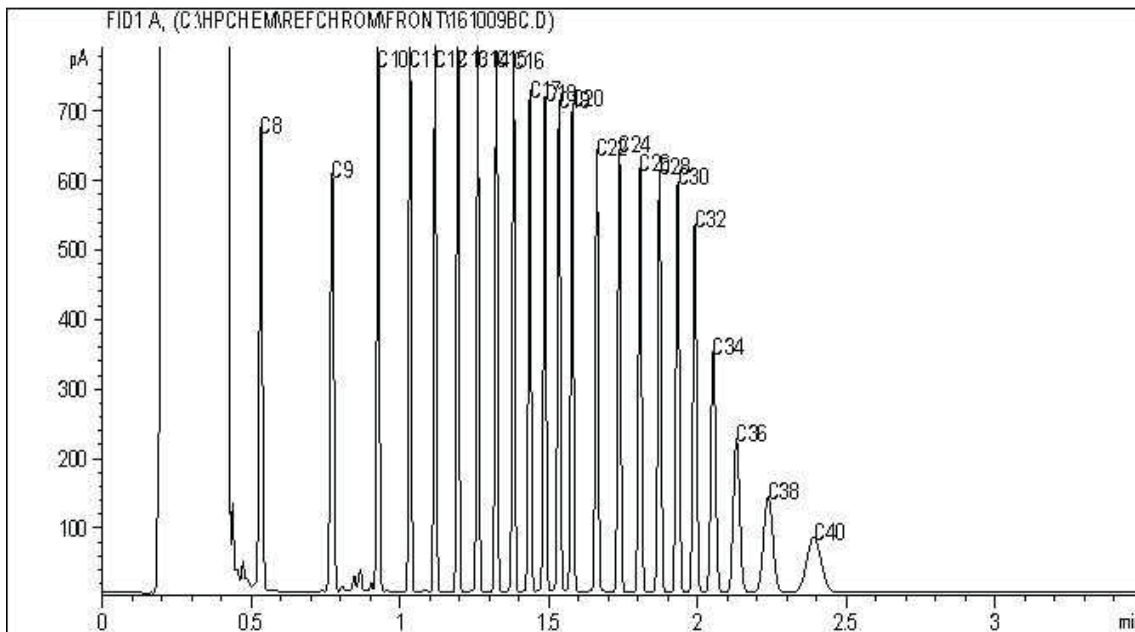
TYPICAL PRODUCT CARBON NUMBER RANGES

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EPH in Soil by GC/FID Chromatogram



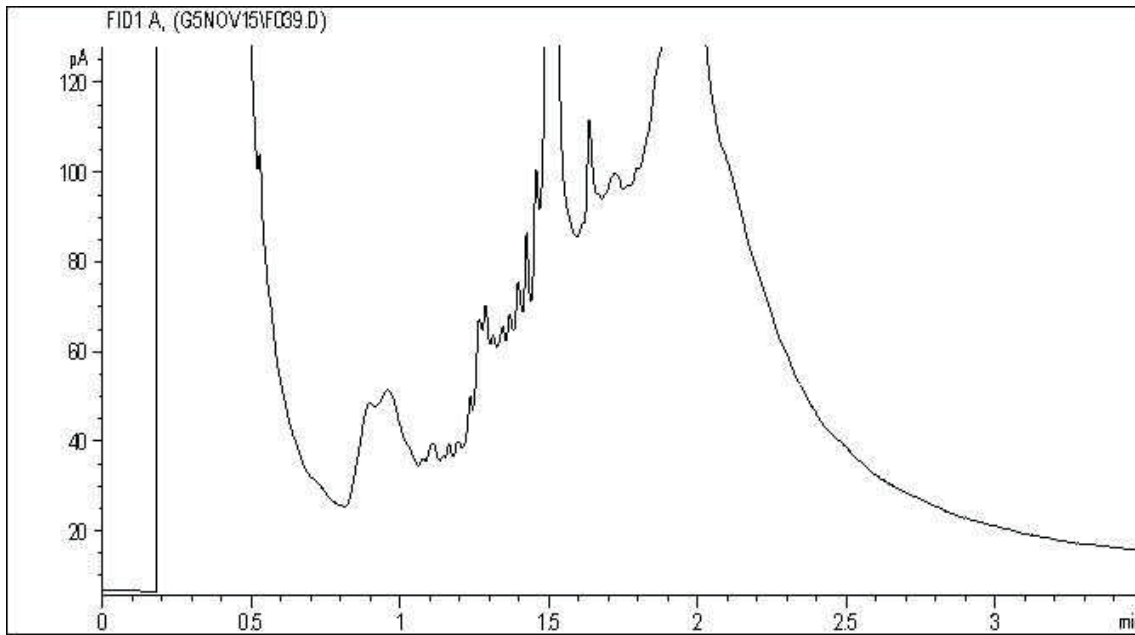
Carbon Range Distribution - Reference Chromatogram



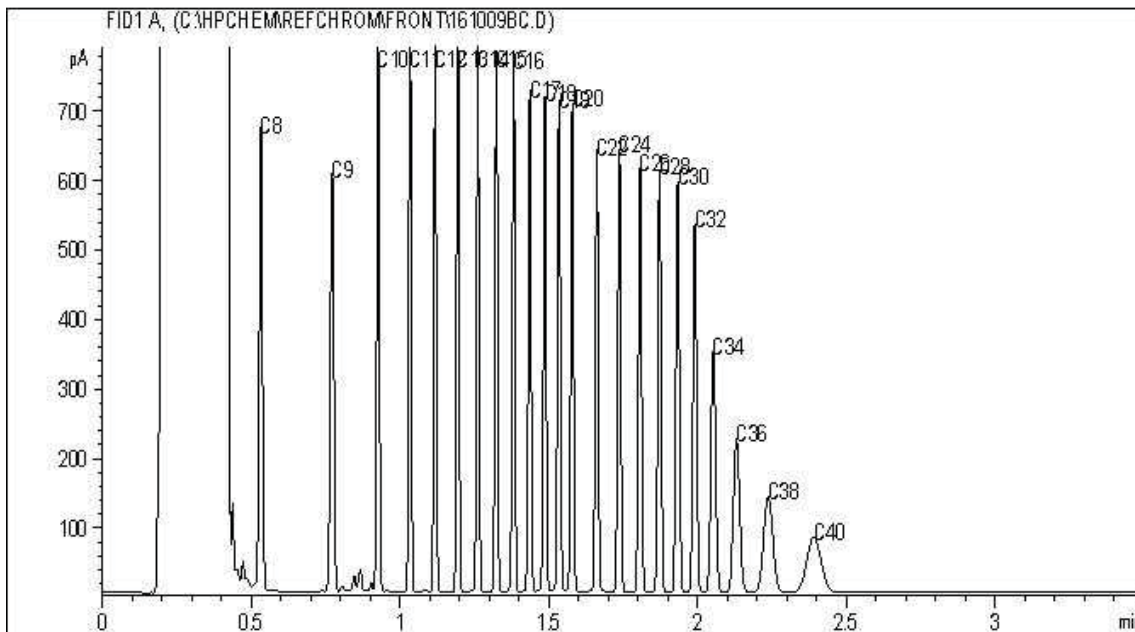
TYPICAL PRODUCT CARBON NUMBER RANGES

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EPH in Soil by GC/FID Chromatogram



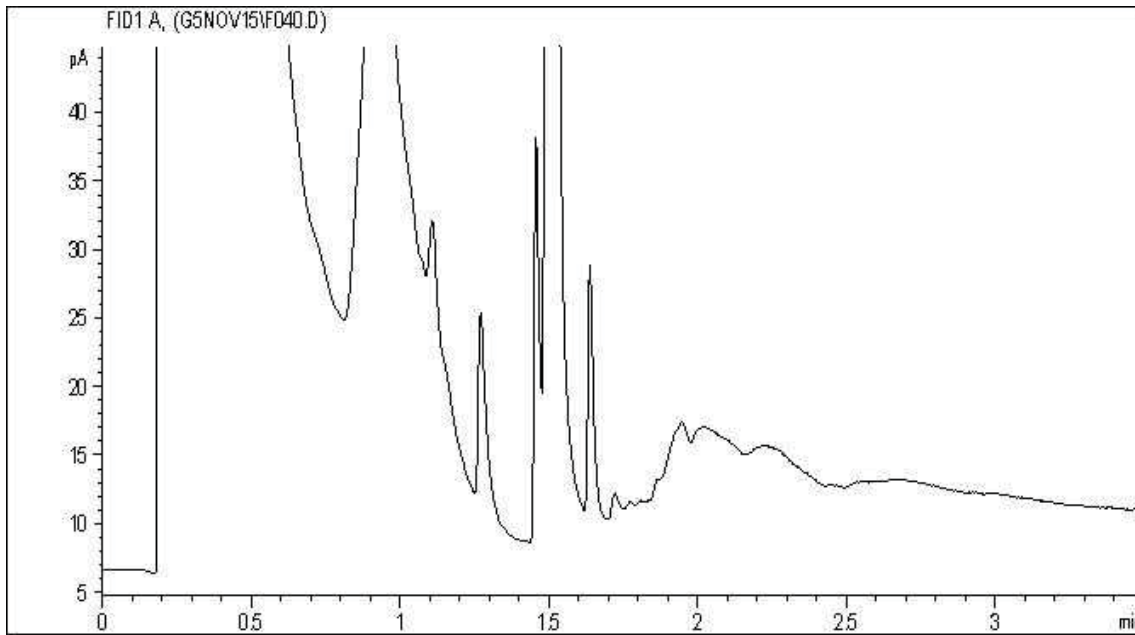
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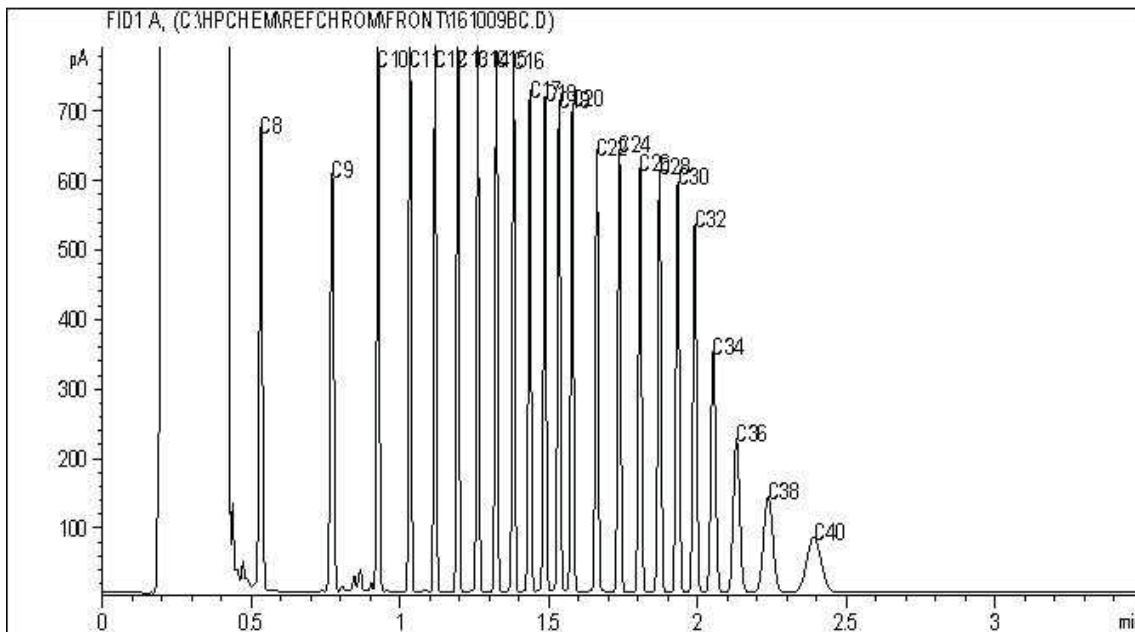
TYPICAL PRODUCT CARBON NUMBER RANGES

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EPH in Soil by GC/FID Chromatogram



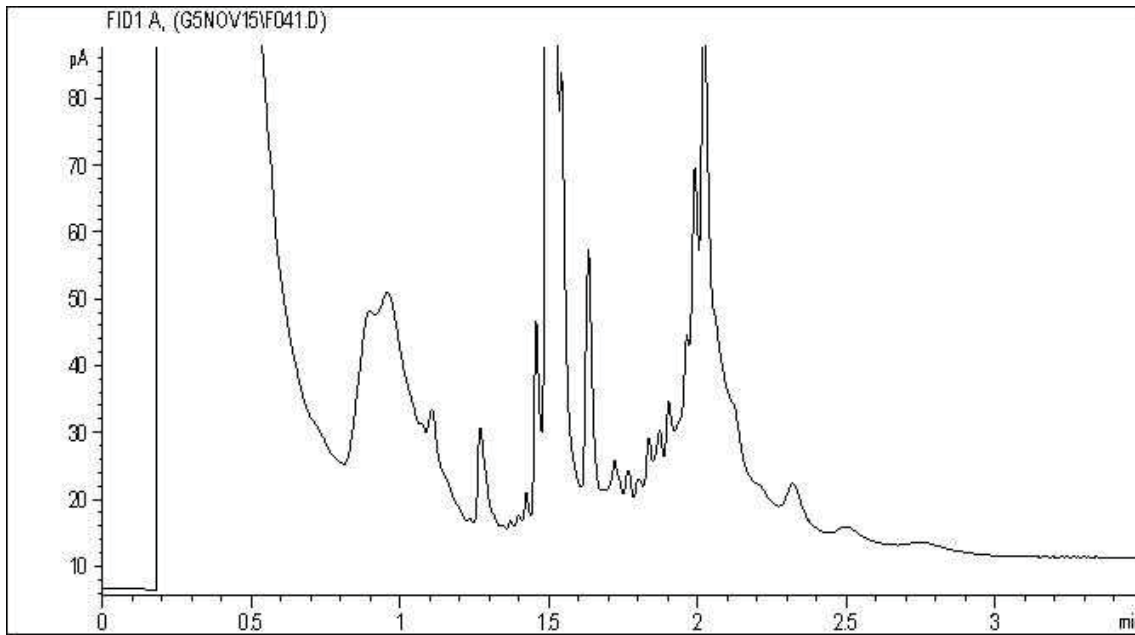
Carbon Range Distribution - Reference Chromatogram



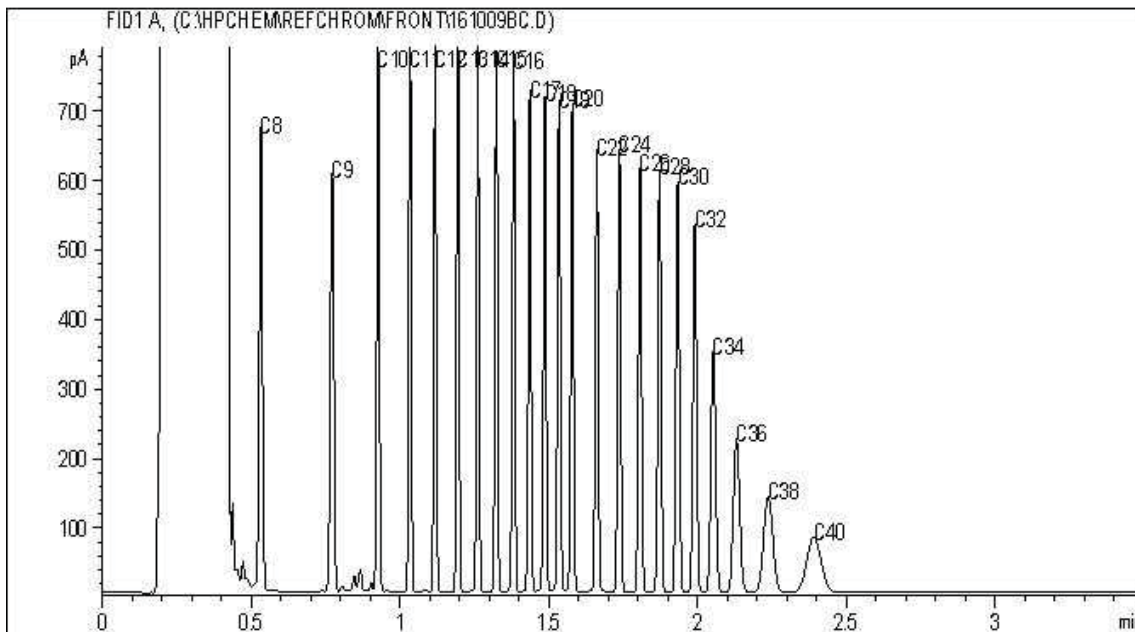
TYPICAL PRODUCT CARBON NUMBER RANGES

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EPH in Soil by GC/FID Chromatogram



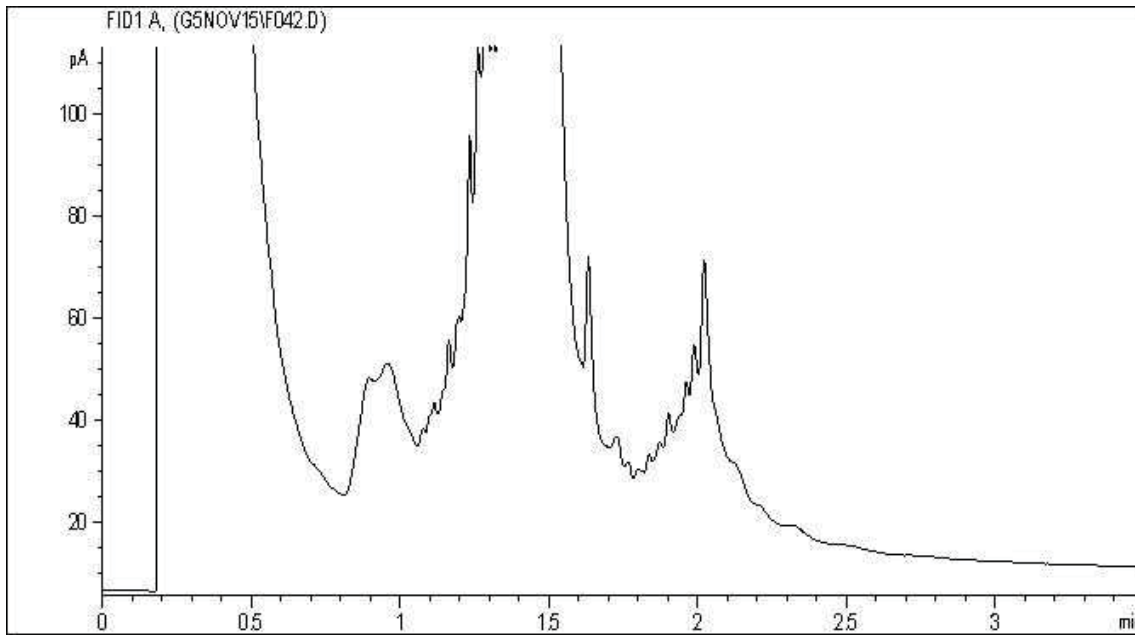
Carbon Range Distribution - Reference Chromatogram



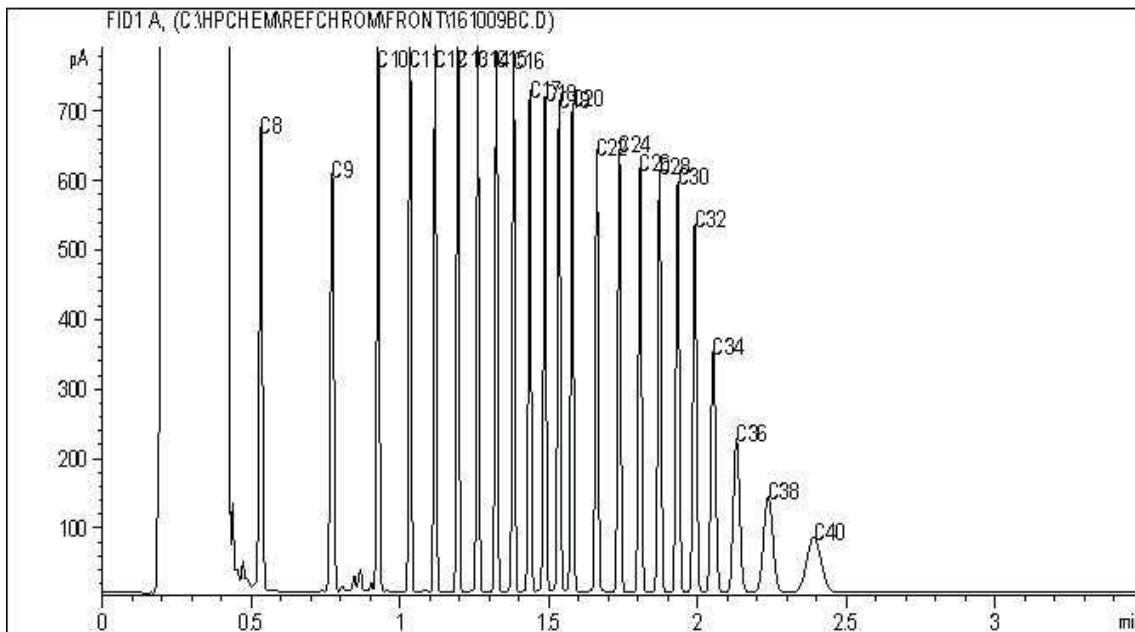
TYPICAL PRODUCT CARBON NUMBER RANGES

**Note:** This information is provided for reference purposes only. Should detailed chemist interpretation or fingerprinting be required, please contact the laboratory.

EPH in Soil by GC/FID Chromatogram



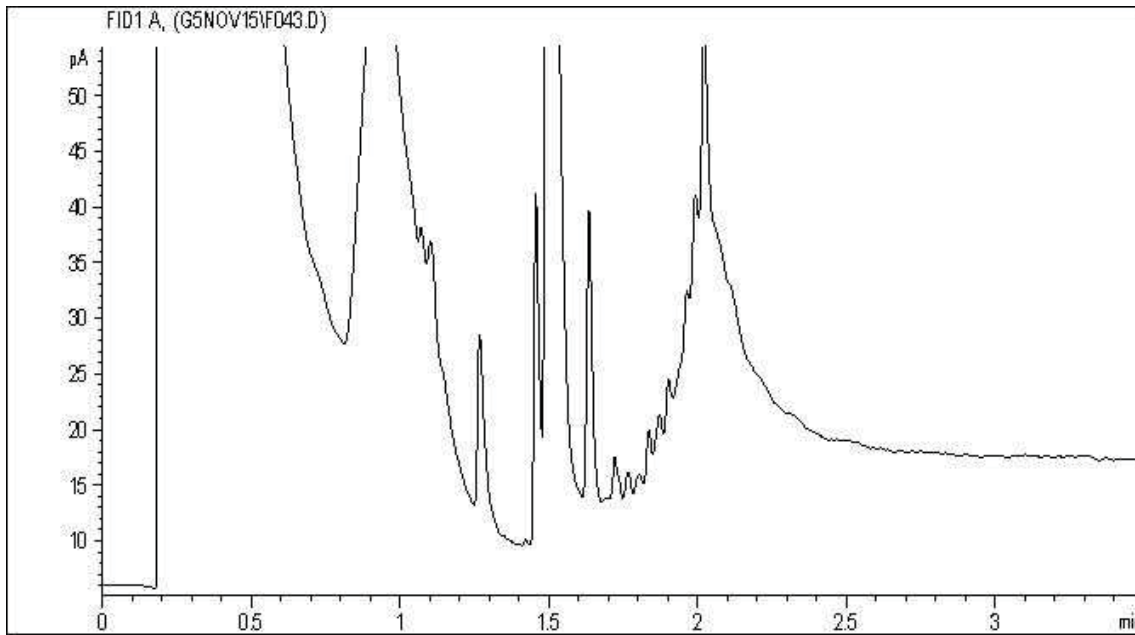
Carbon Range Distribution - Reference Chromatogram



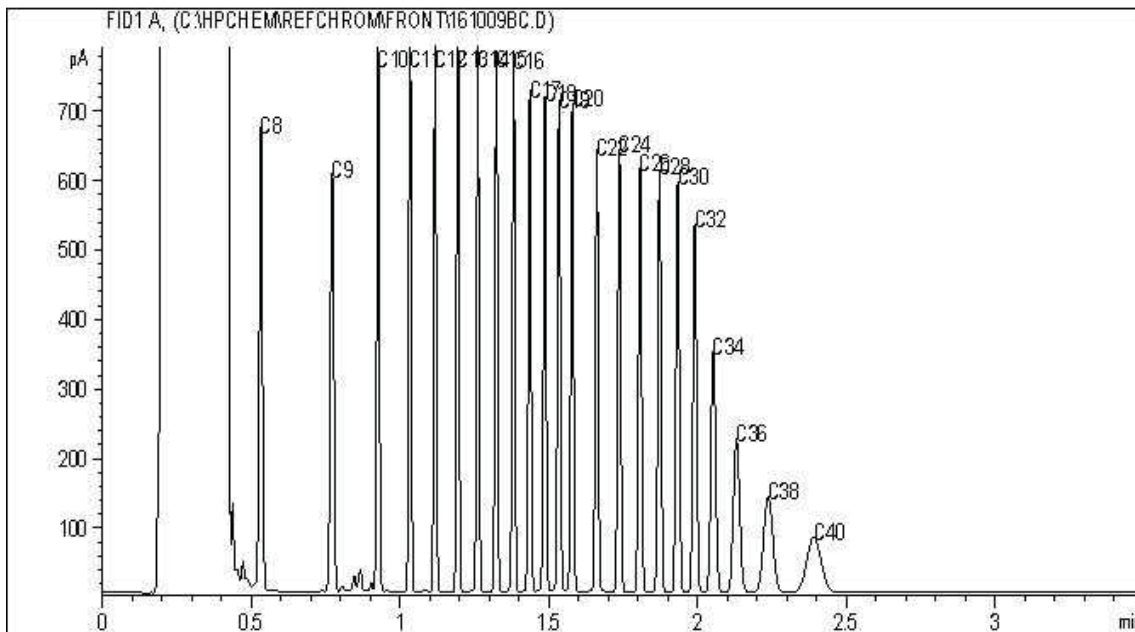
TYPICAL PRODUCT CARBON NUMBER RANGES

Note: This information is provided for reference purposes only. Should detailed chemist interpretation or fingerprinting be required, please contact the laboratory.

EPH in Soil by GC/FID Chromatogram



Carbon Range Distribution - Reference Chromatogram

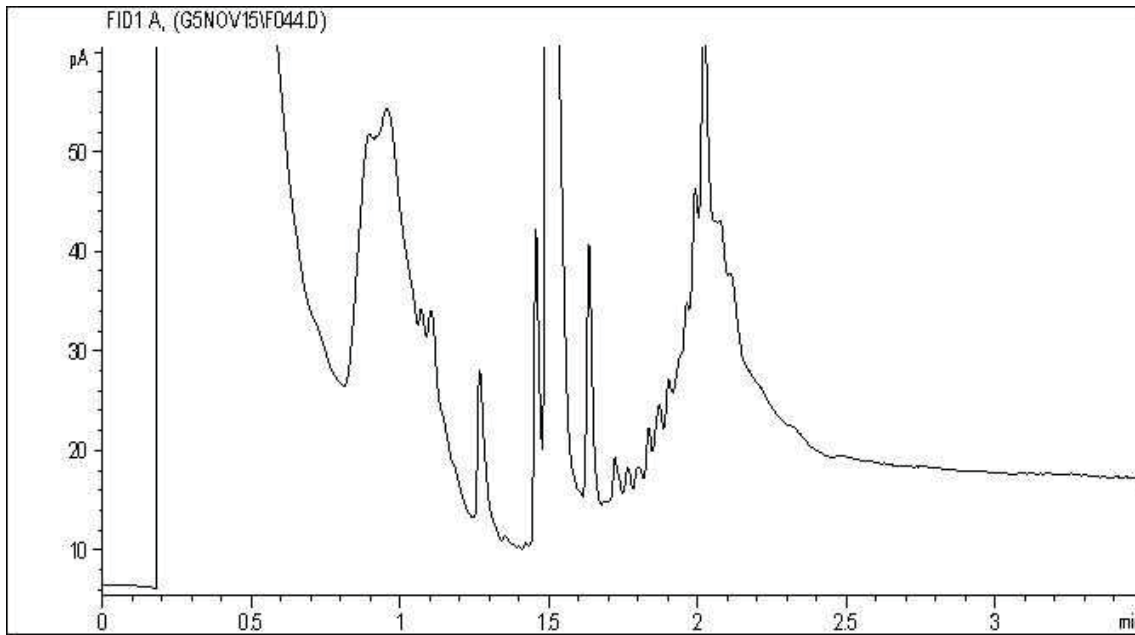


TYPICAL PRODUCT CARBON NUMBER RANGES

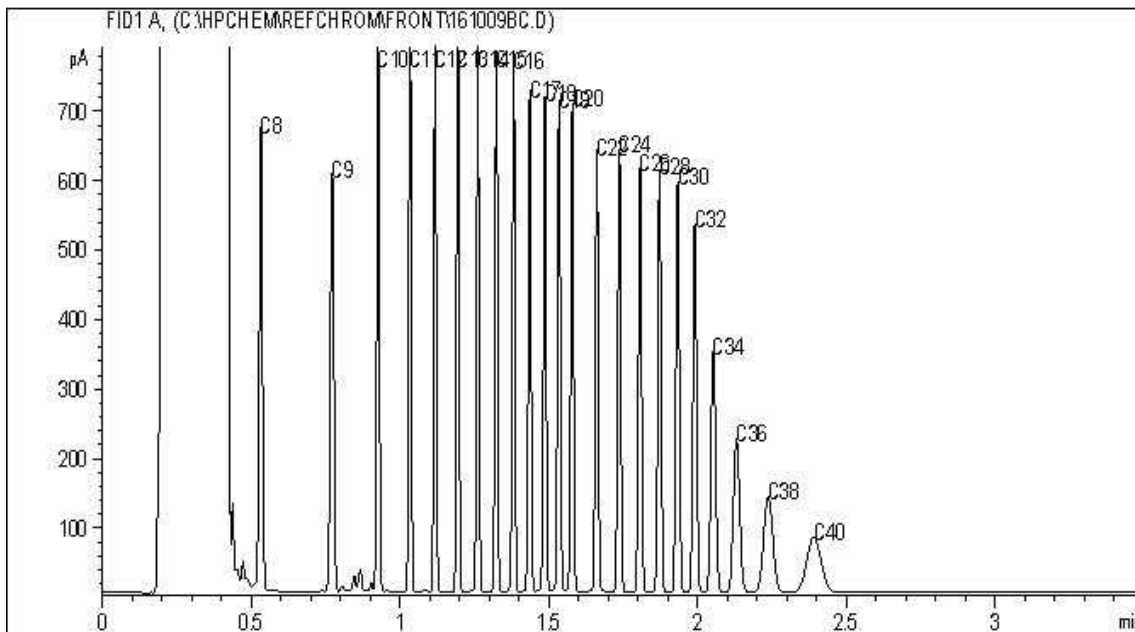
Note: This information is provided for reference purposes only. Should detailed chemist interpretation or fingerprinting be required, please contact the laboratory.



EPH in Soil by GC/FID Chromatogram



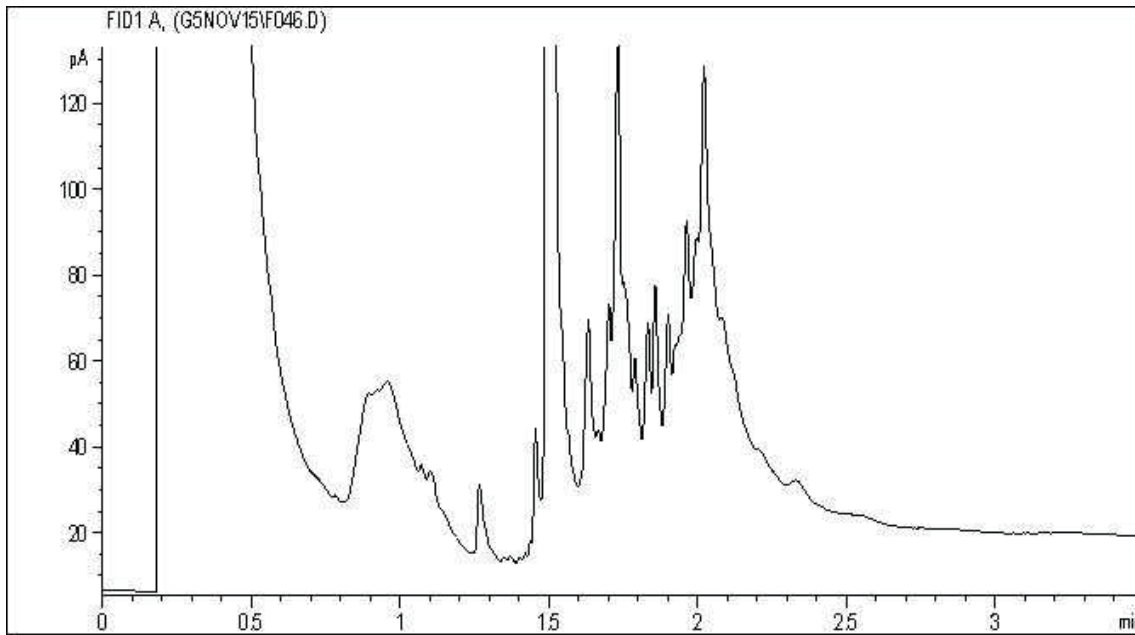
Carbon Range Distribution - Reference Chromatogram



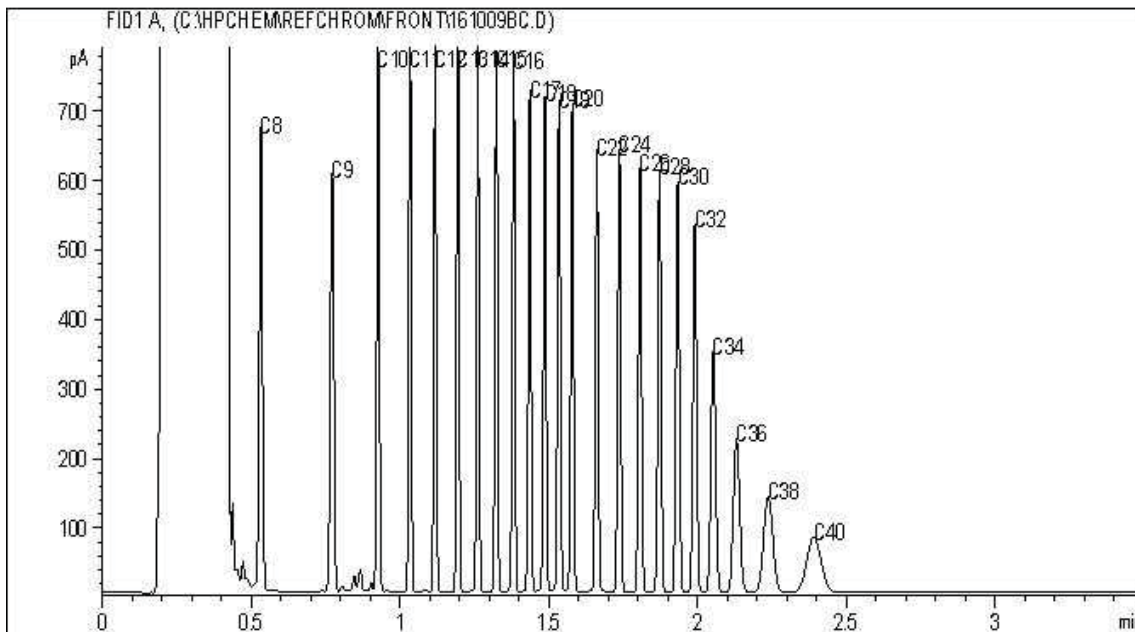
TYPICAL PRODUCT CARBON NUMBER RANGES

Note: This information is provided for reference purposes only. Should detailed chemist interpretation or fingerprinting be required, please contact the laboratory.

EPH in Soil by GC/FID Chromatogram



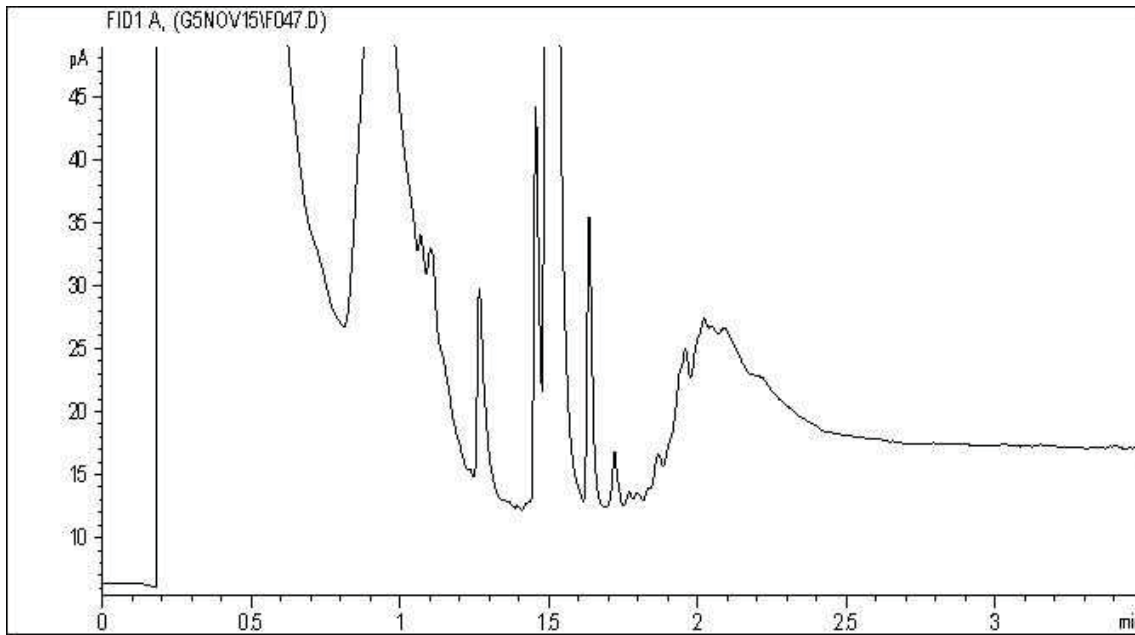
Carbon Range Distribution - Reference Chromatogram



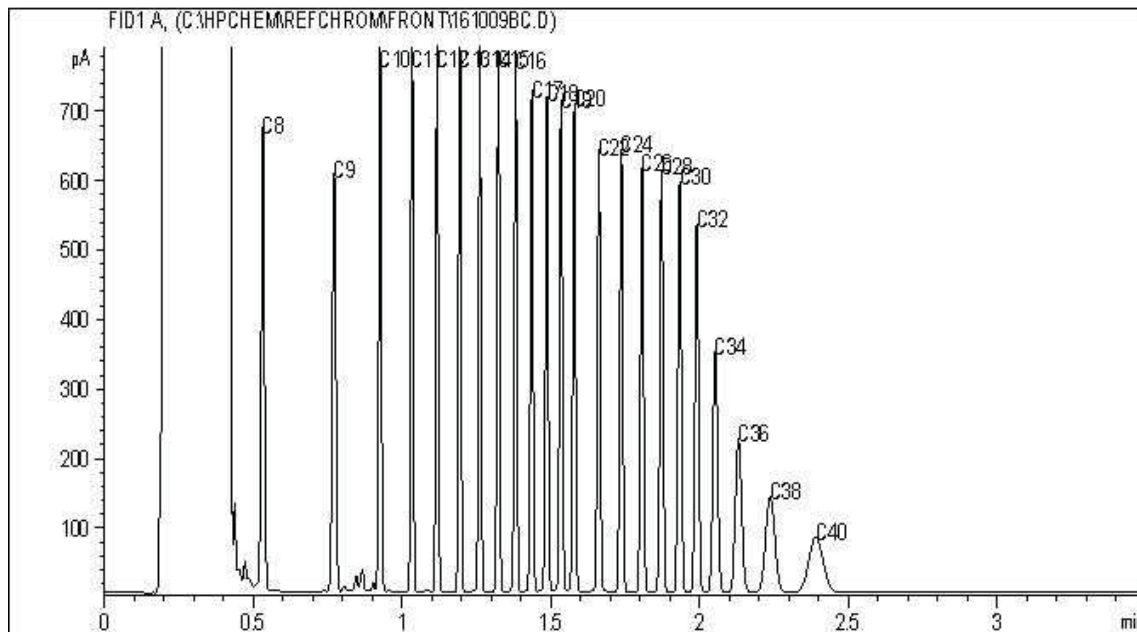
TYPICAL PRODUCT CARBON NUMBER RANGES

Note: This information is provided for reference purposes only. Should detailed chemist interpretation or fingerprinting be required, please contact the laboratory.

EPH in Soil by GC/FID Chromatogram



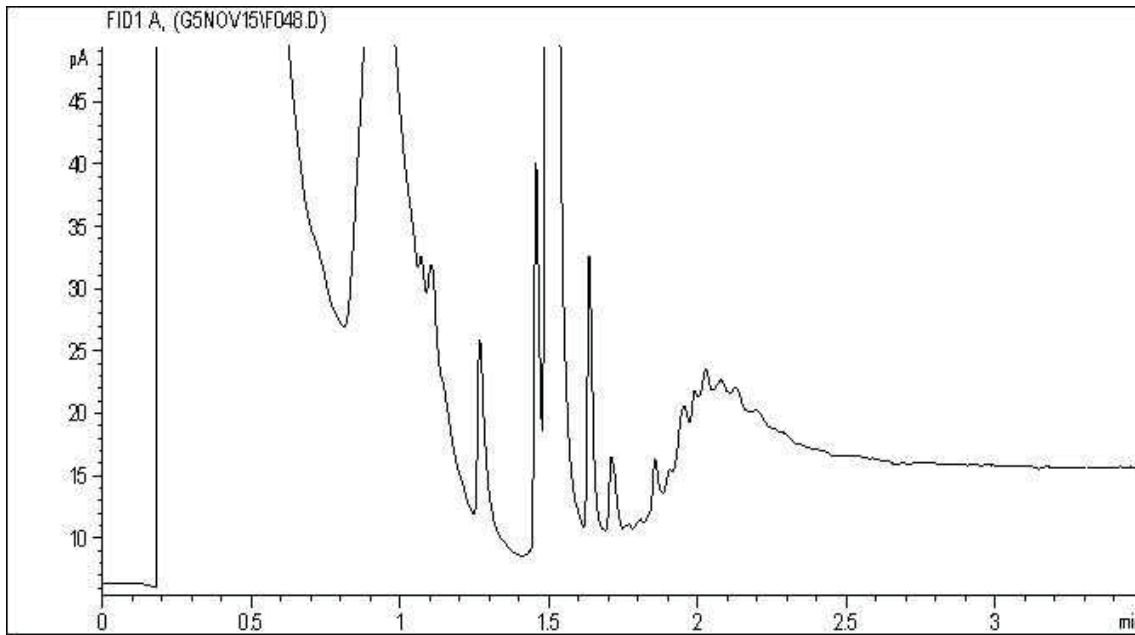
Carbon Range Distribution - Reference Chromatogram



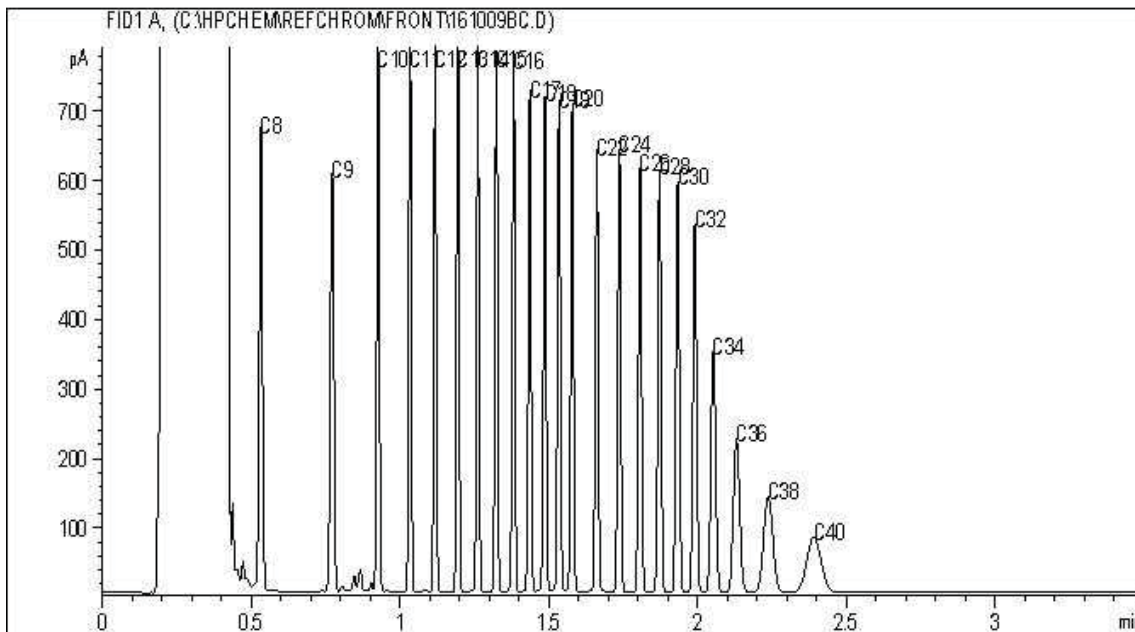
TYPICAL PRODUCT CARBON NUMBER RANGES

Note: This information is provided for reference purposes only. Should detailed chemist interpretation or fingerprinting be required, please contact the laboratory.

EPH in Soil by GC/FID Chromatogram



Carbon Range Distribution - Reference Chromatogram



TYPICAL PRODUCT CARBON NUMBER RANGES

Note: This information is provided for reference purposes only. Should detailed chemist interpretation or fingerprinting be required, please contact the laboratory.

**Attention: Michael Chao**

SNC LAVALIN ENVIRONMENT INC.  
8648 COMMERCE COURT  
BURNABY, BC  
CANADA V5A 4N6

Your P.O. #: 700365225  
Your Project #: 640752  
Site#: AEC 22A  
Site Location: Watson Lake Airport  
Your C.O.C. #: 510054-02-01, 510054-01-01

**Report Date: 2016/11/16**  
Report #: R2301793  
Version: 1 - Final

**CERTIFICATE OF ANALYSIS**

**MAXXAM JOB #: B6A0687**

**Received: 2016/11/08, 09:30**

Sample Matrix: Soil  
# Samples Received: 17

Analyses	Quantity	Date		Laboratory Method	Analytical Method
		Extracted	Analyzed		
BTEX/MTBE Soil LH, VH, F1 SIM/MS	17	2016/11/10	2016/11/12	BBY8SOP-00010/11/12	EPA 8260c R3 m
Elements by ICPMS (total)	8	2016/11/11	2016/11/14	BBY7SOP-00017,	BC SALM,EPA 6020bR2m
Moisture	17	2016/11/10	2016/11/11	BBY8SOP-00017	BCMOE BCLM Dec2000 m
PAH in Soil by GC/MS (SIM)	8	2016/11/10	2016/11/14	BBY8SOP-00022	EPA 8270d R5 m
PAH in Soil by GC/MS (SIM)	9	2016/11/10	2016/11/15	BBY8SOP-00022	EPA 8270d R5 m
Total PAH and B(a)P Calculation	2	N/A	2016/11/15	BBY WI-00033	Auto Calc
Total PAH and B(a)P Calculation	15	N/A	2016/11/16	BBY WI-00033	Auto Calc
pH (2:1 DI Water Extract)	8	2016/11/11	2016/11/14	BBY6SOP-00028	BCMOE BCLM Mar2005 m
EPH less PAH in Soil By GC/FID	2	N/A	2016/11/15	BBY WI-00033	Auto Calc
EPH less PAH in Soil By GC/FID	15	N/A	2016/11/16	BBY WI-00033	Auto Calc
EPH in Soil by GC/FID	2	2016/11/10	2016/11/14	BBY8SOP-00029	BCMOE EPH s 07/99 m
EPH in Soil by GC/FID	15	2016/11/10	2016/11/15	BBY8SOP-00029	BCMOE EPH s 07/99 m
Volatile HC-BTEX for Soil	11	N/A	2016/11/13	BBY WI-00033	Auto Calc
Volatile HC-BTEX for Soil	6	N/A	2016/11/15	BBY WI-00033	Auto Calc

**Remarks:**

Maxxam Analytics' laboratories are accredited to ISO/IEC 17025:2005 for specific parameters on scopes of accreditation. Unless otherwise noted, procedures used by Maxxam are based upon recognized Provincial, Federal or US method compendia such as CCME, MDDELCC, EPA, APHA.

All work recorded herein has been done in accordance with procedures and practices ordinarily exercised by professionals in Maxxam's profession using accepted testing methodologies, quality assurance and quality control procedures (except where otherwise agreed by the client and Maxxam in writing). All data is in statistical control and has met quality control and method performance criteria unless otherwise noted. All method blanks are reported: unless indicated otherwise, associated sample data are not blank corrected.

Maxxam Analytics' liability is limited to the actual cost of the requested analyses, unless otherwise agreed in writing. There is no other warranty expressed or implied. Maxxam has been retained to provide analysis of samples provided by the Client using the testing methodology referenced in this report. Interpretation and use of test results are the sole responsibility of the Client and are not within the scope of services provided by Maxxam, unless otherwise agreed in writing.

Solid sample results, except biota, are based on dry weight unless otherwise indicated. Organic analyses are not recovery corrected except for isotope dilution methods. Results relate to samples tested.

This Certificate shall not be reproduced except in full, without the written approval of the laboratory.

Reference Method suffix "m" indicates test methods incorporate validated modifications from specific reference methods to improve performance.

**Attention:Michael Chao**

SNC LAVALIN ENVIRONMENT INC.  
8648 COMMERCE COURT  
BURNABY, BC  
CANADA V5A 4N6

Your P.O. #: 700365225  
Your Project #: 640752  
Site#: AEC 22A  
Site Location: Watson Lake Airport  
Your C.O.C. #: 510054-02-01, 510054-01-01

**Report Date: 2016/11/16**  
Report #: R2301793  
Version: 1 - Final

**CERTIFICATE OF ANALYSIS**

**MAXXAM JOB #: B6A0687**

**Received: 2016/11/08, 09:30**

\* RPDs calculated using raw data. The rounding of final results may result in the apparent difference.

Encryption Key

Please direct all questions regarding this Certificate of Analysis to your Project Manager.

Samantha Fregien, Project Manager

Email: SFregien@maxxam.ca

Phone# (604)639-8418

=====  
Maxxam has procedures in place to guard against improper use of the electronic signature and have the required "signatories", as per section 5.10.2 of ISO/IEC 17025:2005(E), signing the reports. For Service Group specific validation please refer to the Validation Signature Page.

Maxxam Job #: B6A0687  
Report Date: 2016/11/16

SNC LAVALIN ENVIRONMENT INC.  
Client Project #: 640752  
Site Location: Watson Lake Airport  
Your P.O. #: 700365225  
Sampler Initials: MLC

**PHYSICAL TESTING (SOIL)**

Maxxam ID		PZ7901	PZ7902		PZ7903	PZ7904		
Sampling Date		2016/11/03 15:30	2016/11/03 15:40		2016/11/04 09:00	2016/11/04 09:10		
COC Number		510054-02-01	510054-02-01		510054-02-01	510054-02-01		
	<b>UNITS</b>	<b>22A-BH16-27-1</b>	<b>22A-BH16-27-2</b>	<b>QC Batch</b>	<b>22A-BH16-28-1</b>	<b>22A-BH16-28-2</b>	<b>RDL</b>	<b>QC Batch</b>

<b>Physical Properties</b>								
Moisture	%	19	6.5	8467184	26	15	0.30	8467188
RDL = Reportable Detection Limit								

Maxxam ID		PZ7905		PZ7906	PZ7907	PZ7908		
Sampling Date		2016/11/04 09:30		2016/11/04 09:40	2016/11/04 10:00	2016/11/04 10:10		
COC Number		510054-02-01		510054-02-01	510054-02-01	510054-02-01		
	<b>UNITS</b>	<b>22A-BH16-29-1</b>	<b>QC Batch</b>	<b>22A-BH16-29-2</b>	<b>22A-BH16-30-1</b>	<b>22A-BH16-30-2</b>	<b>RDL</b>	<b>QC Batch</b>

<b>Physical Properties</b>								
Moisture	%	6.1	8467184	11	3.7	17	0.30	8467188
RDL = Reportable Detection Limit								

Maxxam ID		PZ7912	PZ7913	PZ7914		PZ7915	PZ7916		
Sampling Date		2016/11/04 10:30	2016/11/04 10:40	2016/11/04 10:50		2016/11/04 10:55	2016/11/04 11:00		
COC Number		510054-01-01	510054-01-01	510054-01-01		510054-01-01	510054-01-01		
	<b>UNITS</b>	<b>22A-BH16-31-1</b>	<b>22A-BH16-31-2</b>	<b>22A-BH16-32-1</b>	<b>QC Batch</b>	<b>22A-BH16-32-2</b>	<b>22A-BH16-32-3</b>	<b>RDL</b>	<b>QC Batch</b>

<b>Physical Properties</b>									
Moisture	%	5.6	5.4	16	8467184	15	15	0.30	8467188
RDL = Reportable Detection Limit									

Maxxam ID		PZ7918	PZ7919	PZ7920		PZ7921		
Sampling Date		2016/11/04 12:00	2016/11/04 12:10	2016/11/04 14:00		2016/11/04 14:10		
COC Number		510054-01-01	510054-01-01	510054-01-01		510054-01-01		
	<b>UNITS</b>	<b>22A-BH16-33-1</b>	<b>22A-BH16-33-2</b>	<b>22A-BH16-34-1</b>	<b>QC Batch</b>	<b>22A-BH16-34-2</b>	<b>RDL</b>	<b>QC Batch</b>

<b>Physical Properties</b>								
Moisture	%	16	15	2.4	8467184	4.8	0.30	8467188
RDL = Reportable Detection Limit								

Maxxam Job #: B6A0687  
Report Date: 2016/11/16

SNC LAVALIN ENVIRONMENT INC.  
Client Project #: 640752  
Site Location: Watson Lake Airport  
Your P.O. #: 700365225  
Sampler Initials: MLC

**CSR BTEX/VPH BY HS IN SOIL (SOIL)**

Maxxam ID		PZ7901	PZ7902		PZ7903	PZ7904		
Sampling Date		2016/11/03 15:30	2016/11/03 15:40		2016/11/04 09:00	2016/11/04 09:10		
COC Number		510054-02-01	510054-02-01		510054-02-01	510054-02-01		
	UNITS	22A-BH16-27-1	22A-BH16-27-2	QC Batch	22A-BH16-28-1	22A-BH16-28-2	RDL	QC Batch
<b>Volatiles</b>								
VPH (VH6 to 10 - BTEX)	mg/kg	<10	<10	8466396	<10	<10	10	8466396
Methyl-tert-butylether (MTBE)	mg/kg	<0.10	<0.10	8468164	<0.10	<0.10	0.10	8468163
Benzene	mg/kg	<0.0050	<0.0050	8468164	<0.0050	<0.0050	0.0050	8468163
Toluene	mg/kg	<0.020	<0.020	8468164	<0.020	<0.020	0.020	8468163
Ethylbenzene	mg/kg	<0.010	<0.010	8468164	<0.010	<0.010	0.010	8468163
m & p-Xylene	mg/kg	<0.040	<0.040	8468164	<0.040	<0.040	0.040	8468163
o-Xylene	mg/kg	<0.040	<0.040	8468164	<0.040	<0.040	0.040	8468163
Styrene	mg/kg	<0.030	<0.030	8468164	<0.030	<0.030	0.030	8468163
Xylenes (Total)	mg/kg	<0.040	<0.040	8468164	<0.040	<0.040	0.040	8468163
VH C6-C10	mg/kg	<10	<10	8468164	<10	<10	10	8468163
<b>Surrogate Recovery (%)</b>								
1,4-Difluorobenzene (sur.)	%	108	107	8468164	96	89		8468163
4-Bromofluorobenzene (sur.)	%	102	103	8468164	112	93		8468163
D10-ETHYLBENZENE (sur.)	%	87	87	8468164	104	102		8468163
D4-1,2-Dichloroethane (sur.)	%	98	98	8468164	112	105		8468163
RDL = Reportable Detection Limit								



Maxxam Job #: B6A0687  
Report Date: 2016/11/16

SNC LAVALIN ENVIRONMENT INC.  
Client Project #: 640752  
Site Location: Watson Lake Airport  
Your P.O. #: 700365225  
Sampler Initials: MLC

**CSR BTEX/VPH BY HS IN SOIL (SOIL)**

Maxxam ID		PZ7905		PZ7906		PZ7907		
Sampling Date		2016/11/04 09:30		2016/11/04 09:40		2016/11/04 10:00		
COC Number		510054-02-01		510054-02-01		510054-02-01		
	<b>UNITS</b>	<b>22A-BH16-29-1</b>	<b>QC Batch</b>	<b>22A-BH16-29-2</b>	<b>QC Batch</b>	<b>22A-BH16-30-1</b>	<b>RDL</b>	<b>QC Batch</b>
<b>Volatiles</b>								
VPH (VH6 to 10 - BTEX)	mg/kg	<10	8466396	<10	8466396	<10	10	8466396
Methyl-tert-butylether (MTBE)	mg/kg	<0.10	8468164	<0.10	8468163	<0.10	0.10	8468164
Benzene	mg/kg	<0.0050	8468164	<0.0050	8468163	<0.0050	0.0050	8468164
Toluene	mg/kg	<0.020	8468164	<0.020	8468163	<0.020	0.020	8468164
Ethylbenzene	mg/kg	<0.010	8468164	<0.010	8468163	<0.010	0.010	8468164
m & p-Xylene	mg/kg	<0.040	8468164	<0.040	8468163	<0.040	0.040	8468164
o-Xylene	mg/kg	<0.040	8468164	<0.040	8468163	<0.040	0.040	8468164
Styrene	mg/kg	<0.030	8468164	<0.030	8468163	<0.030	0.030	8468164
Xylenes (Total)	mg/kg	<0.040	8468164	<0.040	8468163	<0.040	0.040	8468164
VH C6-C10	mg/kg	<10	8468164	<10	8468163	<10	10	8468164
<b>Surrogate Recovery (%)</b>								
1,4-Difluorobenzene (sur.)	%	107	8468164	105	8468163	107		8468164
4-Bromofluorobenzene (sur.)	%	104	8468164	102	8468163	104		8468164
D10-ETHYLBENZENE (sur.)	%	86	8468164	103	8468163	87		8468164
D4-1,2-Dichloroethane (sur.)	%	98	8468164	119	8468163	97		8468164
RDL = Reportable Detection Limit								

Maxxam Job #: B6A0687  
Report Date: 2016/11/16

SNC LAVALIN ENVIRONMENT INC.  
Client Project #: 640752  
Site Location: Watson Lake Airport  
Your P.O. #: 700365225  
Sampler Initials: MLC

**CSR BTEX/VPH BY HS IN SOIL (SOIL)**

Maxxam ID		PZ7908		PZ7912	PZ7913	PZ7914		
Sampling Date		2016/11/04 10:10		2016/11/04 10:30	2016/11/04 10:40	2016/11/04 10:50		
COC Number		510054-02-01		510054-01-01	510054-01-01	510054-01-01		
	UNITS	22A-BH16-30-2	QC Batch	22A-BH16-31-1	22A-BH16-31-2	22A-BH16-32-1	RDL	QC Batch
<b>Volatiles</b>								
VPH (VH6 to 10 - BTEX)	mg/kg	<10	8466396	<10	<10	<10	10	8466396
Methyl-tert-butylether (MTBE)	mg/kg	<0.10	8468163	<0.10	<0.10	<0.10	0.10	8468164
Benzene	mg/kg	<0.0050	8468163	<0.0050	<0.0050	<0.0050	0.0050	8468164
Toluene	mg/kg	<0.020	8468163	<0.020	<0.020	<0.020	0.020	8468164
Ethylbenzene	mg/kg	<0.010	8468163	<0.010	<0.010	<0.010	0.010	8468164
m & p-Xylene	mg/kg	<0.040	8468163	<0.040	<0.040	<0.040	0.040	8468164
o-Xylene	mg/kg	<0.040	8468163	<0.040	<0.040	<0.040	0.040	8468164
Styrene	mg/kg	<0.030	8468163	<0.030	<0.030	<0.030	0.030	8468164
Xylenes (Total)	mg/kg	<0.040	8468163	<0.040	<0.040	<0.040	0.040	8468164
VH C6-C10	mg/kg	<10	8468163	<10	<10	<10	10	8468164
<b>Surrogate Recovery (%)</b>								
1,4-Difluorobenzene (sur.)	%	105	8468163	107	106	108		8468164
4-Bromofluorobenzene (sur.)	%	101	8468163	103	103	103		8468164
D10-ETHYLBENZENE (sur.)	%	102	8468163	85	84	88		8468164
D4-1,2-Dichloroethane (sur.)	%	122	8468163	98	100	99		8468164
RDL = Reportable Detection Limit								

Maxxam Job #: B6A0687  
Report Date: 2016/11/16

SNC LAVALIN ENVIRONMENT INC.  
Client Project #: 640752  
Site Location: Watson Lake Airport  
Your P.O. #: 700365225  
Sampler Initials: MLC

**CSR BTEX/VPH BY HS IN SOIL (SOIL)**

Maxxam ID		PZ7915	PZ7916		PZ7918	PZ7919		
Sampling Date		2016/11/04 10:55	2016/11/04 11:00		2016/11/04 12:00	2016/11/04 12:10		
COC Number		510054-01-01	510054-01-01		510054-01-01	510054-01-01		
	UNITS	22A-BH16-32-2	22A-BH16-32-3	QC Batch	22A-BH16-33-1	22A-BH16-33-2	RDL	QC Batch
<b>Volatiles</b>								
VPH (VH6 to 10 - BTEX)	mg/kg	<10	<10	8466396	<10	<10	10	8466396
Methyl-tert-butylether (MTBE)	mg/kg	<0.10	<0.10	8468163	<0.10	<0.10	0.10	8468164
Benzene	mg/kg	<0.0050	<0.0050	8468163	<0.0050	<0.0050	0.0050	8468164
Toluene	mg/kg	<0.020	<0.020	8468163	<0.020	<0.020	0.020	8468164
Ethylbenzene	mg/kg	<0.010	<0.010	8468163	<0.010	<0.010	0.010	8468164
m & p-Xylene	mg/kg	<0.040	<0.040	8468163	<0.040	<0.040	0.040	8468164
o-Xylene	mg/kg	<0.040	<0.040	8468163	<0.040	<0.040	0.040	8468164
Styrene	mg/kg	<0.030	<0.030	8468163	<0.030	<0.030	0.030	8468164
Xylenes (Total)	mg/kg	<0.040	<0.040	8468163	<0.040	<0.040	0.040	8468164
VH C6-C10	mg/kg	<10	<10	8468163	<10	<10	10	8468164
<b>Surrogate Recovery (%)</b>								
1,4-Difluorobenzene (sur.)	%	97	108	8468163	107	107		8468164
4-Bromofluorobenzene (sur.)	%	103	103	8468163	104	103		8468164
D10-ETHYLBENZENE (sur.)	%	102	106	8468163	89	88		8468164
D4-1,2-Dichloroethane (sur.)	%	116	119	8468163	102	97		8468164
RDL = Reportable Detection Limit								

Maxxam Job #: B6A0687  
Report Date: 2016/11/16

SNC LAVALIN ENVIRONMENT INC.  
Client Project #: 640752  
Site Location: Watson Lake Airport  
Your P.O. #: 700365225  
Sampler Initials: MLC

**CSR BTEX/VPH BY HS IN SOIL (SOIL)**

Maxxam ID		PZ7920	PZ7921		
Sampling Date		2016/11/04 14:00	2016/11/04 14:10		
COC Number		510054-01-01	510054-01-01		
	<b>UNITS</b>	<b>22A-BH16-34-1</b>	<b>22A-BH16-34-2</b>	<b>RDL</b>	<b>QC Batch</b>
<b>Volatiles</b>					
VPH (VH6 to 10 - BTEX)	mg/kg	<10	<10	10	8466396
Methyl-tert-butylether (MTBE)	mg/kg	<0.10	<0.10	0.10	8468164
Benzene	mg/kg	<0.0050	<0.0050	0.0050	8468164
Toluene	mg/kg	<0.020	<0.020	0.020	8468164
Ethylbenzene	mg/kg	<0.010	<0.010	0.010	8468164
m & p-Xylene	mg/kg	<0.040	<0.040	0.040	8468164
o-Xylene	mg/kg	<0.040	<0.040	0.040	8468164
Styrene	mg/kg	<0.030	<0.030	0.030	8468164
Xylenes (Total)	mg/kg	<0.040	<0.040	0.040	8468164
VH C6-C10	mg/kg	<10	<10	10	8468164
<b>Surrogate Recovery (%)</b>					
1,4-Difluorobenzene (sur.)	%	109	107		8468164
4-Bromofluorobenzene (sur.)	%	103	103		8468164
D10-ETHYLBENZENE (sur.)	%	86	85		8468164
D4-1,2-Dichloroethane (sur.)	%	99	97		8468164
RDL = Reportable Detection Limit					

Maxxam Job #: B6A0687  
Report Date: 2016/11/16

SNC LAVALIN ENVIRONMENT INC.  
Client Project #: 640752  
Site Location: Watson Lake Airport  
Your P.O. #: 700365225  
Sampler Initials: MLC

**LEPH & HEPH WITH PAH FOR CSR IN SOIL (SOIL)**

Maxxam ID		PZ7901		PZ7902	PZ7903	PZ7904		
Sampling Date		2016/11/03 15:30		2016/11/03 15:40	2016/11/04 09:00	2016/11/04 09:10		
COC Number		510054-02-01		510054-02-01	510054-02-01	510054-02-01		
	UNITS	22A-BH16-27-1	QC Batch	22A-BH16-27-2	22A-BH16-28-1	22A-BH16-28-2	RDL	QC Batch
<b>Polycyclic Aromatics</b>								
Naphthalene	mg/kg	<0.050	8470052	<0.050	<0.050	<0.050	0.050	8470044
2-Methylnaphthalene	mg/kg	<0.050	8470052	<0.050	<0.050	<0.050	0.050	8470044
Acenaphthylene	mg/kg	<0.050	8470052	<0.050	<0.050	<0.050	0.050	8470044
Acenaphthene	mg/kg	<0.050	8470052	<0.050	<0.050	<0.050	0.050	8470044
Fluorene	mg/kg	<0.050	8470052	<0.050	<0.050	<0.050	0.050	8470044
Phenanthrene	mg/kg	<0.050	8470052	<0.050	<0.050	<0.050	0.050	8470044
Anthracene	mg/kg	<0.050	8470052	<0.050	<0.050	<0.050	0.050	8470044
Fluoranthene	mg/kg	<0.050	8470052	<0.050	<0.050	<0.050	0.050	8470044
Pyrene	mg/kg	<0.050	8470052	<0.050	<0.050	<0.050	0.050	8470044
Benzo(a)anthracene	mg/kg	<0.050	8470052	<0.050	<0.050	<0.050	0.050	8470044
Chrysene	mg/kg	<0.050	8470052	<0.050	<0.050	<0.050	0.050	8470044
Benzo(b&j)fluoranthene	mg/kg	<0.050	8470052	<0.050	<0.050	<0.050	0.050	8470044
Benzo(b)fluoranthene	mg/kg	<0.050	8470052	<0.050	<0.050	<0.050	0.050	8470044
Benzo(k)fluoranthene	mg/kg	<0.050	8470052	<0.050	<0.050	<0.050	0.050	8470044
Benzo(a)pyrene	mg/kg	<0.050	8470052	<0.050	<0.050	<0.050	0.050	8470044
Indeno(1,2,3-cd)pyrene	mg/kg	<0.050	8470052	<0.050	<0.050	<0.050	0.050	8470044
Dibenz(a,h)anthracene	mg/kg	<0.050	8470052	<0.050	<0.050	<0.050	0.050	8470044
Benzo(g,h,i)perylene	mg/kg	<0.050	8470052	<0.050	<0.050	<0.050	0.050	8470044
Low Molecular Weight PAH's	mg/kg	<0.050	8466392	<0.050	<0.050	<0.050	0.050	8466392
High Molecular Weight PAH's	mg/kg	<0.050	8466392	<0.050	<0.050	<0.050	0.050	8466392
Total PAH	mg/kg	<0.050	8466392	<0.050	<0.050	<0.050	0.050	8466392
<b>Calculated Parameters</b>								
LEPH (C10-C19 less PAH)	mg/kg	<100	8466394	<100	<100	<100	100	8466394
HEPH (C19-C32 less PAH)	mg/kg	<100	8466394	<100	160	<100	100	8466394
<b>Hydrocarbons</b>								
EPH (C10-C19)	mg/kg	<100	8470047	<100	<100	<100	100	8470039
EPH (C19-C32)	mg/kg	<100	8470047	<100	160	<100	100	8470039
<b>Surrogate Recovery (%)</b>								
D10-ANTHRACENE (sur.)	%	93	8470052	97	82	98		8470044
D8-ACENAPHTHYLENE (sur.)	%	87	8470052	93	82	91		8470044
RDL = Reportable Detection Limit								

Maxxam Job #: B6A0687  
Report Date: 2016/11/16

SNC LAVALIN ENVIRONMENT INC.  
Client Project #: 640752  
Site Location: Watson Lake Airport  
Your P.O. #: 700365225  
Sampler Initials: MLC

**LEPH & HEPH WITH PAH FOR CSR IN SOIL (SOIL)**

Maxxam ID		PZ7901		PZ7902	PZ7903	PZ7904		
Sampling Date		2016/11/03 15:30		2016/11/03 15:40	2016/11/04 09:00	2016/11/04 09:10		
COC Number		510054-02-01		510054-02-01	510054-02-01	510054-02-01		
	<b>UNITS</b>	<b>22A-BH16-27-1</b>	<b>QC Batch</b>	<b>22A-BH16-27-2</b>	<b>22A-BH16-28-1</b>	<b>22A-BH16-28-2</b>	<b>RDL</b>	<b>QC Batch</b>
D8-NAPHTHALENE (sur.)	%	90	8470052	92	88	89		8470044
TERPHENYL-D14 (sur.)	%	87	8470052	88	83	88		8470044
O-TERPHENYL (sur.)	%	103	8470047	101	99	99		8470039
RDL = Reportable Detection Limit								

Maxxam Job #: B6A0687  
Report Date: 2016/11/16

SNC LAVALIN ENVIRONMENT INC.  
Client Project #: 640752  
Site Location: Watson Lake Airport  
Your P.O. #: 700365225  
Sampler Initials: MLC

**LEPH & HEPH WITH PAH FOR CSR IN SOIL (SOIL)**

Maxxam ID		PZ7905	PZ7906		PZ7907		PZ7908		
Sampling Date		2016/11/04 09:30	2016/11/04 09:40		2016/11/04 10:00		2016/11/04 10:10		
COC Number		510054-02-01	510054-02-01		510054-02-01		510054-02-01		
	UNITS	22A-BH16-29-1	22A-BH16-29-2	QC Batch	22A-BH16-30-1	QC Batch	22A-BH16-30-2	RDL	QC Batch
<b>Polycyclic Aromatics</b>									
Naphthalene	mg/kg	<0.050	<0.050	8470052	<0.050	8470044	<0.050	0.050	8469437
2-Methylnaphthalene	mg/kg	<0.050	<0.050	8470052	<0.050	8470044	<0.050	0.050	8469437
Acenaphthylene	mg/kg	<0.050	<0.050	8470052	<0.050	8470044	<0.050	0.050	8469437
Acenaphthene	mg/kg	<0.050	<0.050	8470052	<0.050	8470044	<0.050	0.050	8469437
Fluorene	mg/kg	<0.050	<0.050	8470052	<0.050	8470044	<0.050	0.050	8469437
Phenanthrene	mg/kg	<0.050	<0.050	8470052	<0.050	8470044	<0.050	0.050	8469437
Anthracene	mg/kg	<0.050	<0.050	8470052	<0.050	8470044	<0.050	0.050	8469437
Fluoranthene	mg/kg	<0.050	<0.050	8470052	<0.050	8470044	<0.050	0.050	8469437
Pyrene	mg/kg	<0.050	<0.050	8470052	<0.050	8470044	<0.050	0.050	8469437
Benzo(a)anthracene	mg/kg	<0.050	<0.050	8470052	<0.050	8470044	<0.050	0.050	8469437
Chrysene	mg/kg	<0.050	<0.050	8470052	<0.050	8470044	<0.050	0.050	8469437
Benzo(b&j)fluoranthene	mg/kg	<0.050	<0.050	8470052	<0.050	8470044	<0.050	0.050	8469437
Benzo(b)fluoranthene	mg/kg	<0.050	<0.050	8470052	<0.050	8470044	<0.050	0.050	8469437
Benzo(k)fluoranthene	mg/kg	<0.050	<0.050	8470052	<0.050	8470044	<0.050	0.050	8469437
Benzo(a)pyrene	mg/kg	<0.050	<0.050	8470052	<0.050	8470044	<0.050	0.050	8469437
Indeno(1,2,3-cd)pyrene	mg/kg	<0.050	<0.050	8470052	<0.050	8470044	<0.050	0.050	8469437
Dibenz(a,h)anthracene	mg/kg	<0.050	<0.050	8470052	<0.050	8470044	<0.050	0.050	8469437
Benzo(g,h,i)perylene	mg/kg	<0.050	<0.050	8470052	<0.050	8470044	<0.050	0.050	8469437
Low Molecular Weight PAH's	mg/kg	<0.050	<0.050	8466392	<0.050	8466392	<0.050	0.050	8466392
High Molecular Weight PAH's	mg/kg	<0.050	<0.050	8466392	<0.050	8466392	<0.050	0.050	8466392
Total PAH	mg/kg	<0.050	<0.050	8466392	<0.050	8466392	<0.050	0.050	8466392
<b>Calculated Parameters</b>									
LEPH (C10-C19 less PAH)	mg/kg	190	<100	8466394	<100	8466394	<100	100	8466394
HEPH (C19-C32 less PAH)	mg/kg	<100	<100	8466394	<100	8466394	<100	100	8466394
<b>Hydrocarbons</b>									
EPH (C10-C19)	mg/kg	190	<100	8470047	<100	8470039	<100	100	8469433
EPH (C19-C32)	mg/kg	<100	<100	8470047	<100	8470039	<100	100	8469433
<b>Surrogate Recovery (%)</b>									
D10-ANTHRACENE (sur.)	%	99	96	8470052	96	8470044	85		8469437
D8-ACENAPHTHYLENE (sur.)	%	90	91	8470052	88	8470044	79		8469437
RDL = Reportable Detection Limit									

Maxxam Job #: B6A0687  
Report Date: 2016/11/16

SNC LAVALIN ENVIRONMENT INC.  
Client Project #: 640752  
Site Location: Watson Lake Airport  
Your P.O. #: 700365225  
Sampler Initials: MLC

**LEPH & HEPH WITH PAH FOR CSR IN SOIL (SOIL)**

Maxxam ID		PZ7905	PZ7906		PZ7907		PZ7908		
Sampling Date		2016/11/04 09:30	2016/11/04 09:40		2016/11/04 10:00		2016/11/04 10:10		
COC Number		510054-02-01	510054-02-01		510054-02-01		510054-02-01		
	<b>UNITS</b>	<b>22A-BH16-29-1</b>	<b>22A-BH16-29-2</b>	<b>QC Batch</b>	<b>22A-BH16-30-1</b>	<b>QC Batch</b>	<b>22A-BH16-30-2</b>	<b>RDL</b>	<b>QC Batch</b>
D8-NAPHTHALENE (sur.)	%	88	91	8470052	89	8470044	77		8469437
TERPHENYL-D14 (sur.)	%	87	86	8470052	85	8470044	70		8469437
O-TERPHENYL (sur.)	%	100	97	8470047	99	8470039	96		8469433
RDL = Reportable Detection Limit									



Maxxam Job #: B6A0687  
Report Date: 2016/11/16

SNC LAVALIN ENVIRONMENT INC.  
Client Project #: 640752  
Site Location: Watson Lake Airport  
Your P.O. #: 700365225  
Sampler Initials: MLC

**LEPH & HEPH WITH PAH FOR CSR IN SOIL (SOIL)**

Maxxam ID		PZ7912	PZ7913	PZ7914		PZ7915		
Sampling Date		2016/11/04 10:30	2016/11/04 10:40	2016/11/04 10:50		2016/11/04 10:55		
COC Number		510054-01-01	510054-01-01	510054-01-01		510054-01-01		
	<b>UNITS</b>	<b>22A-BH16-31-1</b>	<b>22A-BH16-31-2</b>	<b>22A-BH16-32-1</b>	<b>QC Batch</b>	<b>22A-BH16-32-2</b>	<b>RDL</b>	<b>QC Batch</b>
<b>Polycyclic Aromatics</b>								
Naphthalene	mg/kg	<0.050	<0.050	<0.050	8470052	<0.050	0.050	8469437
2-Methylnaphthalene	mg/kg	<0.050	<0.050	<0.050	8470052	<0.050	0.050	8469437
Acenaphthylene	mg/kg	<0.050	<0.050	<0.050	8470052	<0.050	0.050	8469437
Acenaphthene	mg/kg	<0.050	<0.050	<0.050	8470052	<0.050	0.050	8469437
Fluorene	mg/kg	<0.050	<0.050	<0.050	8470052	<0.050	0.050	8469437
Phenanthrene	mg/kg	<0.050	<0.050	<0.050	8470052	<0.050	0.050	8469437
Anthracene	mg/kg	<0.050	<0.050	<0.050	8470052	<0.050	0.050	8469437
Fluoranthene	mg/kg	<0.050	<0.050	<0.050	8470052	<0.050	0.050	8469437
Pyrene	mg/kg	<0.050	<0.050	<0.050	8470052	<0.050	0.050	8469437
Benzo(a)anthracene	mg/kg	<0.050	<0.050	<0.050	8470052	<0.050	0.050	8469437
Chrysene	mg/kg	<0.050	<0.050	<0.050	8470052	<0.050	0.050	8469437
Benzo(b&j)fluoranthene	mg/kg	<0.050	<0.050	<0.050	8470052	<0.050	0.050	8469437
Benzo(b)fluoranthene	mg/kg	<0.050	<0.050	<0.050	8470052	<0.050	0.050	8469437
Benzo(k)fluoranthene	mg/kg	<0.050	<0.050	<0.050	8470052	<0.050	0.050	8469437
Benzo(a)pyrene	mg/kg	<0.050	<0.050	<0.050	8470052	<0.050	0.050	8469437
Indeno(1,2,3-cd)pyrene	mg/kg	<0.050	<0.050	<0.050	8470052	<0.050	0.050	8469437
Dibenz(a,h)anthracene	mg/kg	<0.050	<0.050	<0.050	8470052	<0.050	0.050	8469437
Benzo(g,h,i)perylene	mg/kg	<0.050	<0.050	<0.050	8470052	<0.050	0.050	8469437
Low Molecular Weight PAH's	mg/kg	<0.050	<0.050	<0.050	8466392	<0.050	0.050	8466392
High Molecular Weight PAH's	mg/kg	<0.050	<0.050	<0.050	8466392	<0.050	0.050	8466392
Total PAH	mg/kg	<0.050	<0.050	<0.050	8466392	<0.050	0.050	8466392
<b>Calculated Parameters</b>								
LEPH (C10-C19 less PAH)	mg/kg	<100	<100	230	8466394	<100	100	8466394
HEPH (C19-C32 less PAH)	mg/kg	<100	<100	130	8466394	<100	100	8466394
<b>Hydrocarbons</b>								
EPH (C10-C19)	mg/kg	<100	<100	230	8470047	<100	100	8469433
EPH (C19-C32)	mg/kg	<100	<100	130	8470047	<100	100	8469433
<b>Surrogate Recovery (%)</b>								
D10-ANTHRACENE (sur.)	%	99	97	98	8470052	82		8469437
D8-ACENAPHTHYLENE (sur.)	%	94	90	90	8470052	79		8469437
RDL = Reportable Detection Limit								

Maxxam Job #: B6A0687  
Report Date: 2016/11/16

SNC LAVALIN ENVIRONMENT INC.  
Client Project #: 640752  
Site Location: Watson Lake Airport  
Your P.O. #: 700365225  
Sampler Initials: MLC

**LEPH & HEPH WITH PAH FOR CSR IN SOIL (SOIL)**

Maxxam ID		PZ7912	PZ7913	PZ7914		PZ7915		
Sampling Date		2016/11/04 10:30	2016/11/04 10:40	2016/11/04 10:50		2016/11/04 10:55		
COC Number		510054-01-01	510054-01-01	510054-01-01		510054-01-01		
	<b>UNITS</b>	<b>22A-BH16-31-1</b>	<b>22A-BH16-31-2</b>	<b>22A-BH16-32-1</b>	<b>QC Batch</b>	<b>22A-BH16-32-2</b>	<b>RDL</b>	<b>QC Batch</b>
D8-NAPHTHALENE (sur.)	%	95	91	90	8470052	78		8469437
TERPHENYL-D14 (sur.)	%	90	88	87	8470052	67		8469437
O-TERPHENYL (sur.)	%	104	102	102	8470047	85		8469433
RDL = Reportable Detection Limit								

Maxxam Job #: B6A0687  
Report Date: 2016/11/16

SNC LAVALIN ENVIRONMENT INC.  
Client Project #: 640752  
Site Location: Watson Lake Airport  
Your P.O. #: 700365225  
Sampler Initials: MLC

**LEPH & HEPH WITH PAH FOR CSR IN SOIL (SOIL)**

Maxxam ID		PZ7916		PZ7918	PZ7919	PZ7920		
Sampling Date		2016/11/04 11:00		2016/11/04 12:00	2016/11/04 12:10	2016/11/04 14:00		
COC Number		510054-01-01		510054-01-01	510054-01-01	510054-01-01		
	UNITS	22A-BH16-32-3	QC Batch	22A-BH16-33-1	22A-BH16-33-2	22A-BH16-34-1	RDL	QC Batch
<b>Polycyclic Aromatics</b>								
Naphthalene	mg/kg	<0.050	8470044	<0.050	<0.050	<0.050	0.050	8470052
2-Methylnaphthalene	mg/kg	<0.050	8470044	<0.050	<0.050	<0.050	0.050	8470052
Acenaphthylene	mg/kg	<0.050	8470044	<0.050	<0.050	<0.050	0.050	8470052
Acenaphthene	mg/kg	<0.050	8470044	<0.050	<0.050	<0.050	0.050	8470052
Fluorene	mg/kg	<0.050	8470044	<0.050	<0.050	<0.050	0.050	8470052
Phenanthrene	mg/kg	<0.050	8470044	<0.050	<0.050	<0.050	0.050	8470052
Anthracene	mg/kg	<0.050	8470044	<0.050	<0.050	<0.050	0.050	8470052
Fluoranthene	mg/kg	<0.050	8470044	<0.050	<0.050	<0.050	0.050	8470052
Pyrene	mg/kg	<0.050	8470044	<0.050	<0.050	<0.050	0.050	8470052
Benzo(a)anthracene	mg/kg	<0.050	8470044	<0.050	<0.050	<0.050	0.050	8470052
Chrysene	mg/kg	<0.050	8470044	<0.050	<0.050	<0.050	0.050	8470052
Benzo(b&j)fluoranthene	mg/kg	<0.050	8470044	<0.050	<0.050	<0.050	0.050	8470052
Benzo(b)fluoranthene	mg/kg	<0.050	8470044	<0.050	<0.050	<0.050	0.050	8470052
Benzo(k)fluoranthene	mg/kg	<0.050	8470044	<0.050	<0.050	<0.050	0.050	8470052
Benzo(a)pyrene	mg/kg	<0.050	8470044	<0.050	<0.050	<0.050	0.050	8470052
Indeno(1,2,3-cd)pyrene	mg/kg	<0.050	8470044	<0.050	<0.050	<0.050	0.050	8470052
Dibenz(a,h)anthracene	mg/kg	<0.050	8470044	<0.050	<0.050	<0.050	0.050	8470052
Benzo(g,h,i)perylene	mg/kg	<0.050	8470044	<0.050	<0.050	<0.050	0.050	8470052
Low Molecular Weight PAH's	mg/kg	<0.050	8466392	<0.050	<0.050	<0.050	0.050	8466392
High Molecular Weight PAH's	mg/kg	<0.050	8466392	<0.050	<0.050	<0.050	0.050	8466392
Total PAH	mg/kg	<0.050	8466392	<0.050	<0.050	<0.050	0.050	8466392
<b>Calculated Parameters</b>								
LEPH (C10-C19 less PAH)	mg/kg	<100	8466394	<100	<100	<100	100	8466394
HEPH (C19-C32 less PAH)	mg/kg	<100	8466394	<100	<100	<100	100	8466394
<b>Hydrocarbons</b>								
EPH (C10-C19)	mg/kg	<100	8470039	<100	<100	<100	100	8470047
EPH (C19-C32)	mg/kg	<100	8470039	<100	<100	<100	100	8470047
<b>Surrogate Recovery (%)</b>								
D10-ANTHRACENE (sur.)	%	101	8470044	91	97	97		8470052
D8-ACENAPHTHYLENE (sur.)	%	92	8470044	89	91	91		8470052
RDL = Reportable Detection Limit								

Maxxam Job #: B6A0687  
Report Date: 2016/11/16

SNC LAVALIN ENVIRONMENT INC.  
Client Project #: 640752  
Site Location: Watson Lake Airport  
Your P.O. #: 700365225  
Sampler Initials: MLC

**LEPH & HEPH WITH PAH FOR CSR IN SOIL (SOIL)**

Maxxam ID		PZ7916		PZ7918	PZ7919	PZ7920		
Sampling Date		2016/11/04 11:00		2016/11/04 12:00	2016/11/04 12:10	2016/11/04 14:00		
COC Number		510054-01-01		510054-01-01	510054-01-01	510054-01-01		
	<b>UNITS</b>	<b>22A-BH16-32-3</b>	<b>QC Batch</b>	<b>22A-BH16-33-1</b>	<b>22A-BH16-33-2</b>	<b>22A-BH16-34-1</b>	<b>RDL</b>	<b>QC Batch</b>
D8-NAPHTHALENE (sur.)	%	91	8470044	87	91	92		8470052
TERPHENYL-D14 (sur.)	%	88	8470044	83	87	86		8470052
O-TERPHENYL (sur.)	%	95	8470039	102	105	103		8470047
RDL = Reportable Detection Limit								

Maxxam Job #: B6A0687  
Report Date: 2016/11/16

SNC LAVALIN ENVIRONMENT INC.  
Client Project #: 640752  
Site Location: Watson Lake Airport  
Your P.O. #: 700365225  
Sampler Initials: MLC

**LEPH & HEPH WITH PAH FOR CSR IN SOIL (SOIL)**

Maxxam ID		PZ7921		
Sampling Date		2016/11/04 14:10		
COC Number		510054-01-01		
	<b>UNITS</b>	<b>22A-BH16-34-2</b>	<b>RDL</b>	<b>QC Batch</b>
<b>Polycyclic Aromatics</b>				
Naphthalene	mg/kg	<0.050	0.050	8470044
2-Methylnaphthalene	mg/kg	<0.050	0.050	8470044
Acenaphthylene	mg/kg	<0.050	0.050	8470044
Acenaphthene	mg/kg	<0.050	0.050	8470044
Fluorene	mg/kg	<0.050	0.050	8470044
Phenanthrene	mg/kg	<0.050	0.050	8470044
Anthracene	mg/kg	<0.050	0.050	8470044
Fluoranthene	mg/kg	<0.050	0.050	8470044
Pyrene	mg/kg	<0.050	0.050	8470044
Benzo(a)anthracene	mg/kg	<0.050	0.050	8470044
Chrysene	mg/kg	<0.050	0.050	8470044
Benzo(b&j)fluoranthene	mg/kg	<0.050	0.050	8470044
Benzo(b)fluoranthene	mg/kg	<0.050	0.050	8470044
Benzo(k)fluoranthene	mg/kg	<0.050	0.050	8470044
Benzo(a)pyrene	mg/kg	<0.050	0.050	8470044
Indeno(1,2,3-cd)pyrene	mg/kg	<0.050	0.050	8470044
Dibenz(a,h)anthracene	mg/kg	<0.050	0.050	8470044
Benzo(g,h,i)perylene	mg/kg	<0.050	0.050	8470044
Low Molecular Weight PAH`s	mg/kg	<0.050	0.050	8466392
High Molecular Weight PAH`s	mg/kg	<0.050	0.050	8466392
Total PAH	mg/kg	<0.050	0.050	8466392
<b>Calculated Parameters</b>				
LEPH (C10-C19 less PAH)	mg/kg	<100	100	8466394
HEPH (C19-C32 less PAH)	mg/kg	<100	100	8466394
<b>Hydrocarbons</b>				
EPH (C10-C19)	mg/kg	<100	100	8470039
EPH (C19-C32)	mg/kg	<100	100	8470039
<b>Surrogate Recovery (%)</b>				
D10-ANTHRACENE (sur.)	%	99		8470044
D8-ACENAPHTHYLENE (sur.)	%	91		8470044
RDL = Reportable Detection Limit				

Maxxam Job #: B6A0687  
Report Date: 2016/11/16

SNC LAVALIN ENVIRONMENT INC.  
Client Project #: 640752  
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Your P.O. #: 700365225  
Sampler Initials: MLC

**LEPH & HEPH WITH PAH FOR CSR IN SOIL (SOIL)**

Maxxam ID		PZ7921		
Sampling Date		2016/11/04 14:10		
COC Number		510054-01-01		
	<b>UNITS</b>	<b>22A-BH16-34-2</b>	<b>RDL</b>	<b>QC Batch</b>
D8-NAPHTHALENE (sur.)	%	92		8470044
TERPHENYL-D14 (sur.)	%	89		8470044
O-TERPHENYL (sur.)	%	96		8470039
RDL = Reportable Detection Limit				

Maxxam Job #: B6A0687  
Report Date: 2016/11/16

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Sampler Initials: MLC

**CSR/CCME METALS IN SOIL (SOIL)**

Maxxam ID		PZ7901	PZ7903	PZ7905	PZ7907	PZ7912		
Sampling Date		2016/11/03 15:30	2016/11/04 09:00	2016/11/04 09:30	2016/11/04 10:00	2016/11/04 10:30		
COC Number		510054-02-01	510054-02-01	510054-02-01	510054-02-01	510054-01-01		
	<b>UNITS</b>	<b>22A-BH16-27-1</b>	<b>22A-BH16-28-1</b>	<b>22A-BH16-29-1</b>	<b>22A-BH16-30-1</b>	<b>22A-BH16-31-1</b>	<b>RDL</b>	<b>QC Batch</b>

<b>Physical Properties</b>								
Soluble (2:1) pH	pH	6.49	7.27	6.58	7.09	6.80	N/A	8467959
<b>Total Metals by ICPMS</b>								
Total Aluminum (Al)	mg/kg	9620	14200	4270	3570	4700	100	8467958
Total Antimony (Sb)	mg/kg	0.46	1.09	0.77	0.34	0.53	0.10	8467958
Total Arsenic (As)	mg/kg	5.34	15.8	4.80	3.33	5.70	0.50	8467958
Total Barium (Ba)	mg/kg	177	567	89.8	61.9	98.3	0.10	8467958
Total Beryllium (Be)	mg/kg	<0.40	0.90	<0.40	<0.40	<0.40	0.40	8467958
Total Bismuth (Bi)	mg/kg	0.15	0.22	<0.10	<0.10	<0.10	0.10	8467958
Total Cadmium (Cd)	mg/kg	0.276	0.684	0.186	0.058	0.255	0.050	8467958
Total Calcium (Ca)	mg/kg	2500	8210	1170	1120	1240	100	8467958
Total Chromium (Cr)	mg/kg	25.5	36.9	15.6	16.5	20.7	1.0	8467958
Total Cobalt (Co)	mg/kg	8.79	10.1	5.24	4.10	5.87	0.30	8467958
Total Copper (Cu)	mg/kg	9.26	33.2	10.9	12.4	13.3	0.50	8467958
Total Iron (Fe)	mg/kg	18200	34700	10300	7900	12000	100	8467958
Total Lead (Pb)	mg/kg	8.00	21.0	11.6	6.75	11.5	0.10	8467958
Total Lithium (Li)	mg/kg	10.0	17.8	5.2	<5.0	<5.0	5.0	8467958
Total Magnesium (Mg)	mg/kg	2600	3270	1940	2080	2360	100	8467958
Total Manganese (Mn)	mg/kg	397	881	290	113	333	0.20	8467958
Total Mercury (Hg)	mg/kg	<0.050	<0.050	0.076	<0.050	0.086	0.050	8467958
Total Molybdenum (Mo)	mg/kg	0.57	1.74	0.42	0.23	0.41	0.10	8467958
Total Nickel (Ni)	mg/kg	20.6	35.7	16.4	17.4	19.4	0.80	8467958
Total Phosphorus (P)	mg/kg	1510	941	500	360	534	10	8467958
Total Potassium (K)	mg/kg	466	829	309	338	375	100	8467958
Total Selenium (Se)	mg/kg	<0.50	1.77	<0.50	<0.50	<0.50	0.50	8467958
Total Silver (Ag)	mg/kg	0.069	0.302	0.054	<0.050	<0.050	0.050	8467958
Total Sodium (Na)	mg/kg	<100	<100	<100	<100	<100	100	8467958
Total Strontium (Sr)	mg/kg	17.1	48.9	7.23	8.80	6.97	0.10	8467958
Total Thallium (Tl)	mg/kg	0.069	0.108	<0.050	<0.050	<0.050	0.050	8467958
Total Tin (Sn)	mg/kg	0.29	0.48	0.25	<0.10	0.35	0.10	8467958
Total Titanium (Ti)	mg/kg	346	112	137	104	157	1.0	8467958

RDL = Reportable Detection Limit  
N/A = Not Applicable

Maxxam Job #: B6A0687  
Report Date: 2016/11/16

SNC LAVALIN ENVIRONMENT INC.  
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Sampler Initials: MLC

**CSR/CCME METALS IN SOIL (SOIL)**

Maxxam ID		PZ7901	PZ7903	PZ7905	PZ7907	PZ7912		
Sampling Date		2016/11/03 15:30	2016/11/04 09:00	2016/11/04 09:30	2016/11/04 10:00	2016/11/04 10:30		
COC Number		510054-02-01	510054-02-01	510054-02-01	510054-02-01	510054-01-01		
	UNITS	22A-BH16-27-1	22A-BH16-28-1	22A-BH16-29-1	22A-BH16-30-1	22A-BH16-31-1	RDL	QC Batch
Total Uranium (U)	mg/kg	0.454	2.80	0.302	0.212	0.354	0.050	8467958
Total Vanadium (V)	mg/kg	28.7	42.4	15.0	12.0	15.9	2.0	8467958
Total Zinc (Zn)	mg/kg	51.5	113	42.1	26.4	60.0	1.0	8467958
Total Zirconium (Zr)	mg/kg	1.87	1.99	0.62	0.81	0.63	0.50	8467958
RDL = Reportable Detection Limit								



Maxxam Job #: B6A0687  
Report Date: 2016/11/16

SNC LAVALIN ENVIRONMENT INC.  
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Sampler Initials: MLC

**CSR/CCME METALS IN SOIL (SOIL)**

Maxxam ID		PZ7914	PZ7918	PZ7920		
Sampling Date		2016/11/04 10:50	2016/11/04 12:00	2016/11/04 14:00		
COC Number		510054-01-01	510054-01-01	510054-01-01		
	<b>UNITS</b>	<b>22A-BH16-32-1</b>	<b>22A-BH16-33-1</b>	<b>22A-BH16-34-1</b>	<b>RDL</b>	<b>QC Batch</b>

<b>Physical Properties</b>						
Soluble (2:1) pH	pH	6.07	6.88	6.07	N/A	8467959
<b>Total Metals by ICPMS</b>						
Total Aluminum (Al)	mg/kg	5970	12000	5260	100	8467958
Total Antimony (Sb)	mg/kg	0.54	0.51	0.71	0.10	8467958
Total Arsenic (As)	mg/kg	6.21	5.43	6.63	0.50	8467958
Total Barium (Ba)	mg/kg	174	140	68.3	0.10	8467958
Total Beryllium (Be)	mg/kg	<0.40	<0.40	<0.40	0.40	8467958
Total Bismuth (Bi)	mg/kg	0.10	0.19	<0.10	0.10	8467958
Total Cadmium (Cd)	mg/kg	0.264	0.254	0.131	0.050	8467958
Total Calcium (Ca)	mg/kg	2340	3500	810	100	8467958
Total Chromium (Cr)	mg/kg	18.9	30.6	20.5	1.0	8467958
Total Cobalt (Co)	mg/kg	5.86	7.07	6.55	0.30	8467958
Total Copper (Cu)	mg/kg	15.7	6.30	11.3	0.50	8467958
Total Iron (Fe)	mg/kg	15100	25400	12100	100	8467958
Total Lead (Pb)	mg/kg	19.1	10.6	5.60	0.10	8467958
Total Lithium (Li)	mg/kg	7.4	12.2	<5.0	5.0	8467958
Total Magnesium (Mg)	mg/kg	2200	2900	2600	100	8467958
Total Manganese (Mn)	mg/kg	425	244	201	0.20	8467958
Total Mercury (Hg)	mg/kg	0.091	<0.050	<0.050	0.050	8467958
Total Molybdenum (Mo)	mg/kg	0.62	0.62	0.57	0.10	8467958
Total Nickel (Ni)	mg/kg	19.4	25.5	22.3	0.80	8467958
Total Phosphorus (P)	mg/kg	691	1740	406	10	8467958
Total Potassium (K)	mg/kg	432	343	304	100	8467958
Total Selenium (Se)	mg/kg	0.51	<0.50	<0.50	0.50	8467958
Total Silver (Ag)	mg/kg	0.106	0.210	<0.050	0.050	8467958
Total Sodium (Na)	mg/kg	<100	<100	<100	100	8467958
Total Strontium (Sr)	mg/kg	17.1	19.9	5.68	0.10	8467958
Total Thallium (Tl)	mg/kg	0.059	0.076	<0.050	0.050	8467958
Total Tin (Sn)	mg/kg	0.17	0.61	<0.10	0.10	8467958
Total Titanium (Ti)	mg/kg	109	404	101	1.0	8467958
RDL = Reportable Detection Limit						
N/A = Not Applicable						

Maxxam Job #: B6A0687  
Report Date: 2016/11/16

SNC LAVALIN ENVIRONMENT INC.  
Client Project #: 640752  
Site Location: Watson Lake Airport  
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Sampler Initials: MLC

**CSR/CCME METALS IN SOIL (SOIL)**

Maxxam ID		PZ7914	PZ7918	PZ7920		
Sampling Date		2016/11/04 10:50	2016/11/04 12:00	2016/11/04 14:00		
COC Number		510054-01-01	510054-01-01	510054-01-01		
	<b>UNITS</b>	<b>22A-BH16-32-1</b>	<b>22A-BH16-33-1</b>	<b>22A-BH16-34-1</b>	<b>RDL</b>	<b>QC Batch</b>
Total Uranium (U)	mg/kg	0.946	0.367	0.271	0.050	8467958
Total Vanadium (V)	mg/kg	18.5	45.5	15.7	2.0	8467958
Total Zinc (Zn)	mg/kg	53.4	65.4	28.7	1.0	8467958
Total Zirconium (Zr)	mg/kg	1.02	2.26	1.45	0.50	8467958
RDL = Reportable Detection Limit						

Maxxam Job #: B6A0687  
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SNC LAVALIN ENVIRONMENT INC.  
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### GENERAL COMMENTS

Each temperature is the average of up to three cooler temperatures taken at receipt

Package 1	3.0°C
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**Results relate only to the items tested.**

Maxxam Job #: B6A0687  
Report Date: 2016/11/16

**QUALITY ASSURANCE REPORT**

SNC LAVALIN ENVIRONMENT INC.  
Client Project #: 640752  
Site Location: Watson Lake Airport  
Your P.O. #: 700365225  
Sampler Initials: MLC

QC Batch	Parameter	Date	Matrix Spike		Spiked Blank		Method Blank		RPD		QC Standard	
			% Recovery	QC Limits	% Recovery	QC Limits	Value	UNITS	Value (%)	QC Limits	% Recovery	QC Limits
8468163	1,4-Difluorobenzene (sur.)	2016/11/12	101	60 - 140	97	60 - 140	98	%				
8468163	4-Bromofluorobenzene (sur.)	2016/11/12	102	70 - 140	107	70 - 140	102	%				
8468163	D10-ETHYLBENZENE (sur.)	2016/11/12	106	60 - 130	89	60 - 130	98	%				
8468163	D4-1,2-Dichloroethane (sur.)	2016/11/12	114	60 - 140	106	60 - 140	112	%				
8468164	1,4-Difluorobenzene (sur.)	2016/11/12	93	60 - 140	98	60 - 140	105	%				
8468164	4-Bromofluorobenzene (sur.)	2016/11/12	107	70 - 140	102	70 - 140	106	%				
8468164	D10-ETHYLBENZENE (sur.)	2016/11/12	106	60 - 130	83	60 - 130	94	%				
8468164	D4-1,2-Dichloroethane (sur.)	2016/11/12	106	60 - 140	97	60 - 140	103	%				
8469433	O-TERPHENYL (sur.)	2016/11/14	91	50 - 130	92	50 - 130	90	%				
8469437	D10-ANTHRACENE (sur.)	2016/11/14	81	60 - 130	87	60 - 130	87	%				
8469437	D8-ACENAPHTHYLENE (sur.)	2016/11/14	78	50 - 130	81	50 - 130	81	%				
8469437	D8-NAPHTHALENE (sur.)	2016/11/14	73	50 - 130	80	50 - 130	82	%				
8469437	TERPHENYL-D14 (sur.)	2016/11/14	68	60 - 130	74	60 - 130	72	%				
8470039	O-TERPHENYL (sur.)	2016/11/15	102	50 - 130	102	50 - 130	103	%				
8470044	D10-ANTHRACENE (sur.)	2016/11/14	98	60 - 130	95	60 - 130	99	%				
8470044	D8-ACENAPHTHYLENE (sur.)	2016/11/14	91	50 - 130	89	50 - 130	91	%				
8470044	D8-NAPHTHALENE (sur.)	2016/11/14	90	50 - 130	91	50 - 130	94	%				
8470044	TERPHENYL-D14 (sur.)	2016/11/14	82	60 - 130	83	60 - 130	90	%				
8470047	O-TERPHENYL (sur.)	2016/11/15	104	50 - 130	104	50 - 130	100	%				
8470052	D10-ANTHRACENE (sur.)	2016/11/15	95	60 - 130	96	60 - 130	97	%				
8470052	D8-ACENAPHTHYLENE (sur.)	2016/11/15	90	50 - 130	88	50 - 130	88	%				
8470052	D8-NAPHTHALENE (sur.)	2016/11/15	91	50 - 130	89	50 - 130	90	%				
8470052	TERPHENYL-D14 (sur.)	2016/11/15	80	60 - 130	80	60 - 130	79	%				
8467184	Moisture	2016/11/11					<0.30	%	7.1	20		
8467188	Moisture	2016/11/11					<0.30	%	1.5	20		
8467958	Total Aluminum (Al)	2016/11/14					<100	mg/kg	5.2	35	79	70 - 130
8467958	Total Antimony (Sb)	2016/11/14	98	75 - 125	97	75 - 125	<0.10	mg/kg	NC	30	111	70 - 130
8467958	Total Arsenic (As)	2016/11/14	99	75 - 125	101	75 - 125	<0.50	mg/kg	0.062	30	92	70 - 130
8467958	Total Barium (Ba)	2016/11/14	NC	75 - 125	99	75 - 125	<0.10	mg/kg	7.3	35	96	70 - 130
8467958	Total Beryllium (Be)	2016/11/14	97	75 - 125	98	75 - 125	<0.40	mg/kg	NC	30	102	70 - 130

Maxxam Job #: B6A0687  
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**QUALITY ASSURANCE REPORT(CONT'D)**

SNC LAVALIN ENVIRONMENT INC.  
Client Project #: 640752  
Site Location: Watson Lake Airport  
Your P.O. #: 700365225  
Sampler Initials: MLC

QC Batch	Parameter	Date	Matrix Spike		Spiked Blank		Method Blank		RPD		QC Standard	
			% Recovery	QC Limits	% Recovery	QC Limits	Value	UNITS	Value (%)	QC Limits	% Recovery	QC Limits
8467958	Total Bismuth (Bi)	2016/11/14					<0.10	mg/kg	NC	30		
8467958	Total Cadmium (Cd)	2016/11/14	112	75 - 125	113	75 - 125	<0.050	mg/kg	NC	30	125	70 - 130
8467958	Total Calcium (Ca)	2016/11/14					<100	mg/kg	8.4	30	88	70 - 130
8467958	Total Chromium (Cr)	2016/11/14	105	75 - 125	99	75 - 125	<1.0	mg/kg	13	30	98	70 - 130
8467958	Total Cobalt (Co)	2016/11/14	100	75 - 125	98	75 - 125	<0.30	mg/kg	2.2	30	95	70 - 130
8467958	Total Copper (Cu)	2016/11/14	102	75 - 125	104	75 - 125	<0.50	mg/kg	5.0	30	100	70 - 130
8467958	Total Iron (Fe)	2016/11/14					<100	mg/kg	7.4	30	90	70 - 130
8467958	Total Lead (Pb)	2016/11/14	103	75 - 125	103	75 - 125	<0.10	mg/kg	3.8	35	104	70 - 130
8467958	Total Lithium (Li)	2016/11/14	100	75 - 125	101	75 - 125	<5.0	mg/kg	NC	30	97	70 - 130
8467958	Total Magnesium (Mg)	2016/11/14					<100	mg/kg	1.3	30	83	70 - 130
8467958	Total Manganese (Mn)	2016/11/14	NC	75 - 125	97	75 - 125	<0.20	mg/kg	2.8	30	96	70 - 130
8467958	Total Mercury (Hg)	2016/11/14	110	75 - 125	107	75 - 125	<0.050	mg/kg	NC	35	99	70 - 130
8467958	Total Molybdenum (Mo)	2016/11/14	100	75 - 125	98	75 - 125	<0.10	mg/kg	NC	35	117	70 - 130
8467958	Total Nickel (Ni)	2016/11/14	100	75 - 125	100	75 - 125	<0.80	mg/kg	3.6	30	104	70 - 130
8467958	Total Phosphorus (P)	2016/11/14					<10	mg/kg	7.8	30	96	70 - 130
8467958	Total Potassium (K)	2016/11/14					<100	mg/kg	NC	35	77	70 - 130
8467958	Total Selenium (Se)	2016/11/14	110	75 - 125	110	75 - 125	<0.50	mg/kg	NC	30		
8467958	Total Silver (Ag)	2016/11/14	78	75 - 125	77	75 - 125	<0.050	mg/kg	NC	35	84	70 - 130
8467958	Total Sodium (Na)	2016/11/14					<100	mg/kg	NC	35	74	70 - 130
8467958	Total Strontium (Sr)	2016/11/14	90	75 - 125	96	75 - 125	0.11, RDL=0.10	mg/kg	12	35	98	70 - 130
8467958	Total Thallium (Tl)	2016/11/14	101	75 - 125	104	75 - 125	<0.050	mg/kg	NC	30	96	70 - 130
8467958	Total Tin (Sn)	2016/11/14	94	75 - 125	91	75 - 125	<0.10	mg/kg	NC	35	92	70 - 130
8467958	Total Titanium (Ti)	2016/11/14	NC	75 - 125	95	75 - 125	<1.0	mg/kg	5.1	35		
8467958	Total Uranium (U)	2016/11/14	103	75 - 125	103	75 - 125	<0.050	mg/kg	NC	30	101	70 - 130
8467958	Total Vanadium (V)	2016/11/14	101	75 - 125	96	75 - 125	<2.0	mg/kg	NC	30	96	70 - 130
8467958	Total Zinc (Zn)	2016/11/14	114	75 - 125	114	75 - 125	<1.0	mg/kg	1.6	30	106	70 - 130
8467958	Total Zirconium (Zr)	2016/11/14					<0.50	mg/kg	NC	30		
8467959	Soluble (2:1) pH	2016/11/14			100	97 - 103			0.23	N/A		
8468163	Benzene	2016/11/13	124	60 - 140	100	60 - 140	<0.0050	mg/kg	NC	40		

Maxxam Job #: B6A0687  
Report Date: 2016/11/16

**QUALITY ASSURANCE REPORT(CONT'D)**

SNC LAVALIN ENVIRONMENT INC.  
Client Project #: 640752  
Site Location: Watson Lake Airport  
Your P.O. #: 700365225  
Sampler Initials: MLC

QC Batch	Parameter	Date	Matrix Spike		Spiked Blank		Method Blank		RPD		QC Standard	
			% Recovery	QC Limits	% Recovery	QC Limits	Value	UNITS	Value (%)	QC Limits	% Recovery	QC Limits
8468163	Ethylbenzene	2016/11/13	121	60 - 140	103	60 - 140	<0.010	mg/kg	NC	40		
8468163	m & p-Xylene	2016/11/13	116	60 - 140	100	60 - 140	<0.040	mg/kg	NC	40		
8468163	Methyl-tert-butylether (MTBE)	2016/11/13					<0.10	mg/kg	NC	40		
8468163	o-Xylene	2016/11/13	105	60 - 140	90	60 - 140	<0.040	mg/kg	NC	40		
8468163	Styrene	2016/11/13					<0.030	mg/kg	NC	40		
8468163	Toluene	2016/11/13	117	60 - 140	100	60 - 140	<0.020	mg/kg	NC	40		
8468163	VH C6-C10	2016/11/13			70	60 - 140	<10	mg/kg	NC	40		
8468163	Xylenes (Total)	2016/11/13					<0.040	mg/kg	NC	40		
8468164	Benzene	2016/11/12	108	60 - 140	92	60 - 140	<0.0050	mg/kg	NC	40		
8468164	Ethylbenzene	2016/11/12	109	60 - 140	92	60 - 140	<0.010	mg/kg	NC	40		
8468164	m & p-Xylene	2016/11/12	105	60 - 140	90	60 - 140	<0.040	mg/kg	NC	40		
8468164	Methyl-tert-butylether (MTBE)	2016/11/12					<0.10	mg/kg	NC	40		
8468164	o-Xylene	2016/11/12	105	60 - 140	89	60 - 140	<0.040	mg/kg	NC	40		
8468164	Styrene	2016/11/12					<0.030	mg/kg	NC	40		
8468164	Toluene	2016/11/12	104	60 - 140	89	60 - 140	<0.020	mg/kg	NC	40		
8468164	VH C6-C10	2016/11/12			84	60 - 140	<10	mg/kg	NC	40		
8468164	Xylenes (Total)	2016/11/12					<0.040	mg/kg	NC	40		
8469433	EPH (C10-C19)	2016/11/14	95	50 - 130	97	50 - 130	<100	mg/kg	NC	40		
8469433	EPH (C19-C32)	2016/11/14	97	50 - 130	97	50 - 130	<100	mg/kg	NC	40		
8469437	2-Methylnaphthalene	2016/11/14	74	50 - 130	80	50 - 130	<0.050	mg/kg	NC	50		
8469437	Acenaphthene	2016/11/14	76	50 - 130	81	50 - 130	<0.050	mg/kg	NC	50		
8469437	Acenaphthylene	2016/11/14	74	50 - 130	78	50 - 130	<0.050	mg/kg	NC	50		
8469437	Anthracene	2016/11/14	75	60 - 130	82	60 - 130	<0.050	mg/kg	NC	50		
8469437	Benzo(a)anthracene	2016/11/14	72	60 - 130	75	60 - 130	<0.050	mg/kg	NC	50		
8469437	Benzo(a)pyrene	2016/11/14	71	60 - 130	74	60 - 130	<0.050	mg/kg	NC	50		
8469437	Benzo(b&j)fluoranthene	2016/11/14	76	60 - 130	80	60 - 130	<0.050	mg/kg	NC	50		
8469437	Benzo(b)fluoranthene	2016/11/14	74	60 - 130	77	60 - 130	<0.050	mg/kg	NC	50		
8469437	Benzo(g,h,i)perylene	2016/11/14	68	60 - 130	68	60 - 130	<0.050	mg/kg	NC	50		
8469437	Benzo(k)fluoranthene	2016/11/14	74	60 - 130	81	60 - 130	<0.050	mg/kg	NC	50		
8469437	Chrysene	2016/11/14	75	60 - 130	79	60 - 130	<0.050	mg/kg	NC	50		

Maxxam Job #: B6A0687  
Report Date: 2016/11/16

**QUALITY ASSURANCE REPORT(CONT'D)**

SNC LAVALIN ENVIRONMENT INC.  
Client Project #: 640752  
Site Location: Watson Lake Airport  
Your P.O. #: 700365225  
Sampler Initials: MLC

QC Batch	Parameter	Date	Matrix Spike		Spiked Blank		Method Blank		RPD		QC Standard	
			% Recovery	QC Limits	% Recovery	QC Limits	Value	UNITS	Value (%)	QC Limits	% Recovery	QC Limits
8469437	Dibenz(a,h)anthracene	2016/11/14	69	60 - 130	70	60 - 130	<0.050	mg/kg	NC	50		
8469437	Fluoranthene	2016/11/14	74	60 - 130	81	60 - 130	<0.050	mg/kg	NC	50		
8469437	Fluorene	2016/11/14	74	50 - 130	77	50 - 130	<0.050	mg/kg	NC	50		
8469437	Indeno(1,2,3-cd)pyrene	2016/11/14	70	60 - 130	71	60 - 130	<0.050	mg/kg	NC	50		
8469437	Naphthalene	2016/11/14	72	50 - 130	79	50 - 130	<0.050	mg/kg	NC	50		
8469437	Phenanthrene	2016/11/14	71	60 - 130	77	60 - 130	<0.050	mg/kg	NC	50		
8469437	Pyrene	2016/11/14	74	60 - 130	81	60 - 130	<0.050	mg/kg	NC	50		
8470039	EPH (C10-C19)	2016/11/15	104	50 - 130	103	50 - 130	<100	mg/kg	NC	40		
8470039	EPH (C19-C32)	2016/11/15	104	50 - 130	104	50 - 130	<100	mg/kg	NC	40		
8470044	2-Methylnaphthalene	2016/11/15	82	50 - 130	86	50 - 130	<0.050	mg/kg	NC	50		
8470044	Acenaphthene	2016/11/15	84	50 - 130	89	50 - 130	<0.050	mg/kg	NC	50		
8470044	Acenaphthylene	2016/11/15	82	50 - 130	86	50 - 130	<0.050	mg/kg	NC	50		
8470044	Anthracene	2016/11/15	86	60 - 130	90	60 - 130	<0.050	mg/kg	NC	50		
8470044	Benzo(a)anthracene	2016/11/15	79	60 - 130	84	60 - 130	<0.050	mg/kg	NC	50		
8470044	Benzo(a)pyrene	2016/11/15	82	60 - 130	85	60 - 130	<0.050	mg/kg	NC	50		
8470044	Benzo(b&j)fluoranthene	2016/11/15	85	60 - 130	90	60 - 130	<0.050	mg/kg	NC	50		
8470044	Benzo(b)fluoranthene	2016/11/15	81	60 - 130	82	60 - 130	<0.050	mg/kg	NC	50		
8470044	Benzo(g,h,i)perylene	2016/11/15	76	60 - 130	73	60 - 130	<0.050	mg/kg	NC	50		
8470044	Benzo(k)fluoranthene	2016/11/15	84	60 - 130	90	60 - 130	<0.050	mg/kg	NC	50		
8470044	Chrysene	2016/11/15	84	60 - 130	89	60 - 130	<0.050	mg/kg	NC	50		
8470044	Dibenz(a,h)anthracene	2016/11/15	75	60 - 130	74	60 - 130	<0.050	mg/kg	NC	50		
8470044	Fluoranthene	2016/11/15	85	60 - 130	91	60 - 130	<0.050	mg/kg	NC	50		
8470044	Fluorene	2016/11/15	80	50 - 130	86	50 - 130	<0.050	mg/kg	NC	50		
8470044	Indeno(1,2,3-cd)pyrene	2016/11/15	77	60 - 130	75	60 - 130	<0.050	mg/kg	NC	50		
8470044	Naphthalene	2016/11/15	82	50 - 130	85	50 - 130	<0.050	mg/kg	NC	50		
8470044	Phenanthrene	2016/11/15	81	60 - 130	87	60 - 130	<0.050	mg/kg	NC	50		
8470044	Pyrene	2016/11/15	84	60 - 130	89	60 - 130	<0.050	mg/kg	NC	50		
8470047	EPH (C10-C19)	2016/11/15	107	50 - 130	105	50 - 130	<100	mg/kg	NC	40		
8470047	EPH (C19-C32)	2016/11/15	106	50 - 130	106	50 - 130	<100	mg/kg	NC	40		
8470052	2-Methylnaphthalene	2016/11/15	86	50 - 130	85	50 - 130	<0.050	mg/kg	NC	50		

Maxxam Job #: B6A0687  
Report Date: 2016/11/16

**QUALITY ASSURANCE REPORT(CONT'D)**

SNC LAVALIN ENVIRONMENT INC.  
Client Project #: 640752  
Site Location: Watson Lake Airport  
Your P.O. #: 700365225  
Sampler Initials: MLC

QC Batch	Parameter	Date	Matrix Spike		Spiked Blank		Method Blank		RPD		QC Standard	
			% Recovery	QC Limits	% Recovery	QC Limits	Value	UNITS	Value (%)	QC Limits	% Recovery	QC Limits
8470052	Acenaphthene	2016/11/15	88	50 - 130	89	50 - 130	<0.050	mg/kg	NC	50		
8470052	Acenaphthylene	2016/11/15	85	50 - 130	85	50 - 130	<0.050	mg/kg	NC	50		
8470052	Anthracene	2016/11/15	89	60 - 130	92	60 - 130	<0.050	mg/kg	NC	50		
8470052	Benzo(a)anthracene	2016/11/15	85	60 - 130	85	60 - 130	<0.050	mg/kg	NC	50		
8470052	Benzo(a)pyrene	2016/11/15	83	60 - 130	83	60 - 130	<0.050	mg/kg	NC	50		
8470052	Benzo(b&j)fluoranthene	2016/11/15	90	60 - 130	90	60 - 130	<0.050	mg/kg	NC	50		
8470052	Benzo(b)fluoranthene	2016/11/15	88	60 - 130	87	60 - 130	<0.050	mg/kg	NC	50		
8470052	Benzo(g,h,i)perylene	2016/11/15	82	60 - 130	76	60 - 130	<0.050	mg/kg	NC	50		
8470052	Benzo(k)fluoranthene	2016/11/15	88	60 - 130	85	60 - 130	<0.050	mg/kg	NC	50		
8470052	Chrysene	2016/11/15	88	60 - 130	89	60 - 130	<0.050	mg/kg	NC	50		
8470052	Dibenz(a,h)anthracene	2016/11/15	83	60 - 130	79	60 - 130	<0.050	mg/kg	NC	50		
8470052	Fluoranthene	2016/11/15	88	60 - 130	90	60 - 130	<0.050	mg/kg	NC	50		
8470052	Fluorene	2016/11/15	85	50 - 130	86	50 - 130	<0.050	mg/kg	NC	50		
8470052	Indeno(1,2,3-cd)pyrene	2016/11/15	84	60 - 130	79	60 - 130	<0.050	mg/kg	NC	50		
8470052	Naphthalene	2016/11/15	85	50 - 130	81	50 - 130	<0.050	mg/kg	NC	50		
8470052	Phenanthrene	2016/11/15	85	60 - 130	86	60 - 130	<0.050	mg/kg	NC	50		
8470052	Pyrene	2016/11/15	87	60 - 130	90	60 - 130	<0.050	mg/kg	NC	50		

N/A = Not Applicable

Duplicate: Paired analysis of a separate portion of the same sample. Used to evaluate the variance in the measurement.

Matrix Spike: A sample to which a known amount of the analyte of interest has been added. Used to evaluate sample matrix interference.

QC Standard: A sample of known concentration prepared by an external agency under stringent conditions. Used as an independent check of method accuracy.

Spiked Blank: A blank matrix sample to which a known amount of the analyte, usually from a second source, has been added. Used to evaluate method accuracy.

Method Blank: A blank matrix containing all reagents used in the analytical procedure. Used to identify laboratory contamination.

Surrogate: A pure or isotopically labeled compound whose behavior mirrors the analytes of interest. Used to evaluate extraction efficiency.

NC (Matrix Spike): The recovery in the matrix spike was not calculated. The relative difference between the concentration in the parent sample and the spiked amount was too small to permit a reliable recovery calculation (matrix spike concentration was less than 2x that of the native sample concentration).

NC (Duplicate RPD): The duplicate RPD was not calculated. The concentration in the sample and/or duplicate was too low to permit a reliable RPD calculation (one or both samples < 5x RDL).

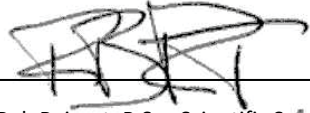


Maxxam Job #: B6A0687  
Report Date: 2016/11/16

SNC LAVALIN ENVIRONMENT INC.  
Client Project #: 640752  
Site Location: Watson Lake Airport  
Your P.O. #: 700365225  
Sampler Initials: MLC

### VALIDATION SIGNATURE PAGE

The analytical data and all QC contained in this report were reviewed and validated by the following individual(s).



Rob Reinert, B.Sc., Scientific Spécialist

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Maxxam has procedures in place to guard against improper use of the electronic signature and have the required "signatories", as per section 5.10.2 of ISO/IEC 17025:2005(E), signing the reports. For Service Group specific validation please refer to the Validation Signature Page.

**INVOICE TO:**

Company Name: **#1756 PUBLIC WORKS & GOVERNMENT SERVICE**  
 Contact Name: **Robert Price**  
 Address: **641- 800 BURRARD STREET  
VANCOUVER BC V6Z 2V8**  
 Phone: **(604) 775-6810** Fax: **(604) 775-6650**  
 Email: **robert.price@pwgsc-tpsgc.gc.ca**

**Report Information**

Company Name: **#26479 SNC LAVALIN ENVIRONMENT INC.**  
 Contact Name: **Michael Chao**  
 Address: **8648 COMMERCE COURT  
BURNABY BC V5A 4N6**  
 Phone: **(604) 515-5151** Fax: \_\_\_\_\_  
 Email: **Michael.Chao@snc-lavalin.com**

**Project Information**

Quotation #: **B61631**  
 P.O. #: **Pending**  
 Project #: **640752**  
 Project Name: **AEC 22A**  
 Site #: **Watson Lake Airport**  
 Sampled By: **MLC**



B6A0687\_COC



C6510054-02-01

**Only**

Bottle Order #: \_\_\_\_\_  
 510054  
 Project Manager  
 Samantha Fregien

**Regulatory Criteria**

*Yukon CSR Soil*

**Special Instructions**

**Analysis Requested**

Regulated Drinking Water? (Y/N)	Metals Field Filtered? (Y/N)	CSR BTEX/VPH	LEPH & HEPH with CSR PAH	CSR/CCME Diss. Metals in Water w/ CV Hg	CSR VOC + VPH	CSR/CCME Metals in Soil
		X	X			X

**Turnaround Time (TAT) Required**

Please provide advance notice for rush projects

Regular (Standard) TAT (will be applied if Rush TAT is not specified)   
 Standard TAT = 5-7 Working days for most tests.  
 Please note: Standard TAT for certain tests such as BOD and Dioxins/Furans are > 8 days - contact your Project Manager for details.

Job Specific Rush TAT (if applies to entire submission)  
 Date Required: \_\_\_\_\_ Time Required: \_\_\_\_\_  
 Rush Confirmation Number: \_\_\_\_\_ (cost lab for #)

Note: For regulated drinking water samples - please use the Drinking Water Chain of Custody Form

Samples must be kept cool (< 10°C) from time of sampling until delivery to maxxam

Sample Barcode Label	Sample (Location) Identification	Date Sampled	Time Sampled	Matrix	Regulated Drinking Water? (Y/N)	Metals Field Filtered? (Y/N)	CSR BTEX/VPH	LEPH & HEPH with CSR PAH	CSR/CCME Diss. Metals in Water w/ CV Hg	CSR VOC + VPH	CSR/CCME Metals in Soil	# of Bottles	Comments
1	22A-BH16-27-1	16/11/03	15:30	Soil			X	X			X	2	RECEIVED IN WHITEHORSE
2	22A-BH16-27-2	↓	15:40				X	X				2	BY: <i>Syomo@0930</i>
3	22A-BH16-28-1	16/11/04	9:00				X	X			X	2	2016-11-08
4	22A-BH16-28-2		9:10				X	X				2	TEMP: 31313
5	22A-BH16-29-1		9:30				X	X			X	2	
6	22A-BH16-29-2		9:40				X	X				2	
7	22A-BH16-30-1		10:00				X	X			X	2	
8	22A-BH16-30-2		10:10				X	X				2	
9	22A-BH16-30-3		10:20									X	2
10	22A-BH16-30-4		10:30									X	2

**RECEIVED BY: (Signature/Print)** *Michael Chao* **DATE: (YY/MM/DD)** 16/11/06 **TIME:** 17:00

**RECEIVED BY: (Signature/Print)** *Michael Chao* **DATE: (YY/MM/DD)** 2016/11/09 **TIME:** 13:00

**# Jars used and not submitted:** \_\_\_\_\_

**Lab Use Only**

Time Sensitive:  Temperature (°C) on Receipt: *111* Custody Seal intact on Cooler?  Yes  No

\* IT IS THE RESPONSIBILITY OF THE RELINQUISHER TO ENSURE THE ACCURACY OF THE CHAIN OF CUSTODY RECORD. AN INCOMPLETE CHAIN OF CUSTODY MAY RESULT IN ANALYTICAL TAT DELAYS.





Maxxam Analytics International Corporation o/a Maxxam Analytics  
 4606 Canada Way, Burnaby, British Columbia Canada V5G 1K5 Tel: (604) 734 7276 Toll-free: 800-563-6296 Fax: (604) 731 2386 www.maxxam.ca

<b>INVOICE TO:</b>		<b>Report Information</b>		<b>Project Information</b>	
Company Name	#1756 PUBLIC WORKS & GOVERNMENT SERVICE	Company Name	#26479 SNC LAVALIN ENVIRONMENT INC.	Quotation #	B61631
Contact Name	Robert Price	Contact Name	Michael Chao <i>Marta Pasca</i>	P.O. #	Pending
Address	641- 800 BURNARD STREET VANCOUVER BC V6Z 2V8	Address	8648 COMMERCE COURT BURNABY BC V5A 4N6	Project #	640752
Phone	(604) 775-6810 Fax (604) 775-6650	Phone	(604) 515-5151 Fax	Project Name	ARC 22A
Email	robert.price@pwgsc-lpsgc.gc.ca	Email	Michael.Chao@snc-lavalin.com	Site #	Watson Lake Airport
				Site #	Watson Lake Airport
				Site #	Watson Lake Airport



B6A0687\_COC

Project Manager  
Samantha Fregien

Bottle Order #:  
510054

CS#10054-01-01

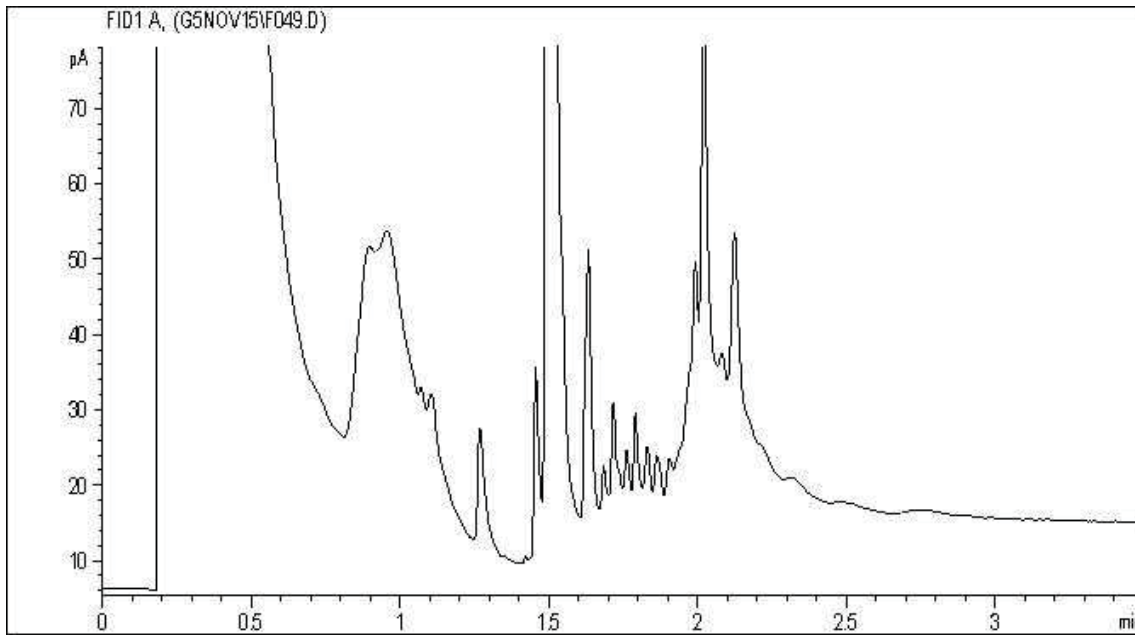
Regulatory Criteria	Special Instructions	Analysis Requested		Turnaround Time (TAT) Required
Yukon CSR Soil		Regulated Drinking Water? (Y/N)	Metals Field Filtered? (Y/N)	Regular (Standard) TAT (will be applied if Rush TAT is not specified) Standard TAT = 5-7 Working days for most tests. Please note: Standard TAT for certain tests such as BOD and Dioxins/Furans are > 5 days - contact your Project Manager for details.
Note: For regulated drinking water samples - please use the Drinking Water Chain of Custody Form		CSR BTEX/VPH	LEPH & HEPH with CSR PAH	Job Specific Rush TAT (if applies to entire submission) Date Required: _____ Time Required: _____ Rush Confirmation Number _____ (call lab for #)
Samples must be kept cool (< 10°C) from time of sampling until delivery to maxxam		CSR/CCME Diss. Metals in Water w/ CV Hg	CSR VOC + VPH	<input checked="" type="checkbox"/>

Sample Barcode Label	Sample (Location) Identification	Date Sampled	Time Sampled	Matrix	Regulated Drinking Water? (Y/N)	Metals Field Filtered? (Y/N)	CSR BTEX/VPH	LEPH & HEPH with CSR PAH	CSR/CCME Diss. Metals in Water w/ CV Hg	CSR VOC + VPH	CSR/CCME Metals in Soil	# of Bottles	Comments	
1	22A-BH16-31-1	16/11/04	10:30	Soil			X	X			X	2	RECEIVED IN WHITEHORSE	
2	22A-BH16-31-2		10:46				X	X				2	BY: <i>Suyono@0930</i>	
3	22A-BH16-32-1		10:50				X	X			X	2	2016-11-08	
4	22A-BH16-32-2		10:55				X	X				2	TEMP: 31313	
5	22A-BH16-32-3		11:00				X	X				2		
6	22A-BH16-32-4		11:10									X	2	
7	22A-BH16-33-1		12:00				X	X			X	2		
8	22A-BH16-33-2		12:10				X	X				2		
9	22A-BH16-34-1		14:00				X	X			X	2		
10	22A-BH16-34-2		14:10				X	X				2		

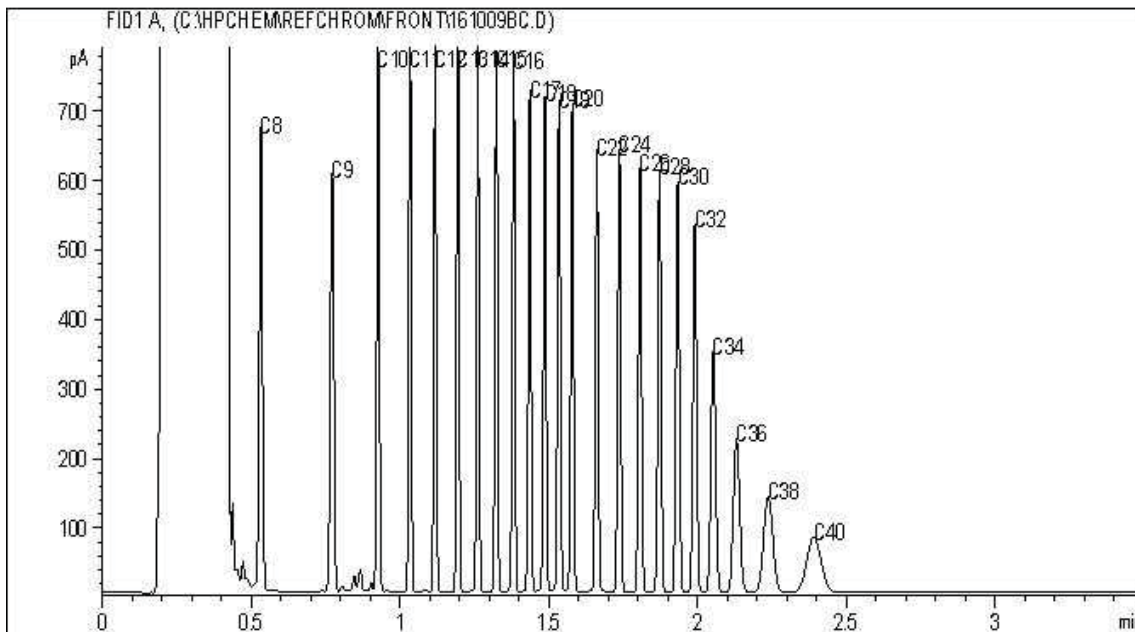
** RELINQUISHED BY: (Signature/Print)	Date: (YY/MM/DD)	Time	RECEIVED BY: (Signature/Print)	Date: (YY/MM/DD)	Time	# Jars used and not submitted	Lab Use Only
<i>Mike Chao</i>	16/11/04	17:00	<i>Michael Balthasar</i>	2016/11/09	13:00		Tare Sensitive <input type="checkbox"/> Temperature (°C) on Receipt: 111 Custody Seal Intact on Cooler? <input checked="" type="checkbox"/> Yes <input type="checkbox"/> No

\* IT IS THE RESPONSIBILITY OF THE RELINQUISHER TO ENSURE THE ACCURACY OF THE CHAIN OF CUSTODY RECORD. AN INCOMPLETE CHAIN OF CUSTODY MAY RESULT IN ANALYTICAL TAT DELAYS.

EPH in Soil by GC/FID Chromatogram



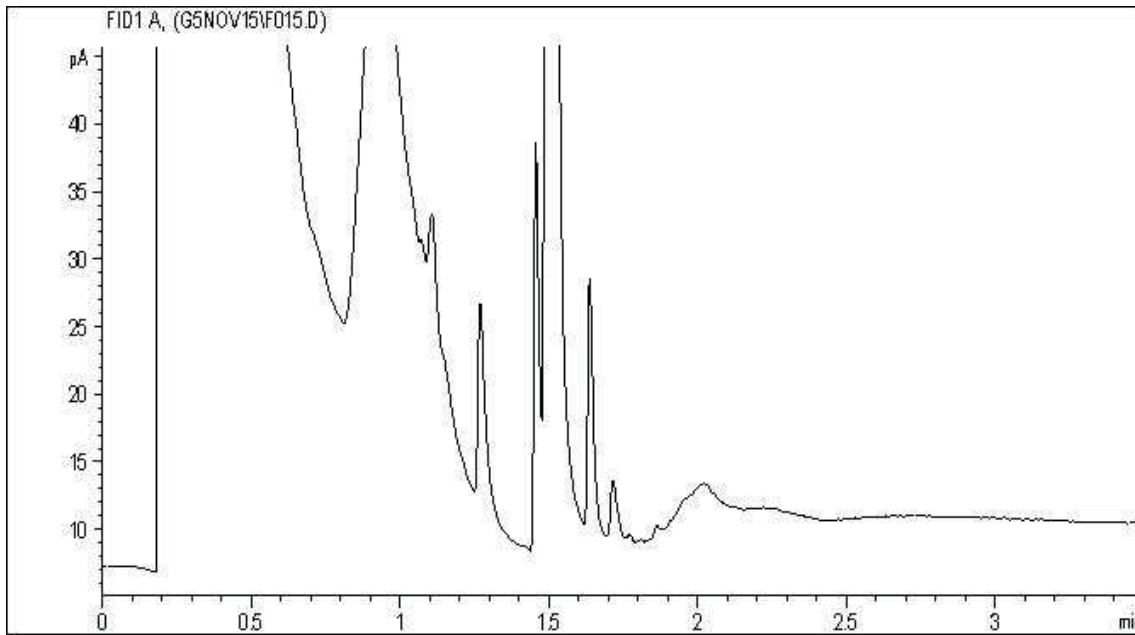
Carbon Range Distribution - Reference Chromatogram



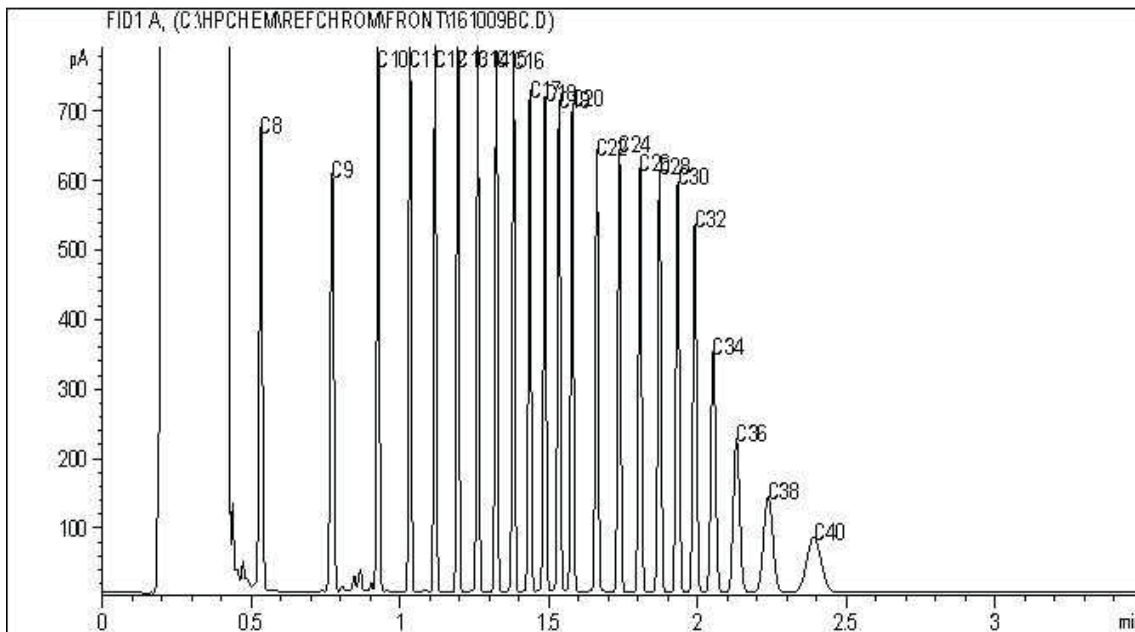
TYPICAL PRODUCT CARBON NUMBER RANGES

Note: This information is provided for reference purposes only. Should detailed chemist interpretation or fingerprinting be required, please contact the laboratory.

EPH in Soil by GC/FID Chromatogram



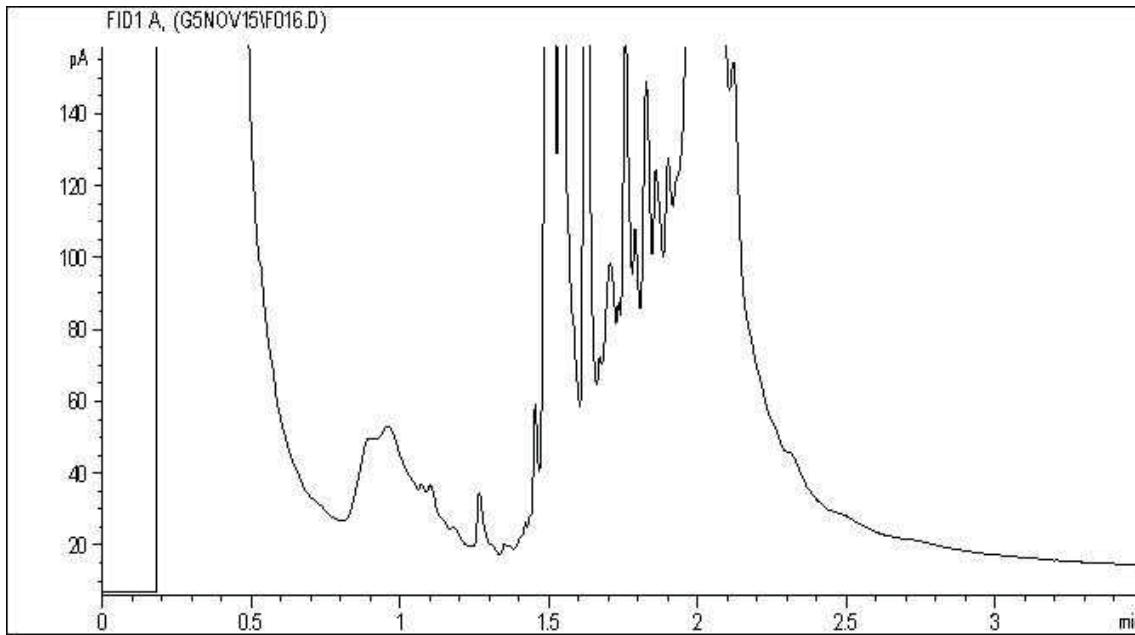
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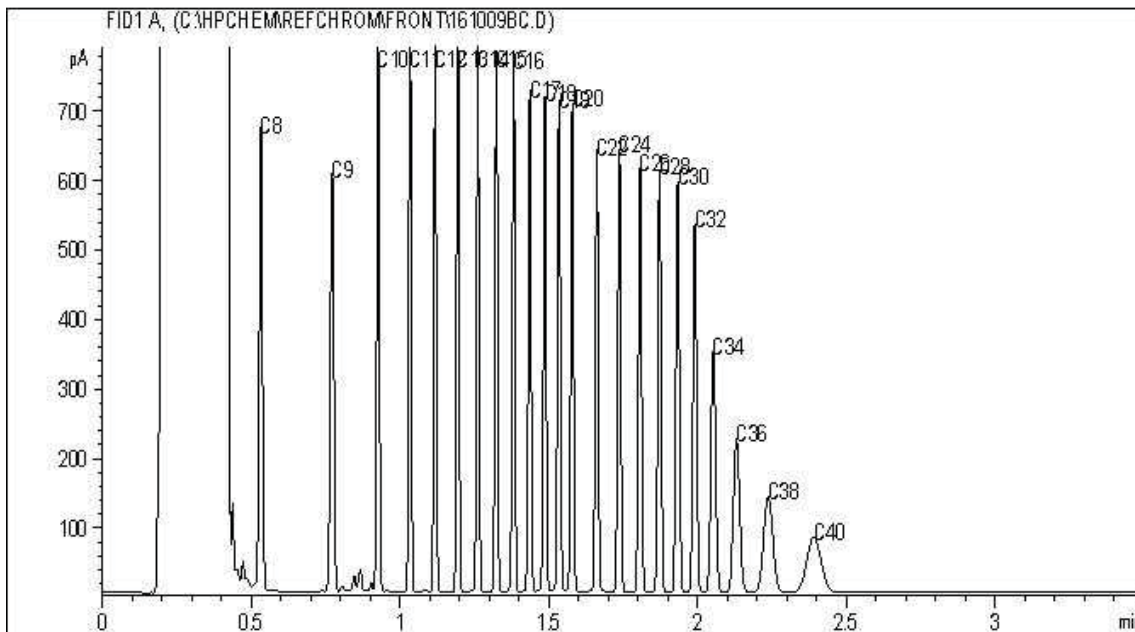
TYPICAL PRODUCT CARBON NUMBER RANGES

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EPH in Soil by GC/FID Chromatogram



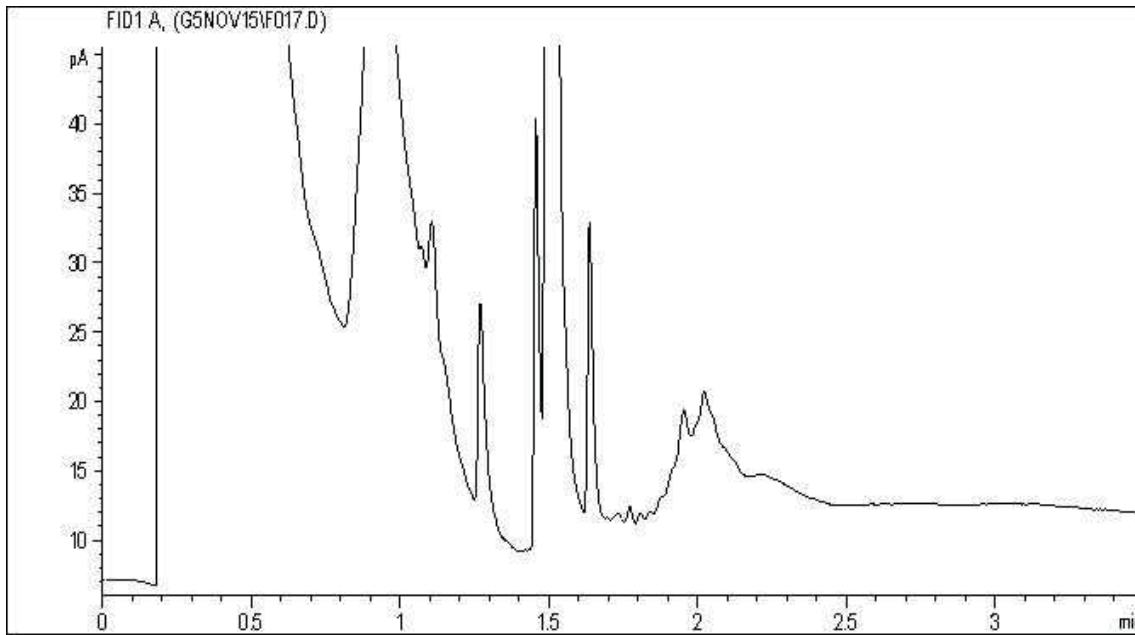
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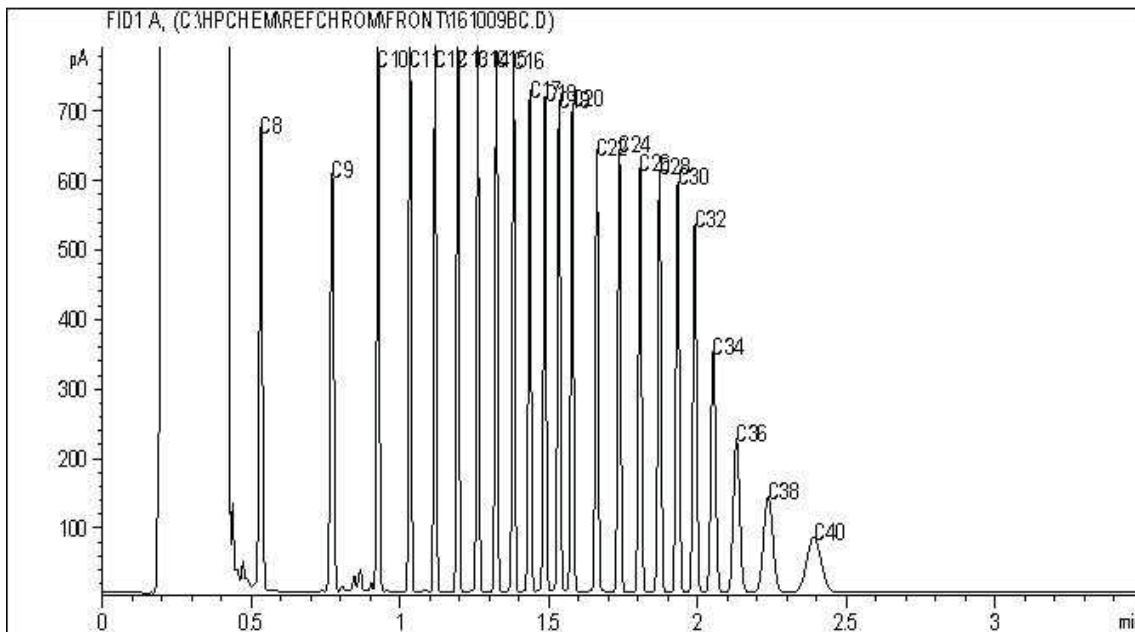
TYPICAL PRODUCT CARBON NUMBER RANGES

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EPH in Soil by GC/FID Chromatogram



Carbon Range Distribution - Reference Chromatogram

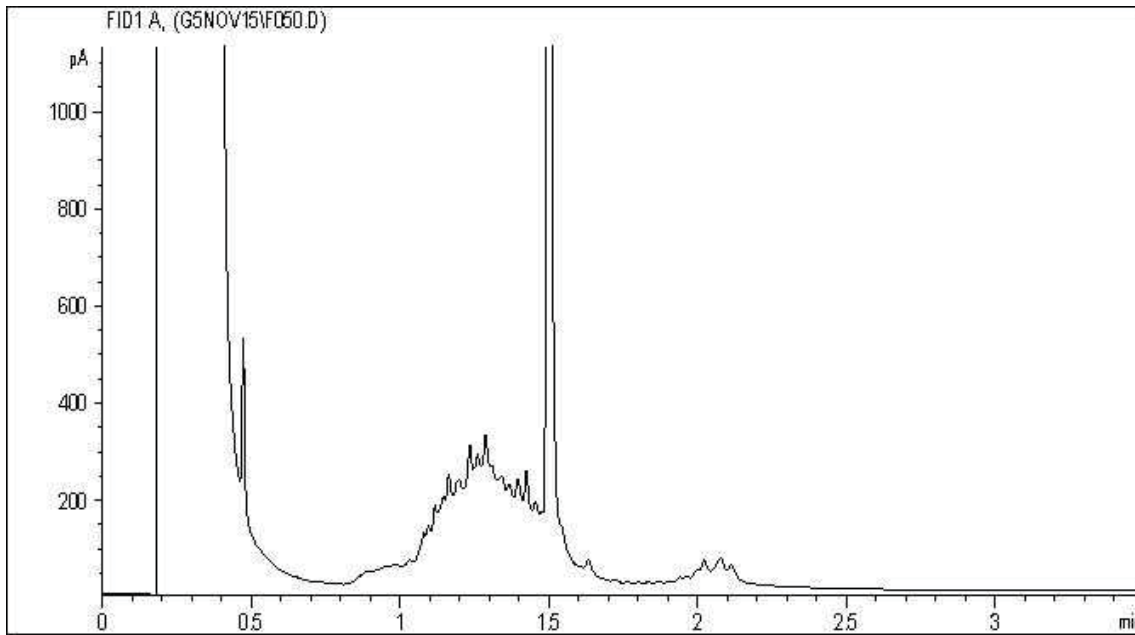


TYPICAL PRODUCT CARBON NUMBER RANGES

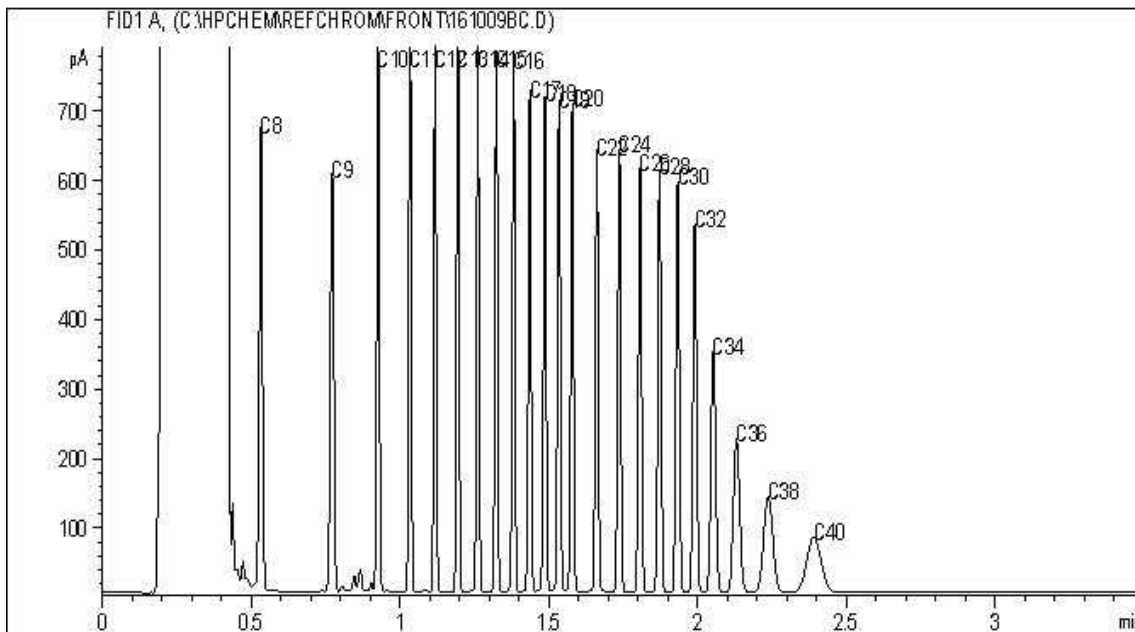
Note: This information is provided for reference purposes only. Should detailed chemist interpretation or fingerprinting be required, please contact the laboratory.



EPH in Soil by GC/FID Chromatogram



Carbon Range Distribution - Reference Chromatogram

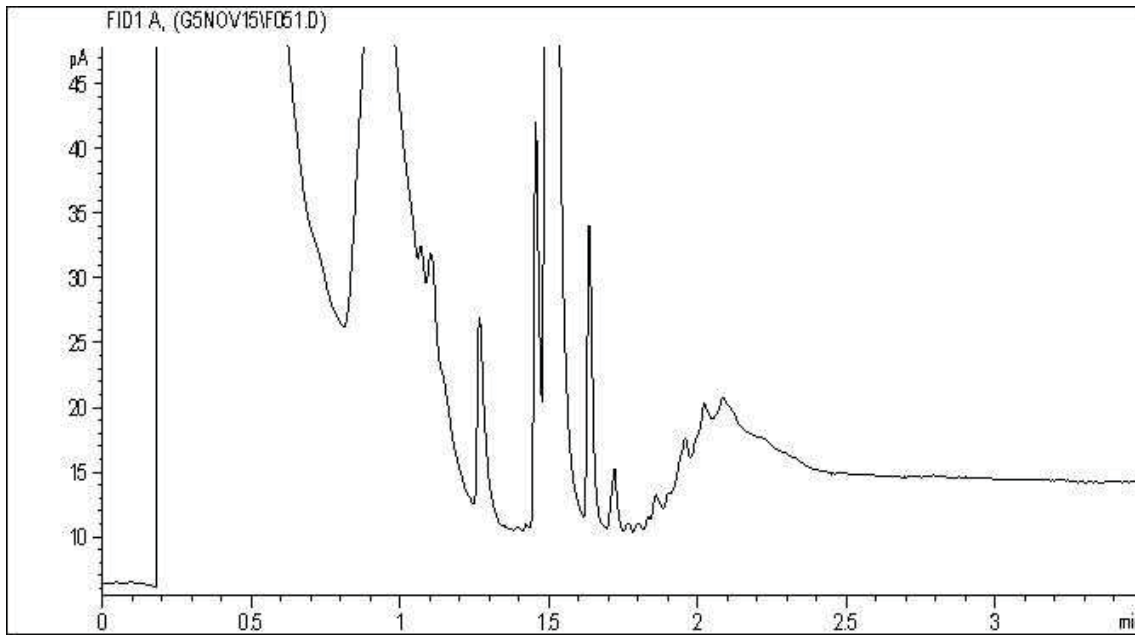


TYPICAL PRODUCT CARBON NUMBER RANGES

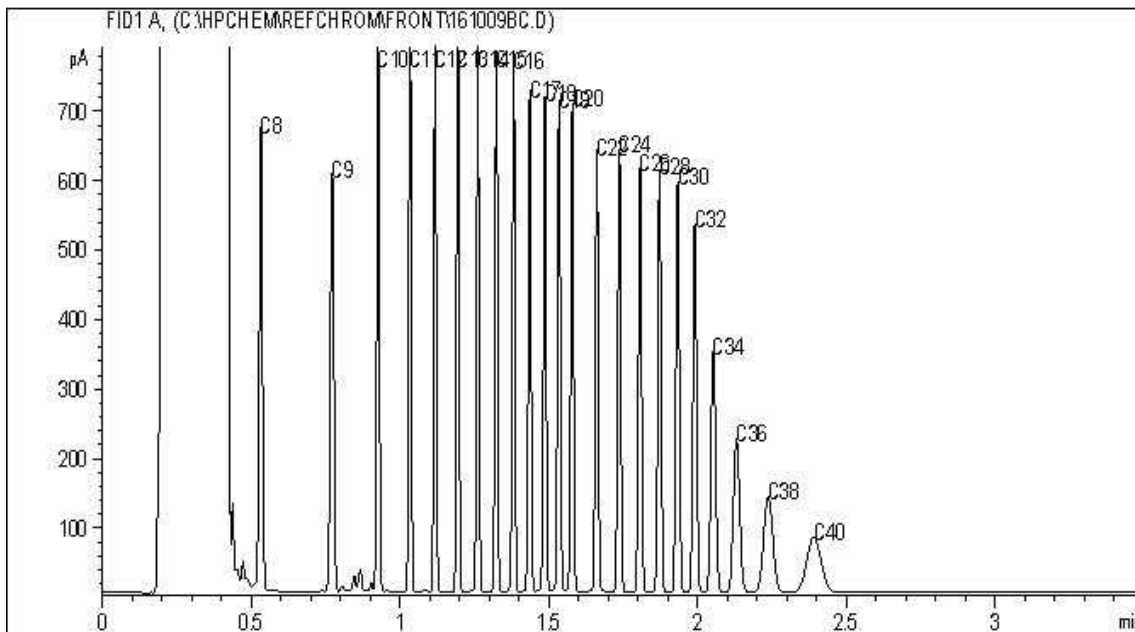
Note: This information is provided for reference purposes only. Should detailed chemist interpretation or fingerprinting be required, please contact the laboratory.



EPH in Soil by GC/FID Chromatogram



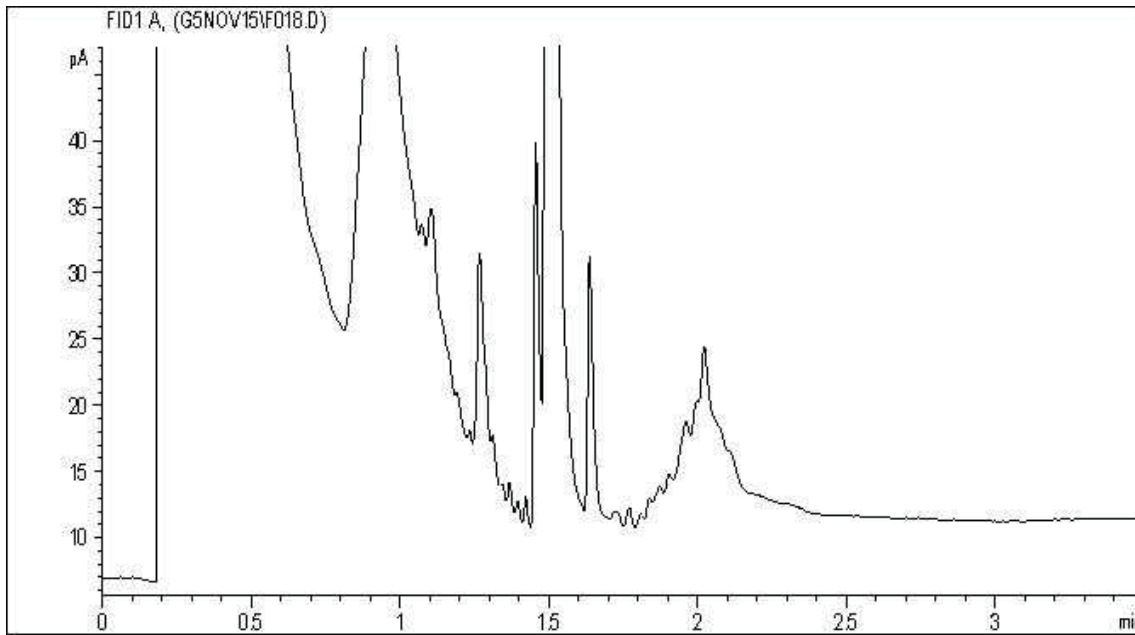
Carbon Range Distribution - Reference Chromatogram



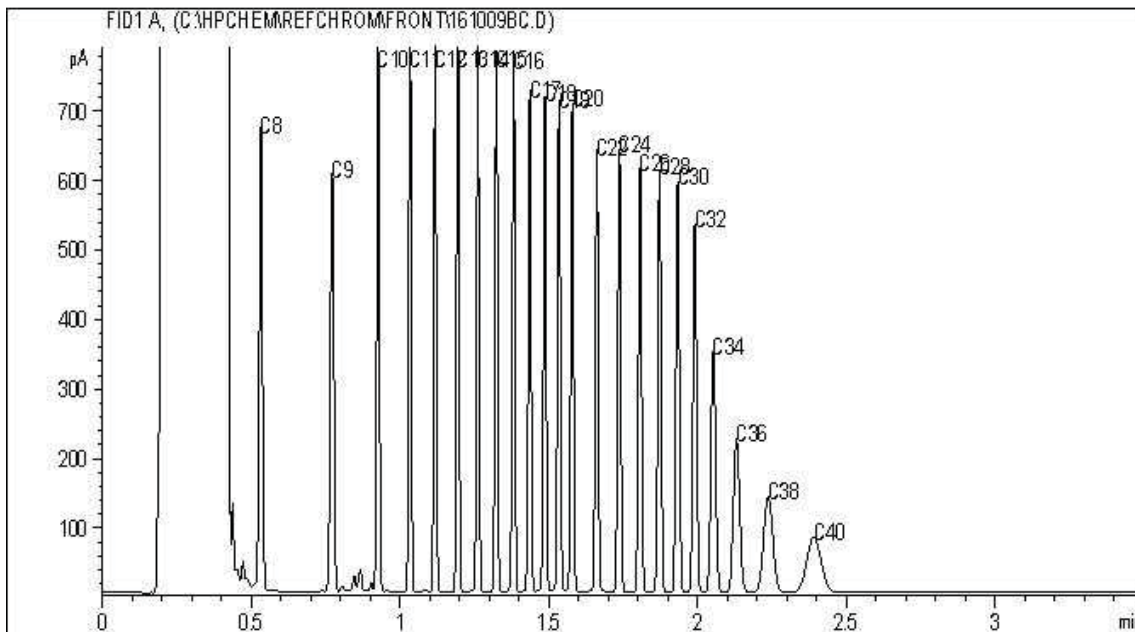
TYPICAL PRODUCT CARBON NUMBER RANGES

Note: This information is provided for reference purposes only. Should detailed chemist interpretation or fingerprinting be required, please contact the laboratory.

EPH in Soil by GC/FID Chromatogram



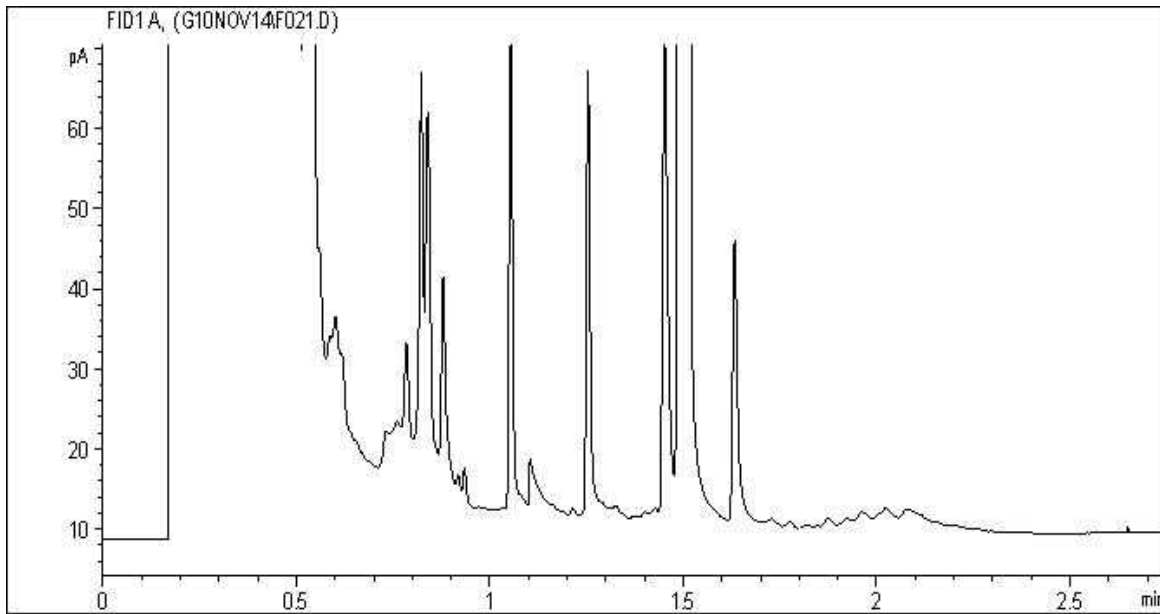
Carbon Range Distribution - Reference Chromatogram



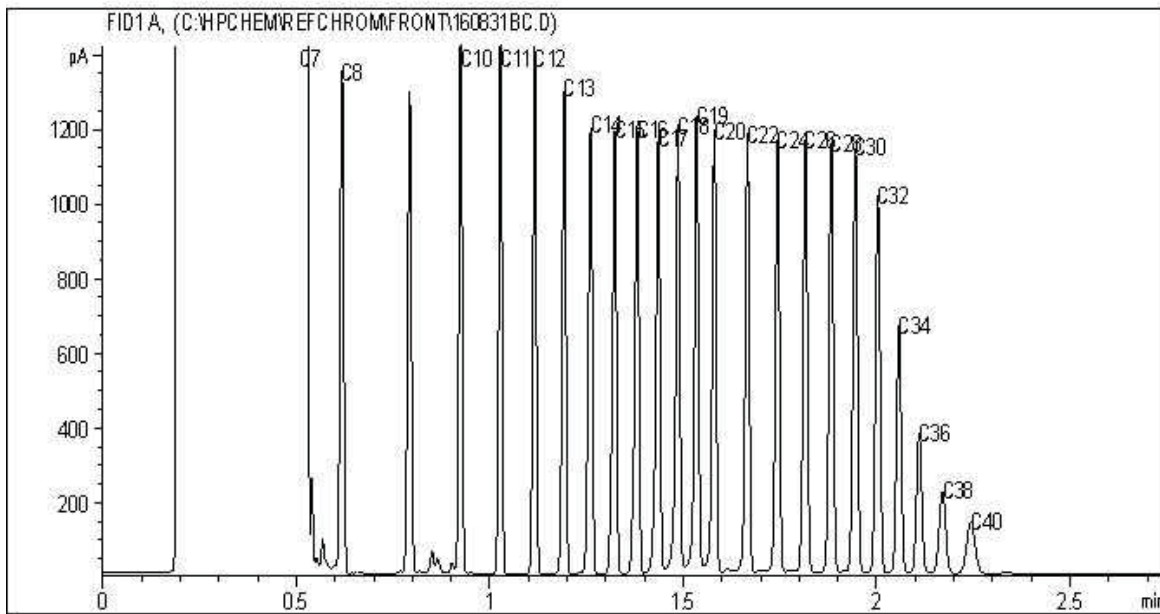
TYPICAL PRODUCT CARBON NUMBER RANGES

Note: This information is provided for reference purposes only. Should detailed chemist interpretation or fingerprinting be required, please contact the laboratory.

EPH in Soil by GC/FID Chromatogram



Carbon Range Distribution - Reference Chromatogram

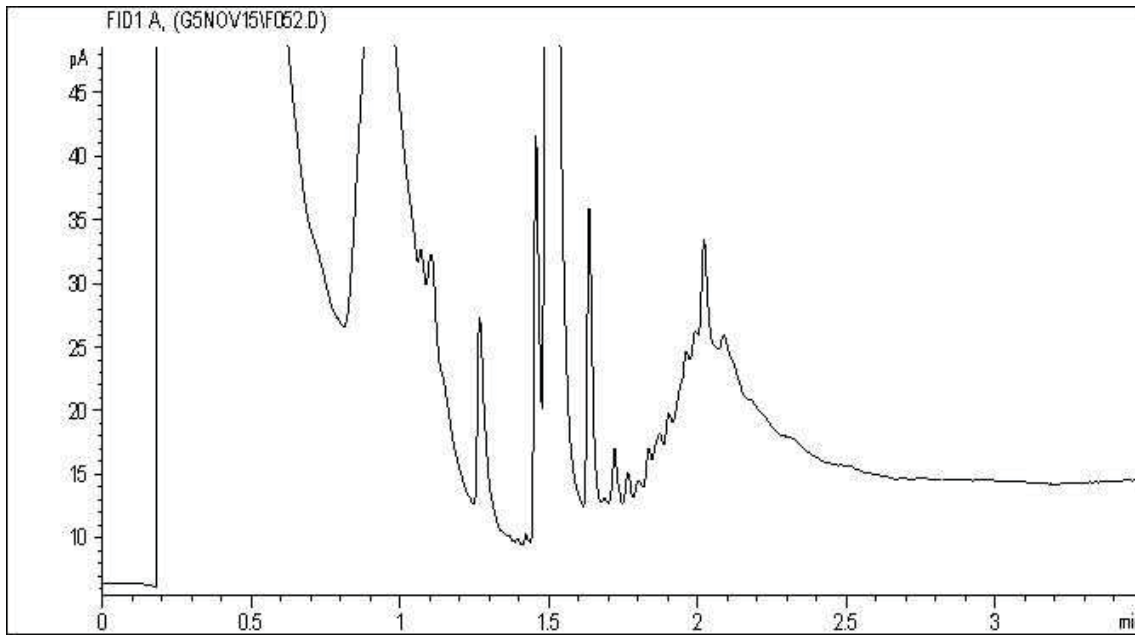


TYPICAL PRODUCT CARBON NUMBER RANGES

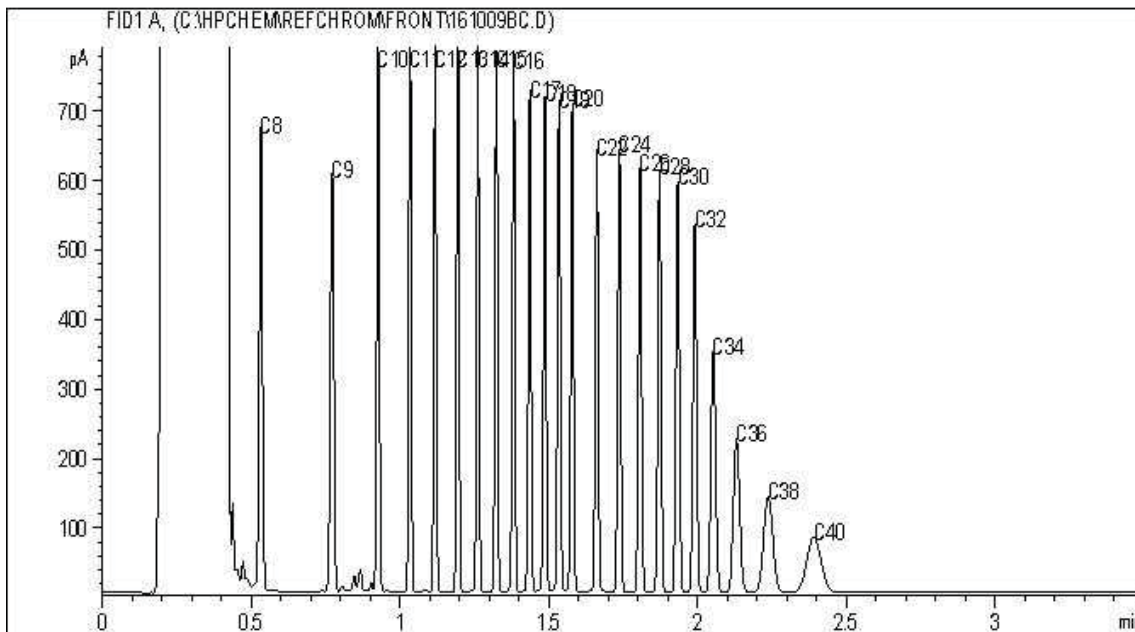
Gasoline:	C4 - C12	Diesel:	C8 - C22
Varsol:	C8 - C12	Lubricating oils:	C20 - C40

Note: This information is provided for reference purposes only. Should detailed chemist interpretation or fingerprinting be required, please contact the laboratory.

EPH in Soil by GC/FID Chromatogram



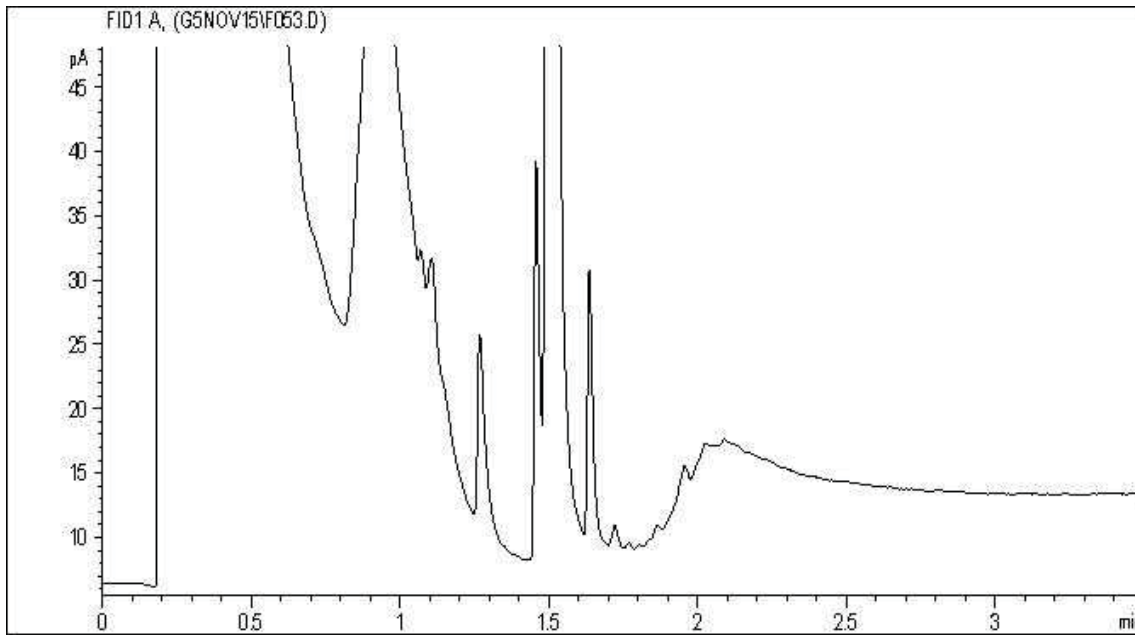
Carbon Range Distribution - Reference Chromatogram



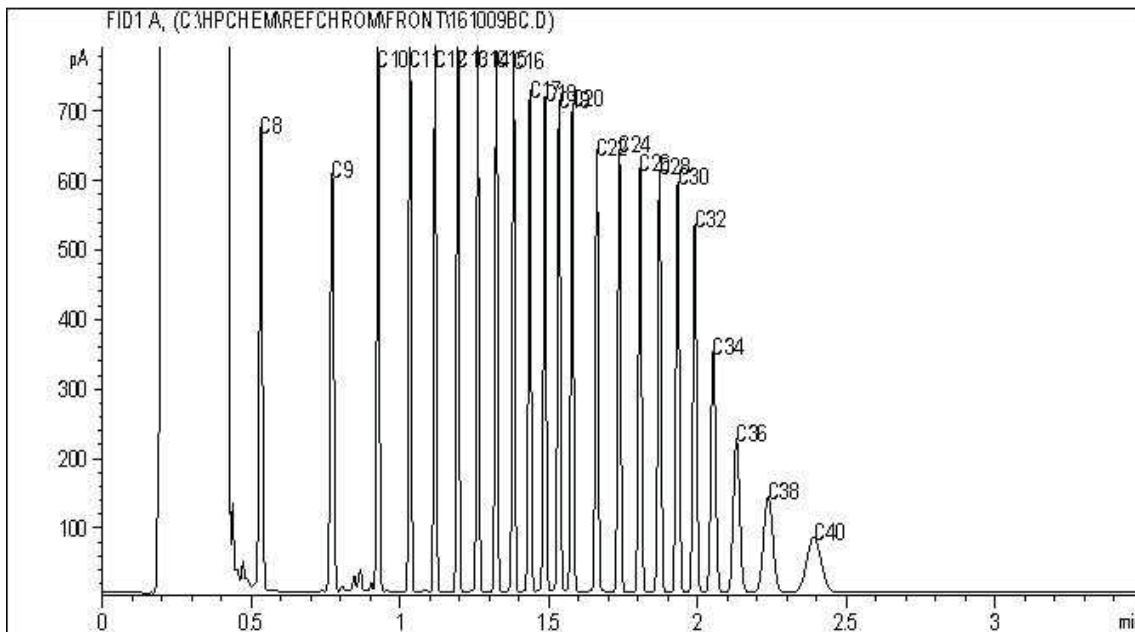
TYPICAL PRODUCT CARBON NUMBER RANGES

Note: This information is provided for reference purposes only. Should detailed chemist interpretation or fingerprinting be required, please contact the laboratory.

EPH in Soil by GC/FID Chromatogram



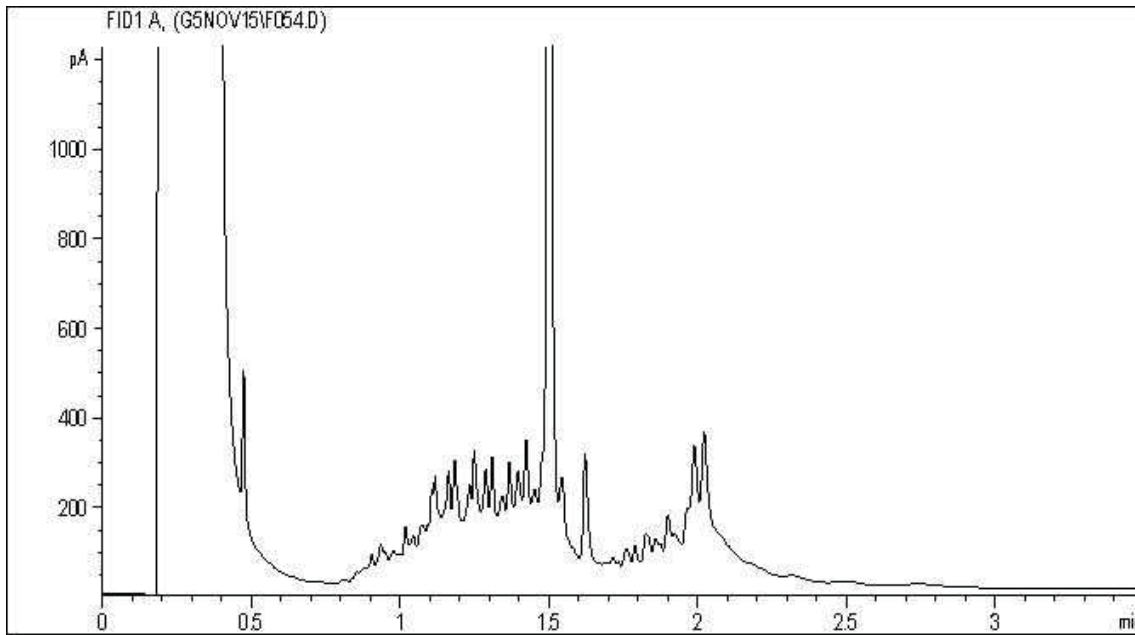
Carbon Range Distribution - Reference Chromatogram



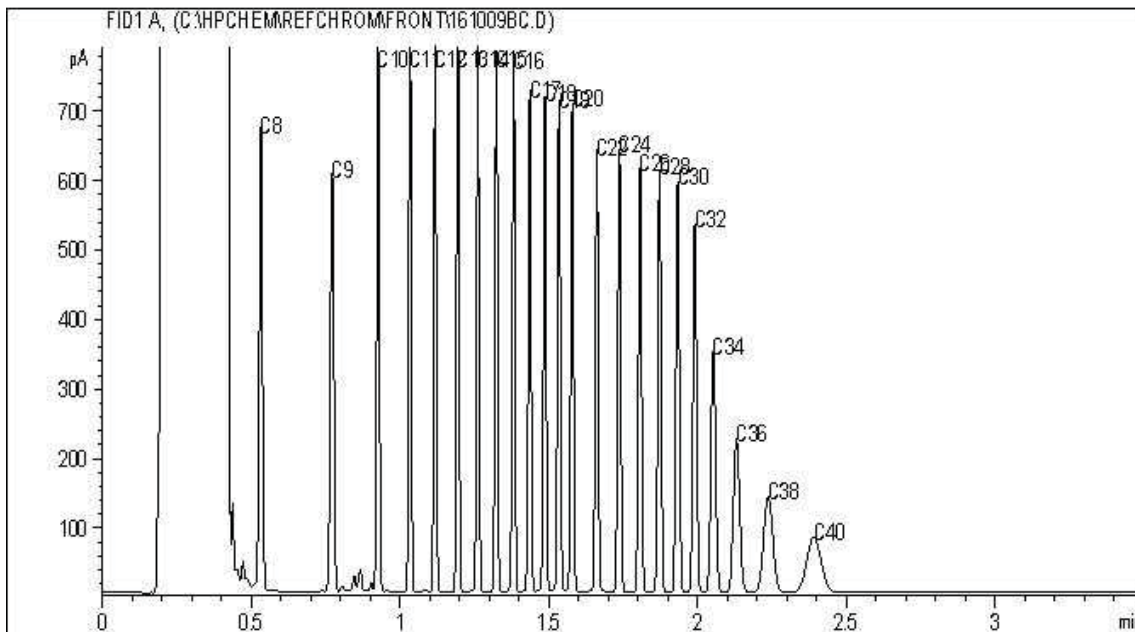
TYPICAL PRODUCT CARBON NUMBER RANGES

Note: This information is provided for reference purposes only. Should detailed chemist interpretation or fingerprinting be required, please contact the laboratory.

EPH in Soil by GC/FID Chromatogram



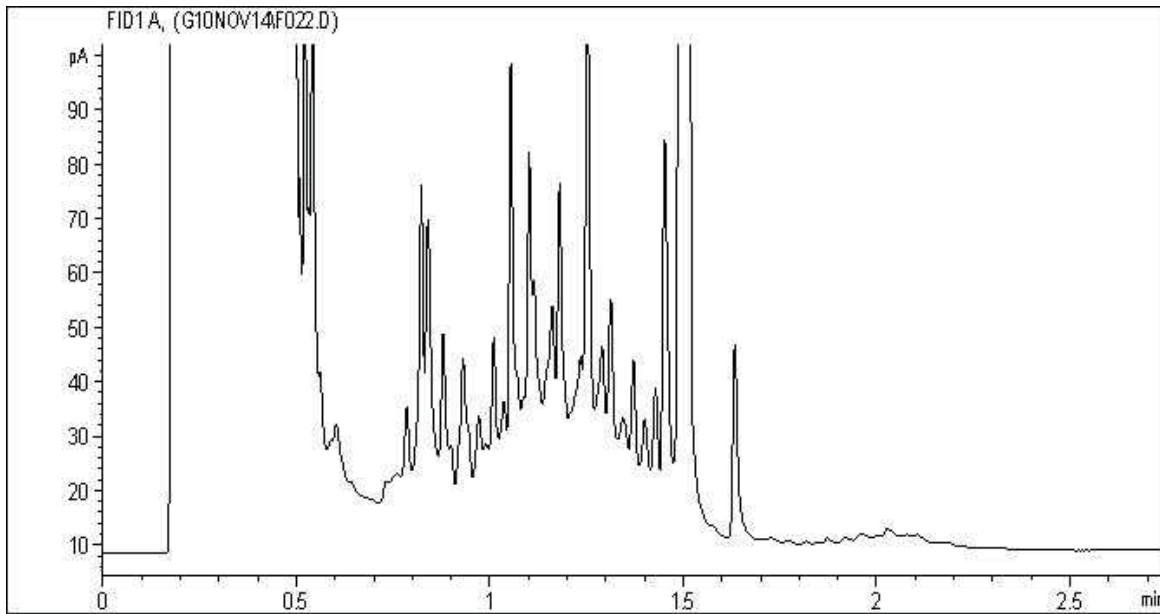
Carbon Range Distribution - Reference Chromatogram



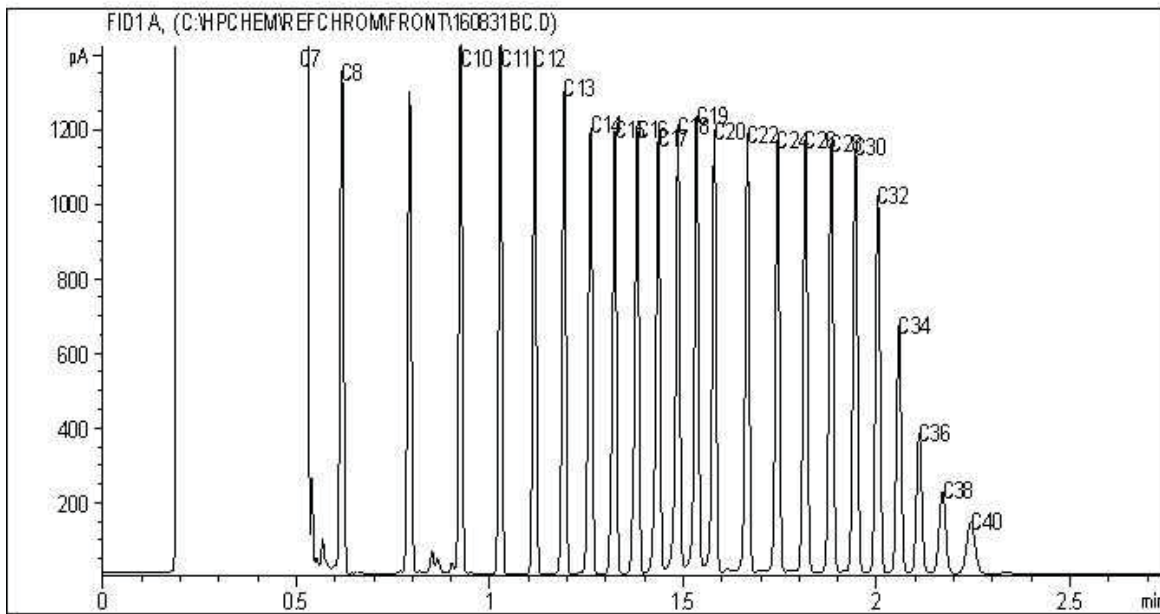
TYPICAL PRODUCT CARBON NUMBER RANGES

**Note:** This information is provided for reference purposes only. Should detailed chemist interpretation or fingerprinting be required, please contact the laboratory.

EPH in Soil by GC/FID Chromatogram



Carbon Range Distribution - Reference Chromatogram

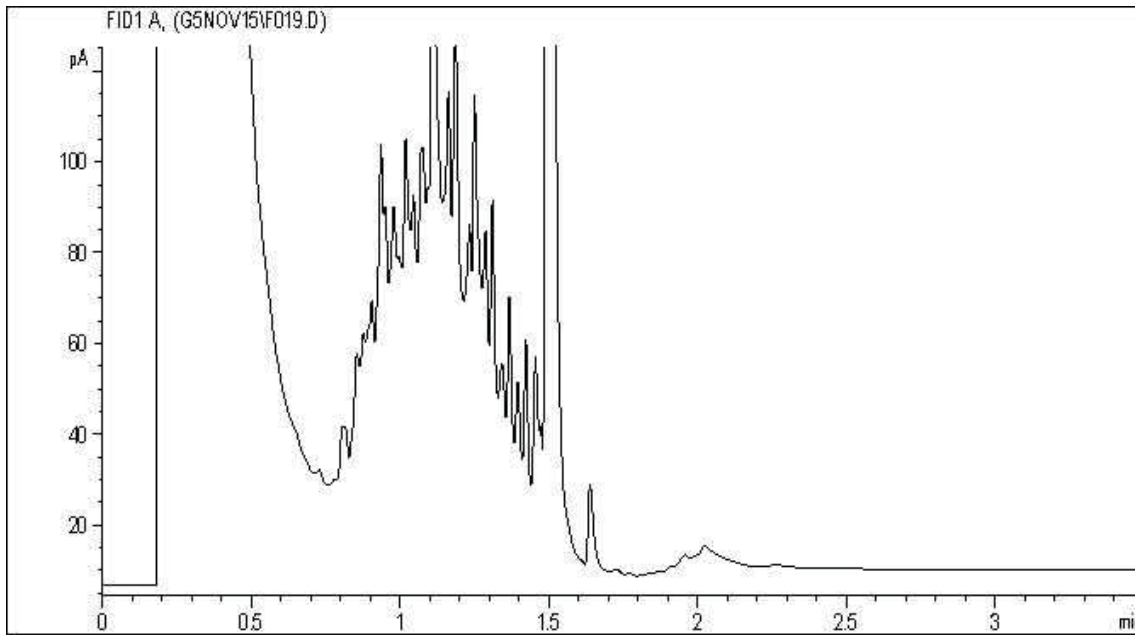


TYPICAL PRODUCT CARBON NUMBER RANGES

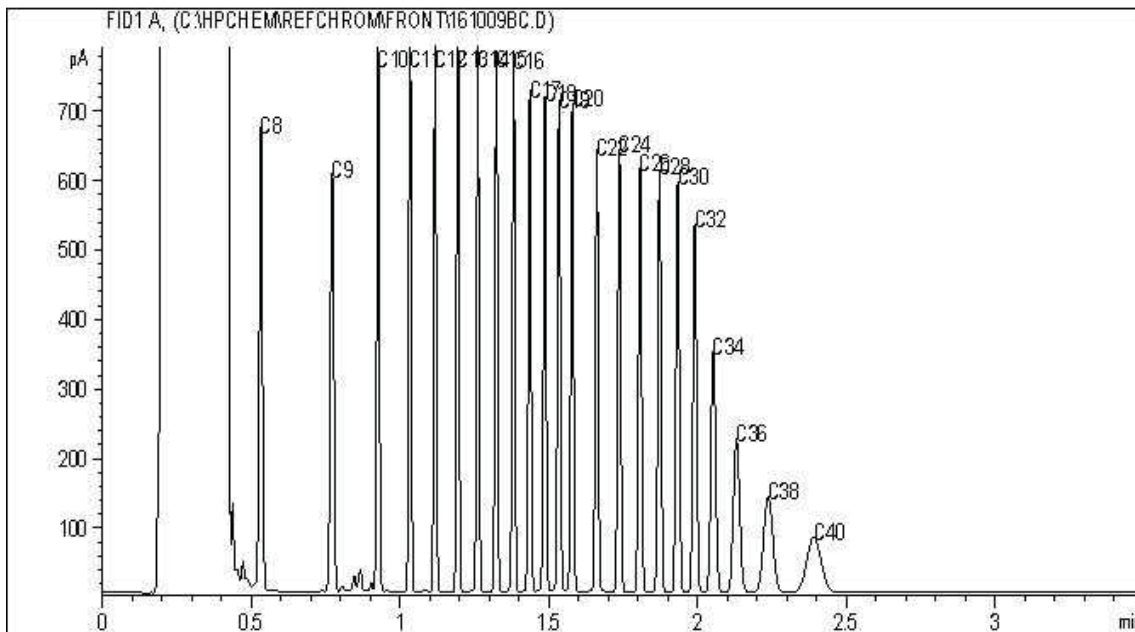
Gasoline:	C4 - C12	Diesel:	C8 - C22
Varsol:	C8 - C12	Lubricating oils:	C20 - C40

**Note: This information is provided for reference purposes only. Should detailed chemist interpretation or fingerprinting be required, please contact the laboratory.**

EPH in Soil by GC/FID Chromatogram



Carbon Range Distribution - Reference Chromatogram

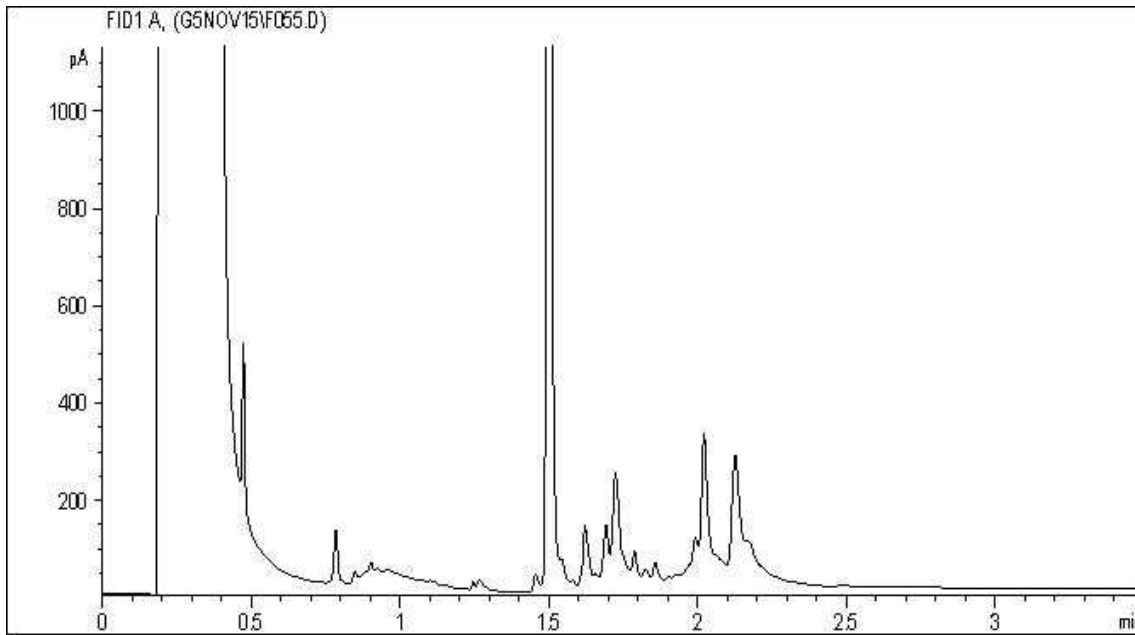


TYPICAL PRODUCT CARBON NUMBER RANGES

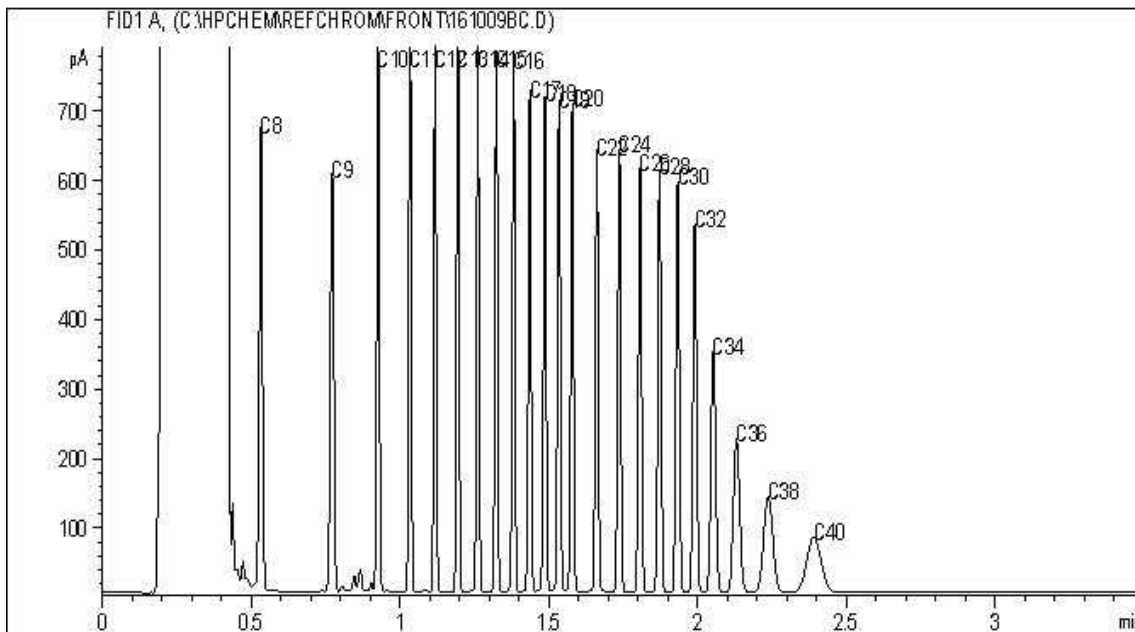
**Note:** This information is provided for reference purposes only. Should detailed chemist interpretation or fingerprinting be required, please contact the laboratory.



EPH in Soil by GC/FID Chromatogram



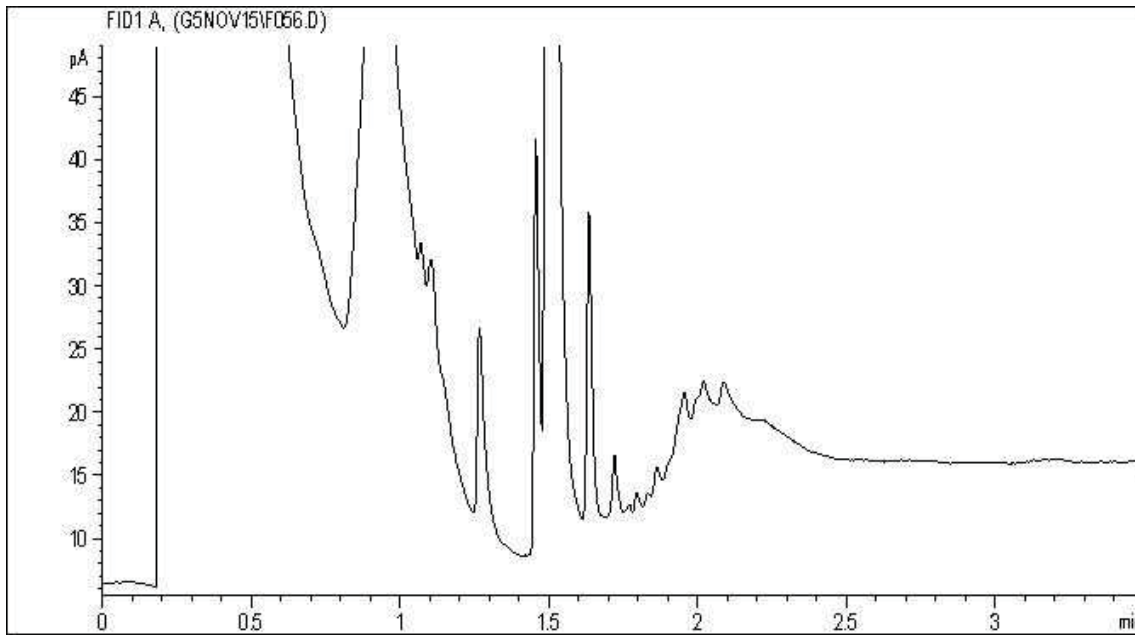
Carbon Range Distribution - Reference Chromatogram



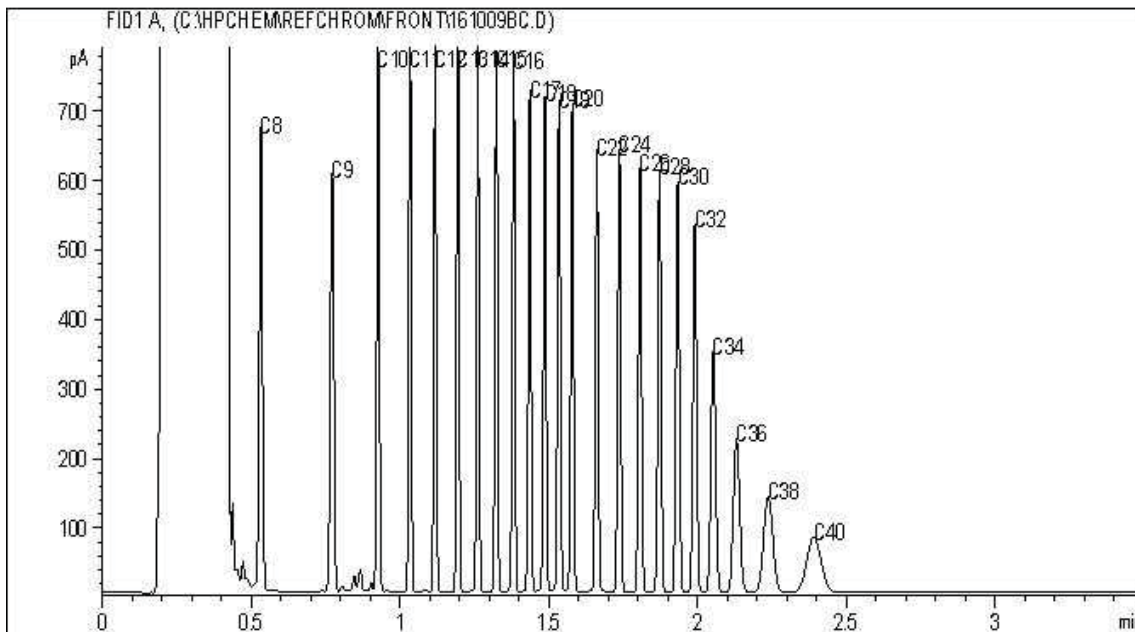
TYPICAL PRODUCT CARBON NUMBER RANGES

Note: This information is provided for reference purposes only. Should detailed chemist interpretation or fingerprinting be required, please contact the laboratory.

EPH in Soil by GC/FID Chromatogram



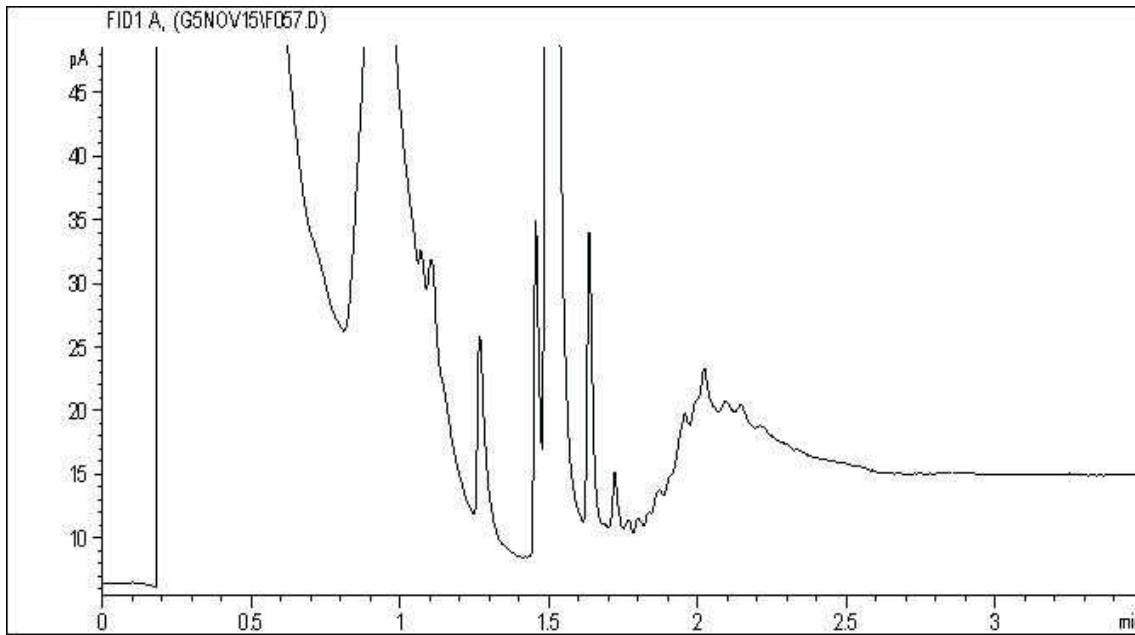
Carbon Range Distribution - Reference Chromatogram



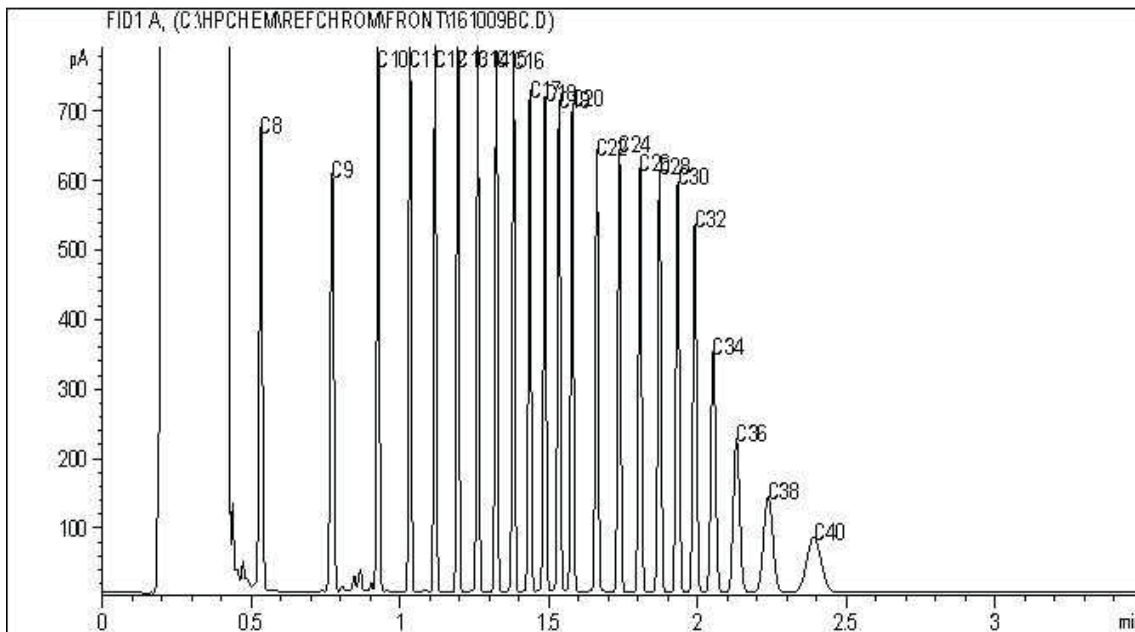
TYPICAL PRODUCT CARBON NUMBER RANGES

Note: This information is provided for reference purposes only. Should detailed chemist interpretation or fingerprinting be required, please contact the laboratory.

EPH in Soil by GC/FID Chromatogram



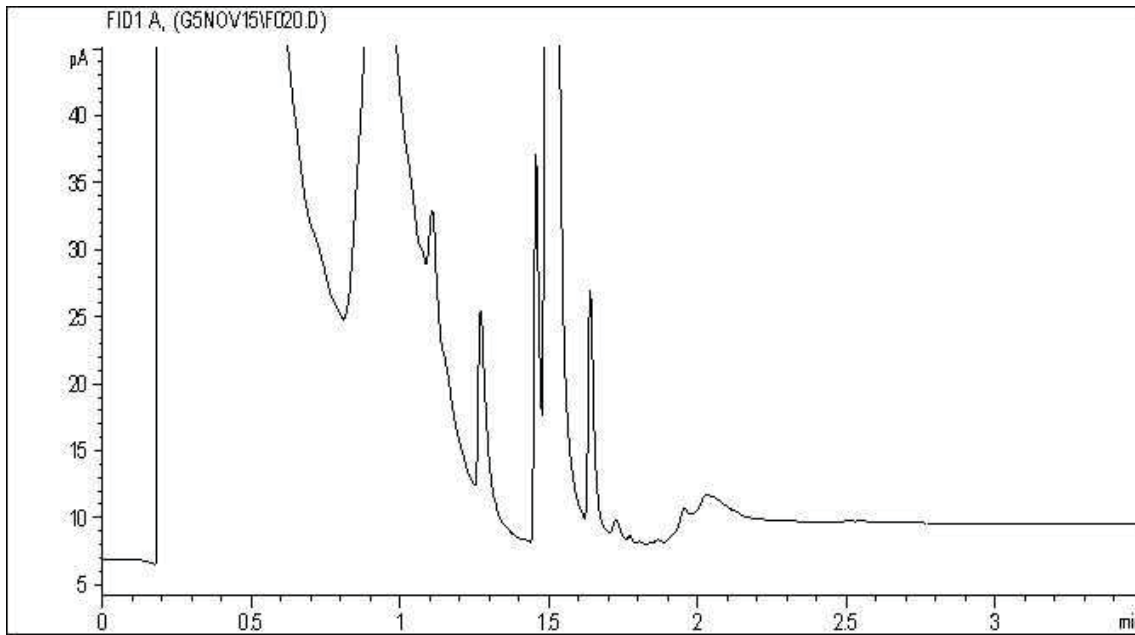
Carbon Range Distribution - Reference Chromatogram



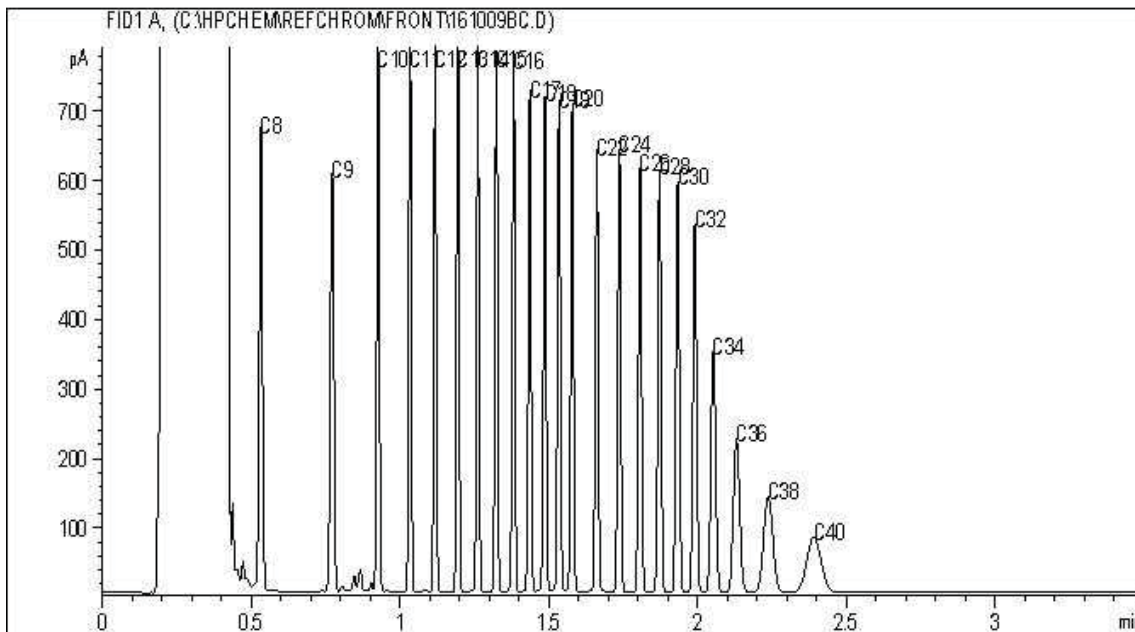
TYPICAL PRODUCT CARBON NUMBER RANGES

Note: This information is provided for reference purposes only. Should detailed chemist interpretation or fingerprinting be required, please contact the laboratory.

EPH in Soil by GC/FID Chromatogram



Carbon Range Distribution - Reference Chromatogram



TYPICAL PRODUCT CARBON NUMBER RANGES

Note: This information is provided for reference purposes only. Should detailed chemist interpretation or fingerprinting be required, please contact the laboratory.

**Attention: Michael Chao**

SNC LAVALIN ENVIRONMENT INC.  
8648 COMMERCE COURT  
BURNABY, BC  
CANADA V5A 4N6

Your P.O. #: 700365225  
Your Project #: 640752  
Site#: AEC 22D  
Site Location: Watson Lake Airport  
Your C.O.C. #: 510054-04-01, 510054-03-01

**Report Date: 2016/11/18**

Report #: R2302655

Version: 1 - Final

**CERTIFICATE OF ANALYSIS**

**MAXXAM JOB #: B6A0692**

**Received: 2016/11/08, 09:30**

Sample Matrix: Soil  
# Samples Received: 10

Analyses	Quantity	Date Extracted	Date Analyzed	Laboratory Method	Analytical Method
BTEX/MTBE Soil LH, VH, F1 SIM/MS	2	2016/11/10	2016/11/12	BBY8SOP-00010/11/12	EPA 8260c R3 m
BTEX/MTBE Soil LH, VH, F1 SIM/MS	5	2016/11/10	2016/11/13	BBY8SOP-00010/11/12	EPA 8260c R3 m
Elements by ICPMS (total)	5	2016/11/11	2016/11/14	BBY7SOP-00017,	BC SALM,EPA 6020bR2m
Moisture	10	2016/11/10	2016/11/11	BBY8SOP-00017	BCMOE BCLM Dec2000 m
PAH in Soil by GC/MS (SIM)	3	2016/11/10	2016/11/14	BBY8SOP-00022	EPA 8270d R5 m
PAH in Soil by GC/MS (SIM)	7	2016/11/10	2016/11/15	BBY8SOP-00022	EPA 8270d R5 m
Total PAH and B(a)P Calculation	3	N/A	2016/11/15	BBY WI-00033	Auto Calc
Total PAH and B(a)P Calculation	7	N/A	2016/11/16	BBY WI-00033	Auto Calc
pH (2:1 DI Water Extract)	5	2016/11/11	2016/11/14	BBY6SOP-00028	BCMOE BCLM Mar2005 m
EPH less PAH in Soil By GC/FID	3	N/A	2016/11/15	BBY WI-00033	Auto Calc
EPH less PAH in Soil By GC/FID	7	N/A	2016/11/16	BBY WI-00033	Auto Calc
EPH in Soil by GC/FID	1	2016/11/10	2016/11/13	BBY8SOP-00029	BCMOE EPH s 07/99 m
EPH in Soil by GC/FID	2	2016/11/10	2016/11/14	BBY8SOP-00029	BCMOE EPH s 07/99 m
EPH in Soil by GC/FID	7	2016/11/10	2016/11/15	BBY8SOP-00029	BCMOE EPH s 07/99 m
VOCs, VH, F1, LH in Soil by HS GC/MS	1	2016/11/10	2016/11/15	BBY8-SOP-00009	EPA 8260c R3 m
VOCs, VH, F1, LH in Soil by HS GC/MS	2	2016/11/10	2016/11/16	BBY8-SOP-00009	EPA 8260c R3 m
Volatile HC-BTEX for Soil	8	N/A	2016/11/15	BBY WI-00033	Auto Calc
Volatile HC-BTEX for Soil	1	N/A	2016/11/16	BBY WI-00033	Auto Calc
Volatile HC-BTEX for Soil	1	N/A	2016/11/17	BBY WI-00033	Auto Calc

**Remarks:**

Maxxam Analytics' laboratories are accredited to ISO/IEC 17025:2005 for specific parameters on scopes of accreditation. Unless otherwise noted, procedures used by Maxxam are based upon recognized Provincial, Federal or US method compendia such as CCME, MDDELCC, EPA, APHA.

All work recorded herein has been done in accordance with procedures and practices ordinarily exercised by professionals in Maxxam's profession using accepted testing methodologies, quality assurance and quality control procedures (except where otherwise agreed by the client and Maxxam in writing). All data is in statistical control and has met quality control and method performance criteria unless otherwise noted. All method blanks are reported: unless indicated otherwise, associated sample data are not blank corrected.

Maxxam Analytics' liability is limited to the actual cost of the requested analyses, unless otherwise agreed in writing. There is no other warranty expressed or implied. Maxxam has been retained to provide analysis of samples provided by the Client using the testing methodology referenced in this report. Interpretation and use of test results are the sole responsibility of the Client and are not within the scope of services provided by Maxxam, unless

**Attention:Michael Chao**

SNC LAVALIN ENVIRONMENT INC.  
8648 COMMERCE COURT  
BURNABY, BC  
CANADA V5A 4N6

Your P.O. #: 700365225  
Your Project #: 640752  
Site#: AEC 22D  
Site Location: Watson Lake Airport  
Your C.O.C. #: 510054-04-01, 510054-03-01

**Report Date: 2016/11/18**  
Report #: R2302655  
Version: 1 - Final

**CERTIFICATE OF ANALYSIS**

**MAXXAM JOB #: B6A0692**

**Received: 2016/11/08, 09:30**  
otherwise agreed in writing.

Solid sample results, except biota, are based on dry weight unless otherwise indicated. Organic analyses are not recovery corrected except for isotope dilution methods. Results relate to samples tested.

This Certificate shall not be reproduced except in full, without the written approval of the laboratory.

Reference Method suffix "m" indicates test methods incorporate validated modifications from specific reference methods to improve performance.

\* RPDs calculated using raw data. The rounding of final results may result in the apparent difference.

**Encryption Key**

Please direct all questions regarding this Certificate of Analysis to your Project Manager.

Samantha Fregien, Project Manager  
Email: SFregien@maxxam.ca  
Phone# (604)639-8418

=====  
Maxxam has procedures in place to guard against improper use of the electronic signature and have the required "signatories", as per section 5.10.2 of ISO/IEC 17025:2005(E), signing the reports. For Service Group specific validation please refer to the Validation Signature Page.

Maxxam Job #: B6A0692  
Report Date: 2016/11/18

SNC LAVALIN ENVIRONMENT INC.  
Client Project #: 640752  
Site Location: Watson Lake Airport  
Your P.O. #: 700365225  
Sampler Initials: MLC

**PHYSICAL TESTING (SOIL)**

Maxxam ID		PZ7961	PZ7962	PZ7963	PZ7965	PZ7966	PZ7968		
Sampling Date		2016/11/05 10:00	2016/11/05 10:10	2016/11/05 10:20	2016/11/05 11:00	2016/11/05 11:10	2016/11/05 14:10		
COC Number		510054-04-01	510054-04-01	510054-04-01	510054-04-01	510054-04-01	510054-04-01		
	<b>UNITS</b>	<b>22D-BH16-7-1</b>	<b>22D-BH16-7-2</b>	<b>22D-BH16-7-3</b>	<b>22D-BH16-8-1</b>	<b>22D-BH16-8-2</b>	<b>22D-BH16-9-2</b>	<b>RDL</b>	<b>QC Batch</b>

**Physical Properties**

Moisture	%	3.1	8.7	9.9	3.4	9.3	8.6	0.30	8467188
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RDL = Reportable Detection Limit

Maxxam ID		PZ7969	PZ7980	PZ7981	PZ7982		
Sampling Date		2016/11/05 14:20	2016/11/05 14:50	2016/11/05 15:00	2016/11/05 15:10		
COC Number		510054-04-01	510054-03-01	510054-03-01	510054-03-01		
	<b>UNITS</b>	<b>22D-BH16-9-3</b>	<b>22D-BH16-10-2</b>	<b>22D-BH16-10-3</b>	<b>22D-BH16-10-4</b>	<b>RDL</b>	<b>QC Batch</b>

**Physical Properties**

Moisture	%	13	11	12	11	0.30	8467188
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RDL = Reportable Detection Limit

Maxxam Job #: B6A0692  
Report Date: 2016/11/18

SNC LAVALIN ENVIRONMENT INC.  
Client Project #: 640752  
Site Location: Watson Lake Airport  
Your P.O. #: 700365225  
Sampler Initials: MLC

**CSR BTEX/VPH BY HS IN SOIL (SOIL)**

Maxxam ID		PZ7961	PZ7966	PZ7968	PZ7969	PZ7980		
Sampling Date		2016/11/05 10:00	2016/11/05 11:10	2016/11/05 14:10	2016/11/05 14:20	2016/11/05 14:50		
COC Number		510054-04-01	510054-04-01	510054-04-01	510054-04-01	510054-03-01		
	<b>UNITS</b>	<b>22D-BH16-7-1</b>	<b>22D-BH16-8-2</b>	<b>22D-BH16-9-2</b>	<b>22D-BH16-9-3</b>	<b>22D-BH16-10-2</b>	<b>RDL</b>	<b>QC Batch</b>
<b>Volatiles</b>								
VPH (VH6 to 10 - BTEX)	mg/kg	<10	<10	79	<10	<10	10	8466396
Methyl-tert-butylether (MTBE)	mg/kg	<0.10	<0.10	<0.10	<0.10	<0.10	0.10	8468163
Benzene	mg/kg	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	0.0050	8468163
Toluene	mg/kg	<0.020	<0.020	<0.020	<0.020	<0.020	0.020	8468163
Ethylbenzene	mg/kg	<0.010	<0.010	<0.010	<0.010	<0.010	0.010	8468163
m & p-Xylene	mg/kg	<0.040	<0.040	<0.040	<0.040	<0.040	0.040	8468163
o-Xylene	mg/kg	<0.040	<0.040	<0.040	<0.040	<0.040	0.040	8468163
Styrene	mg/kg	<0.030	<0.030	<0.030	<0.030	<0.030	0.030	8468163
Xylenes (Total)	mg/kg	<0.040	<0.040	<0.040	<0.040	<0.040	0.040	8468163
VH C6-C10	mg/kg	<10	<10	79	<10	<10	10	8468163
<b>Surrogate Recovery (%)</b>								
1,4-Difluorobenzene (sur.)	%	95	87	101	104	95		8468163
4-Bromofluorobenzene (sur.)	%	115	93	104	104	103		8468163
D10-ETHYLBENZENE (sur.)	%	103	103	104	101	105		8468163
D4-1,2-Dichloroethane (sur.)	%	117	107	124	116	120		8468163
RDL = Reportable Detection Limit								



Maxxam Job #: B6A0692  
Report Date: 2016/11/18

SNC LAVALIN ENVIRONMENT INC.  
Client Project #: 640752  
Site Location: Watson Lake Airport  
Your P.O. #: 700365225  
Sampler Initials: MLC

**CSR BTEX/VPH BY HS IN SOIL (SOIL)**

Maxxam ID		PZ7981	PZ7982		
Sampling Date		2016/11/05 15:00	2016/11/05 15:10		
COC Number		510054-03-01	510054-03-01		
	<b>UNITS</b>	<b>22D-BH16-10-3</b>	<b>22D-BH16-10-4</b>	<b>RDL</b>	<b>QC Batch</b>
<b>Volatiles</b>					
VPH (VH6 to 10 - BTEX)	mg/kg	<10	<10	10	8466396
Methyl-tert-butylether (MTBE)	mg/kg	<0.10	<0.10	0.10	8468163
Benzene	mg/kg	<0.0050	<0.0050	0.0050	8468163
Toluene	mg/kg	<0.020	<0.020	0.020	8468163
Ethylbenzene	mg/kg	<0.010	<0.010	0.010	8468163
m & p-Xylene	mg/kg	<0.040	<0.040	0.040	8468163
o-Xylene	mg/kg	<0.040	<0.040	0.040	8468163
Styrene	mg/kg	<0.030	<0.030	0.030	8468163
Xylenes (Total)	mg/kg	<0.040	<0.040	0.040	8468163
VH C6-C10	mg/kg	<10	<10	10	8468163
<b>Surrogate Recovery (%)</b>					
1,4-Difluorobenzene (sur.)	%	95	103		8468163
4-Bromofluorobenzene (sur.)	%	104	102		8468163
D10-ETHYLBENZENE (sur.)	%	107	106		8468163
D4-1,2-Dichloroethane (sur.)	%	114	110		8468163
RDL = Reportable Detection Limit					

Maxxam Job #: B6A0692  
Report Date: 2016/11/18

SNC LAVALIN ENVIRONMENT INC.  
Client Project #: 640752  
Site Location: Watson Lake Airport  
Your P.O. #: 700365225  
Sampler Initials: MLC

**LEPH & HEPH WITH PAH FOR CSR IN SOIL (SOIL)**

Maxxam ID		PZ7961	PZ7962	PZ7963		PZ7965	PZ7966		
Sampling Date		2016/11/05 10:00	2016/11/05 10:10	2016/11/05 10:20		2016/11/05 11:00	2016/11/05 11:10		
COC Number		510054-04-01	510054-04-01	510054-04-01		510054-04-01	510054-04-01		
	UNITS	22D-BH16-7-1	22D-BH16-7-2	22D-BH16-7-3	QC Batch	22D-BH16-8-1	22D-BH16-8-2	RDL	QC Batch
<b>Polycyclic Aromatics</b>									
Naphthalene	mg/kg	<0.050	<0.050	<0.050	8470044	<0.050	<0.050	0.050	8469437
2-Methylnaphthalene	mg/kg	<0.050	<0.050	<0.050	8470044	<0.050	<0.050	0.050	8469437
Acenaphthylene	mg/kg	<0.050	<0.050	<0.050	8470044	<0.050	<0.050	0.050	8469437
Acenaphthene	mg/kg	<0.050	<0.050	<0.050	8470044	<0.050	<0.050	0.050	8469437
Fluorene	mg/kg	<0.050	<0.050	<0.050	8470044	<0.050	<0.050	0.050	8469437
Phenanthrene	mg/kg	<0.050	<0.050	<0.050	8470044	<0.050	<0.050	0.050	8469437
Anthracene	mg/kg	<0.050	<0.050	<0.050	8470044	<0.050	<0.050	0.050	8469437
Fluoranthene	mg/kg	<0.050	<0.050	<0.050	8470044	<0.050	<0.050	0.050	8469437
Pyrene	mg/kg	<0.050	<0.050	<0.050	8470044	<0.050	<0.050	0.050	8469437
Benzo(a)anthracene	mg/kg	<0.050	<0.050	<0.050	8470044	<0.050	<0.050	0.050	8469437
Chrysene	mg/kg	<0.050	<0.050	<0.050	8470044	<0.050	<0.050	0.050	8469437
Benzo(b&j)fluoranthene	mg/kg	<0.050	<0.050	<0.050	8470044	<0.050	<0.050	0.050	8469437
Benzo(b)fluoranthene	mg/kg	<0.050	<0.050	<0.050	8470044	<0.050	<0.050	0.050	8469437
Benzo(k)fluoranthene	mg/kg	<0.050	<0.050	<0.050	8470044	<0.050	<0.050	0.050	8469437
Benzo(a)pyrene	mg/kg	<0.050	<0.050	<0.050	8470044	<0.050	<0.050	0.050	8469437
Indeno(1,2,3-cd)pyrene	mg/kg	<0.050	<0.050	<0.050	8470044	<0.050	<0.050	0.050	8469437
Dibenz(a,h)anthracene	mg/kg	<0.050	<0.050	<0.050	8470044	<0.050	<0.050	0.050	8469437
Benzo(g,h,i)perylene	mg/kg	<0.050	<0.050	<0.050	8470044	<0.050	<0.050	0.050	8469437
Low Molecular Weight PAH`s	mg/kg	<0.050	<0.050	<0.050	8466392	<0.050	<0.050	0.050	8466392
High Molecular Weight PAH`s	mg/kg	<0.050	<0.050	<0.050	8466392	<0.050	<0.050	0.050	8466392
Total PAH	mg/kg	<0.050	<0.050	<0.050	8466392	<0.050	<0.050	0.050	8466392
<b>Calculated Parameters</b>									
LEPH (C10-C19 less PAH)	mg/kg	<100	<100	<100	8466394	<100	<100	100	8466394
HEPH (C19-C32 less PAH)	mg/kg	<100	<100	<100	8466394	<100	<100	100	8466394
<b>Hydrocarbons</b>									
EPH (C10-C19)	mg/kg	<100	<100	<100	8470039	<100	<100	100	8469433
EPH (C19-C32)	mg/kg	<100	<100	<100	8470039	<100	<100	100	8469433
<b>Surrogate Recovery (%)</b>									
D10-ANTHRACENE (sur.)	%	100	99	96	8470044	87	82		8469437
D8-ACENAPHTHYLENE (sur.)	%	90	90	88	8470044	81	76		8469437
RDL = Reportable Detection Limit									

Maxxam Job #: B6A0692  
Report Date: 2016/11/18

SNC LAVALIN ENVIRONMENT INC.  
Client Project #: 640752  
Site Location: Watson Lake Airport  
Your P.O. #: 700365225  
Sampler Initials: MLC

**LEPH & HEPH WITH PAH FOR CSR IN SOIL (SOIL)**

Maxxam ID		PZ7961	PZ7962	PZ7963		PZ7965	PZ7966		
Sampling Date		2016/11/05 10:00	2016/11/05 10:10	2016/11/05 10:20		2016/11/05 11:00	2016/11/05 11:10		
COC Number		510054-04-01	510054-04-01	510054-04-01		510054-04-01	510054-04-01		
	<b>UNITS</b>	<b>22D-BH16-7-1</b>	<b>22D-BH16-7-2</b>	<b>22D-BH16-7-3</b>	<b>QC Batch</b>	<b>22D-BH16-8-1</b>	<b>22D-BH16-8-2</b>	<b>RDL</b>	<b>QC Batch</b>
D8-NAPHTHALENE (sur.)	%	92	88	87	8470044	80	76		8469437
TERPHENYL-D14 (sur.)	%	90	87	84	8470044	72	68		8469437
O-TERPHENYL (sur.)	%	98	99	98	8470039	94	93		8469433
RDL = Reportable Detection Limit									

Maxxam Job #: B6A0692  
Report Date: 2016/11/18

SNC LAVALIN ENVIRONMENT INC.  
Client Project #: 640752  
Site Location: Watson Lake Airport  
Your P.O. #: 700365225  
Sampler Initials: MLC

**LEPH & HEPH WITH PAH FOR CSR IN SOIL (SOIL)**

Maxxam ID		PZ7968		PZ7969	PZ7980	PZ7981		
Sampling Date		2016/11/05 14:10		2016/11/05 14:20	2016/11/05 14:50	2016/11/05 15:00		
COC Number		510054-04-01		510054-04-01	510054-03-01	510054-03-01		
	UNITS	22D-BH16-9-2	QC Batch	22D-BH16-9-3	22D-BH16-10-2	22D-BH16-10-3	RDL	QC Batch
<b>Polycyclic Aromatics</b>								
Naphthalene	mg/kg	<0.050	8470052	<0.050	<0.050	<0.050	0.050	8470044
2-Methylnaphthalene	mg/kg	<0.050	8470052	<0.050	<0.050	<0.050	0.050	8470044
Acenaphthylene	mg/kg	<0.050	8470052	<0.050	<0.050	<0.050	0.050	8470044
Acenaphthene	mg/kg	0.10 (1)	8470052	<0.050	<0.050	<0.050	0.050	8470044
Fluorene	mg/kg	<0.050	8470052	<0.050	<0.050	<0.050	0.050	8470044
Phenanthrene	mg/kg	<0.050	8470052	<0.050	<0.050	<0.050	0.050	8470044
Anthracene	mg/kg	<0.050	8470052	<0.050	<0.050	<0.050	0.050	8470044
Fluoranthene	mg/kg	<0.050	8470052	<0.050	<0.050	<0.050	0.050	8470044
Pyrene	mg/kg	<0.050	8470052	<0.050	<0.050	<0.050	0.050	8470044
Benzo(a)anthracene	mg/kg	<0.050	8470052	<0.050	<0.050	<0.050	0.050	8470044
Chrysene	mg/kg	<0.050	8470052	<0.050	<0.050	<0.050	0.050	8470044
Benzo(b&j)fluoranthene	mg/kg	<0.050	8470052	<0.050	<0.050	<0.050	0.050	8470044
Benzo(b)fluoranthene	mg/kg	<0.050	8470052	<0.050	<0.050	<0.050	0.050	8470044
Benzo(k)fluoranthene	mg/kg	<0.050	8470052	<0.050	<0.050	<0.050	0.050	8470044
Benzo(a)pyrene	mg/kg	<0.050	8470052	<0.050	<0.050	<0.050	0.050	8470044
Indeno(1,2,3-cd)pyrene	mg/kg	<0.050	8470052	<0.050	<0.050	<0.050	0.050	8470044
Dibenz(a,h)anthracene	mg/kg	<0.050	8470052	<0.050	<0.050	<0.050	0.050	8470044
Benzo(g,h,i)perylene	mg/kg	<0.050	8470052	<0.050	<0.050	<0.050	0.050	8470044
Low Molecular Weight PAH's	mg/kg	0.10	8466392	<0.050	<0.050	<0.050	0.050	8466392
High Molecular Weight PAH's	mg/kg	<0.050	8466392	<0.050	<0.050	<0.050	0.050	8466392
Total PAH	mg/kg	0.10	8466392	<0.050	<0.050	<0.050	0.050	8466392
<b>Calculated Parameters</b>								
LEPH (C10-C19 less PAH)	mg/kg	3600	8466394	<100	<100	<100	100	8466394
HEPH (C19-C32 less PAH)	mg/kg	150	8466394	<100	<100	<100	100	8466394
<b>Hydrocarbons</b>								
EPH (C10-C19)	mg/kg	3600	8470047	<100	<100	<100	100	8470039
EPH (C19-C32)	mg/kg	150	8470047	<100	<100	<100	100	8470039
<b>Surrogate Recovery (%)</b>								
D10-ANTHRACENE (sur.)	%	105	8470052	102	97	96		8470044
D8-ACENAPHTHYLENE (sur.)	%	94	8470052	94	90	88		8470044
RDL = Reportable Detection Limit								
(1) Qualifying ion outside of acceptance criteria. Results are tentatively identified and potentially biased high.								

Maxxam Job #: B6A0692  
Report Date: 2016/11/18

SNC LAVALIN ENVIRONMENT INC.  
Client Project #: 640752  
Site Location: Watson Lake Airport  
Your P.O. #: 700365225  
Sampler Initials: MLC

**LEPH & HEPH WITH PAH FOR CSR IN SOIL (SOIL)**

Maxxam ID		PZ7968		PZ7969	PZ7980	PZ7981		
Sampling Date		2016/11/05 14:10		2016/11/05 14:20	2016/11/05 14:50	2016/11/05 15:00		
COC Number		510054-04-01		510054-04-01	510054-03-01	510054-03-01		
	<b>UNITS</b>	<b>22D-BH16-9-2</b>	<b>QC Batch</b>	<b>22D-BH16-9-3</b>	<b>22D-BH16-10-2</b>	<b>22D-BH16-10-3</b>	<b>RDL</b>	<b>QC Batch</b>
D8-NAPHTHALENE (sur.)	%	92	8470052	95	92	90		8470044
TERPHENYL-D14 (sur.)	%	93	8470052	91	87	86		8470044
O-TERPHENYL (sur.)	%	124	8470047	98	98	98		8470039
RDL = Reportable Detection Limit								

Maxxam Job #: B6A0692  
Report Date: 2016/11/18

SNC LAVALIN ENVIRONMENT INC.  
Client Project #: 640752  
Site Location: Watson Lake Airport  
Your P.O. #: 700365225  
Sampler Initials: MLC

**LEPH & HEPH WITH PAH FOR CSR IN SOIL (SOIL)**

Maxxam ID		PZ7982		
Sampling Date		2016/11/05 15:10		
COC Number		510054-03-01		
	<b>UNITS</b>	<b>22D-BH16-10-4</b>	<b>RDL</b>	<b>QC Batch</b>
<b>Polycyclic Aromatics</b>				
Naphthalene	mg/kg	<0.050	0.050	8468649
2-Methylnaphthalene	mg/kg	<0.050	0.050	8468649
Acenaphthylene	mg/kg	<0.050	0.050	8468649
Acenaphthene	mg/kg	<0.050	0.050	8468649
Fluorene	mg/kg	<0.050	0.050	8468649
Phenanthrene	mg/kg	<0.050	0.050	8468649
Anthracene	mg/kg	<0.050	0.050	8468649
Fluoranthene	mg/kg	<0.050	0.050	8468649
Pyrene	mg/kg	<0.050	0.050	8468649
Benzo(a)anthracene	mg/kg	<0.050	0.050	8468649
Chrysene	mg/kg	<0.050	0.050	8468649
Benzo(b&j)fluoranthene	mg/kg	<0.050	0.050	8468649
Benzo(b)fluoranthene	mg/kg	<0.050	0.050	8468649
Benzo(k)fluoranthene	mg/kg	<0.050	0.050	8468649
Benzo(a)pyrene	mg/kg	<0.050	0.050	8468649
Indeno(1,2,3-cd)pyrene	mg/kg	<0.050	0.050	8468649
Dibenz(a,h)anthracene	mg/kg	<0.050	0.050	8468649
Benzo(g,h,i)perylene	mg/kg	<0.050	0.050	8468649
Low Molecular Weight PAH`s	mg/kg	<0.050	0.050	8466392
High Molecular Weight PAH`s	mg/kg	<0.050	0.050	8466392
Total PAH	mg/kg	<0.050	0.050	8466392
<b>Calculated Parameters</b>				
LEPH (C10-C19 less PAH)	mg/kg	<100	100	8466394
HEPH (C19-C32 less PAH)	mg/kg	<100	100	8466394
<b>Hydrocarbons</b>				
EPH (C10-C19)	mg/kg	<100	100	8468654
EPH (C19-C32)	mg/kg	<100	100	8468654
<b>Surrogate Recovery (%)</b>				
D10-ANTHRACENE (sur.)	%	95		8468649
D8-ACENAPHTHYLENE (sur.)	%	87		8468649
RDL = Reportable Detection Limit				

Maxxam Job #: B6A0692  
Report Date: 2016/11/18

SNC LAVALIN ENVIRONMENT INC.  
Client Project #: 640752  
Site Location: Watson Lake Airport  
Your P.O. #: 700365225  
Sampler Initials: MLC

**LEPH & HEPH WITH PAH FOR CSR IN SOIL (SOIL)**

Maxxam ID		PZ7982		
Sampling Date		2016/11/05 15:10		
COC Number		510054-03-01		
	<b>UNITS</b>	<b>22D-BH16-10-4</b>	<b>RDL</b>	<b>QC Batch</b>
D8-NAPHTHALENE (sur.)	%	93		8468649
TERPHENYL-D14 (sur.)	%	77		8468649
O-TERPHENYL (sur.)	%	94		8468654
RDL = Reportable Detection Limit				

Maxxam Job #: B6A0692  
Report Date: 2016/11/18

SNC LAVALIN ENVIRONMENT INC.  
Client Project #: 640752  
Site Location: Watson Lake Airport  
Your P.O. #: 700365225  
Sampler Initials: MLC

**CSR/CCME METALS IN SOIL (SOIL)**

Maxxam ID		PZ7961	PZ7965	PZ7968	PZ7980	PZ7981		
Sampling Date		2016/11/05 10:00	2016/11/05 11:00	2016/11/05 14:10	2016/11/05 14:50	2016/11/05 15:00		
COC Number		510054-04-01	510054-04-01	510054-04-01	510054-03-01	510054-03-01		
	<b>UNITS</b>	<b>22D-BH16-7-1</b>	<b>22D-BH16-8-1</b>	<b>22D-BH16-9-2</b>	<b>22D-BH16-10-2</b>	<b>22D-BH16-10-3</b>	<b>RDL</b>	<b>QC Batch</b>

<b>Physical Properties</b>								
Soluble (2:1) pH	pH	8.66	5.65	6.88	7.14	7.09	N/A	8467959
<b>Total Metals by ICPMS</b>								
Total Aluminum (Al)	mg/kg	3670	5520	1650	2120	1970	100	8467958
Total Antimony (Sb)	mg/kg	0.50	0.48	0.22	0.31	0.19	0.10	8467958
Total Arsenic (As)	mg/kg	9.34	6.66	1.55	2.37	2.58	0.50	8467958
Total Barium (Ba)	mg/kg	68.9	92.7	29.4	41.5	46.8	0.10	8467958
Total Beryllium (Be)	mg/kg	<0.40	<0.40	<0.40	<0.40	<0.40	0.40	8467958
Total Bismuth (Bi)	mg/kg	<0.10	<0.10	<0.10	<0.10	<0.10	0.10	8467958
Total Cadmium (Cd)	mg/kg	0.125	0.178	0.398	0.085	0.094	0.050	8467958
Total Calcium (Ca)	mg/kg	2200	948	573	825	848	100	8467958
Total Chromium (Cr)	mg/kg	10.1	15.3	4.7	9.3	7.0	1.0	8467958
Total Cobalt (Co)	mg/kg	5.76	7.23	5.75	3.15	2.82	0.30	8467958
Total Copper (Cu)	mg/kg	11.1	10.5	5.00	5.78	4.07	0.50	8467958
Total Iron (Fe)	mg/kg	7410	13500	3500	6360	5030	100	8467958
Total Lead (Pb)	mg/kg	6.17	8.62	2.37	2.91	2.74	0.10	8467958
Total Lithium (Li)	mg/kg	<5.0	5.7	<5.0	<5.0	<5.0	5.0	8467958
Total Magnesium (Mg)	mg/kg	1670	1810	889	1250	1120	100	8467958
Total Manganese (Mn)	mg/kg	155	221	39.8	165	165	0.20	8467958
Total Mercury (Hg)	mg/kg	<0.050	<0.050	<0.050	<0.050	<0.050	0.050	8467958
Total Molybdenum (Mo)	mg/kg	0.42	0.82	0.22	0.19	0.18	0.10	8467958
Total Nickel (Ni)	mg/kg	12.7	16.0	13.2	9.26	8.96	0.80	8467958
Total Phosphorus (P)	mg/kg	252	609	138	214	193	10	8467958
Total Potassium (K)	mg/kg	345	361	174	244	199	100	8467958
Total Selenium (Se)	mg/kg	<0.50	<0.50	<0.50	<0.50	<0.50	0.50	8467958
Total Silver (Ag)	mg/kg	0.096	0.063	<0.050	<0.050	<0.050	0.050	8467958
Total Sodium (Na)	mg/kg	<100	<100	<100	<100	<100	100	8467958
Total Strontium (Sr)	mg/kg	11.3	7.12	8.80	7.28	8.05	0.10	8467958
Total Thallium (Tl)	mg/kg	0.052	0.055	0.071	<0.050	<0.050	0.050	8467958
Total Tin (Sn)	mg/kg	0.15	0.13	<0.10	<0.10	<0.10	0.10	8467958
Total Titanium (Ti)	mg/kg	157	185	80.3	94.1	74.6	1.0	8467958

RDL = Reportable Detection Limit

N/A = Not Applicable



Maxxam Job #: B6A0692  
Report Date: 2016/11/18

SNC LAVALIN ENVIRONMENT INC.  
Client Project #: 640752  
Site Location: Watson Lake Airport  
Your P.O. #: 700365225  
Sampler Initials: MLC

**CSR/CCME METALS IN SOIL (SOIL)**

Maxxam ID		PZ7961	PZ7965	PZ7968	PZ7980	PZ7981		
Sampling Date		2016/11/05 10:00	2016/11/05 11:00	2016/11/05 14:10	2016/11/05 14:50	2016/11/05 15:00		
COC Number		510054-04-01	510054-04-01	510054-04-01	510054-03-01	510054-03-01		
	<b>UNITS</b>	<b>22D-BH16-7-1</b>	<b>22D-BH16-8-1</b>	<b>22D-BH16-9-2</b>	<b>22D-BH16-10-2</b>	<b>22D-BH16-10-3</b>	<b>RDL</b>	<b>QC Batch</b>
Total Uranium (U)	mg/kg	0.309	0.415	0.197	0.229	0.217	0.050	8467958
Total Vanadium (V)	mg/kg	13.7	17.1	5.7	8.2	7.0	2.0	8467958
Total Zinc (Zn)	mg/kg	20.4	39.4	14.7	16.3	14.7	1.0	8467958
Total Zirconium (Zr)	mg/kg	2.12	1.28	<0.50	<0.50	<0.50	0.50	8467958
RDL = Reportable Detection Limit								

Maxxam Job #: B6A0692  
Report Date: 2016/11/18

SNC LAVALIN ENVIRONMENT INC.  
Client Project #: 640752  
Site Location: Watson Lake Airport  
Your P.O. #: 700365225  
Sampler Initials: MLC

**CSR VOC + VPH IN SOIL (SOIL)**

Maxxam ID		PZ7962	PZ7963	PZ7965		
Sampling Date		2016/11/05 10:10	2016/11/05 10:20	2016/11/05 11:00		
COC Number		510054-04-01	510054-04-01	510054-04-01		
	<b>UNITS</b>	<b>22D-BH16-7-2</b>	<b>22D-BH16-7-3</b>	<b>22D-BH16-8-1</b>	<b>RDL</b>	<b>QC Batch</b>
<b>Volatiles</b>						
VPH (VH6 to 10 - BTEX)	mg/kg	<10	<10	<10	10	8466396
Vinyl chloride	mg/kg	<0.060	<0.060	<0.060	0.060	8470312
Bromomethane	mg/kg	<0.30	<0.30	<0.30	0.30	8470312
Chloroethane	mg/kg	<0.10	<0.10	<0.10	0.10	8470312
Trichlorofluoromethane	mg/kg	<0.20	<0.20	<0.20	0.20	8470312
1,1-dichloroethene	mg/kg	<0.025	<0.025	<0.025	0.025	8470312
Dichloromethane	mg/kg	<0.10	<0.10	<0.10	0.10	8470312
trans-1,2-dichloroethene	mg/kg	<0.025	<0.025	<0.025	0.025	8470312
1,1-dichloroethane	mg/kg	<0.025	<0.025	<0.025	0.025	8470312
cis-1,2-dichloroethene	mg/kg	<0.025	<0.025	<0.025	0.025	8470312
Chloroform	mg/kg	<0.050	<0.050	<0.050	0.050	8470312
1,1,1-trichloroethane	mg/kg	<0.025	<0.025	<0.025	0.025	8470312
1,2-dichloroethane	mg/kg	<0.025	<0.025	<0.025	0.025	8470312
Carbon tetrachloride	mg/kg	<0.025	<0.025	<0.025	0.025	8470312
Benzene	mg/kg	<0.0050	<0.0050	<0.0050	0.0050	8470312
Methyl-tert-butylether (MTBE)	mg/kg	<0.10	<0.10	<0.10	0.10	8470312
1,2-dichloropropane	mg/kg	<0.025	<0.025	<0.025	0.025	8470312
Trichloroethene	mg/kg	<0.0050	<0.0050	<0.0050	0.0050	8470312
Bromodichloromethane	mg/kg	<0.050	<0.050	<0.050	0.050	8470312
cis-1,3-dichloropropene	mg/kg	<0.050	<0.050	<0.050	0.050	8470312
trans-1,3-dichloropropene	mg/kg	<0.050	<0.050	<0.050	0.050	8470312
1,1,2-trichloroethane	mg/kg	<0.025	<0.025	<0.025	0.025	8470312
Toluene	mg/kg	<0.020	<0.020	<0.020	0.020	8470312
Chlorodibromomethane	mg/kg	<0.050	<0.050	<0.050	0.050	8470312
1,2-dibromoethane	mg/kg	<0.025	<0.025	<0.025	0.025	8470312
Tetrachloroethene	mg/kg	<0.025	<0.025	<0.025	0.025	8470312
Chlorobenzene	mg/kg	<0.025	<0.025	<0.025	0.025	8470312
1,1,1,2-tetrachloroethane	mg/kg	<0.025	<0.025	<0.025	0.025	8470312
Ethylbenzene	mg/kg	<0.010	<0.010	<0.010	0.010	8470312
m & p-Xylene	mg/kg	<0.040	<0.040	<0.040	0.040	8470312
RDL = Reportable Detection Limit						

Maxxam Job #: B6A0692  
Report Date: 2016/11/18

SNC LAVALIN ENVIRONMENT INC.  
Client Project #: 640752  
Site Location: Watson Lake Airport  
Your P.O. #: 700365225  
Sampler Initials: MLC

**CSR VOC + VPH IN SOIL (SOIL)**

Maxxam ID		PZ7962	PZ7963	PZ7965		
Sampling Date		2016/11/05 10:10	2016/11/05 10:20	2016/11/05 11:00		
COC Number		510054-04-01	510054-04-01	510054-04-01		
	<b>UNITS</b>	<b>22D-BH16-7-2</b>	<b>22D-BH16-7-3</b>	<b>22D-BH16-8-1</b>	<b>RDL</b>	<b>QC Batch</b>
Bromoform	mg/kg	<0.050	<0.050	<0.050	0.050	8470312
Styrene	mg/kg	<0.030	<0.030	<0.030	0.030	8470312
o-Xylene	mg/kg	<0.040	<0.040	<0.040	0.040	8470312
Xylenes (Total)	mg/kg	<0.040	<0.040	<0.040	0.040	8470312
1,1,2,2-tetrachloroethane	mg/kg	<0.025	<0.025	<0.025	0.025	8470312
1,2-dichlorobenzene	mg/kg	<0.025	<0.025	<0.025	0.025	8470312
1,3-dichlorobenzene	mg/kg	<0.025	<0.025	<0.025	0.025	8470312
1,4-dichlorobenzene	mg/kg	<0.025	<0.025	<0.025	0.025	8470312
1,2,3-trichlorobenzene	mg/kg	<0.025	<0.025	<0.025	0.025	8470312
Hexachlorobutadiene	mg/kg	<0.20	<0.20	<0.20	0.20	8470312
1,2,4-trichlorobenzene	mg/kg	<0.025	<0.025	<0.025	0.025	8470312
VH C6-C10	mg/kg	<10	<10	<10	10	8470312
<b>Surrogate Recovery (%)</b>						
1,4-Difluorobenzene (sur.)	%	98	100	95		8470312
4-Bromofluorobenzene (sur.)	%	93	109	73		8470312
D10-ETHYLBENZENE (sur.)	%	96	98	108		8470312
D4-1,2-Dichloroethane (sur.)	%	94	96	85		8470312
RDL = Reportable Detection Limit						

Maxxam Job #: B6A0692  
Report Date: 2016/11/18

SNC LAVALIN ENVIRONMENT INC.  
Client Project #: 640752  
Site Location: Watson Lake Airport  
Your P.O. #: 700365225  
Sampler Initials: MLC

### GENERAL COMMENTS

Each temperature is the average of up to three cooler temperatures taken at receipt

Package 1	2.7°C
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**Results relate only to the items tested.**

Maxxam Job #: B6A0692  
Report Date: 2016/11/18

**QUALITY ASSURANCE REPORT**

SNC LAVALIN ENVIRONMENT INC.  
Client Project #: 640752  
Site Location: Watson Lake Airport  
Your P.O. #: 700365225  
Sampler Initials: MLC

QC Batch	Parameter	Date	Matrix Spike		Spiked Blank		Method Blank		RPD		QC Standard	
			% Recovery	QC Limits	% Recovery	QC Limits	Value	UNITS	Value (%)	QC Limits	% Recovery	QC Limits
8468163	1,4-Difluorobenzene (sur.)	2016/11/12	101	60 - 140	97	60 - 140	98	%				
8468163	4-Bromofluorobenzene (sur.)	2016/11/12	102	70 - 140	107	70 - 140	102	%				
8468163	D10-ETHYLBENZENE (sur.)	2016/11/12	106	60 - 130	89	60 - 130	98	%				
8468163	D4-1,2-Dichloroethane (sur.)	2016/11/12	114	60 - 140	106	60 - 140	112	%				
8468649	D10-ANTHRACENE (sur.)	2016/11/13	86	60 - 130	89	60 - 130	99	%				
8468649	D8-ACENAPHTHYLENE (sur.)	2016/11/13	86	50 - 130	87	50 - 130	93	%				
8468649	D8-NAPHTHALENE (sur.)	2016/11/13	91	50 - 130	88	50 - 130	94	%				
8468649	TERPHENYL-D14 (sur.)	2016/11/13	76	60 - 130	77	60 - 130	82	%				
8468654	O-TERPHENYL (sur.)	2016/11/13	97	50 - 130	97	50 - 130	95	%				
8469433	O-TERPHENYL (sur.)	2016/11/14	91	50 - 130	92	50 - 130	90	%				
8469437	D10-ANTHRACENE (sur.)	2016/11/14	81	60 - 130	87	60 - 130	87	%				
8469437	D8-ACENAPHTHYLENE (sur.)	2016/11/14	78	50 - 130	81	50 - 130	81	%				
8469437	D8-NAPHTHALENE (sur.)	2016/11/14	73	50 - 130	80	50 - 130	82	%				
8469437	TERPHENYL-D14 (sur.)	2016/11/14	68	60 - 130	74	60 - 130	72	%				
8470039	O-TERPHENYL (sur.)	2016/11/15	102	50 - 130	102	50 - 130	103	%				
8470044	D10-ANTHRACENE (sur.)	2016/11/14	98	60 - 130	95	60 - 130	99	%				
8470044	D8-ACENAPHTHYLENE (sur.)	2016/11/14	91	50 - 130	89	50 - 130	91	%				
8470044	D8-NAPHTHALENE (sur.)	2016/11/14	90	50 - 130	91	50 - 130	94	%				
8470044	TERPHENYL-D14 (sur.)	2016/11/14	82	60 - 130	83	60 - 130	90	%				
8470047	O-TERPHENYL (sur.)	2016/11/15	104	50 - 130	104	50 - 130	100	%				
8470052	D10-ANTHRACENE (sur.)	2016/11/15	95	60 - 130	96	60 - 130	97	%				
8470052	D8-ACENAPHTHYLENE (sur.)	2016/11/15	90	50 - 130	88	50 - 130	88	%				
8470052	D8-NAPHTHALENE (sur.)	2016/11/15	91	50 - 130	89	50 - 130	90	%				
8470052	TERPHENYL-D14 (sur.)	2016/11/15	80	60 - 130	80	60 - 130	79	%				
8470312	1,4-Difluorobenzene (sur.)	2016/11/15	96	70 - 130	96	70 - 130	102	%				
8470312	4-Bromofluorobenzene (sur.)	2016/11/15	111	70 - 130	112	70 - 130	97	%				
8470312	D10-ETHYLBENZENE (sur.)	2016/11/15	98	50 - 130	88	50 - 130	105	%				
8470312	D4-1,2-Dichloroethane (sur.)	2016/11/15	111	70 - 130	114	70 - 130	96	%				
8467188	Moisture	2016/11/11					<0.30	%	1.5	20		
8467958	Total Aluminum (Al)	2016/11/14					<100	mg/kg	5.2	35	79	70 - 130

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Client Project #: 640752  
Site Location: Watson Lake Airport  
Your P.O. #: 700365225  
Sampler Initials: MLC

QC Batch	Parameter	Date	Matrix Spike		Spiked Blank		Method Blank		RPD		QC Standard	
			% Recovery	QC Limits	% Recovery	QC Limits	Value	UNITS	Value (%)	QC Limits	% Recovery	QC Limits
8467958	Total Antimony (Sb)	2016/11/14	98	75 - 125	97	75 - 125	<0.10	mg/kg	NC	30	111	70 - 130
8467958	Total Arsenic (As)	2016/11/14	99	75 - 125	101	75 - 125	<0.50	mg/kg	0.062	30	92	70 - 130
8467958	Total Barium (Ba)	2016/11/14	NC	75 - 125	99	75 - 125	<0.10	mg/kg	7.3	35	96	70 - 130
8467958	Total Beryllium (Be)	2016/11/14	97	75 - 125	98	75 - 125	<0.40	mg/kg	NC	30	102	70 - 130
8467958	Total Bismuth (Bi)	2016/11/14					<0.10	mg/kg	NC	30		
8467958	Total Cadmium (Cd)	2016/11/14	112	75 - 125	113	75 - 125	<0.050	mg/kg	NC	30	125	70 - 130
8467958	Total Calcium (Ca)	2016/11/14					<100	mg/kg	8.4	30	88	70 - 130
8467958	Total Chromium (Cr)	2016/11/14	105	75 - 125	99	75 - 125	<1.0	mg/kg	13	30	98	70 - 130
8467958	Total Cobalt (Co)	2016/11/14	100	75 - 125	98	75 - 125	<0.30	mg/kg	2.2	30	95	70 - 130
8467958	Total Copper (Cu)	2016/11/14	102	75 - 125	104	75 - 125	<0.50	mg/kg	5.0	30	100	70 - 130
8467958	Total Iron (Fe)	2016/11/14					<100	mg/kg	7.4	30	90	70 - 130
8467958	Total Lead (Pb)	2016/11/14	103	75 - 125	103	75 - 125	<0.10	mg/kg	3.8	35	104	70 - 130
8467958	Total Lithium (Li)	2016/11/14	100	75 - 125	101	75 - 125	<5.0	mg/kg	NC	30	97	70 - 130
8467958	Total Magnesium (Mg)	2016/11/14					<100	mg/kg	1.3	30	83	70 - 130
8467958	Total Manganese (Mn)	2016/11/14	NC	75 - 125	97	75 - 125	<0.20	mg/kg	2.8	30	96	70 - 130
8467958	Total Mercury (Hg)	2016/11/14	110	75 - 125	107	75 - 125	<0.050	mg/kg	NC	35	99	70 - 130
8467958	Total Molybdenum (Mo)	2016/11/14	100	75 - 125	98	75 - 125	<0.10	mg/kg	NC	35	117	70 - 130
8467958	Total Nickel (Ni)	2016/11/14	100	75 - 125	100	75 - 125	<0.80	mg/kg	3.6	30	104	70 - 130
8467958	Total Phosphorus (P)	2016/11/14					<10	mg/kg	7.8	30	96	70 - 130
8467958	Total Potassium (K)	2016/11/14					<100	mg/kg	NC	35	77	70 - 130
8467958	Total Selenium (Se)	2016/11/14	110	75 - 125	110	75 - 125	<0.50	mg/kg	NC	30		
8467958	Total Silver (Ag)	2016/11/14	78	75 - 125	77	75 - 125	<0.050	mg/kg	NC	35	84	70 - 130
8467958	Total Sodium (Na)	2016/11/14					<100	mg/kg	NC	35	74	70 - 130
8467958	Total Strontium (Sr)	2016/11/14	90	75 - 125	96	75 - 125	0.11, RDL=0.10	mg/kg	12	35	98	70 - 130
8467958	Total Thallium (Tl)	2016/11/14	101	75 - 125	104	75 - 125	<0.050	mg/kg	NC	30	96	70 - 130
8467958	Total Tin (Sn)	2016/11/14	94	75 - 125	91	75 - 125	<0.10	mg/kg	NC	35	92	70 - 130
8467958	Total Titanium (Ti)	2016/11/14	NC	75 - 125	95	75 - 125	<1.0	mg/kg	5.1	35		
8467958	Total Uranium (U)	2016/11/14	103	75 - 125	103	75 - 125	<0.050	mg/kg	NC	30	101	70 - 130
8467958	Total Vanadium (V)	2016/11/14	101	75 - 125	96	75 - 125	<2.0	mg/kg	NC	30	96	70 - 130

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Site Location: Watson Lake Airport  
Your P.O. #: 700365225  
Sampler Initials: MLC

QC Batch	Parameter	Date	Matrix Spike		Spiked Blank		Method Blank		RPD		QC Standard	
			% Recovery	QC Limits	% Recovery	QC Limits	Value	UNITS	Value (%)	QC Limits	% Recovery	QC Limits
8467958	Total Zinc (Zn)	2016/11/14	114	75 - 125	114	75 - 125	<1.0	mg/kg	1.6	30	106	70 - 130
8467958	Total Zirconium (Zr)	2016/11/14					<0.50	mg/kg	NC	30		
8467959	Soluble (2:1) pH	2016/11/14			100	97 - 103			0.23	N/A		
8468163	Benzene	2016/11/13	124	60 - 140	100	60 - 140	<0.0050	mg/kg	NC	40		
8468163	Ethylbenzene	2016/11/13	121	60 - 140	103	60 - 140	<0.010	mg/kg	NC	40		
8468163	m & p-Xylene	2016/11/13	116	60 - 140	100	60 - 140	<0.040	mg/kg	NC	40		
8468163	Methyl-tert-butylether (MTBE)	2016/11/13					<0.10	mg/kg	NC	40		
8468163	o-Xylene	2016/11/13	105	60 - 140	90	60 - 140	<0.040	mg/kg	NC	40		
8468163	Styrene	2016/11/13					<0.030	mg/kg	NC	40		
8468163	Toluene	2016/11/13	117	60 - 140	100	60 - 140	<0.020	mg/kg	NC	40		
8468163	VH C6-C10	2016/11/13			70	60 - 140	<10	mg/kg	NC	40		
8468163	Xylenes (Total)	2016/11/13					<0.040	mg/kg	NC	40		
8468649	2-Methylnaphthalene	2016/11/14	82	50 - 130	87	50 - 130	<0.050	mg/kg	NC	50		
8468649	Acenaphthene	2016/11/14	86	50 - 130	90	50 - 130	<0.050	mg/kg	NC	50		
8468649	Acenaphthylene	2016/11/14	84	50 - 130	88	50 - 130	<0.050	mg/kg	NC	50		
8468649	Anthracene	2016/11/14	82	60 - 130	87	60 - 130	<0.050	mg/kg	NC	50		
8468649	Benzo(a)anthracene	2016/11/14	76	60 - 130	82	60 - 130	<0.050	mg/kg	NC	50		
8468649	Benzo(a)pyrene	2016/11/14	83	60 - 130	84	60 - 130	<0.050	mg/kg	NC	50		
8468649	Benzo(b&j)fluoranthene	2016/11/14	83	60 - 130	89	60 - 130	<0.050	mg/kg	NC	50		
8468649	Benzo(b)fluoranthene	2016/11/14	85	60 - 130	86	60 - 130	<0.050	mg/kg	NC	50		
8468649	Benzo(g,h,i)perylene	2016/11/14	83	60 - 130	79	60 - 130	<0.050	mg/kg	NC	50		
8468649	Benzo(k)fluoranthene	2016/11/14	82	60 - 130	84	60 - 130	<0.050	mg/kg	NC	50		
8468649	Chrysene	2016/11/14	79	60 - 130	87	60 - 130	<0.050	mg/kg	NC	50		
8468649	Dibenz(a,h)anthracene	2016/11/14	86	60 - 130	82	60 - 130	<0.050	mg/kg	NC	50		
8468649	Fluoranthene	2016/11/14	80	60 - 130	87	60 - 130	<0.050	mg/kg	NC	50		
8468649	Fluorene	2016/11/14	77	50 - 130	82	50 - 130	<0.050	mg/kg	NC	50		
8468649	Indeno(1,2,3-cd)pyrene	2016/11/14	84	60 - 130	83	60 - 130	<0.050	mg/kg	NC	50		
8468649	Naphthalene	2016/11/14	81	50 - 130	84	50 - 130	<0.050	mg/kg	NC	50		
8468649	Phenanthrene	2016/11/14	79	60 - 130	84	60 - 130	<0.050	mg/kg	NC	50		
8468649	Pyrene	2016/11/14	82	60 - 130	87	60 - 130	<0.050	mg/kg	NC	50		

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Site Location: Watson Lake Airport  
Your P.O. #: 700365225  
Sampler Initials: MLC

QC Batch	Parameter	Date	Matrix Spike		Spiked Blank		Method Blank		RPD		QC Standard	
			% Recovery	QC Limits	% Recovery	QC Limits	Value	UNITS	Value (%)	QC Limits	% Recovery	QC Limits
8468654	EPH (C10-C19)	2016/11/13	91	50 - 130	94	50 - 130	<100	mg/kg	NC	40		
8468654	EPH (C19-C32)	2016/11/13	93	50 - 130	95	50 - 130	<100	mg/kg	NC	40		
8469433	EPH (C10-C19)	2016/11/14	95	50 - 130	97	50 - 130	<100	mg/kg	NC	40		
8469433	EPH (C19-C32)	2016/11/14	97	50 - 130	97	50 - 130	<100	mg/kg	NC	40		
8469437	2-Methylnaphthalene	2016/11/14	74	50 - 130	80	50 - 130	<0.050	mg/kg	NC	50		
8469437	Acenaphthene	2016/11/14	76	50 - 130	81	50 - 130	<0.050	mg/kg	NC	50		
8469437	Acenaphthylene	2016/11/14	74	50 - 130	78	50 - 130	<0.050	mg/kg	NC	50		
8469437	Anthracene	2016/11/14	75	60 - 130	82	60 - 130	<0.050	mg/kg	NC	50		
8469437	Benzo(a)anthracene	2016/11/14	72	60 - 130	75	60 - 130	<0.050	mg/kg	NC	50		
8469437	Benzo(a)pyrene	2016/11/14	71	60 - 130	74	60 - 130	<0.050	mg/kg	NC	50		
8469437	Benzo(b&j)fluoranthene	2016/11/14	76	60 - 130	80	60 - 130	<0.050	mg/kg	NC	50		
8469437	Benzo(b)fluoranthene	2016/11/14	74	60 - 130	77	60 - 130	<0.050	mg/kg	NC	50		
8469437	Benzo(g,h,i)perylene	2016/11/14	68	60 - 130	68	60 - 130	<0.050	mg/kg	NC	50		
8469437	Benzo(k)fluoranthene	2016/11/14	74	60 - 130	81	60 - 130	<0.050	mg/kg	NC	50		
8469437	Chrysene	2016/11/14	75	60 - 130	79	60 - 130	<0.050	mg/kg	NC	50		
8469437	Dibenz(a,h)anthracene	2016/11/14	69	60 - 130	70	60 - 130	<0.050	mg/kg	NC	50		
8469437	Fluoranthene	2016/11/14	74	60 - 130	81	60 - 130	<0.050	mg/kg	NC	50		
8469437	Fluorene	2016/11/14	74	50 - 130	77	50 - 130	<0.050	mg/kg	NC	50		
8469437	Indeno(1,2,3-cd)pyrene	2016/11/14	70	60 - 130	71	60 - 130	<0.050	mg/kg	NC	50		
8469437	Naphthalene	2016/11/14	72	50 - 130	79	50 - 130	<0.050	mg/kg	NC	50		
8469437	Phenanthrene	2016/11/14	71	60 - 130	77	60 - 130	<0.050	mg/kg	NC	50		
8469437	Pyrene	2016/11/14	74	60 - 130	81	60 - 130	<0.050	mg/kg	NC	50		
8470039	EPH (C10-C19)	2016/11/15	104	50 - 130	103	50 - 130	<100	mg/kg	NC	40		
8470039	EPH (C19-C32)	2016/11/15	104	50 - 130	104	50 - 130	<100	mg/kg	NC	40		
8470044	2-Methylnaphthalene	2016/11/15	82	50 - 130	86	50 - 130	<0.050	mg/kg	NC	50		
8470044	Acenaphthene	2016/11/15	84	50 - 130	89	50 - 130	<0.050	mg/kg	NC	50		
8470044	Acenaphthylene	2016/11/15	82	50 - 130	86	50 - 130	<0.050	mg/kg	NC	50		
8470044	Anthracene	2016/11/15	86	60 - 130	90	60 - 130	<0.050	mg/kg	NC	50		
8470044	Benzo(a)anthracene	2016/11/15	79	60 - 130	84	60 - 130	<0.050	mg/kg	NC	50		
8470044	Benzo(a)pyrene	2016/11/15	82	60 - 130	85	60 - 130	<0.050	mg/kg	NC	50		



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Site Location: Watson Lake Airport  
Your P.O. #: 700365225  
Sampler Initials: MLC

QC Batch	Parameter	Date	Matrix Spike		Spiked Blank		Method Blank		RPD		QC Standard	
			% Recovery	QC Limits	% Recovery	QC Limits	Value	UNITS	Value (%)	QC Limits	% Recovery	QC Limits
8470044	Benzo(b&j)fluoranthene	2016/11/15	85	60 - 130	90	60 - 130	<0.050	mg/kg	NC	50		
8470044	Benzo(b)fluoranthene	2016/11/15	81	60 - 130	82	60 - 130	<0.050	mg/kg	NC	50		
8470044	Benzo(g,h,i)perylene	2016/11/15	76	60 - 130	73	60 - 130	<0.050	mg/kg	NC	50		
8470044	Benzo(k)fluoranthene	2016/11/15	84	60 - 130	90	60 - 130	<0.050	mg/kg	NC	50		
8470044	Chrysene	2016/11/15	84	60 - 130	89	60 - 130	<0.050	mg/kg	NC	50		
8470044	Dibenz(a,h)anthracene	2016/11/15	75	60 - 130	74	60 - 130	<0.050	mg/kg	NC	50		
8470044	Fluoranthene	2016/11/15	85	60 - 130	91	60 - 130	<0.050	mg/kg	NC	50		
8470044	Fluorene	2016/11/15	80	50 - 130	86	50 - 130	<0.050	mg/kg	NC	50		
8470044	Indeno(1,2,3-cd)pyrene	2016/11/15	77	60 - 130	75	60 - 130	<0.050	mg/kg	NC	50		
8470044	Naphthalene	2016/11/15	82	50 - 130	85	50 - 130	<0.050	mg/kg	NC	50		
8470044	Phenanthrene	2016/11/15	81	60 - 130	87	60 - 130	<0.050	mg/kg	NC	50		
8470044	Pyrene	2016/11/15	84	60 - 130	89	60 - 130	<0.050	mg/kg	NC	50		
8470047	EPH (C10-C19)	2016/11/15	107	50 - 130	105	50 - 130	<100	mg/kg	NC	40		
8470047	EPH (C19-C32)	2016/11/15	106	50 - 130	106	50 - 130	<100	mg/kg	NC	40		
8470052	2-Methylnaphthalene	2016/11/15	86	50 - 130	85	50 - 130	<0.050	mg/kg	NC	50		
8470052	Acenaphthene	2016/11/15	88	50 - 130	89	50 - 130	<0.050	mg/kg	NC	50		
8470052	Acenaphthylene	2016/11/15	85	50 - 130	85	50 - 130	<0.050	mg/kg	NC	50		
8470052	Anthracene	2016/11/15	89	60 - 130	92	60 - 130	<0.050	mg/kg	NC	50		
8470052	Benzo(a)anthracene	2016/11/15	85	60 - 130	85	60 - 130	<0.050	mg/kg	NC	50		
8470052	Benzo(a)pyrene	2016/11/15	83	60 - 130	83	60 - 130	<0.050	mg/kg	NC	50		
8470052	Benzo(b&j)fluoranthene	2016/11/15	90	60 - 130	90	60 - 130	<0.050	mg/kg	NC	50		
8470052	Benzo(b)fluoranthene	2016/11/15	88	60 - 130	87	60 - 130	<0.050	mg/kg	NC	50		
8470052	Benzo(g,h,i)perylene	2016/11/15	82	60 - 130	76	60 - 130	<0.050	mg/kg	NC	50		
8470052	Benzo(k)fluoranthene	2016/11/15	88	60 - 130	85	60 - 130	<0.050	mg/kg	NC	50		
8470052	Chrysene	2016/11/15	88	60 - 130	89	60 - 130	<0.050	mg/kg	NC	50		
8470052	Dibenz(a,h)anthracene	2016/11/15	83	60 - 130	79	60 - 130	<0.050	mg/kg	NC	50		
8470052	Fluoranthene	2016/11/15	88	60 - 130	90	60 - 130	<0.050	mg/kg	NC	50		
8470052	Fluorene	2016/11/15	85	50 - 130	86	50 - 130	<0.050	mg/kg	NC	50		
8470052	Indeno(1,2,3-cd)pyrene	2016/11/15	84	60 - 130	79	60 - 130	<0.050	mg/kg	NC	50		
8470052	Naphthalene	2016/11/15	85	50 - 130	81	50 - 130	<0.050	mg/kg	NC	50		

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Site Location: Watson Lake Airport  
Your P.O. #: 700365225  
Sampler Initials: MLC

QC Batch	Parameter	Date	Matrix Spike		Spiked Blank		Method Blank		RPD		QC Standard	
			% Recovery	QC Limits	% Recovery	QC Limits	Value	UNITS	Value (%)	QC Limits	% Recovery	QC Limits
8470052	Phenanthrene	2016/11/15	85	60 - 130	86	60 - 130	<0.050	mg/kg	NC	50		
8470052	Pyrene	2016/11/15	87	60 - 130	90	60 - 130	<0.050	mg/kg	NC	50		
8470312	1,1,1,2-tetrachloroethane	2016/11/15	97	60 - 140	93	60 - 140	<0.025	mg/kg	NC	40		
8470312	1,1,1-trichloroethane	2016/11/15	96	60 - 140	92	60 - 140	<0.025	mg/kg	NC	40		
8470312	1,1,2,2-tetrachloroethane	2016/11/15	93	60 - 140	97	60 - 140	<0.025	mg/kg	NC	40		
8470312	1,1,2-trichloroethane	2016/11/15	94	60 - 140	94	60 - 140	<0.025	mg/kg	NC	40		
8470312	1,1-dichloroethane	2016/11/15	86	60 - 140	83	60 - 140	<0.025	mg/kg	NC	40		
8470312	1,1-dichloroethene	2016/11/15	86	60 - 140	83	60 - 140	<0.025	mg/kg	NC	40		
8470312	1,2,3-trichlorobenzene	2016/11/15	104	60 - 140	103	60 - 140	<0.025	mg/kg	NC	40		
8470312	1,2,4-trichlorobenzene	2016/11/15	97	60 - 140	90	60 - 140	<0.025	mg/kg	NC	40		
8470312	1,2-dibromoethane	2016/11/15	101	60 - 140	101	60 - 140	<0.025	mg/kg	NC	40		
8470312	1,2-dichlorobenzene	2016/11/15	108	60 - 140	107	60 - 140	<0.025	mg/kg	NC	40		
8470312	1,2-dichloroethane	2016/11/15	92	60 - 140	89	60 - 140	<0.025	mg/kg	NC	40		
8470312	1,2-dichloropropane	2016/11/15	87	60 - 140	93	60 - 140	<0.025	mg/kg	NC	40		
8470312	1,3-dichlorobenzene	2016/11/15	108	60 - 140	107	60 - 140	<0.025	mg/kg	NC	40		
8470312	1,4-dichlorobenzene	2016/11/15	103	60 - 140	103	60 - 140	<0.025	mg/kg	NC	40		
8470312	Benzene	2016/11/15	98	60 - 140	95	60 - 140	<0.0050	mg/kg	NC	40		
8470312	Bromodichloromethane	2016/11/15	93	60 - 140	91	60 - 140	<0.050	mg/kg	NC	40		
8470312	Bromoform	2016/11/15	95	60 - 140	93	60 - 140	<0.050	mg/kg	NC	40		
8470312	Bromomethane	2016/11/15	76	50 - 150	72	50 - 150	<0.30	mg/kg	NC	40		
8470312	Carbon tetrachloride	2016/11/15	99	60 - 140	83	60 - 140	<0.025	mg/kg	NC	40		
8470312	Chlorobenzene	2016/11/15	98	60 - 140	97	60 - 140	<0.025	mg/kg	NC	40		
8470312	Chlorodibromomethane	2016/11/15	99	60 - 140	98	60 - 140	<0.050	mg/kg	NC	40		
8470312	Chloroethane	2016/11/15	97	50 - 150	82	50 - 150	<0.10	mg/kg	NC	40		
8470312	Chloroform	2016/11/15	93	60 - 140	90	60 - 140	<0.050	mg/kg	NC	40		
8470312	cis-1,2-dichloroethene	2016/11/15	90	60 - 140	88	60 - 140	<0.025	mg/kg	NC	40		
8470312	cis-1,3-dichloropropene	2016/11/15	87	60 - 140	79	60 - 140	<0.050	mg/kg	NC	40		
8470312	Dichloromethane	2016/11/15	104	60 - 140	102	60 - 140	<0.10	mg/kg	NC	40		
8470312	Ethylbenzene	2016/11/15	116	60 - 140	113	60 - 140	<0.010	mg/kg	NC	40		
8470312	Hexachlorobutadiene	2016/11/15	85	50 - 150	91	50 - 150	<0.20	mg/kg	NC	40		

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Site Location: Watson Lake Airport  
Your P.O. #: 700365225  
Sampler Initials: MLC

QC Batch	Parameter	Date	Matrix Spike		Spiked Blank		Method Blank		RPD		QC Standard	
			% Recovery	QC Limits	% Recovery	QC Limits	Value	UNITS	Value (%)	QC Limits	% Recovery	QC Limits
8470312	m & p-Xylene	2016/11/15	120	60 - 140	118	60 - 140	<0.040	mg/kg	NC	40		
8470312	Methyl-tert-butylether (MTBE)	2016/11/15					<0.10	mg/kg	NC	40		
8470312	o-Xylene	2016/11/15	117	60 - 140	116	60 - 140	<0.040	mg/kg	NC	40		
8470312	Styrene	2016/11/15	92	60 - 140	90	60 - 140	<0.030	mg/kg	NC	40		
8470312	Tetrachloroethene	2016/11/15	98	60 - 140	96	60 - 140	<0.025	mg/kg	NC	40		
8470312	Toluene	2016/11/15	101	60 - 140	101	60 - 140	<0.020	mg/kg	NC	40		
8470312	trans-1,2-dichloroethene	2016/11/15	87	60 - 140	87	60 - 140	<0.025	mg/kg	NC	40		
8470312	trans-1,3-dichloropropene	2016/11/15	88	60 - 140	82	60 - 140	<0.050	mg/kg	NC	40		
8470312	Trichloroethene	2016/11/15	92	60 - 140	89	60 - 140	<0.0050	mg/kg	NC	40		
8470312	Trichlorofluoromethane	2016/11/15	88	50 - 150	83	50 - 150	<0.20	mg/kg	NC	40		
8470312	VH C6-C10	2016/11/15			93	60 - 140	<10	mg/kg	NC	40		
8470312	Vinyl chloride	2016/11/15	67	50 - 150	65	50 - 150	<0.060	mg/kg	NC	40		
8470312	Xylenes (Total)	2016/11/15					<0.040	mg/kg	NC	40		

N/A = Not Applicable

Duplicate: Paired analysis of a separate portion of the same sample. Used to evaluate the variance in the measurement.

Matrix Spike: A sample to which a known amount of the analyte of interest has been added. Used to evaluate sample matrix interference.

QC Standard: A sample of known concentration prepared by an external agency under stringent conditions. Used as an independent check of method accuracy.

Spiked Blank: A blank matrix sample to which a known amount of the analyte, usually from a second source, has been added. Used to evaluate method accuracy.

Method Blank: A blank matrix containing all reagents used in the analytical procedure. Used to identify laboratory contamination.

Surrogate: A pure or isotopically labeled compound whose behavior mirrors the analytes of interest. Used to evaluate extraction efficiency.

NC (Matrix Spike): The recovery in the matrix spike was not calculated. The relative difference between the concentration in the parent sample and the spiked amount was too small to permit a reliable recovery calculation (matrix spike concentration was less than 2x that of the native sample concentration).

NC (Duplicate RPD): The duplicate RPD was not calculated. The concentration in the sample and/or duplicate was too low to permit a reliable RPD calculation (one or both samples < 5x RDL).

Maxxam Job #: B6A0692  
Report Date: 2016/11/18

SNC LAVALIN ENVIRONMENT INC.  
Client Project #: 640752  
Site Location: Watson Lake Airport  
Your P.O. #: 700365225  
Sampler Initials: MLC

### VALIDATION SIGNATURE PAGE

The analytical data and all QC contained in this report were reviewed and validated by the following individual(s).



Andy Lu, Ph.D., P.Chem., Scientific Specialist

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Maxxam has procedures in place to guard against improper use of the electronic signature and have the required "signatories", as per section 5.10.2 of ISO/IEC 17025:2005(E), signing the reports. For Service Group specific validation please refer to the Validation Signature Page.

<b>INVOICE TO:</b>		<b>Report Information</b>		<b>Project Information</b>	
Company Name: #1756 PUBLIC WORKS & GOVERNMENT SERVICE	Company Name: #26479 SNC LAVALIN ENVIRONMENT INC.	Quotation #: B61631	Bottle Order #: 510054		
Contact Name: Robert Price	Contact Name: Michael Chao; Marta Rosa	P.O. #: Pending	Project Manager: Samantha Fregien		
Address: 641- 800 BURNARD STREET VANCOUVER BC V6Z 2V8	Address: 8648 COMMERCE COURT BURNABY BC V5A 4N6	Project #: 640752	Project Name: AEC 22D		
Phone: (604) 775-6810 Fax: (604) 775-6650	Phone: (604) 515-5151 Fax:	Site #: Watson Lake Airport	C6510054-04-01		
Email: robert.price@pwgsc-tpsgc.gc.ca	Email: Michael.Chao@snclavalin.com	Sampled By: MIC			



Regulatory Criteria: Yukon CSR Soil	Special Instructions:	Analysis Requested:	Turnaround Time (TAT) Required:
Note: For regulated drinking water samples - please use the Drinking Water Chain of Custody Form		Regular (Standard) TAT (will be applied if Rush TAT is not specified): <input checked="" type="checkbox"/>	Standard TAT = 5-7 Working days for most tests. Please note: Standard TAT for certain tests such as BOD and Dioxins/Furans are > 5 days - contact your Project Manager for details.

Sample Barcode Label	Sample (Location) Identification	Date Sampled	Time Sampled	Matrix	Regulated Drinking Water ? (Y/N)	Metals Field Filtered ? (Y/N)	CSR BTEX/VPH	LEPH & HEPH with CSR PAH	CSR/CCME Diss. Metals in Water w/ CV Hg	CSR VOC + VPH	CSR/CCME Metals in Soil	# of Bottles	Comments
1	22D-BH16-7-1	16/11/05	10:00	Soil			X	X			X	2	RECEIVED IN WHITEHORSE BY: <i>Shyona@09.30x</i>
2	22D-BH16-7-2		10:10				X	X	X			2	2016-11-08
3	22D-BH16-7-3		10:20				X	X	X			2	TEMP: 3, 2, 1, 3 → # cooler
4	22D-BH16-7-4		10:30									X 2	
5	22D-BH16-8-1		11:00				X	X	X	X		2	
6	22D-BH16-8-2		11:10				X	X				2	
7	22D-BH16-9-1		14:00									X 2	
8	22D-BH16-9-2		14:10				X	X			X	2	
9	22D-BH16-9-3		14:20				X	X				2	
10	22D-BH16-9-4		14:30									X 2	

** RELINQUISHED BY: (Signature/Print) <i>Michael Chao</i>	Date: (YY/MM/DD) 16/11/06	Time: 17:00	RECEIVED BY: (Signature/Print) <i>Laurel K. Fisher</i>	Date: (YY/MM/DD) 2016/11/09	Time: 13:00	# Jars used and not submitted	Time Sensitive <input type="checkbox"/>	Temperature (°C) on Receipt: 11	Custody Seal Intact on Cooler? <input checked="" type="checkbox"/> Yes <input type="checkbox"/> No
---	---------------------------	-------------	--	-----------------------------	-------------	-------------------------------	---	---------------------------------	--

\* IT IS THE RESPONSIBILITY OF THE RELINQUISHER TO ENSURE THE ACCURACY OF THE CHAIN OF CUSTODY RECORD. AN INCOMPLETE CHAIN OF CUSTODY MAY RESULT IN ANALYTICAL TAT DELAYS.



<b>INVOICE TO:</b>		<b>Report Information</b>		<b>Project Information</b>	
Company Name	#1756 PUBLIC WORKS & GOVERNMENT SERVICE	Company Name	#26479 SNC LAVALIN ENVIRONMENT INC.	Quotation #	B61631
Contact Name	Robert Price	Contact Name	Michael Chao ; <i>Marka Ross</i>	P.O. #	Pending
Address	641- 800 BURNARD STREET VANCOUVER BC V6Z 2V8	Address	8648 COMMERCE COURT BURNABY BC V5A 4N6	Project #	640752
Phone	(604) 775-6810 Fax: (604) 775-6650	Phone	(604) 515-5151 Fax:	Project Name	AFC 22D
Email	robert.price@pwgsc-tpsgc.gc.ca	Email	Michael.Chao@snc-lavalin.com; <i>Marka.Ross@snc-lavalin.com</i>	Site #	Watson Lake Airport
				Sampled By	MLC



Bottle Order #:  
510054  
Project Manager  
Samantha Fregien

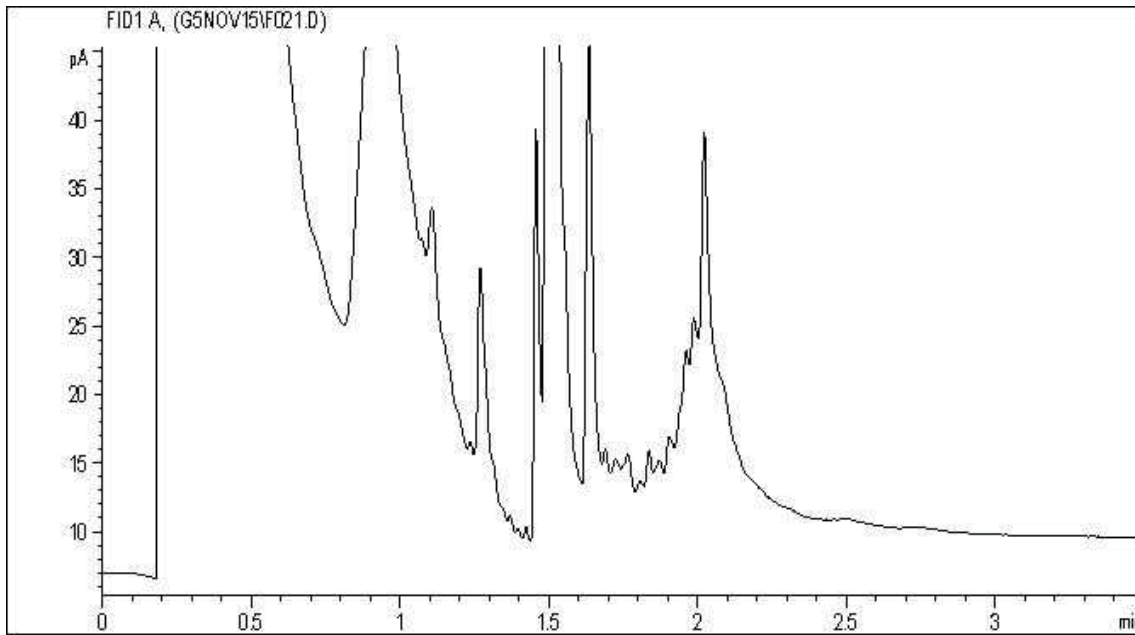
Regulatory Criteria <i>Yukon CSR Soil</i>	Special Instructions	Analysis Requested	Turnaround Time (TAT) Required
<p>Note: For regulated drinking water samples - please use the Drinking Water Chain of Custody Form</p> <p>Samples must be kept cool (&lt; 10°C) from time of sampling until delivery to maxxam</p>		Regular (Standard) TAT (will be applied if Rush TAT is not specified) Standard TAT = 5-7 Working days for most tests. Please note: Standard TAT for certain tests such as BOD and Dioxins/Furans are > 5 days - contact your Project Manager for details.	Regular (Standard) TAT <input checked="" type="checkbox"/> Rush TAT <input type="checkbox"/> Date Required: _____ Time Required: _____ Rush Confirmation Number: _____ (call lab for #)

Sample Barcode Label	Sample (Location) Identification	Date Sampled	Time Sampled	Matrix	Regulated Drinking Water ? (Y/N)	Metals Field Filtered ? (Y/N)	CSR BTEX/VPH	LEPH & HEPH with CSR PAH	CSR/CCME Diss. Metals in Water w/ CV Hg	CSR VOC + VPH	CSR/CCME Metals in Soil	# of Bottles	Comments
1	22D-BH16-10-1	16/11/05	14:40	Soil								2	
2	22D-BH16-10-2	↓	14:50	↓			X	X			X	2	
3	22D-BH16-10-3	↓	15:00	↓			X	X			X	2	
4	22D-BH16-10-4	↓	15:10	↓			X	X				2	
5													RECEIVED IN WHITEHORSE
6													BY: <i>Styons@0938</i>
7													2016-11-08 cooler #
8													TEMP: 3   2   3 → 1
9													
10													

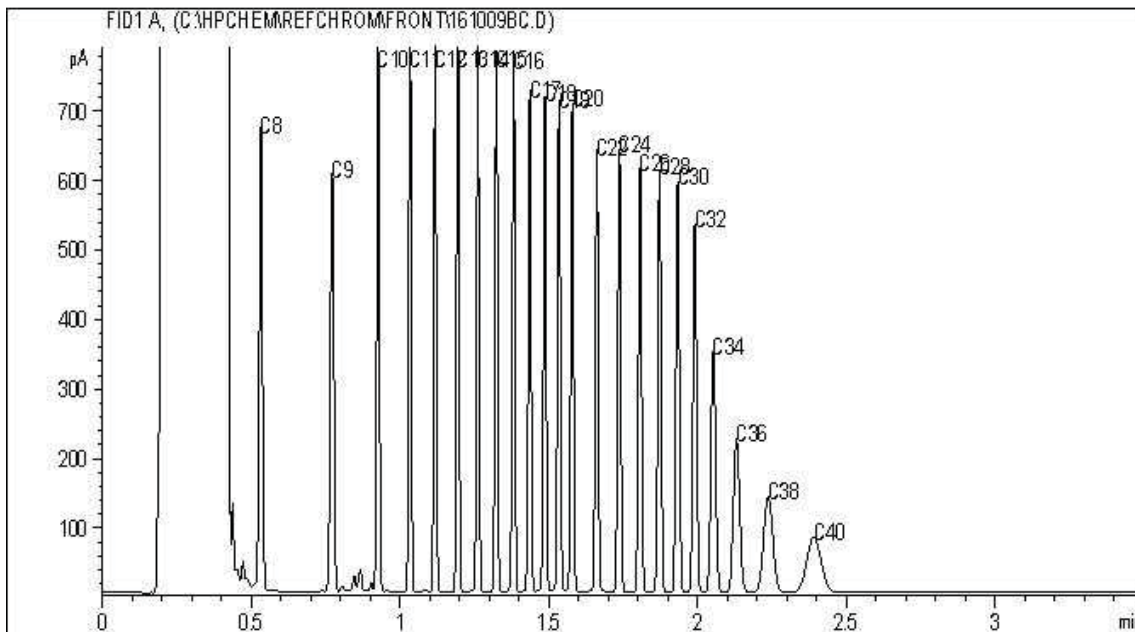
RELINQUISHED BY: (Signature/Print) <i>Michael Chao</i>	Date: (YY/MM/DD) 16/11/05	Time 17:00	RECEIVED BY: (Signature/Print) <i>Lauren Beltrac</i>	Date: (YY/MM/DD) 2016/11/09	Time 13:00	# Jars used and not submitted	Time Sensitive <input type="checkbox"/>	Temperature (°C) on Receipt 111	Custody Seal intact on Cooler? <input type="checkbox"/> Yes <input type="checkbox"/> No
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\* IT IS THE RESPONSIBILITY OF THE RELINQUISHER TO ENSURE THE ACCURACY OF THE CHAIN OF CUSTODY RECORD. AN INCOMPLETE CHAIN OF CUSTODY MAY RESULT IN ANALYTICAL TAT DELAYS.

EPH in Soil by GC/FID Chromatogram



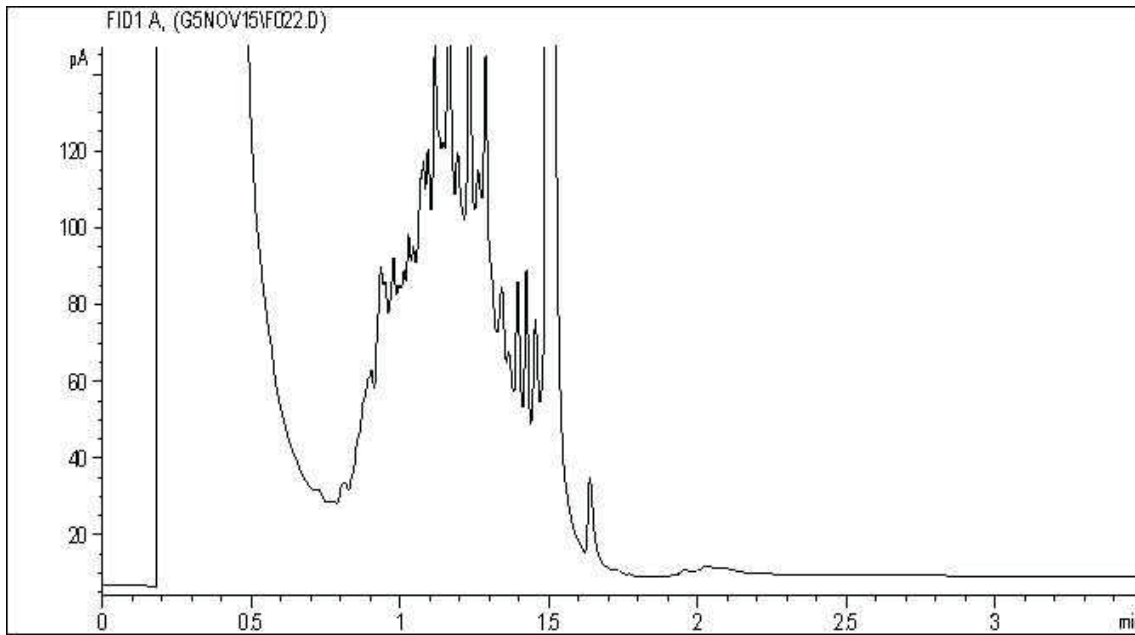
Carbon Range Distribution - Reference Chromatogram



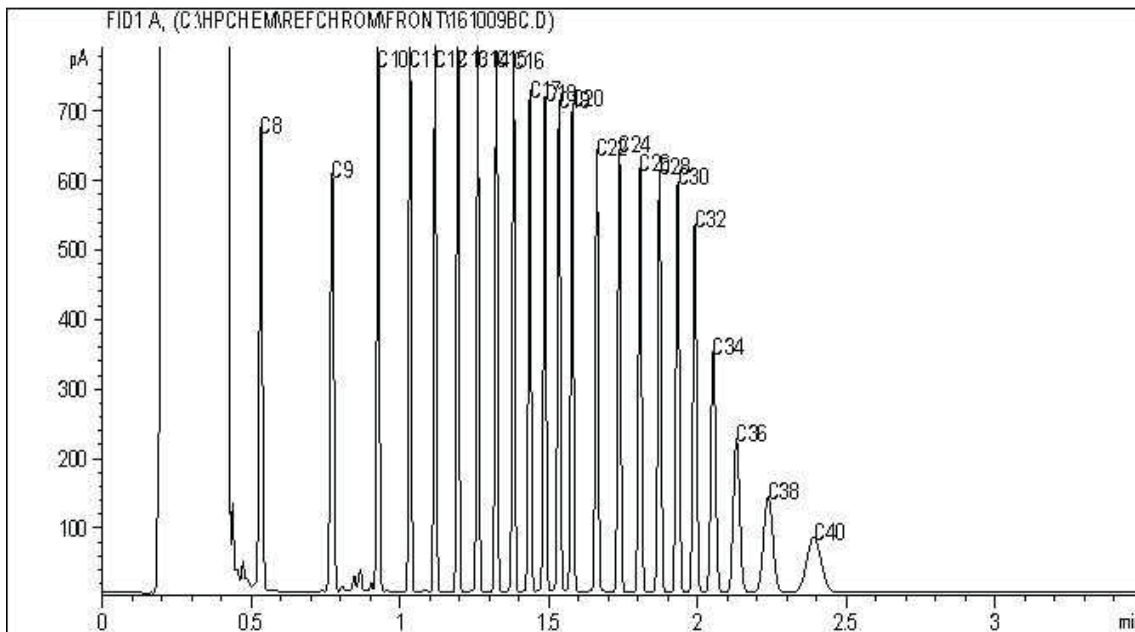
TYPICAL PRODUCT CARBON NUMBER RANGES

Note: This information is provided for reference purposes only. Should detailed chemist interpretation or fingerprinting be required, please contact the laboratory.

EPH in Soil by GC/FID Chromatogram



Carbon Range Distribution - Reference Chromatogram

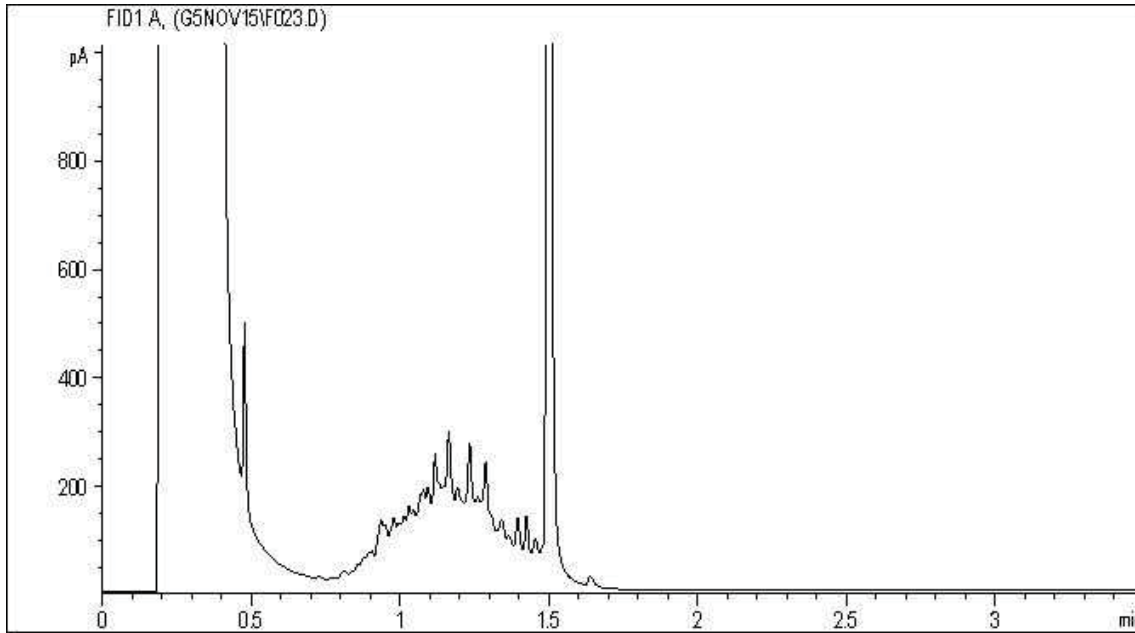


TYPICAL PRODUCT CARBON NUMBER RANGES

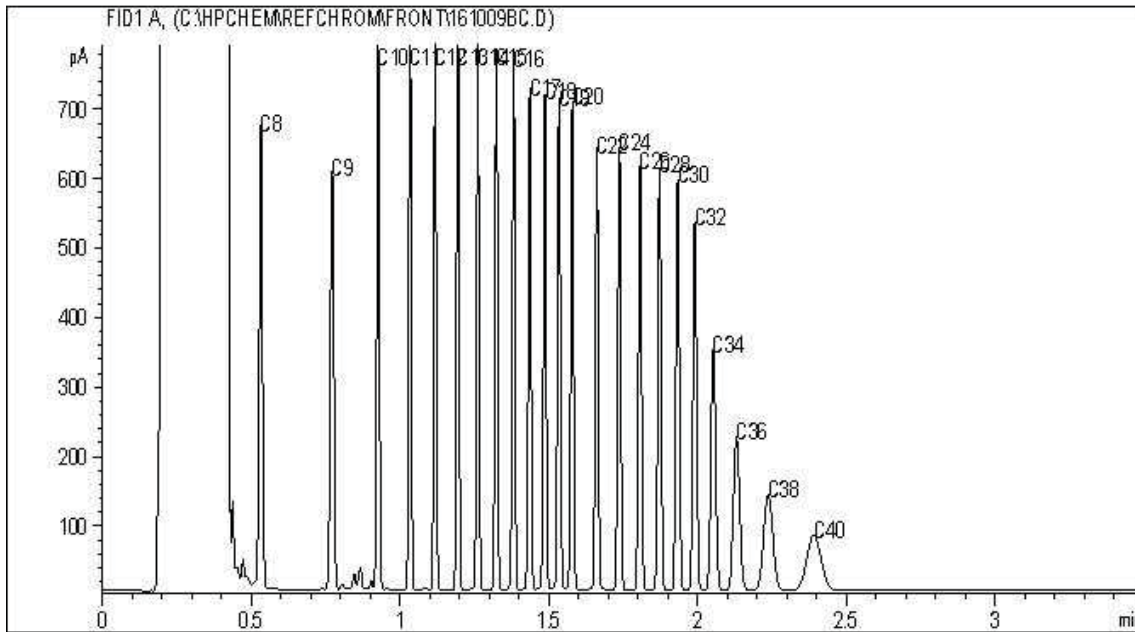
Note: This information is provided for reference purposes only. Should detailed chemist interpretation or fingerprinting be required, please contact the laboratory.



EPH in Soil by GC/FID Chromatogram



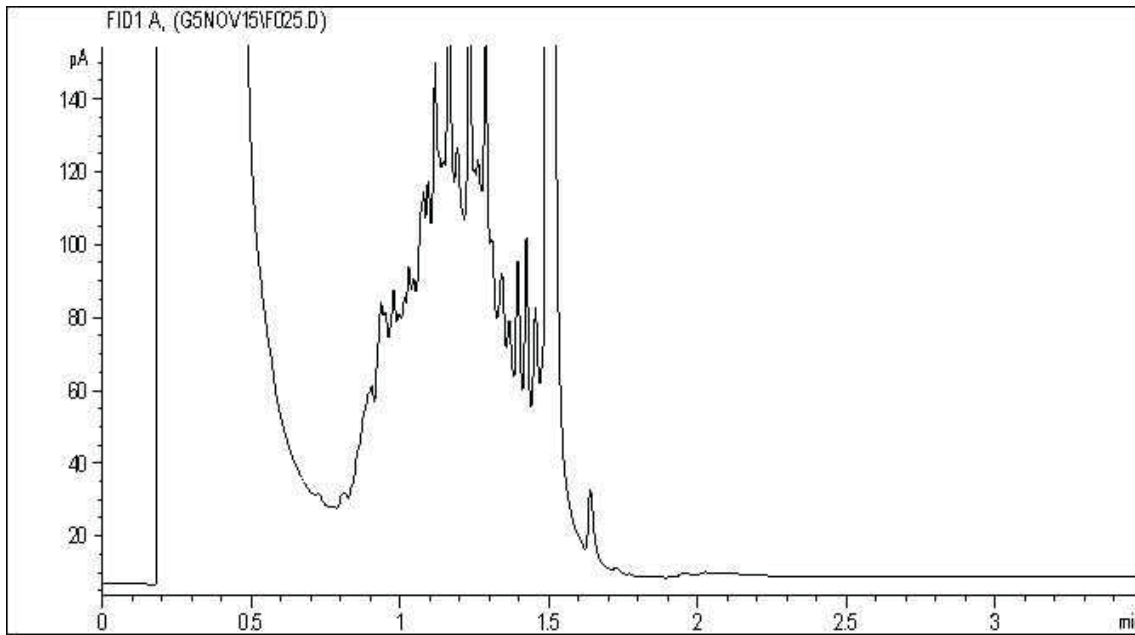
Carbon Range Distribution - Reference Chromatogram



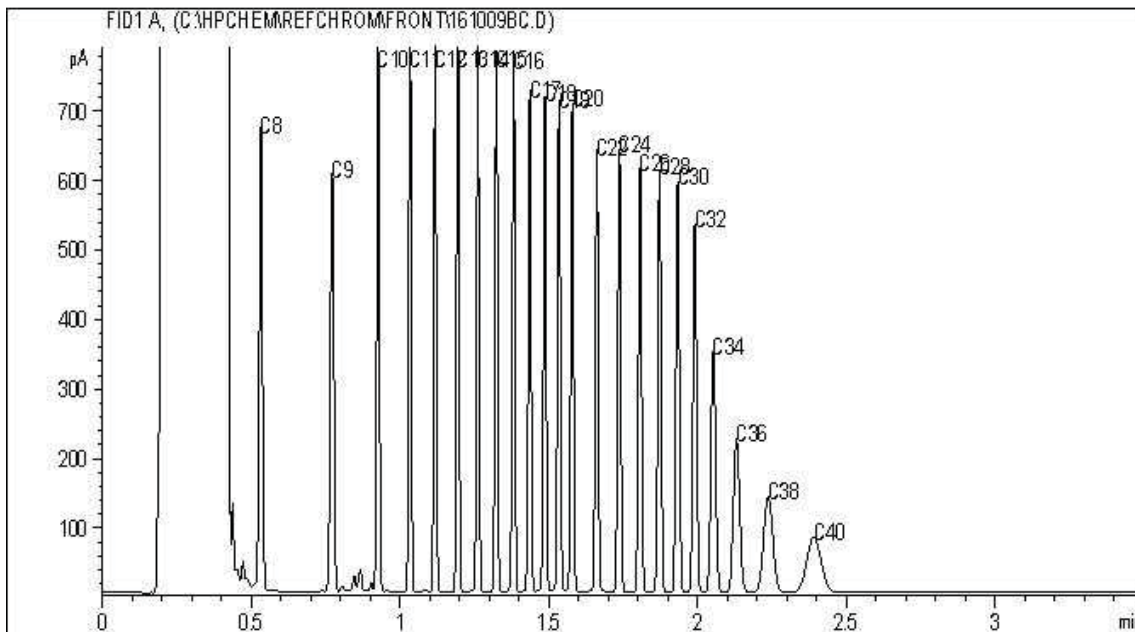
TYPICAL PRODUCT CARBON NUMBER RANGES

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EPH in Soil by GC/FID Chromatogram



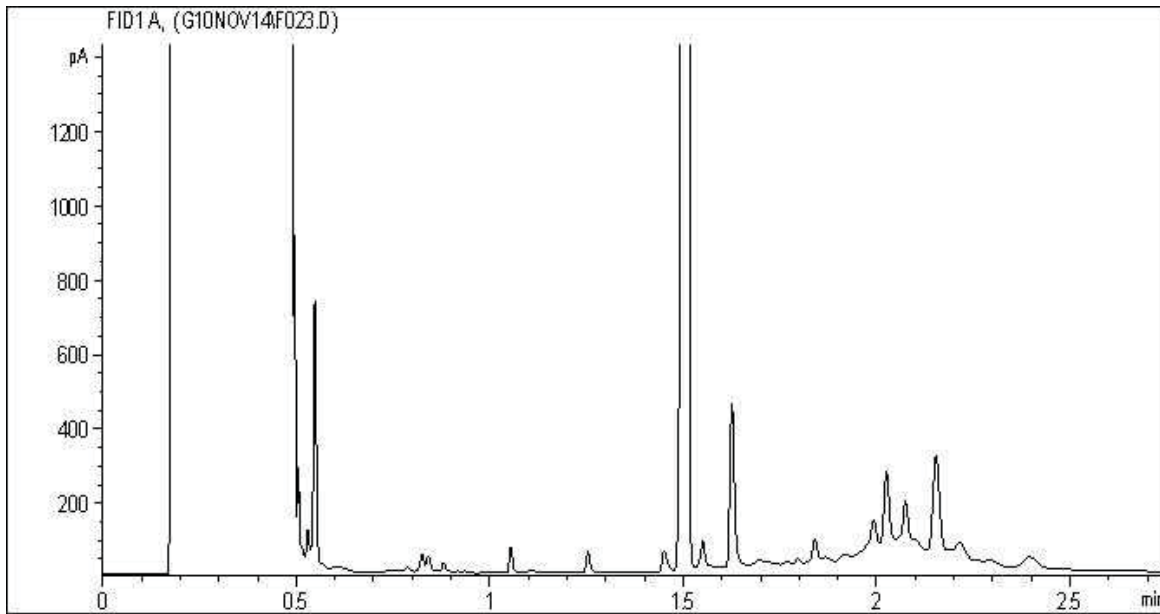
Carbon Range Distribution - Reference Chromatogram



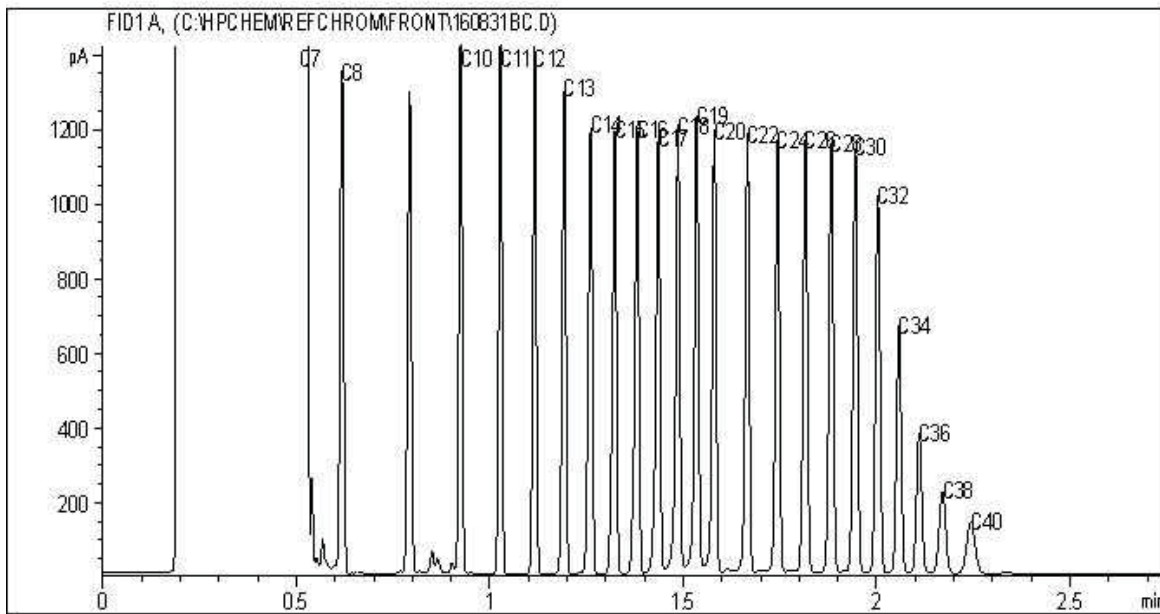
TYPICAL PRODUCT CARBON NUMBER RANGES

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EPH in Soil by GC/FID Chromatogram



Carbon Range Distribution - Reference Chromatogram

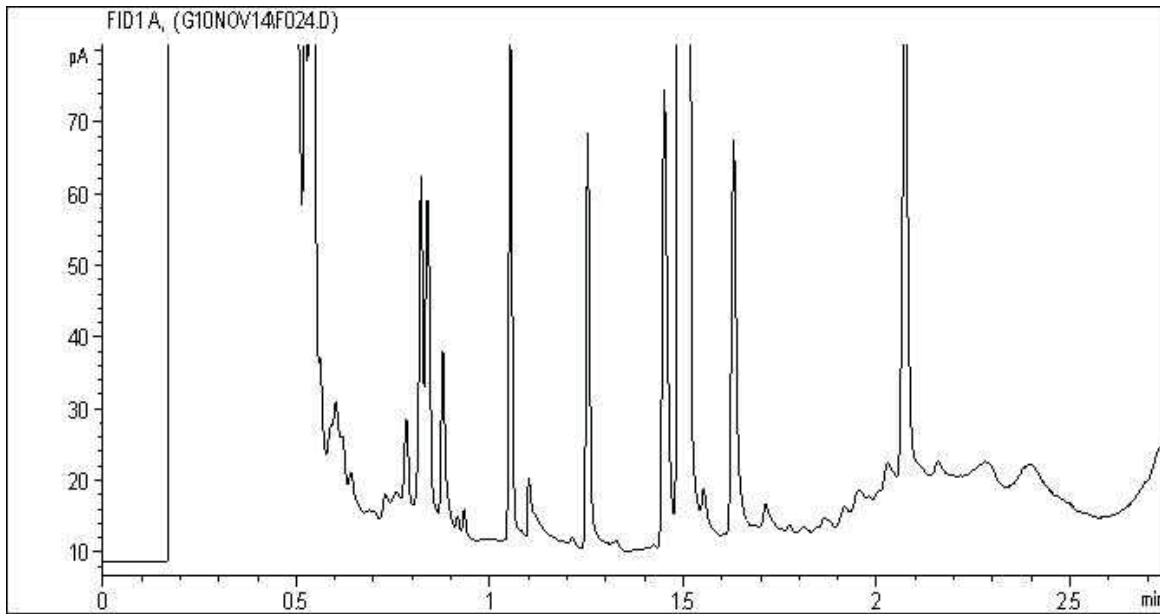


TYPICAL PRODUCT CARBON NUMBER RANGES

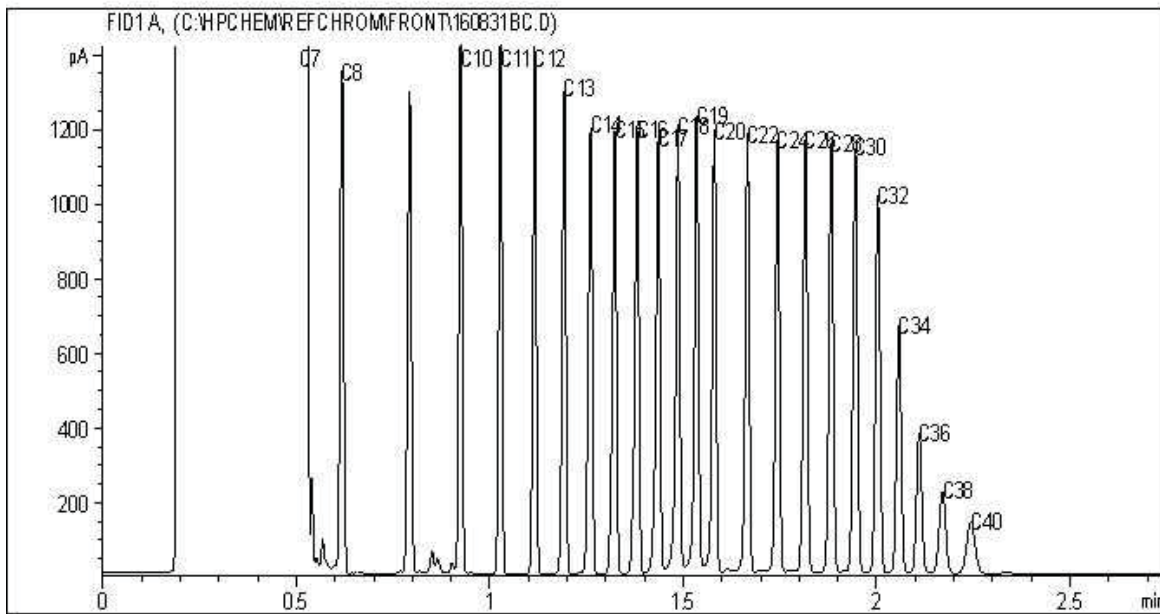
Gasoline:	C4 - C12	Diesel:	C8 - C22
Varsol:	C8 - C12	Lubricating oils:	C20 - C40

**Note: This information is provided for reference purposes only. Should detailed chemist interpretation or fingerprinting be required, please contact the laboratory.**

EPH in Soil by GC/FID Chromatogram



Carbon Range Distribution - Reference Chromatogram

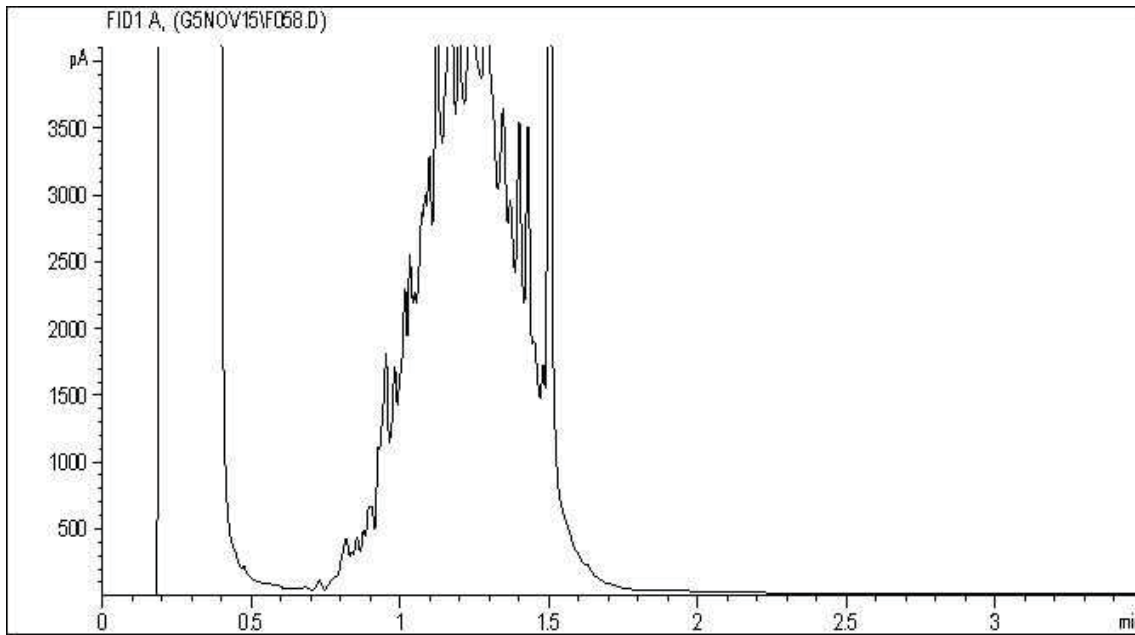


TYPICAL PRODUCT CARBON NUMBER RANGES

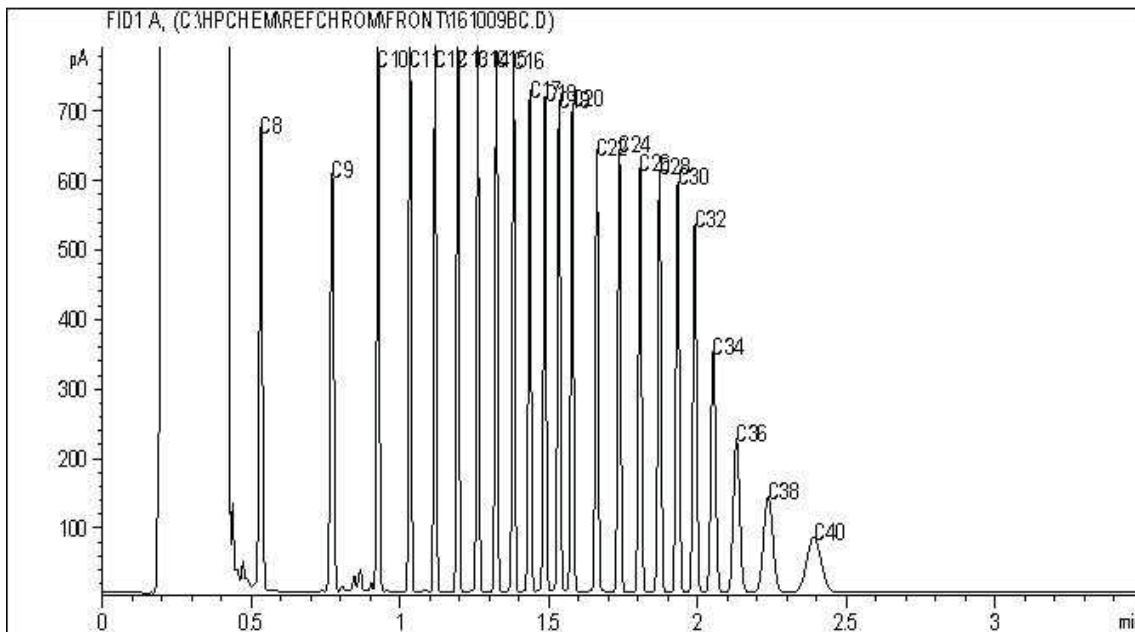
Gasoline:	C4 - C12	Diesel:	C8 - C22
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EPH in Soil by GC/FID Chromatogram



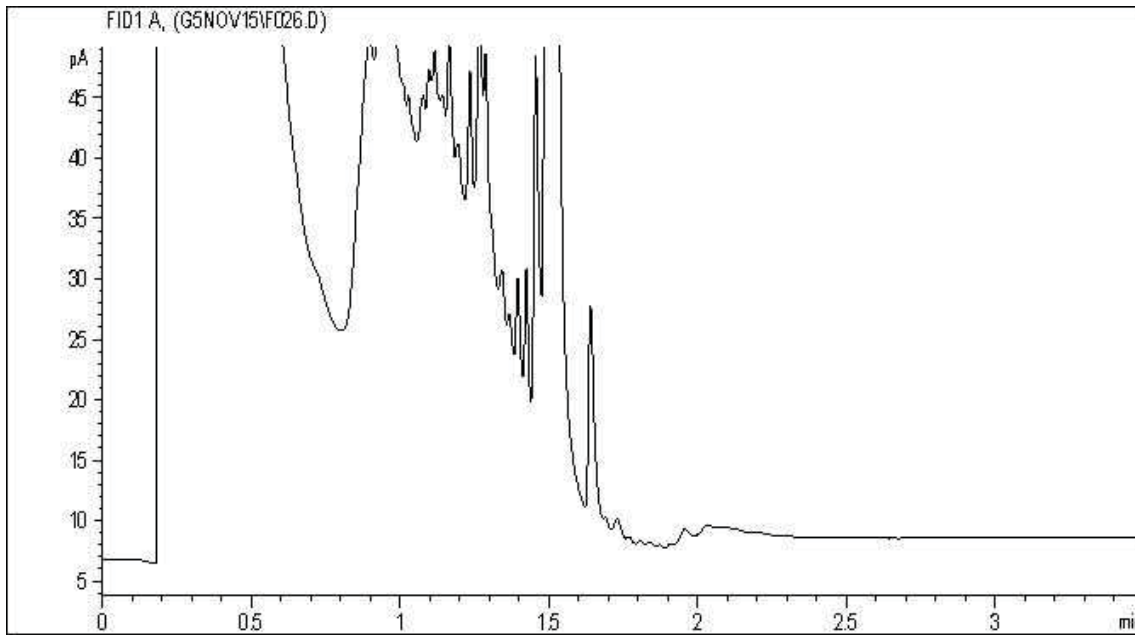
Carbon Range Distribution - Reference Chromatogram



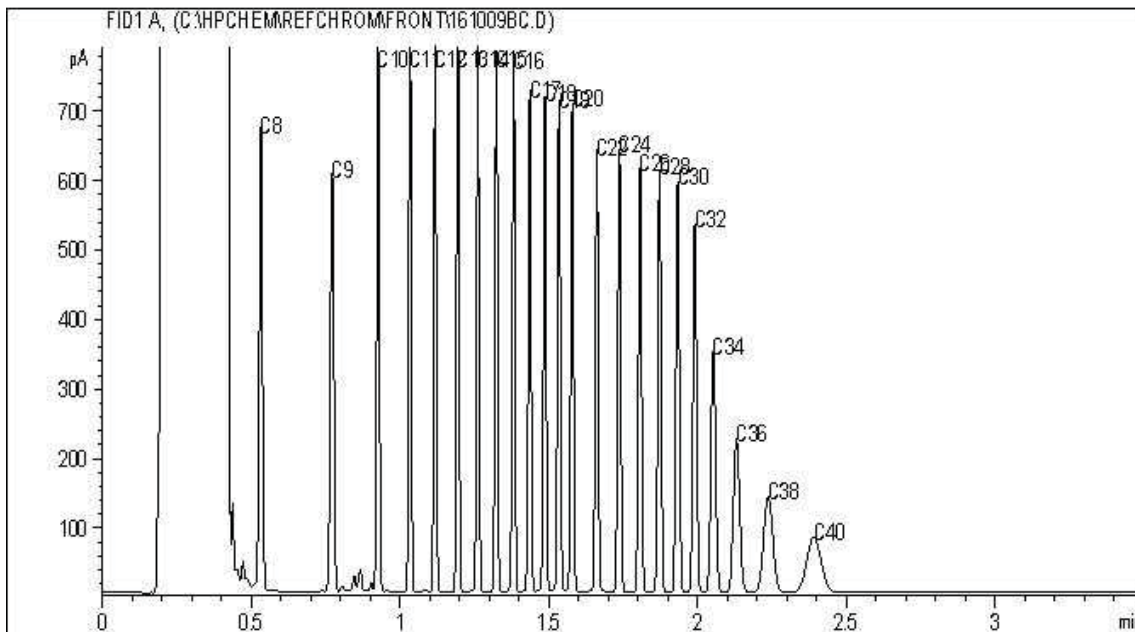
TYPICAL PRODUCT CARBON NUMBER RANGES

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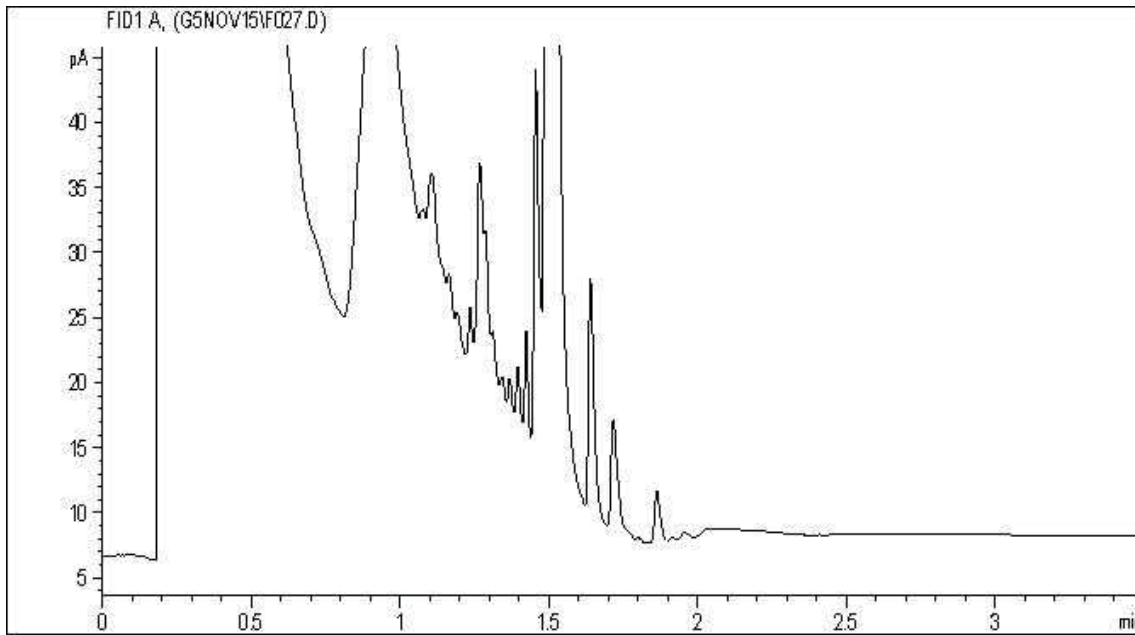
Carbon Range Distribution - Reference Chromatogram



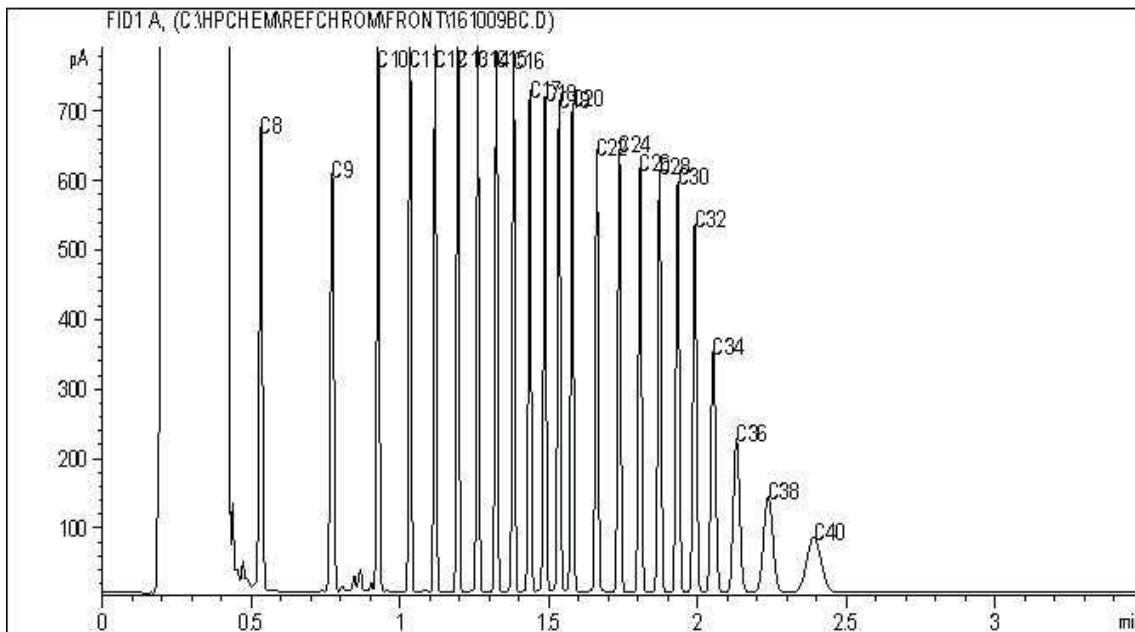
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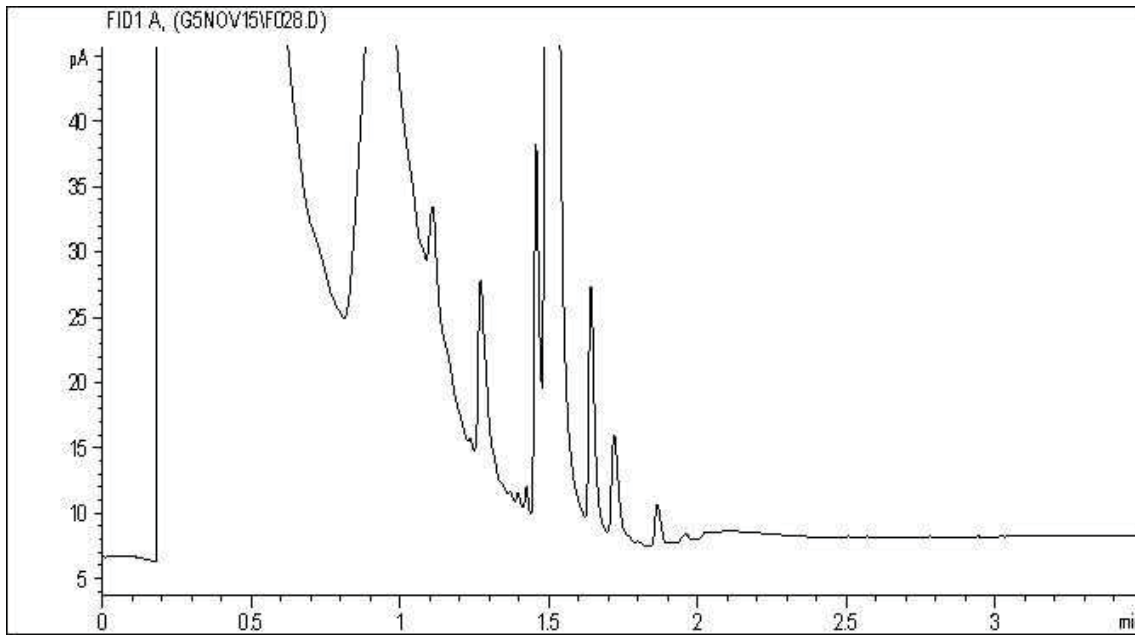
Carbon Range Distribution - Reference Chromatogram



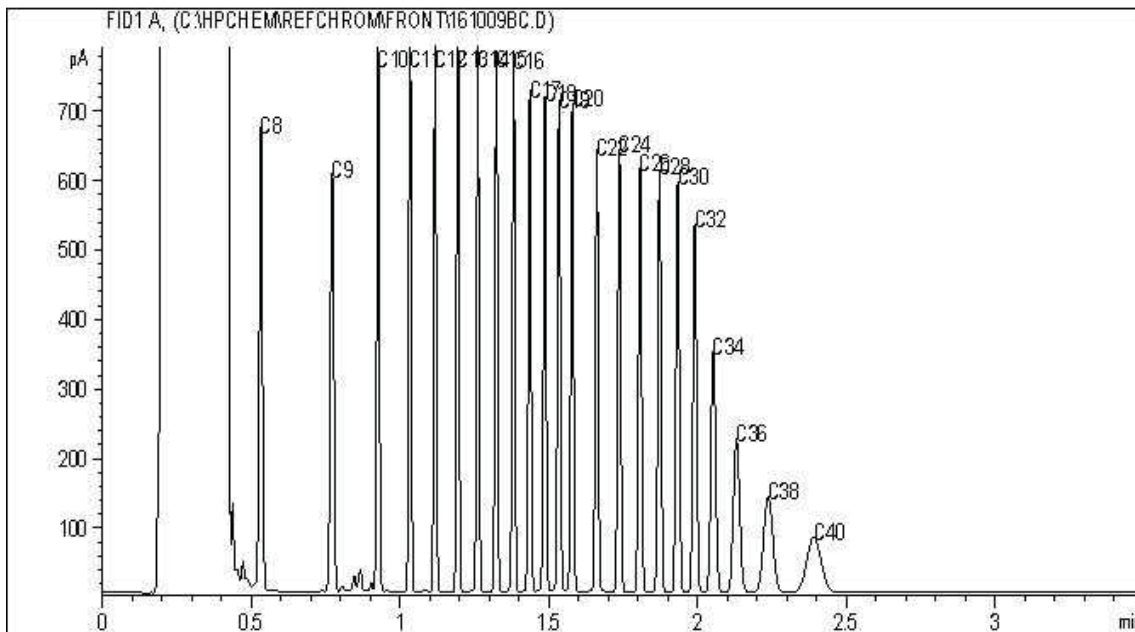
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EPH in Soil by GC/FID Chromatogram



Carbon Range Distribution - Reference Chromatogram

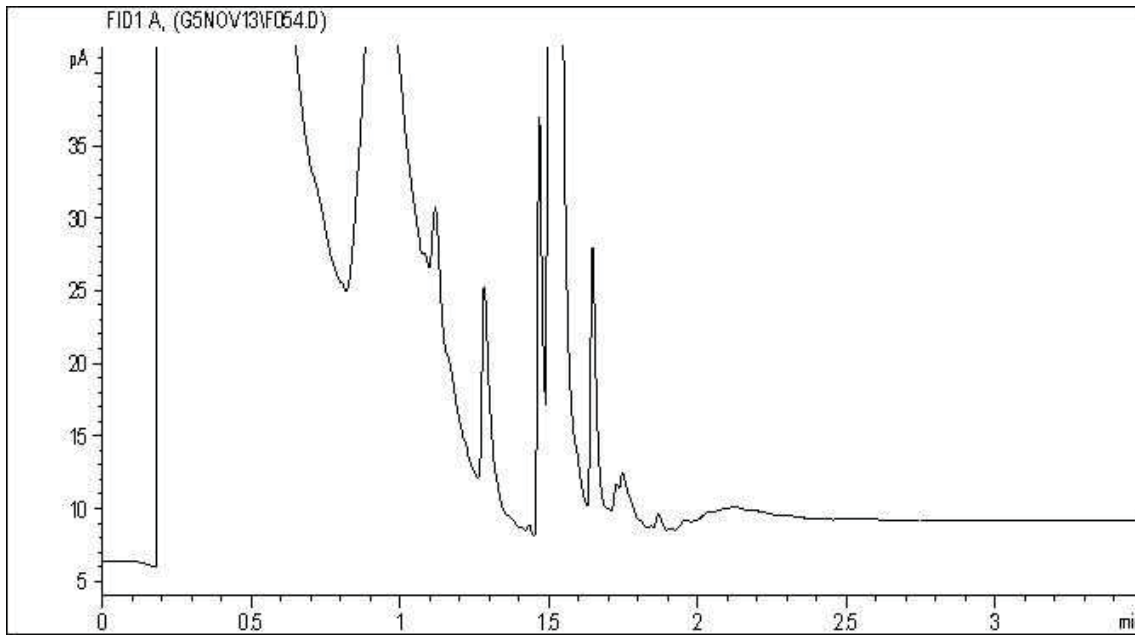


TYPICAL PRODUCT CARBON NUMBER RANGES

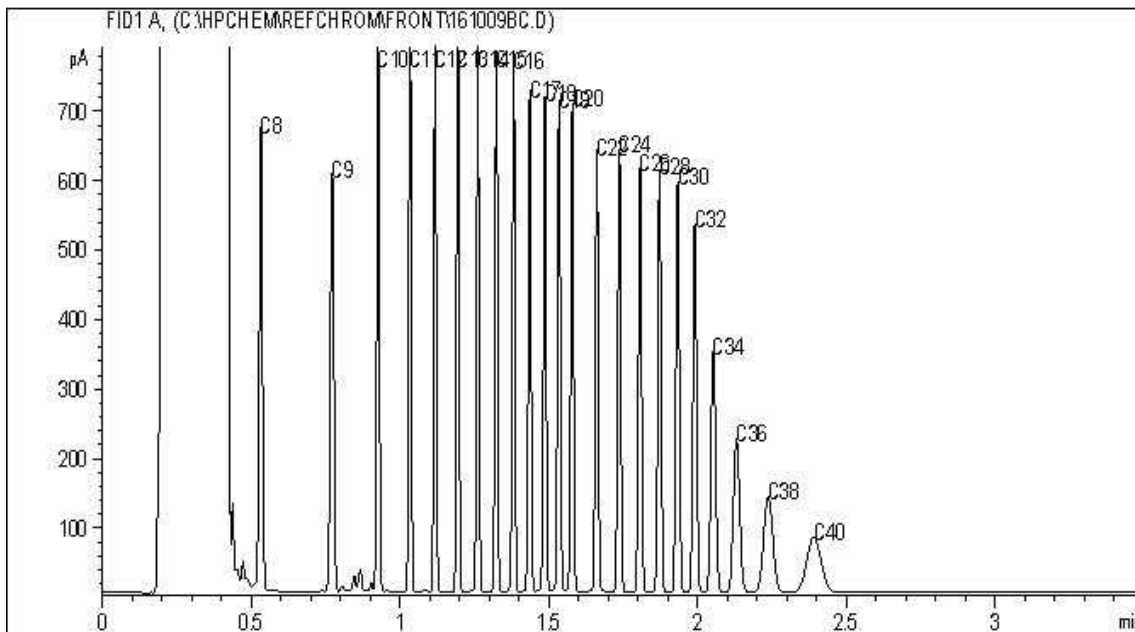
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EPH in Soil by GC/FID Chromatogram



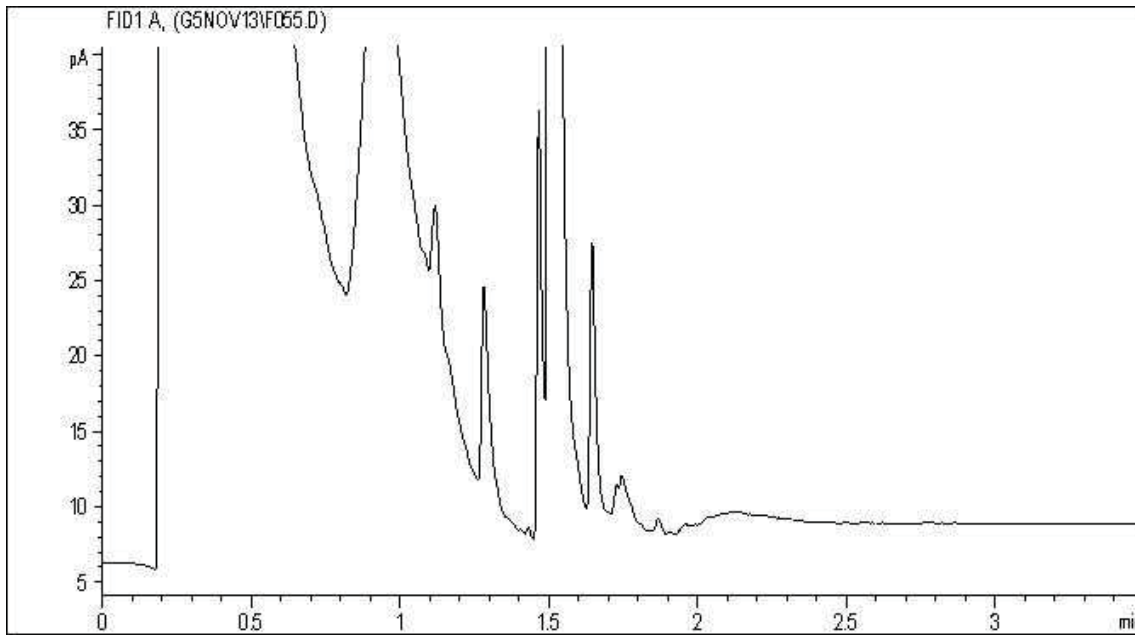
Carbon Range Distribution - Reference Chromatogram



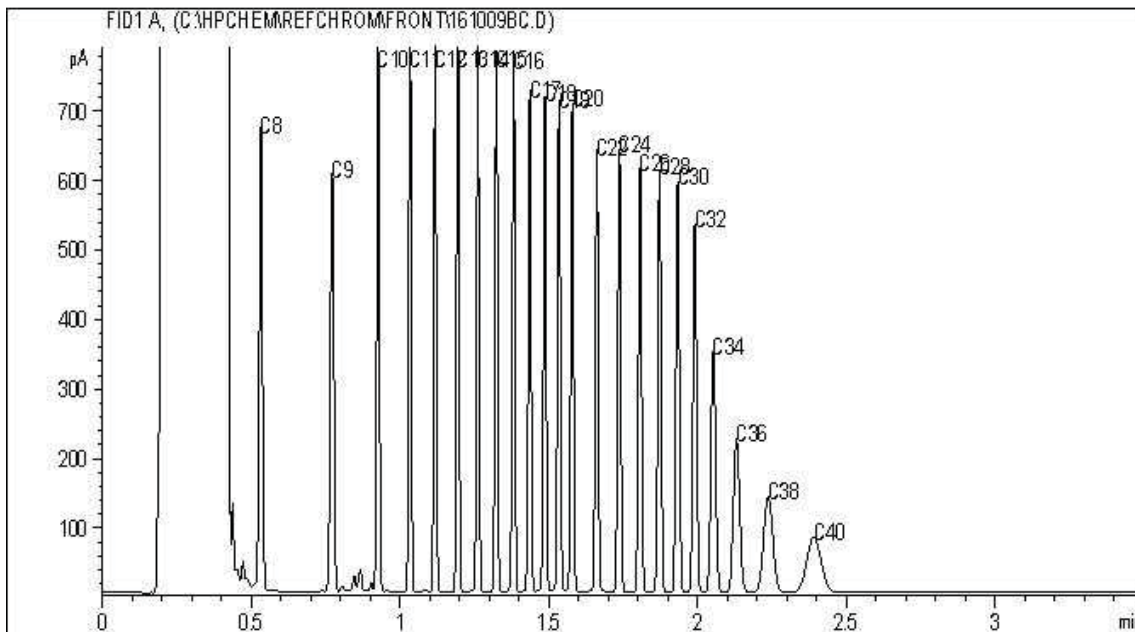
TYPICAL PRODUCT CARBON NUMBER RANGES

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EPH in Soil by GC/FID Chromatogram



Carbon Range Distribution - Reference Chromatogram



TYPICAL PRODUCT CARBON NUMBER RANGES

**Note:** This information is provided for reference purposes only. Should detailed chemist interpretation or fingerprinting be required, please contact the laboratory.

**Attention: Michael Chao**

SNC LAVALIN ENVIRONMENT INC.  
8648 COMMERCE COURT  
BURNABY, BC  
CANADA V5A 4N6

Your P.O. #: 700365225  
Your Project #: 640752  
Site#: AEC 22E  
Site Location: Watson Lake Airport  
Your C.O.C. #: 510054-07-01

**Report Date: 2016/11/16**

Report #: R2301676

Version: 1 - Final

**CERTIFICATE OF ANALYSIS**

**MAXXAM JOB #: B6A0697**

**Received: 2016/11/08, 09:30**

Sample Matrix: Soil  
# Samples Received: 1

Analyses	Quantity	Date		Laboratory Method	Analytical Method
		Extracted	Analyzed		
BTEX/MTBE Soil LH, VH, F1 SIM/MS	1	2016/11/10	2016/11/13	BBY8SOP-00010/11/12	EPA 8260c R3 m
Moisture	1	2016/11/10	2016/11/11	BBY8SOP-00017	BCMOE BCLM Dec2000 m
PAH in Soil by GC/MS (SIM)	1	2016/11/10	2016/11/14	BBY8SOP-00022	EPA 8270d R5 m
Total PAH and B(a)P Calculation	1	N/A	2016/11/15	BBY WI-00033	Auto Calc
EPH less PAH in Soil By GC/FID	1	N/A	2016/11/15	BBY WI-00033	Auto Calc
EPH in Soil by GC/FID	1	2016/11/10	2016/11/14	BBY8SOP-00029	BCMOE EPH s 07/99 m
Volatile HC-BTEX for Soil	1	N/A	2016/11/15	BBY WI-00033	Auto Calc

**Remarks:**

Maxxam Analytics' laboratories are accredited to ISO/IEC 17025:2005 for specific parameters on scopes of accreditation. Unless otherwise noted, procedures used by Maxxam are based upon recognized Provincial, Federal or US method compendia such as CCME, MDDELCC, EPA, APHA.

All work recorded herein has been done in accordance with procedures and practices ordinarily exercised by professionals in Maxxam's profession using accepted testing methodologies, quality assurance and quality control procedures (except where otherwise agreed by the client and Maxxam in writing). All data is in statistical control and has met quality control and method performance criteria unless otherwise noted. All method blanks are reported: unless indicated otherwise, associated sample data are not blank corrected.

Maxxam Analytics' liability is limited to the actual cost of the requested analyses, unless otherwise agreed in writing. There is no other warranty expressed or implied. Maxxam has been retained to provide analysis of samples provided by the Client using the testing methodology referenced in this report. Interpretation and use of test results are the sole responsibility of the Client and are not within the scope of services provided by Maxxam, unless otherwise agreed in writing.

Solid sample results, except biota, are based on dry weight unless otherwise indicated. Organic analyses are not recovery corrected except for isotope dilution methods. Results relate to samples tested.

This Certificate shall not be reproduced except in full, without the written approval of the laboratory.

Reference Method suffix "m" indicates test methods incorporate validated modifications from specific reference methods to improve performance.

\* RPDs calculated using raw data. The rounding of final results may result in the apparent difference.

**Attention:Michael Chao**

SNC LAVALIN ENVIRONMENT INC.  
8648 COMMERCE COURT  
BURNABY, BC  
CANADA V5A 4N6

Your P.O. #: 700365225  
Your Project #: 640752  
Site#: AEC 22E  
Site Location: Watson Lake Airport  
Your C.O.C. #: 510054-07-01

**Report Date: 2016/11/16**  
Report #: R2301676  
Version: 1 - Final

**CERTIFICATE OF ANALYSIS**

**MAXXAM JOB #: B6A0697**

**Received: 2016/11/08, 09:30**

Encryption Key

Please direct all questions regarding this Certificate of Analysis to your Project Manager.  
Samantha Fregien, Project Manager  
Email: SFregien@maxxam.ca  
Phone# (604)639-8418

=====  
Maxxam has procedures in place to guard against improper use of the electronic signature and have the required "signatories", as per section 5.10.2 of ISO/IEC 17025:2005(E), signing the reports. For Service Group specific validation please refer to the Validation Signature Page.

Maxxam Job #: B6A0697  
Report Date: 2016/11/16

SNC LAVALIN ENVIRONMENT INC.  
Client Project #: 640752  
Site Location: Watson Lake Airport  
Your P.O. #: 700365225  
Sampler Initials: MLC

**PHYSICAL TESTING (SOIL)**

Maxxam ID		PZ8031		
Sampling Date		2016/11/05 08:00		
COC Number		510054-07-01		
	<b>UNITS</b>	<b>22E-BH16-6-3</b>	<b>RDL</b>	<b>QC Batch</b>
<b>Physical Properties</b>				
Moisture	%	18	0.30	8467188
RDL = Reportable Detection Limit				

Maxxam Job #: B6A0697  
Report Date: 2016/11/16

SNC LAVALIN ENVIRONMENT INC.  
Client Project #: 640752  
Site Location: Watson Lake Airport  
Your P.O. #: 700365225  
Sampler Initials: MLC

**CSR BTEX/VPH BY HS IN SOIL (SOIL)**

Maxxam ID		PZ8031		
Sampling Date		2016/11/05 08:00		
COC Number		510054-07-01		
	<b>UNITS</b>	<b>22E-BH16-6-3</b>	<b>RDL</b>	<b>QC Batch</b>
<b>Volatiles</b>				
VPH (VH6 to 10 - BTEX)	mg/kg	<10	10	8466396
Methyl-tert-butylether (MTBE)	mg/kg	<0.10	0.10	8468163
Benzene	mg/kg	<0.0050	0.0050	8468163
Toluene	mg/kg	<0.020	0.020	8468163
Ethylbenzene	mg/kg	<0.010	0.010	8468163
m & p-Xylene	mg/kg	<0.040	0.040	8468163
o-Xylene	mg/kg	<0.040	0.040	8468163
Styrene	mg/kg	<0.030	0.030	8468163
Xylenes (Total)	mg/kg	<0.040	0.040	8468163
VH C6-C10	mg/kg	<10	10	8468163
<b>Surrogate Recovery (%)</b>				
1,4-Difluorobenzene (sur.)	%	97		8468163
4-Bromofluorobenzene (sur.)	%	103		8468163
D10-ETHYLBENZENE (sur.)	%	107		8468163
D4-1,2-Dichloroethane (sur.)	%	110		8468163
RDL = Reportable Detection Limit				

Maxxam Job #: B6A0697  
Report Date: 2016/11/16

SNC LAVALIN ENVIRONMENT INC.  
Client Project #: 640752  
Site Location: Watson Lake Airport  
Your P.O. #: 700365225  
Sampler Initials: MLC

**LEPH & HEPH WITH PAH FOR CSR IN SOIL (SOIL)**

Maxxam ID		PZ8031		
Sampling Date		2016/11/05 08:00		
COC Number		510054-07-01		
	<b>UNITS</b>	<b>22E-BH16-6-3</b>	<b>RDL</b>	<b>QC Batch</b>
<b>Polycyclic Aromatics</b>				
Naphthalene	mg/kg	<0.050	0.050	8469437
2-Methylnaphthalene	mg/kg	<0.050	0.050	8469437
Acenaphthylene	mg/kg	<0.050	0.050	8469437
Acenaphthene	mg/kg	<0.050	0.050	8469437
Fluorene	mg/kg	<0.050	0.050	8469437
Phenanthrene	mg/kg	<0.050	0.050	8469437
Anthracene	mg/kg	<0.050	0.050	8469437
Fluoranthene	mg/kg	<0.050	0.050	8469437
Pyrene	mg/kg	<0.050	0.050	8469437
Benzo(a)anthracene	mg/kg	<0.050	0.050	8469437
Chrysene	mg/kg	<0.050	0.050	8469437
Benzo(b&j)fluoranthene	mg/kg	<0.050	0.050	8469437
Benzo(b)fluoranthene	mg/kg	<0.050	0.050	8469437
Benzo(k)fluoranthene	mg/kg	<0.050	0.050	8469437
Benzo(a)pyrene	mg/kg	<0.050	0.050	8469437
Indeno(1,2,3-cd)pyrene	mg/kg	<0.050	0.050	8469437
Dibenz(a,h)anthracene	mg/kg	<0.050	0.050	8469437
Benzo(g,h,i)perylene	mg/kg	<0.050	0.050	8469437
Low Molecular Weight PAH's	mg/kg	<0.050	0.050	8466392
High Molecular Weight PAH's	mg/kg	<0.050	0.050	8466392
Total PAH	mg/kg	<0.050	0.050	8466392
<b>Calculated Parameters</b>				
LEPH (C10-C19 less PAH)	mg/kg	<100	100	8466394
HEPH (C19-C32 less PAH)	mg/kg	<100	100	8466394
<b>Hydrocarbons</b>				
EPH (C10-C19)	mg/kg	<100	100	8469433
EPH (C19-C32)	mg/kg	<100	100	8469433
<b>Surrogate Recovery (%)</b>				
D10-ANTHRACENE (sur.)	%	81		8469437
D8-ACENAPHTHYLENE (sur.)	%	74		8469437
RDL = Reportable Detection Limit				

Maxxam Job #: B6A0697  
Report Date: 2016/11/16

SNC LAVALIN ENVIRONMENT INC.  
Client Project #: 640752  
Site Location: Watson Lake Airport  
Your P.O. #: 700365225  
Sampler Initials: MLC

**LEPH & HEPH WITH PAH FOR CSR IN SOIL (SOIL)**

Maxxam ID		PZ8031		
Sampling Date		2016/11/05 08:00		
COC Number		510054-07-01		
	<b>UNITS</b>	<b>22E-BH16-6-3</b>	<b>RDL</b>	<b>QC Batch</b>
D8-NAPHTHALENE (sur.)	%	71		8469437
TERPHENYL-D14 (sur.)	%	64		8469437
O-TERPHENYL (sur.)	%	93		8469433
RDL = Reportable Detection Limit				



Maxxam Job #: B6A0697  
Report Date: 2016/11/16

SNC LAVALIN ENVIRONMENT INC.  
Client Project #: 640752  
Site Location: Watson Lake Airport  
Your P.O. #: 700365225  
Sampler Initials: MLC

### GENERAL COMMENTS

Each temperature is the average of up to three cooler temperatures taken at receipt

Package 1	2.7°C
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**Results relate only to the items tested.**

Maxxam Job #: B6A0697  
Report Date: 2016/11/16

**QUALITY ASSURANCE REPORT**

SNC LAVALIN ENVIRONMENT INC.  
Client Project #: 640752  
Site Location: Watson Lake Airport  
Your P.O. #: 700365225  
Sampler Initials: MLC

QC Batch	Parameter	Date	Matrix Spike		Spiked Blank		Method Blank		RPD	
			% Recovery	QC Limits	% Recovery	QC Limits	Value	UNITS	Value (%)	QC Limits
8468163	1,4-Difluorobenzene (sur.)	2016/11/12	101	60 - 140	97	60 - 140	98	%		
8468163	4-Bromofluorobenzene (sur.)	2016/11/12	102	70 - 140	107	70 - 140	102	%		
8468163	D10-ETHYLBENZENE (sur.)	2016/11/12	106	60 - 130	89	60 - 130	98	%		
8468163	D4-1,2-Dichloroethane (sur.)	2016/11/12	114	60 - 140	106	60 - 140	112	%		
8469433	O-TERPHENYL (sur.)	2016/11/14	91	50 - 130	92	50 - 130	90	%		
8469437	D10-ANTHRACENE (sur.)	2016/11/14	81	60 - 130	87	60 - 130	87	%		
8469437	D8-ACENAPHTHYLENE (sur.)	2016/11/14	78	50 - 130	81	50 - 130	81	%		
8469437	D8-NAPHTHALENE (sur.)	2016/11/14	73	50 - 130	80	50 - 130	82	%		
8469437	TERPHENYL-D14 (sur.)	2016/11/14	68	60 - 130	74	60 - 130	72	%		
8467188	Moisture	2016/11/11					<0.30	%	1.5	20
8468163	Benzene	2016/11/13	124	60 - 140	100	60 - 140	<0.0050	mg/kg	NC	40
8468163	Ethylbenzene	2016/11/13	121	60 - 140	103	60 - 140	<0.010	mg/kg	NC	40
8468163	m & p-Xylene	2016/11/13	116	60 - 140	100	60 - 140	<0.040	mg/kg	NC	40
8468163	Methyl-tert-butylether (MTBE)	2016/11/13					<0.10	mg/kg	NC	40
8468163	o-Xylene	2016/11/13	105	60 - 140	90	60 - 140	<0.040	mg/kg	NC	40
8468163	Styrene	2016/11/13					<0.030	mg/kg	NC	40
8468163	Toluene	2016/11/13	117	60 - 140	100	60 - 140	<0.020	mg/kg	NC	40
8468163	VH C6-C10	2016/11/13			70	60 - 140	<10	mg/kg	NC	40
8468163	Xylenes (Total)	2016/11/13					<0.040	mg/kg	NC	40
8469433	EPH (C10-C19)	2016/11/14	95	50 - 130	97	50 - 130	<100	mg/kg	NC	40
8469433	EPH (C19-C32)	2016/11/14	97	50 - 130	97	50 - 130	<100	mg/kg	NC	40
8469437	2-Methylnaphthalene	2016/11/14	74	50 - 130	80	50 - 130	<0.050	mg/kg	NC	50
8469437	Acenaphthene	2016/11/14	76	50 - 130	81	50 - 130	<0.050	mg/kg	NC	50
8469437	Acenaphthylene	2016/11/14	74	50 - 130	78	50 - 130	<0.050	mg/kg	NC	50
8469437	Anthracene	2016/11/14	75	60 - 130	82	60 - 130	<0.050	mg/kg	NC	50
8469437	Benzo(a)anthracene	2016/11/14	72	60 - 130	75	60 - 130	<0.050	mg/kg	NC	50
8469437	Benzo(a)pyrene	2016/11/14	71	60 - 130	74	60 - 130	<0.050	mg/kg	NC	50
8469437	Benzo(b&j)fluoranthene	2016/11/14	76	60 - 130	80	60 - 130	<0.050	mg/kg	NC	50
8469437	Benzo(b)fluoranthene	2016/11/14	74	60 - 130	77	60 - 130	<0.050	mg/kg	NC	50
8469437	Benzo(g,h,i)perylene	2016/11/14	68	60 - 130	68	60 - 130	<0.050	mg/kg	NC	50

Maxxam Job #: B6A0697  
Report Date: 2016/11/16

**QUALITY ASSURANCE REPORT(CONT'D)**

SNC LAVALIN ENVIRONMENT INC.  
Client Project #: 640752  
Site Location: Watson Lake Airport  
Your P.O. #: 700365225  
Sampler Initials: MLC

QC Batch	Parameter	Date	Matrix Spike		Spiked Blank		Method Blank		RPD	
			% Recovery	QC Limits	% Recovery	QC Limits	Value	UNITS	Value (%)	QC Limits
8469437	Benzo(k)fluoranthene	2016/11/14	74	60 - 130	81	60 - 130	<0.050	mg/kg	NC	50
8469437	Chrysene	2016/11/14	75	60 - 130	79	60 - 130	<0.050	mg/kg	NC	50
8469437	Dibenz(a,h)anthracene	2016/11/14	69	60 - 130	70	60 - 130	<0.050	mg/kg	NC	50
8469437	Fluoranthene	2016/11/14	74	60 - 130	81	60 - 130	<0.050	mg/kg	NC	50
8469437	Fluorene	2016/11/14	74	50 - 130	77	50 - 130	<0.050	mg/kg	NC	50
8469437	Indeno(1,2,3-cd)pyrene	2016/11/14	70	60 - 130	71	60 - 130	<0.050	mg/kg	NC	50
8469437	Naphthalene	2016/11/14	72	50 - 130	79	50 - 130	<0.050	mg/kg	NC	50
8469437	Phenanthrene	2016/11/14	71	60 - 130	77	60 - 130	<0.050	mg/kg	NC	50
8469437	Pyrene	2016/11/14	74	60 - 130	81	60 - 130	<0.050	mg/kg	NC	50

Duplicate: Paired analysis of a separate portion of the same sample. Used to evaluate the variance in the measurement.

Matrix Spike: A sample to which a known amount of the analyte of interest has been added. Used to evaluate sample matrix interference.

Spiked Blank: A blank matrix sample to which a known amount of the analyte, usually from a second source, has been added. Used to evaluate method accuracy.

Method Blank: A blank matrix containing all reagents used in the analytical procedure. Used to identify laboratory contamination.

Surrogate: A pure or isotopically labeled compound whose behavior mirrors the analytes of interest. Used to evaluate extraction efficiency.

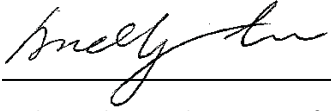
NC (Duplicate RPD): The duplicate RPD was not calculated. The concentration in the sample and/or duplicate was too low to permit a reliable RPD calculation (one or both samples < 5x RDL).

Maxxam Job #: B6A0697  
Report Date: 2016/11/16

SNC LAVALIN ENVIRONMENT INC.  
Client Project #: 640752  
Site Location: Watson Lake Airport  
Your P.O. #: 700365225  
Sampler Initials: MLC

### VALIDATION SIGNATURE PAGE

The analytical data and all QC contained in this report were reviewed and validated by the following individual(s).



Andy Lu, Ph.D., P.Chem., Scientific Specialist

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Maxxam has procedures in place to guard against improper use of the electronic signature and have the required "signatories", as per section 5.10.2 of ISO/IEC 17025:2005(E), signing the reports. For Service Group specific validation please refer to the Validation Signature Page.



Maxxam Analytics International Corporation o/a Maxxam Analytics  
 4606 Canada Way, Burnaby, British Columbia Canada V5G 1K5 Tel: (604) 734 7276 Toll-free: 800-563-6266 Fax: (604) 731 2386 www.maxxam.ca

**INVOICE TO:**

Company Name: #1756 PUBLIC WORKS & GOVERNMENT SERVICE  
 Contact Name: Robert Price  
 Address: 641- 800 BURNARD STREET  
 VANCOUVER BC V6Z 2V8  
 Phone: (604) 775-6810 Fax: (604) 775-6650  
 Email: robert.price@pwgsc-tpsgc.gc.ca

**Report Information**

Company Name: #26479 SNC LAVALIN ENVIRONMENT INC.  
 Contact Name: Michael Chao ; Marta Rosa  
 Address: 8648 COMMERCE COURT  
 BURNABY BC V5A 4N6  
 Phone: (604) 515-5151 Fax:  
 Email: Michael.Chao@snc-lavalin.com ; marta.rosa@snc-lavalin.com

**Project Information**

Quotation #: B61631  
 P.O. #: Pending  
 Project #: 640752  
 Project Name: AEC 22E  
 Site #: Watson Lake Airport  
 Sampled By: MLC



B6A0697\_COC

**Only**

Bottle Order #: 510054  
 Project Manager: Samantha Fregien

**Regulatory Criteria**

Yukon CSR Soil

**Special Instructions**

Regulated Drinking Water ? (Y/N)	Metals Field Filtered ? (Y/N)	CSR BTEX/VPH	LEPH & HEPH with CSR PAH	CSR/CCME Diss. Metals in Water w/ CV Hg	CSR VOC + VPH	CSR/CCME Metals in Soil	Analysis Requested
		X	X				

**Turnaround Time (TAT) Required**

Please provide advance notice for rush projects

Regular (Standard) TAT (will be applied if Rush TAT is not specified)   
 Standard TAT = 5-7 Working days for most tests.  
 Please note: Standard TAT for certain tests such as BOD and Dioxins/Furans are > 5 days - contact your Project Manager for details.

Job Specific Rush TAT (if applies to entire submission)  
 Date Required: \_\_\_\_\_ Time Required: \_\_\_\_\_  
 Rush Confirmation Number: \_\_\_\_\_ (call lab for #)

Note: For regulated drinking water samples - please use the Drinking Water Chain of Custody Form

Samples must be kept cool (< 10°C) from time of sampling until delivery to maxxam

Sample Barcode Label	Sample (Location) Identification	Date Sampled	Time Sampled	Matrix	Regulated Drinking Water ? (Y/N)	Metals Field Filtered ? (Y/N)	CSR BTEX/VPH	LEPH & HEPH with CSR PAH	CSR/CCME Diss. Metals in Water w/ CV Hg	CSR VOC + VPH	CSR/CCME Metals in Soil	Analysis Requested
1	22E-BH16-6-3	16/11/05	8:00	Soil			X	X				
2												
3												
4												
5												
6												
7												
8												
9												
10												

# of Bottles: 2  
 Comments:

RECEIVED IN WHITEHORSE  
 BY: Syom@0930  
 2016-11-08  
 Cooler #  
 TEMP: 3 | 2 | 13 → 1  
 \*\*

\*\* RELINQUISHED BY: (Signature/Print)  
Michael Chao  
 Date: (YY/MM/DD) 16/11/06  
 Time: 17:00

RECEIVED BY: (Signature/Print)  
Laurel Berrier  
 Date: (YY/MM/DD) 2016/11/09  
 Time: 13:00

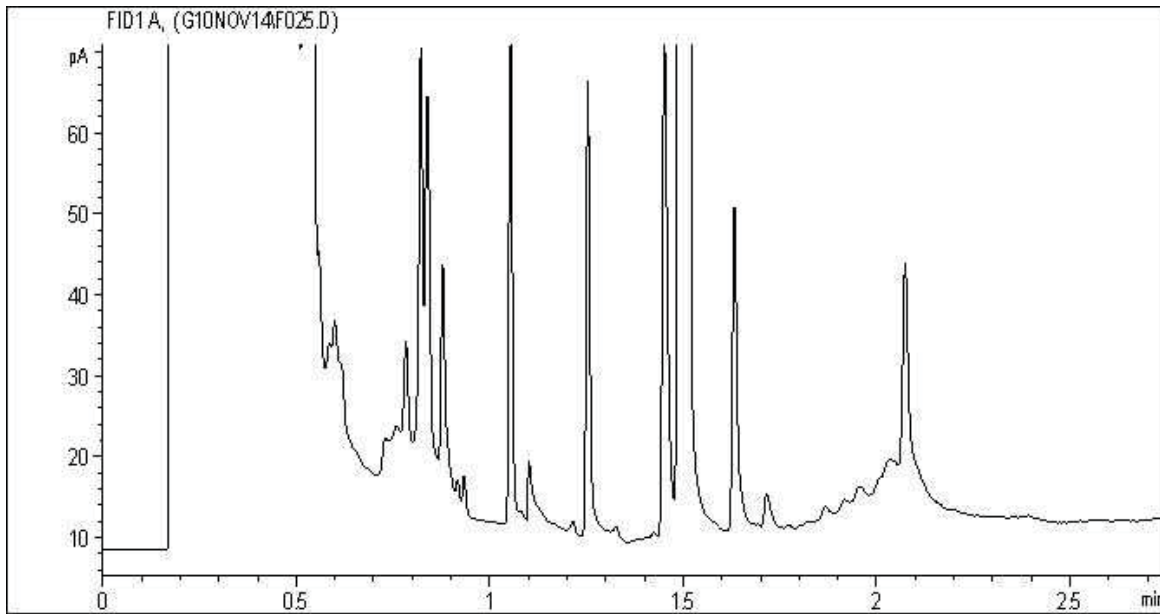
# Jars used and not submitted

**Lab Use Only**

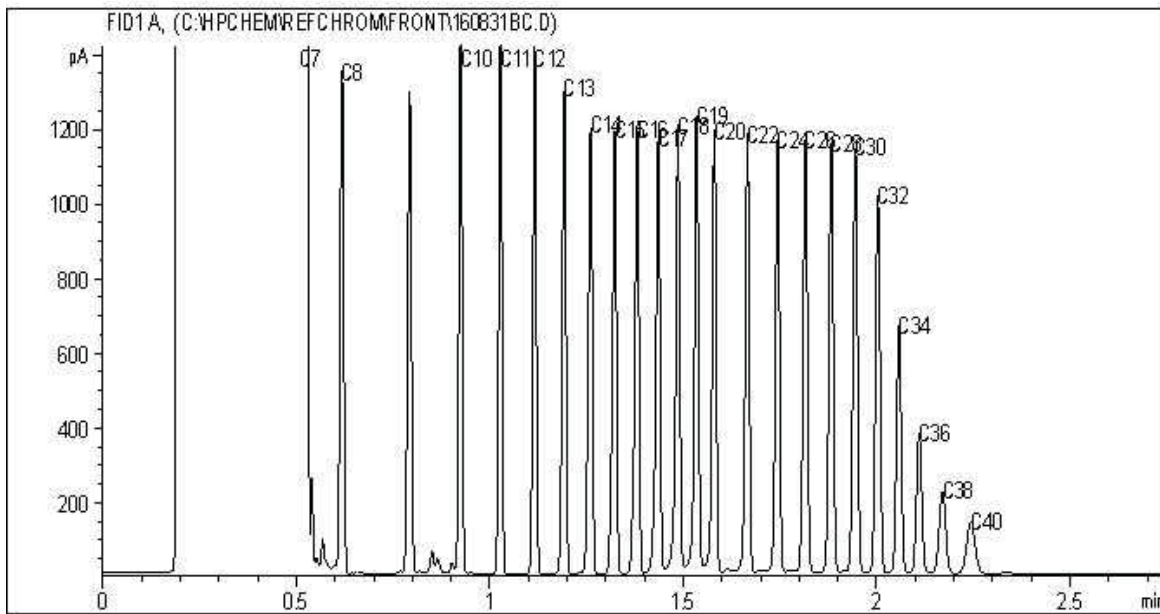
Time Sensitive   
 Temperature (°C) on Receipt: 11  
 Custom Intact on Cooler?  Yes  No

\* IT IS THE RESPONSIBILITY OF THE RELINQUISHER TO ENSURE THE ACCURACY OF THE CHAIN OF CUSTODY RECORD. AN INCOMPLETE CHAIN OF CUSTODY MAY RESULT IN ANALYTICAL TAT DELAYS.

EPH in Soil by GC/FID Chromatogram



Carbon Range Distribution - Reference Chromatogram



TYPICAL PRODUCT CARBON NUMBER RANGES

Gasoline:	C4 - C12	Diesel:	C8 - C22
Varsol:	C8 - C12	Lubricating oils:	C20 - C40

Note: This information is provided for reference purposes only. Should detailed chemist interpretation or fingerprinting be required, please contact the laboratory.

**Attention: Michael Chao**

SNC LAVALIN ENVIRONMENT INC.  
8648 COMMERCE COURT  
BURNABY, BC  
CANADA V5A 4N6

Your P.O. #: 700365230  
Your Project #: 640752  
Site#: APEC 22D  
Site Location: WATSON LAKE AIRPORT  
Your C.O.C. #: 513078-03-01

**Report Date: 2016/12/28**  
Report #: R2323997  
Version: 1 - Final

**CERTIFICATE OF ANALYSIS**

**MAXXAM JOB #: B6B2798**

**Received: 2016/12/19, 09:25**

Sample Matrix: GROUND WATER  
# Samples Received: 4

Analyses	Date		Laboratory Method	Analytical Method
	Quantity	Date Extracted		
Hardness (calculated as CaCO <sub>3</sub> )	4	N/A	2016/12/23 BBY WI-00033	Auto Calc
Mercury (Dissolved) by CVAf	4	N/A	2016/12/23 BBY7SOP-00015	BCMOE BCLM Oct2013 m
EPH in Water when PAH required	4	2016/12/21	2016/12/21 BBY8SOP-00029	BCMOE EPH w 12/00 m
Elements by CRC ICPMS (dissolved)	4	N/A	2016/12/23 BBY7SOP-00002	EPA 6020B R2 m
PAH in Water by GC/MS (SIM)	4	2016/12/21	2016/12/22 BBY8SOP-00021	EPA 8270d R4 m
Total LMW, HMW, Total PAH Calc	4	N/A	2016/12/22 BBY WI-00033	Auto Calc
Filter and HNO <sub>3</sub> Preserve for Metals	3	N/A	2016/12/22 BBY7 WI-00004	BCMOE Reqs 08/14
Filter and HNO <sub>3</sub> Preserve for Metals	1	N/A	2016/12/23 BBY7 WI-00004	BCMOE Reqs 08/14
EPH less PAH in Water by GC/FID	4	N/A	2016/12/22 BBY WI-00033	Auto Calc
VOCs, VH, F1, LH in Water by HS GC/MS	2	2016/12/22	2016/12/23 BBY8SOP-00009	EPA 8260c R3 m
VOCs, VH, F1, LH in Water by HS GC/MS	1	2016/12/22	2016/12/28 BBY8SOP-00009	EPA 8260c R3 m
Volatile HC-BTEX	3	N/A	2016/12/28 BBY WI-00033	Auto Calc

**Remarks:**

Maxxam Analytics' laboratories are accredited to ISO/IEC 17025:2005 for specific parameters on scopes of accreditation. Unless otherwise noted, procedures used by Maxxam are based upon recognized Provincial, Federal or US method compendia such as CCME, MDDELCC, EPA, APHA.

All work recorded herein has been done in accordance with procedures and practices ordinarily exercised by professionals in Maxxam's profession using accepted testing methodologies, quality assurance and quality control procedures (except where otherwise agreed by the client and Maxxam in writing). All data is in statistical control and has met quality control and method performance criteria unless otherwise noted. All method blanks are reported: unless indicated otherwise, associated sample data are not blank corrected.

Maxxam Analytics' liability is limited to the actual cost of the requested analyses, unless otherwise agreed in writing. There is no other warranty expressed or implied. Maxxam has been retained to provide analysis of samples provided by the Client using the testing methodology referenced in this report. Interpretation and use of test results are the sole responsibility of the Client and are not within the scope of services provided by Maxxam, unless otherwise agreed in writing.

Solid sample results, except biota, are based on dry weight unless otherwise indicated. Organic analyses are not recovery corrected except for isotope dilution methods. Results relate to samples tested.

This Certificate shall not be reproduced except in full, without the written approval of the laboratory.

Reference Method suffix "m" indicates test methods incorporate validated modifications from specific reference methods to improve performance.

\* RPDs calculated using raw data. The rounding of final results may result in the apparent difference.



**Attention:Michael Chao**

SNC LAVALIN ENVIRONMENT INC.  
8648 COMMERCE COURT  
BURNABY, BC  
CANADA V5A 4N6

Your P.O. #: 700365230  
Your Project #: 640752  
Site#: APEC 22D  
Site Location: WATSON LAKE AIRPORT  
Your C.O.C. #: 513078-03-01

**Report Date: 2016/12/28**  
Report #: R2323997  
Version: 1 - Final

**CERTIFICATE OF ANALYSIS**

**MAXXAM JOB #: B6B2798**

**Received: 2016/12/19, 09:25**

Encryption Key

Please direct all questions regarding this Certificate of Analysis to your Project Manager.  
Samantha Fregien, Project Manager  
Email: SFregien@maxxam.ca  
Phone# (604)639-8418

=====  
Maxxam has procedures in place to guard against improper use of the electronic signature and have the required "signatories", as per section 5.10.2 of ISO/IEC 17025:2005(E), signing the reports. For Service Group specific validation please refer to the Validation Signature Page.



Maxxam Job #: B6B2798  
Report Date: 2016/12/28

SNC LAVALIN ENVIRONMENT INC.  
Client Project #: 640752  
Site Location: WATSON LAKE AIRPORT  
Your P.O. #: 700365230  
Sampler Initials: MLC

**RESULTS OF CHEMICAL ANALYSES OF GROUND WATER**

Maxxam ID		QH0523	QH0524	QH0525	QH0526	
Sampling Date		2016/12/16 11:00	2016/12/16 11:58	2016/12/16 12:43	2016/12/16	
COC Number		513078-03-01	513078-03-01	513078-03-01	513078-03-01	
	<b>UNITS</b>	<b>22D-MW16-7-161216</b>	<b>22D-MW16-8-161216</b>	<b>22D-MW16-9-161216</b>	<b>22D-MW16-B-161216</b>	<b>QC Batch</b>

<b>Calculated Parameters</b>						
Filter and HNO3 Preservation	N/A	FIELD	FIELD	FIELD	FIELD	ONSITE

Maxxam Job #: B6B2798  
Report Date: 2016/12/28

SNC LAVALIN ENVIRONMENT INC.  
Client Project #: 640752  
Site Location: WATSON LAKE AIRPORT  
Your P.O. #: 700365230  
Sampler Initials: MLC

**LEPH & HEPH WITH CSR/CCME PAH IN WATER (GROUND WATER)**

Maxxam ID		QH0523	QH0524	QH0525	QH0526		
Sampling Date		2016/12/16 11:00	2016/12/16 11:58	2016/12/16 12:43	2016/12/16		
COC Number		513078-03-01	513078-03-01	513078-03-01	513078-03-01		
	<b>UNITS</b>	<b>22D-MW16-7-161216</b>	<b>22D-MW16-8-161216</b>	<b>22D-MW16-9-161216</b>	<b>22D-MW16-B-161216</b>	<b>RDL</b>	<b>QC Batch</b>

<b>Polycyclic Aromatics</b>							
Low Molecular Weight PAH's	ug/L	<0.24	<0.24	<0.24	<0.24	0.24	8507156
High Molecular Weight PAH's	ug/L	<0.050	<0.050	<0.050	<0.050	0.050	8507156
Total PAH	ug/L	<0.24	<0.24	<0.24	<0.24	0.24	8507156
Naphthalene	ug/L	<0.10	<0.10	<0.10	<0.10	0.10	8509571
2-Methylnaphthalene	ug/L	<0.10	<0.10	<0.10	<0.10	0.10	8509571
Quinoline	ug/L	<0.24	<0.24	<0.24	<0.24	0.24	8509571
Acenaphthylene	ug/L	<0.050	<0.050	<0.050	<0.050	0.050	8509571
Acenaphthene	ug/L	<0.050	<0.050	<0.050	<0.050	0.050	8509571
Fluorene	ug/L	<0.050	<0.050	<0.050	<0.050	0.050	8509571
Phenanthrene	ug/L	<0.050	<0.050	<0.050	<0.050	0.050	8509571
Anthracene	ug/L	<0.010	<0.010	<0.010	<0.010	0.010	8509571
Acridine	ug/L	<0.050	<0.050	<0.050	<0.050	0.050	8509571
Fluoranthene	ug/L	<0.020	<0.020	<0.020	<0.020	0.020	8509571
Pyrene	ug/L	<0.020	<0.020	<0.020	<0.020	0.020	8509571
Benzo(a)anthracene	ug/L	<0.010	<0.010	<0.010	<0.010	0.010	8509571
Chrysene	ug/L	<0.050	<0.050	<0.050	<0.050	0.050	8509571
Benzo(b&j)fluoranthene	ug/L	<0.050	<0.050	<0.050	<0.050	0.050	8509571
Benzo(k)fluoranthene	ug/L	<0.050	<0.050	<0.050	<0.050	0.050	8509571
Benzo(a)pyrene	ug/L	<0.0090	<0.0090	<0.0090	<0.0090	0.0090	8509571
Indeno(1,2,3-cd)pyrene	ug/L	<0.050	<0.050	<0.050	<0.050	0.050	8509571
Dibenz(a,h)anthracene	ug/L	<0.050	<0.050	<0.050	<0.050	0.050	8509571
Benzo(g,h,i)perylene	ug/L	<0.050	<0.050	<0.050	<0.050	0.050	8509571
<b>Calculated Parameters</b>							
LEPH (C10-C19 less PAH)	mg/L	<0.20	<0.20	0.46	<0.20	0.20	8507157
HEPH (C19-C32 less PAH)	mg/L	<0.20	<0.20	<0.20	<0.20	0.20	8507157
<b>Ext. Pet. Hydrocarbon</b>							
EPH (C10-C19)	mg/L	<0.20	<0.20	0.46	<0.20	0.20	8509581
EPH (C19-C32)	mg/L	<0.20	<0.20	<0.20	<0.20	0.20	8509581
<b>Surrogate Recovery (%)</b>							
O-TERPHENYL (sur.)	%	95	96	94	96		8509581
RDL = Reportable Detection Limit							

Maxxam Job #: B6B2798  
Report Date: 2016/12/28

SNC LAVALIN ENVIRONMENT INC.  
Client Project #: 640752  
Site Location: WATSON LAKE AIRPORT  
Your P.O. #: 700365230  
Sampler Initials: MLC

**LEPH & HEPH WITH CSR/CCME PAH IN WATER (GROUND WATER)**

Maxxam ID		QH0523	QH0524	QH0525	QH0526		
Sampling Date		2016/12/16 11:00	2016/12/16 11:58	2016/12/16 12:43	2016/12/16		
COC Number		513078-03-01	513078-03-01	513078-03-01	513078-03-01		
	<b>UNITS</b>	<b>22D-MW16-7-161216</b>	<b>22D-MW16-8-161216</b>	<b>22D-MW16-9-161216</b>	<b>22D-MW16-B-161216</b>	<b>RDL</b>	<b>QC Batch</b>
D10-ANTHRACENE (sur.)	%	99	103	96	99		8509571
D8-ACENAPHTHYLENE (sur.)	%	98	98	95	97		8509571
D8-NAPHTHALENE (sur.)	%	99	97	94	94		8509571
D9-Acridine	%	95	98	94	96		8509571
TERPHENYL-D14 (sur.)	%	72	73	71	71		8509571
RDL = Reportable Detection Limit							

Maxxam Job #: B6B2798  
Report Date: 2016/12/28

SNC LAVALIN ENVIRONMENT INC.  
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Your P.O. #: 700365230  
Sampler Initials: MLC

**CSR/CCME DISS. METALS IN WATER W/ CV HG (GROUND WATER)**

Maxxam ID		QH0523	QH0524	QH0525	QH0526		
Sampling Date		2016/12/16 11:00	2016/12/16 11:58	2016/12/16 12:43	2016/12/16		
COC Number		513078-03-01	513078-03-01	513078-03-01	513078-03-01		
	<b>UNITS</b>	<b>22D-MW16-7-161216</b>	<b>22D-MW16-8-161216</b>	<b>22D-MW16-9-161216</b>	<b>22D-MW16-B-161216</b>	<b>RDL</b>	<b>QC Batch</b>

<b>Misc. Inorganics</b>							
Dissolved Hardness (CaCO3)	mg/L	78.2	71.3	90.1	76.7	0.50	8507154
<b>Elements</b>							
Dissolved Mercury (Hg)	ug/L	<0.010	<0.010	<0.010	<0.010	0.010	8512222
<b>Dissolved Metals by ICPMS</b>							
Dissolved Arsenic (As)	ug/L	1.82	3.52	0.13	1.72	0.10	8508568
Dissolved Cadmium (Cd)	ug/L	0.016	<0.010	0.047	0.014	0.010	8508568
Dissolved Chromium (Cr)	ug/L	<1.0	<1.0	<1.0	<1.0	1.0	8508568
Dissolved Copper (Cu)	ug/L	<0.20	<0.20	<0.20	<0.20	0.20	8508568
Dissolved Lead (Pb)	ug/L	<0.20	<0.20	<0.20	<0.20	0.20	8508568
Dissolved Nickel (Ni)	ug/L	2.1	6.0	4.1	1.9	1.0	8508568
Dissolved Selenium (Se)	ug/L	<0.10	<0.10	0.24	<0.10	0.10	8508568
Dissolved Zinc (Zn)	ug/L	<5.0	<5.0	<5.0	<5.0	5.0	8508568
RDL = Reportable Detection Limit							

Maxxam Job #: B6B2798  
Report Date: 2016/12/28

SNC LAVALIN ENVIRONMENT INC.  
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Sampler Initials: MLC

**CSR VOC + VPH IN WATER (GROUND WATER)**

Maxxam ID		QH0523	QH0524	QH0526		
Sampling Date		2016/12/16 11:00	2016/12/16 11:58	2016/12/16		
COC Number		513078-03-01	513078-03-01	513078-03-01		
	<b>UNITS</b>	<b>22D-MW16-7-161216</b>	<b>22D-MW16-8-161216</b>	<b>22D-MW16-B-161216</b>	<b>RDL</b>	<b>QC Batch</b>

<b>Volatiles</b>						
VPH (VH6 to 10 - BTEX)	ug/L	<300	<300	<300	300	8507158
Chloromethane	ug/L	<1.0	<1.0	<1.0	1.0	8511269
Vinyl chloride	ug/L	<0.50	<0.50	<0.50	0.50	8511269
Chloroethane	ug/L	<1.0	<1.0	<1.0	1.0	8511269
Trichlorofluoromethane	ug/L	<4.0	<4.0	<4.0	4.0	8511269
1,1,2Trichloro-1,2,2Trifluoroethane	ug/L	<2.0	<2.0	<2.0	2.0	8511269
Dichlorodifluoromethane	ug/L	<2.0	<2.0	<2.0	2.0	8511269
1,1-dichloroethene	ug/L	<0.50	<0.50	<0.50	0.50	8511269
Dichloromethane	ug/L	<2.0	<2.0	<2.0	2.0	8511269
trans-1,2-dichloroethene	ug/L	<1.0	<1.0	<1.0	1.0	8511269
1,1-dichloroethane	ug/L	<0.50	<0.50	<0.50	0.50	8511269
cis-1,2-dichloroethene	ug/L	<1.0	<1.0	<1.0	1.0	8511269
Chloroform	ug/L	<1.0	<1.0	<1.0	1.0	8511269
1,1,1-trichloroethane	ug/L	<0.50	<0.50	<0.50	0.50	8511269
1,2-dichloroethane	ug/L	<0.50	<0.50	<0.50	0.50	8511269
Carbon tetrachloride	ug/L	<0.50	<0.50	<0.50	0.50	8511269
Benzene	ug/L	<0.40	<0.40	<0.40	0.40	8511269
Methyl-tert-butylether (MTBE)	ug/L	<4.0	<4.0	<4.0	4.0	8511269
1,2-dichloropropane	ug/L	<0.50	<0.50	<0.50	0.50	8511269
cis-1,3-dichloropropene	ug/L	<1.0	<1.0	<1.0	1.0	8511269
trans-1,3-dichloropropene	ug/L	<1.0	<1.0	<1.0	1.0	8511269
Bromomethane	ug/L	<1.0	<1.0	<1.0	1.0	8511269
1,1,2-trichloroethane	ug/L	<0.50	<0.50	<0.50	0.50	8511269
Trichloroethene	ug/L	<0.50	<0.50	<0.50	0.50	8511269
Chlorodibromomethane	ug/L	<1.0	<1.0	<1.0	1.0	8511269
1,2-dibromoethane	ug/L	<0.20	<0.20	<0.20	0.20	8511269
Tetrachloroethene	ug/L	<0.50	<0.50	<0.50	0.50	8511269
Bromodichloromethane	ug/L	<1.0	<1.0	<1.0	1.0	8511269
Toluene	ug/L	<0.40	<0.40	<0.40	0.40	8511269
Ethylbenzene	ug/L	<0.40	<0.40	<0.40	0.40	8511269

RDL = Reportable Detection Limit

Maxxam Job #: B6B2798  
Report Date: 2016/12/28

SNC LAVALIN ENVIRONMENT INC.  
Client Project #: 640752  
Site Location: WATSON LAKE AIRPORT  
Your P.O. #: 700365230  
Sampler Initials: MLC

**CSR VOC + VPH IN WATER (GROUND WATER)**

Maxxam ID		QH0523	QH0524	QH0526		
Sampling Date		2016/12/16 11:00	2016/12/16 11:58	2016/12/16		
COC Number		513078-03-01	513078-03-01	513078-03-01		
	<b>UNITS</b>	<b>22D-MW16-7-161216</b>	<b>22D-MW16-8-161216</b>	<b>22D-MW16-B-161216</b>	<b>RDL</b>	<b>QC Batch</b>
m & p-Xylene	ug/L	<0.40	<0.40	<0.40	0.40	8511269
Bromoform	ug/L	<1.0	<1.0	<1.0	1.0	8511269
Styrene	ug/L	<0.50	<0.50	<0.50	0.50	8511269
o-Xylene	ug/L	<0.40	<0.40	<0.40	0.40	8511269
Xylenes (Total)	ug/L	<0.40	<0.40	<0.40	0.40	8511269
1,1,1,2-tetrachloroethane	ug/L	<0.50	<0.50	<0.50	0.50	8511269
1,1,2,2-tetrachloroethane	ug/L	<0.50	<0.50	<0.50	0.50	8511269
1,2-dichlorobenzene	ug/L	<0.50	<0.50	<0.50	0.50	8511269
1,3-dichlorobenzene	ug/L	<0.50	<0.50	<0.50	0.50	8511269
1,4-dichlorobenzene	ug/L	<0.50	<0.50	<0.50	0.50	8511269
Chlorobenzene	ug/L	<0.50	<0.50	<0.50	0.50	8511269
1,2,3-trichlorobenzene	ug/L	<2.0	<2.0	<2.0	2.0	8511269
1,2,4-trichlorobenzene	ug/L	<2.0	<2.0	<2.0	2.0	8511269
Hexachlorobutadiene	ug/L	<0.50	<0.50	<0.50	0.50	8511269
VH C6-C10	ug/L	<300	<300	<300	300	8511269
<b>Surrogate Recovery (%)</b>						
1,4-Difluorobenzene (sur.)	%	99	100	97		8511269
4-Bromofluorobenzene (sur.)	%	90	95	89		8511269
D4-1,2-Dichloroethane (sur.)	%	93	95	91		8511269
RDL = Reportable Detection Limit						

Maxxam Job #: B6B2798  
Report Date: 2016/12/28

SNC LAVALIN ENVIRONMENT INC.  
Client Project #: 640752  
Site Location: WATSON LAKE AIRPORT  
Your P.O. #: 700365230  
Sampler Initials: MLC

### GENERAL COMMENTS

Each temperature is the average of up to three cooler temperatures taken at receipt

Package 1	2.0°C
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**Results relate only to the items tested.**

Maxxam Job #: B6B2798  
Report Date: 2016/12/28

**QUALITY ASSURANCE REPORT**

SNC LAVALIN ENVIRONMENT INC.  
Client Project #: 640752  
Site Location: WATSON LAKE AIRPORT  
Your P.O. #: 700365230  
Sampler Initials: MLC

QC Batch	Parameter	Date	Matrix Spike		Spiked Blank		Method Blank		RPD	
			% Recovery	QC Limits	% Recovery	QC Limits	Value	UNITS	Value (%)	QC Limits
8509571	D10-ANTHRACENE (sur.)	2016/12/22	96	60 - 130	103	60 - 130	103	%		
8509571	D8-ACENAPHTHYLENE (sur.)	2016/12/22	127	50 - 130	99	50 - 130	97	%		
8509571	D8-NAPHTHALENE (sur.)	2016/12/22	53	50 - 130	98	50 - 130	98	%		
8509571	D9-Acridine	2016/12/22	93	50 - 130	96	50 - 130	98	%		
8509571	TERPHENYL-D14 (sur.)	2016/12/22	62	60 - 130	83	60 - 130	86	%		
8509581	O-TERPHENYL (sur.)	2016/12/21	95	50 - 130	96	50 - 130	97	%		
8511269	1,4-Difluorobenzene (sur.)	2016/12/23	106	70 - 130	99	70 - 130	101	%		
8511269	4-Bromofluorobenzene (sur.)	2016/12/23	97	70 - 130	92	70 - 130	87	%		
8511269	D4-1,2-Dichloroethane (sur.)	2016/12/23	99	70 - 130	92	70 - 130	90	%		
8508568	Dissolved Arsenic (As)	2016/12/23	97	80 - 120	98	80 - 120	<0.10	ug/L	2.7	20
8508568	Dissolved Cadmium (Cd)	2016/12/23	99	80 - 120	101	80 - 120	<0.010	ug/L		
8508568	Dissolved Chromium (Cr)	2016/12/23	96	80 - 120	104	80 - 120	<1.0	ug/L	NC	20
8508568	Dissolved Copper (Cu)	2016/12/23	96	80 - 120	100	80 - 120	<0.20	ug/L	1.9	20
8508568	Dissolved Lead (Pb)	2016/12/23	101	80 - 120	107	80 - 120	<0.20	ug/L	3.3	20
8508568	Dissolved Nickel (Ni)	2016/12/23	NC	80 - 120	102	80 - 120	<1.0	ug/L		
8508568	Dissolved Selenium (Se)	2016/12/23	100	80 - 120	98	80 - 120	<0.10	ug/L		
8508568	Dissolved Zinc (Zn)	2016/12/23	NC	80 - 120	110	80 - 120	<5.0	ug/L	NC	20
8509571	2-Methylnaphthalene	2016/12/22	NC	50 - 130	101	50 - 130	<0.10	ug/L	2.4	40
8509571	Acenaphthene	2016/12/22	105	50 - 130	107	50 - 130	<0.050	ug/L	NC	40
8509571	Acenaphthylene	2016/12/22	103	50 - 130	106	50 - 130	<0.050	ug/L	NC	40
8509571	Acridine	2016/12/22	96	50 - 130	97	50 - 130	<0.050	ug/L	NC	40
8509571	Anthracene	2016/12/22	104	60 - 130	110	60 - 130	<0.010	ug/L	NC	40
8509571	Benzo(a)anthracene	2016/12/22	114	60 - 130	117	60 - 130	<0.010	ug/L	NC	40
8509571	Benzo(a)pyrene	2016/12/22	106	60 - 130	113	60 - 130	<0.0090	ug/L	NC	40
8509571	Benzo(b&j)fluoranthene	2016/12/22	109	60 - 130	115	60 - 130	<0.050	ug/L	NC	40
8509571	Benzo(g,h,i)perylene	2016/12/22	97	60 - 130	103	60 - 130	<0.050	ug/L	NC	40
8509571	Benzo(k)fluoranthene	2016/12/22	113	60 - 130	115	60 - 130	<0.050	ug/L	NC	40
8509571	Chrysene	2016/12/22	117	60 - 130	121	60 - 130	<0.050	ug/L	NC	40
8509571	Dibenz(a,h)anthracene	2016/12/22	110	60 - 130	117	60 - 130	<0.050	ug/L	NC	40
8509571	Fluoranthene	2016/12/22	101	60 - 130	98	60 - 130	<0.020	ug/L	NC	40



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**QUALITY ASSURANCE REPORT(CONT'D)**

SNC LAVALIN ENVIRONMENT INC.  
Client Project #: 640752  
Site Location: WATSON LAKE AIRPORT  
Your P.O. #: 700365230  
Sampler Initials: MLC

QC Batch	Parameter	Date	Matrix Spike		Spiked Blank		Method Blank		RPD	
			% Recovery	QC Limits	% Recovery	QC Limits	Value	UNITS	Value (%)	QC Limits
8509571	Fluorene	2016/12/22	108	50 - 130	103	50 - 130	<0.050	ug/L	NC	40
8509571	Indeno(1,2,3-cd)pyrene	2016/12/22	107	60 - 130	114	60 - 130	<0.050	ug/L	NC	40
8509571	Naphthalene	2016/12/22	NC	50 - 130	106	50 - 130	<0.10	ug/L	3.3	40
8509571	Phenanthrene	2016/12/22	102	60 - 130	104	60 - 130	<0.050	ug/L	NC	40
8509571	Pyrene	2016/12/22	100	60 - 130	100	60 - 130	<0.020	ug/L	NC	40
8509571	Quinoline	2016/12/22	126	50 - 130	117	50 - 130	<0.24	ug/L	NC	40
8509581	EPH (C10-C19)	2016/12/21	NC	50 - 130	97	50 - 130	<0.20	mg/L	0.82	30
8509581	EPH (C19-C32)	2016/12/21	99	50 - 130	96	50 - 130	<0.20	mg/L	NC	30
8511269	1,1,1,2-tetrachloroethane	2016/12/23	101	70 - 130	101	70 - 130	<0.50	ug/L	NC	30
8511269	1,1,1-trichloroethane	2016/12/23	87	70 - 130	86	70 - 130	<0.50	ug/L	NC	30
8511269	1,1,2,2-tetrachloroethane	2016/12/23	90	70 - 130	91	70 - 130	<0.50	ug/L	NC	30
8511269	1,1,2Trichloro-1,2,2Trifluoroethane	2016/12/23					<2.0	ug/L	NC	30
8511269	1,1,2-trichloroethane	2016/12/23	86	70 - 130	82	70 - 130	<0.50	ug/L	NC	30
8511269	1,1-dichloroethane	2016/12/23	82	70 - 130	81	70 - 130	<0.50	ug/L	NC	30
8511269	1,1-dichloroethene	2016/12/23	82	70 - 130	81	70 - 130	<0.50	ug/L	NC	30
8511269	1,2,3-trichlorobenzene	2016/12/23	87	70 - 130	88	70 - 130	<2.0	ug/L	NC	30
8511269	1,2,4-trichlorobenzene	2016/12/23	90	70 - 130	87	70 - 130	<2.0	ug/L	NC	30
8511269	1,2-dibromoethane	2016/12/23	87	70 - 130	88	70 - 130	<0.20	ug/L	NC	30
8511269	1,2-dichlorobenzene	2016/12/23	91	70 - 130	92	70 - 130	<0.50	ug/L	NC	30
8511269	1,2-dichloroethane	2016/12/23	84	70 - 130	87	70 - 130	<0.50	ug/L	NC	30
8511269	1,2-dichloropropane	2016/12/23	84	70 - 130	89	70 - 130	<0.50	ug/L	NC	30
8511269	1,3-dichlorobenzene	2016/12/23	89	70 - 130	86	70 - 130	<0.50	ug/L	NC	30
8511269	1,4-dichlorobenzene	2016/12/23	91	70 - 130	87	70 - 130	<0.50	ug/L	NC	30
8511269	Benzene	2016/12/23	87	70 - 130	87	70 - 130	<0.40	ug/L	NC	30
8511269	Bromodichloromethane	2016/12/23	97	70 - 130	98	70 - 130	<1.0	ug/L	NC	30
8511269	Bromoform	2016/12/23	119	70 - 130	118	70 - 130	<1.0	ug/L	NC	30
8511269	Bromomethane	2016/12/23	79	60 - 140	71	60 - 140	<1.0	ug/L	NC	30
8511269	Carbon tetrachloride	2016/12/23	105	70 - 130	101	70 - 130	<0.50	ug/L	NC	30
8511269	Chlorobenzene	2016/12/23	86	70 - 130	89	70 - 130	<0.50	ug/L	NC	30
8511269	Chlorodibromomethane	2016/12/23	94	70 - 130	109	70 - 130	<1.0	ug/L	NC	30

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Report Date: 2016/12/28

**QUALITY ASSURANCE REPORT(CONT'D)**

SNC LAVALIN ENVIRONMENT INC.  
Client Project #: 640752  
Site Location: WATSON LAKE AIRPORT  
Your P.O. #: 700365230  
Sampler Initials: MLC

QC Batch	Parameter	Date	Matrix Spike		Spiked Blank		Method Blank		RPD	
			% Recovery	QC Limits	% Recovery	QC Limits	Value	UNITS	Value (%)	QC Limits
8511269	Chloroethane	2016/12/23	118	60 - 140	79	60 - 140	<1.0	ug/L	NC	30
8511269	Chloroform	2016/12/23	84	70 - 130	84	70 - 130	<1.0	ug/L	NC	30
8511269	Chloromethane	2016/12/23	83	60 - 140	82	60 - 140	<1.0	ug/L	NC	30
8511269	cis-1,2-dichloroethene	2016/12/23	83	70 - 130	80	70 - 130	<1.0	ug/L	NC	30
8511269	cis-1,3-dichloropropene	2016/12/23	94	70 - 130	91	70 - 130	<1.0	ug/L	NC	30
8511269	Dichlorodifluoromethane	2016/12/23	84	60 - 140	84	60 - 140	<2.0	ug/L	NC	30
8511269	Dichloromethane	2016/12/23	90	70 - 130	92	70 - 130	<2.0	ug/L	NC	30
8511269	Ethylbenzene	2016/12/23	88	70 - 130	86	70 - 130	<0.40	ug/L	NC	30
8511269	Hexachlorobutadiene	2016/12/23	89	70 - 130	87	70 - 130	<0.50	ug/L	NC	30
8511269	m & p-Xylene	2016/12/23	87	70 - 130	86	70 - 130	<0.40	ug/L	NC	30
8511269	Methyl-tert-butylether (MTBE)	2016/12/23	83	70 - 130	82	70 - 130	<4.0	ug/L	NC	30
8511269	o-Xylene	2016/12/23	87	70 - 130	88	70 - 130	<0.40	ug/L	NC	30
8511269	Styrene	2016/12/23	83	70 - 130	83	70 - 130	<0.50	ug/L	NC	30
8511269	Tetrachloroethene	2016/12/23	86	70 - 130	84	70 - 130	<0.50	ug/L	NC	30
8511269	Toluene	2016/12/23	84	70 - 130	84	70 - 130	<0.40	ug/L	NC	30
8511269	trans-1,2-dichloroethene	2016/12/23	82	70 - 130	81	70 - 130	<1.0	ug/L	NC	30
8511269	trans-1,3-dichloropropene	2016/12/23	62 (1)	70 - 130	61 (1)	70 - 130	<1.0	ug/L	NC	30
8511269	Trichloroethene	2016/12/23	85	70 - 130	84	70 - 130	<0.50	ug/L	NC	30
8511269	Trichlorofluoromethane	2016/12/23	103	60 - 140	102	60 - 140	<4.0	ug/L	NC	30
8511269	VH C6-C10	2016/12/23			80	70 - 130	<300	ug/L	NC	30
8511269	Vinyl chloride	2016/12/23	89	60 - 140	88	60 - 140	<0.50	ug/L	NC	30
8511269	Xylenes (Total)	2016/12/23					<0.40	ug/L	NC	30

Maxxam Job #: B6B2798  
Report Date: 2016/12/28

**QUALITY ASSURANCE REPORT(CONT'D)**

SNC LAVALIN ENVIRONMENT INC.  
Client Project #: 640752  
Site Location: WATSON LAKE AIRPORT  
Your P.O. #: 700365230  
Sampler Initials: MLC

QC Batch	Parameter	Date	Matrix Spike		Spiked Blank		Method Blank		RPD	
			% Recovery	QC Limits	% Recovery	QC Limits	Value	UNITS	Value (%)	QC Limits
8512222	Dissolved Mercury (Hg)	2016/12/23	101	80 - 120	101	80 - 120	<0.010	ug/L	NC	20

Duplicate: Paired analysis of a separate portion of the same sample. Used to evaluate the variance in the measurement.

Matrix Spike: A sample to which a known amount of the analyte of interest has been added. Used to evaluate sample matrix interference.

Spiked Blank: A blank matrix sample to which a known amount of the analyte, usually from a second source, has been added. Used to evaluate method accuracy.

Method Blank: A blank matrix containing all reagents used in the analytical procedure. Used to identify laboratory contamination.

Surrogate: A pure or isotopically labeled compound whose behavior mirrors the analytes of interest. Used to evaluate extraction efficiency.

NC (Matrix Spike): The recovery in the matrix spike was not calculated. The relative difference between the concentration in the parent sample and the spiked amount was too small to permit a reliable recovery calculation (matrix spike concentration was less than 2x that of the native sample concentration).

NC (Duplicate RPD): The duplicate RPD was not calculated. The concentration in the sample and/or duplicate was too low to permit a reliable RPD calculation (one or both samples < 5x RDL).

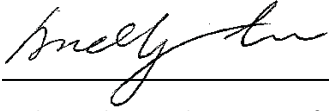
(1) Recovery or RPD for this parameter is outside control limits. The overall quality control for this analysis meets acceptability criteria.

Maxxam Job #: B6B2798  
Report Date: 2016/12/28

SNC LAVALIN ENVIRONMENT INC.  
Client Project #: 640752  
Site Location: WATSON LAKE AIRPORT  
Your P.O. #: 700365230  
Sampler Initials: MLC

### VALIDATION SIGNATURE PAGE

The analytical data and all QC contained in this report were reviewed and validated by the following individual(s).



Andy Lu, Ph.D., P.Chem., Scientific Specialist

---

Maxxam has procedures in place to guard against improper use of the electronic signature and have the required "signatories", as per section 5.10.2 of ISO/IEC 17025:2005(E), signing the reports. For Service Group specific validation please refer to the Validation Signature Page.

<b>INVOICE TO:</b>		<b>Report Information</b>		<b>Project Information</b>	
Company Name	#1756 PUBLIC WORKS & GOVERNMENT SERVICE	Company Name	#26479 SNC LAVALIN ENVIRONMENT INC.	Quotation #	B61631
Contact Name	Jordan Stones	Contact Name	Michael Ghee, Marta Rosa	P.O. #	700365230
Address	641- 800 BURRARD STREET VANCOUVER BC V6Z 2V8	Address	8648 COMMERCE COURT BURNABY BC V5A 4N6	Project #	640752
Phone	(604) 775-6810 Fax: (604) 775-6650	Phone	(604) 515-5151 Fax:	Project Name	Watson Lake Airport
Email	robert.price@pwgsc-tpsgc.gc.ca	Email	Michael.Chao@snclavalin.com, marta.rosa@snclavalin.com	Site #	APEC 22 B
				Sampled By	MLC



B6B2798\_COC

Bottle Order #:  
513078  
Project Manager  
Samantha Fregien

Regulatory Criteria	Special Instructions	Analysis Requested	Turnaround Time (TAT) Required
Yukon CSR Water Drinking / Freshwater		Regulated Drinking Water? (Y/N) Metals Field Filtered? (Y/N) CSR BTEX/VPH in Water LEPH & HEPH with CSR/CCME PAH in Water CSR/CCME Diss. Metals in Water w/ CV Hg CSR VOC + VPH in Water Diss. As, Hg, Cd, Pb, Cr, Cu, Ni, Se, Zn	Regular (Standard) TAT (will be applied if Rush TAT is not specified) Standard TAT = 5-7 Working days for most tests. Please note: Standard TAT for certain tests such as BOD and Dioxins/Furans are > 5 days - contact your Project Manager for details. Job Specific Rush TAT (if applies to entire submission) Date Required: _____ Time Required: _____ Rush Confirmation Number: _____ (call lab for #)

Note: For regulated drinking water samples - please use the Drinking Water Chain of Custody Form

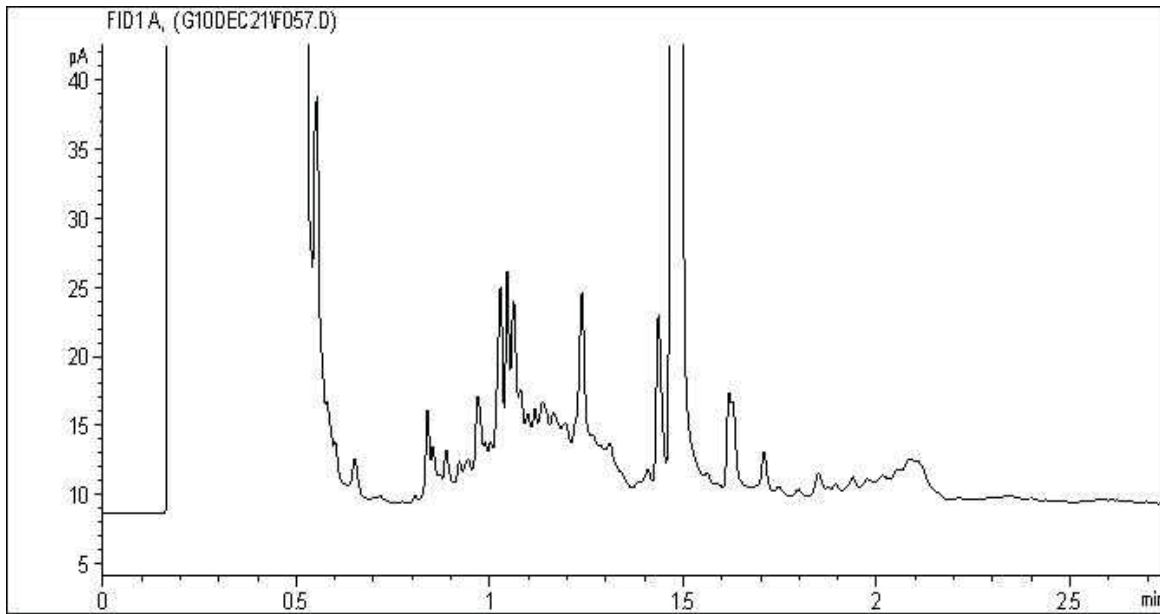
Samples must be kept cool (< 10°C) from time of sampling until delivery to maxxam

Sample Barcode Label	Sample (Location) Identification	Date Sampled	Time Sampled	Matrix	Regulated Drinking Water? (Y/N)	Metals Field Filtered? (Y/N)	CSR BTEX/VPH in Water	LEPH & HEPH with CSR/CCME PAH in Water	CSR/CCME Diss. Metals in Water w/ CV Hg	CSR VOC + VPH in Water	Diss. As, Hg, Cd, Pb, Cr, Cu, Ni, Se, Zn	# of Bottles	Comments
1	22D-MW16-7-161216	16/12/16	11:00	GW	Y	X	X	X	X	X		7	BTEX vials may not contain zero headspace due to climate
2	22D-MW16-8-161216	16/12/16	11:58	↓	Y	X	X	X	X	X		7	
3	22D-MW16-9-161216	16/12/16	12:43	↓	Y	X	X	X	X	X		7	
4	22D-MW16-B-161216	16/12/16	—	GW	Y	X	X	X	X	X		7	↓
5													
6													
7													
8													
9													
10													

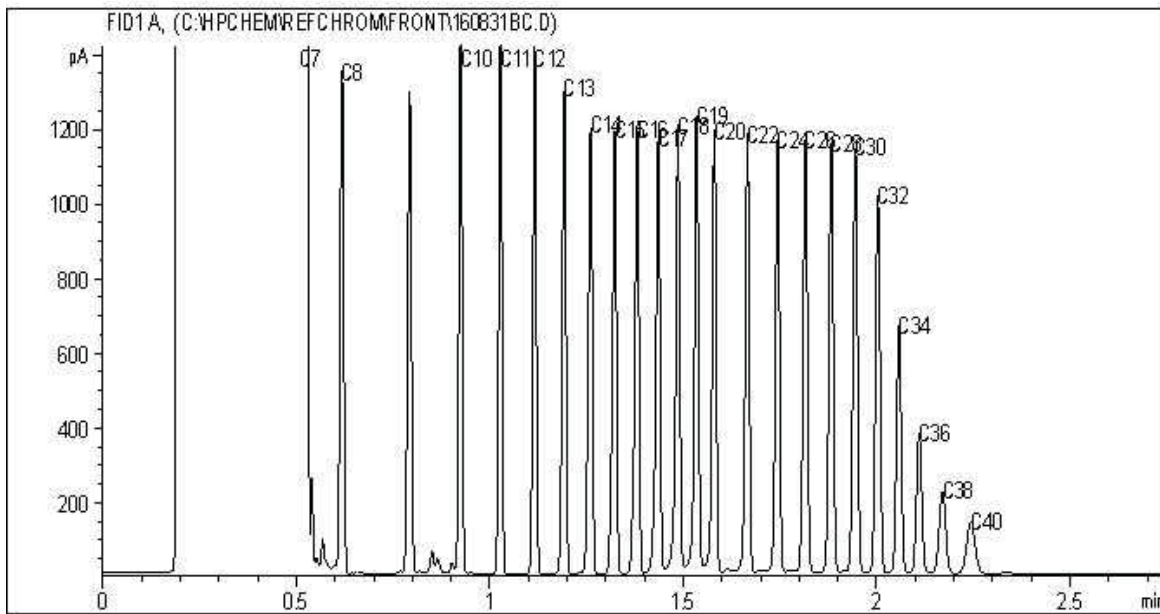
RELINQUISHED BY: (Signature/Print)	Date: (YY/MM/DD)	Time	RECEIVED BY: (Signature/Print)	Date: (YY/MM/DD)	Time	# jars used and not submitted	Time Sensitive	Temperature (°C) on Receipt	Custody Seal Intact on Cooler?
<i>Michael Chao</i> Mike Chao	16/12/16	18:00	<i>KEVIN CHOW</i> KEVIN CHOW	2016/12/19	09:25	MLC	<input type="checkbox"/>	2, 2, 2	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No

\* IT IS THE RESPONSIBILITY OF THE RELINQUISHER TO ENSURE THE ACCURACY OF THE CHAIN OF CUSTODY RECORD. AN INCOMPLETE CHAIN OF CUSTODY MAY RESULT IN ANALYTICAL TAT DELAYS.

EPH in Water when PAH required Chromatogram



Carbon Range Distribution - Reference Chromatogram



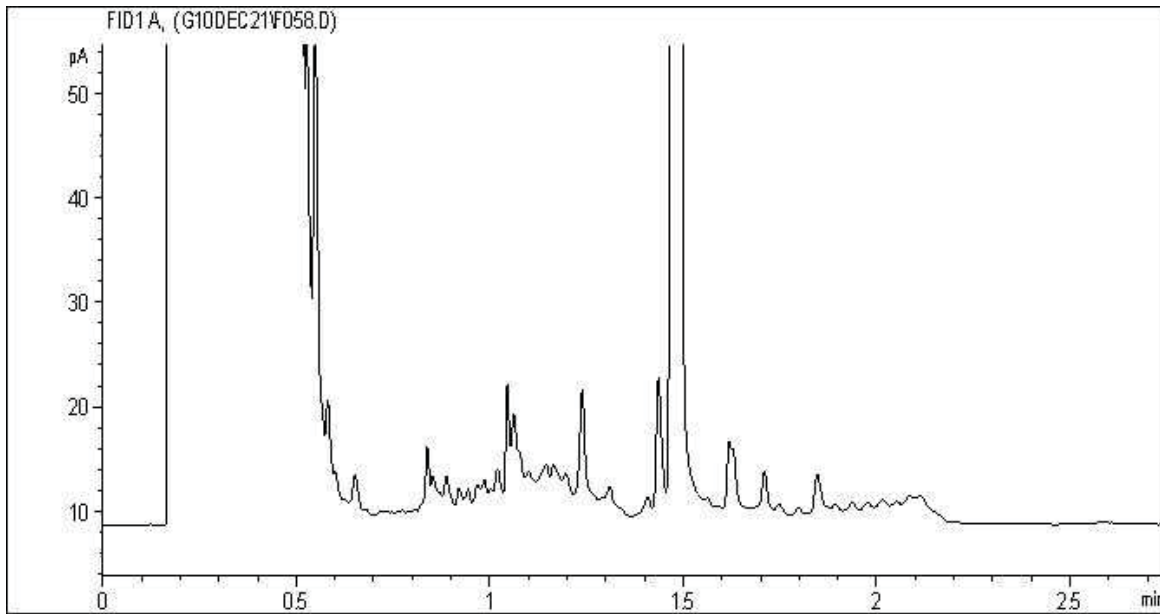
TYPICAL PRODUCT CARBON NUMBER RANGES

Gasoline:	C4 - C12	Diesel:	C8 - C22
Varsol:	C8 - C12	Lubricating oils:	C20 - C40

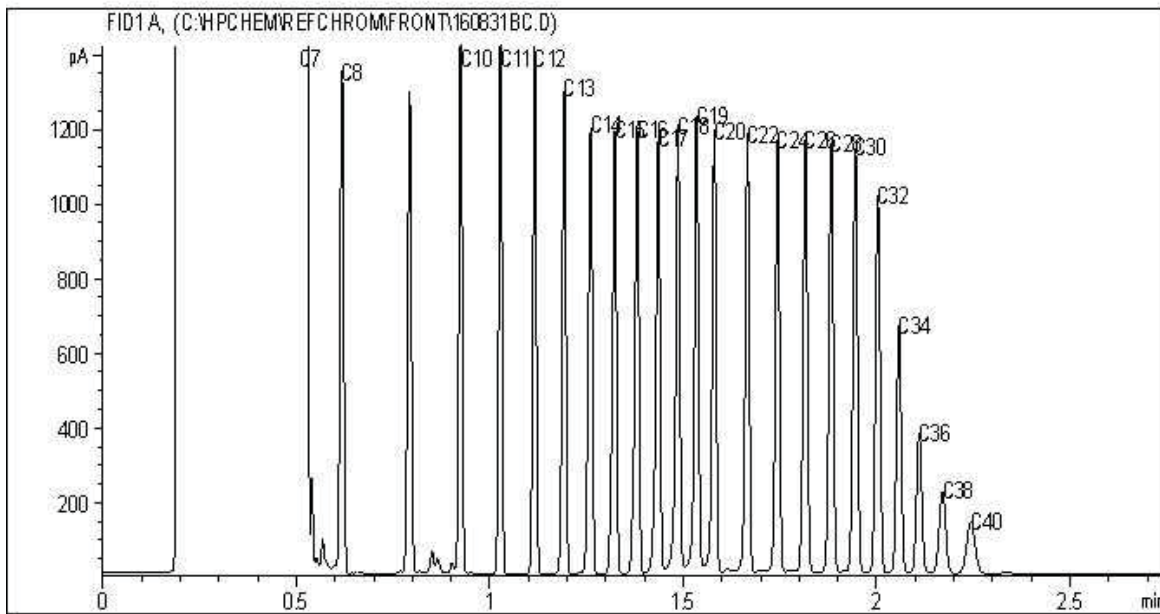
**Note: This information is provided for reference purposes only. Should detailed chemist interpretation or fingerprinting be required, please contact the laboratory.**



EPH in Water when PAH required Chromatogram



Carbon Range Distribution - Reference Chromatogram

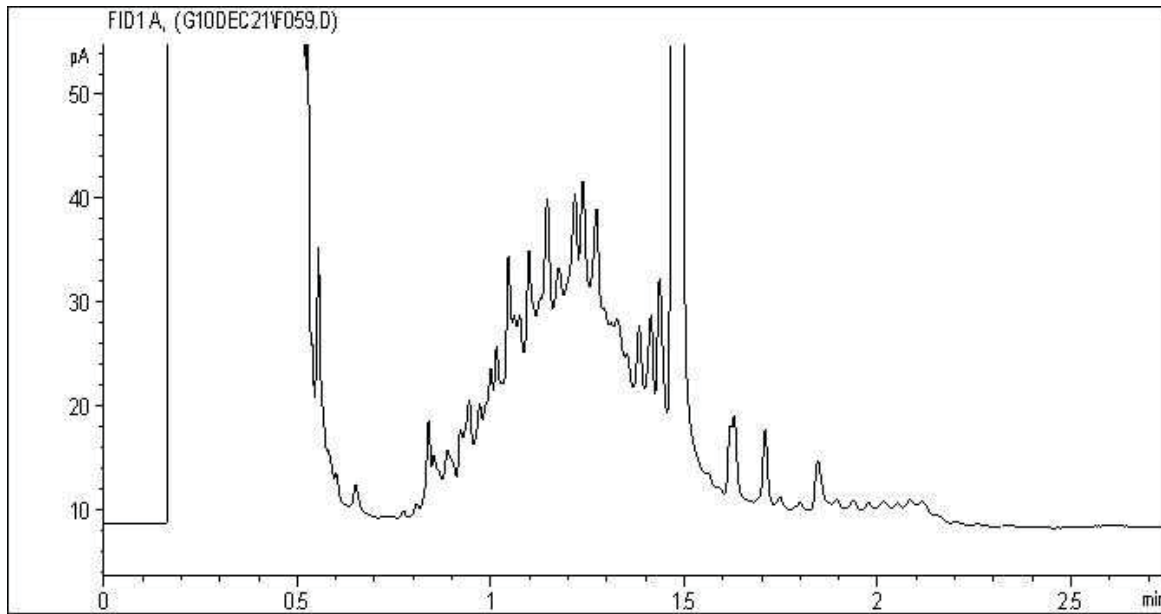


TYPICAL PRODUCT CARBON NUMBER RANGES

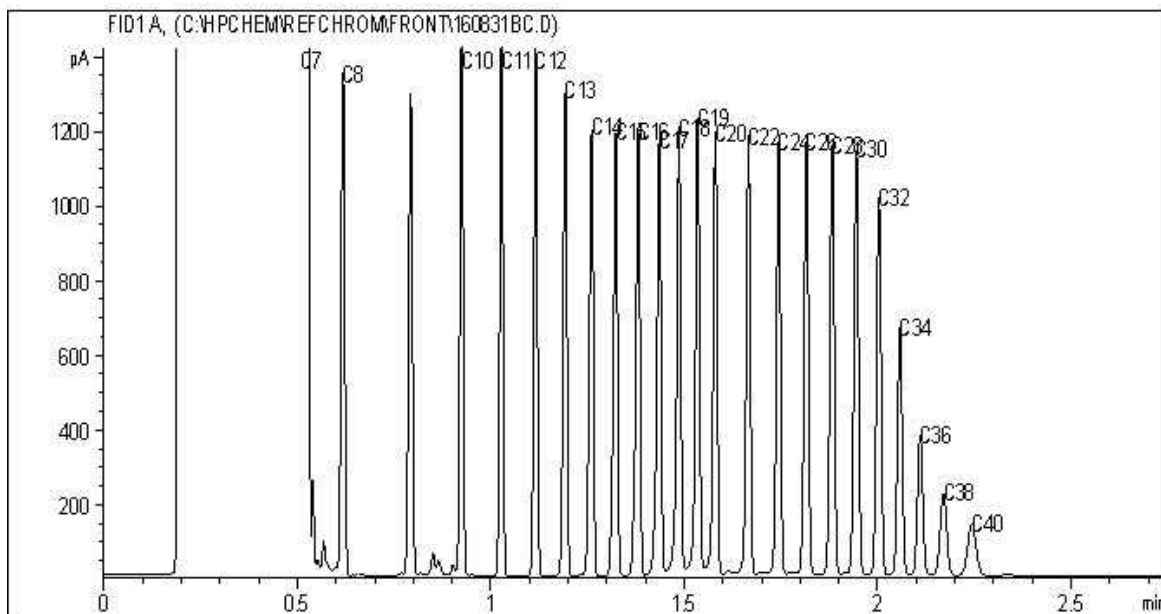
Gasoline:	C4 - C12	Diesel:	C8 - C22
Varsol:	C8 - C12	Lubricating oils:	C20 - C40

**Note: This information is provided for reference purposes only. Should detailed chemist interpretation or fingerprinting be required, please contact the laboratory.**

EPH in Water when PAH required Chromatogram



Carbon Range Distribution - Reference Chromatogram



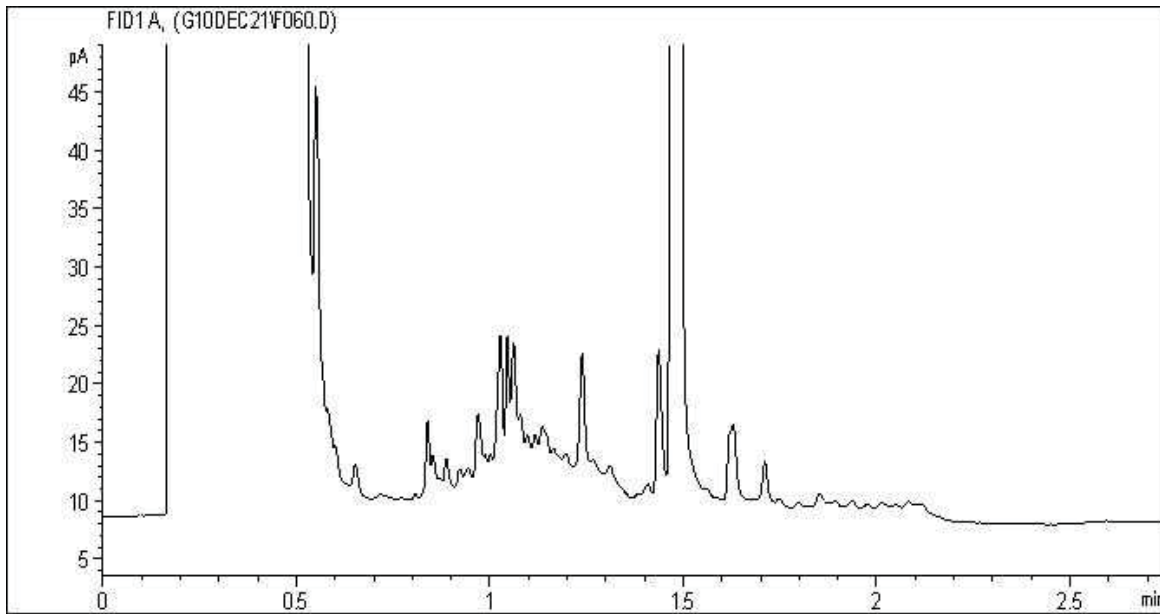
TYPICAL PRODUCT CARBON NUMBER RANGES

Gasoline:	C4 - C12	Diesel:	C8 - C22
Varsol:	C8 - C12	Lubricating oils:	C20 - C40

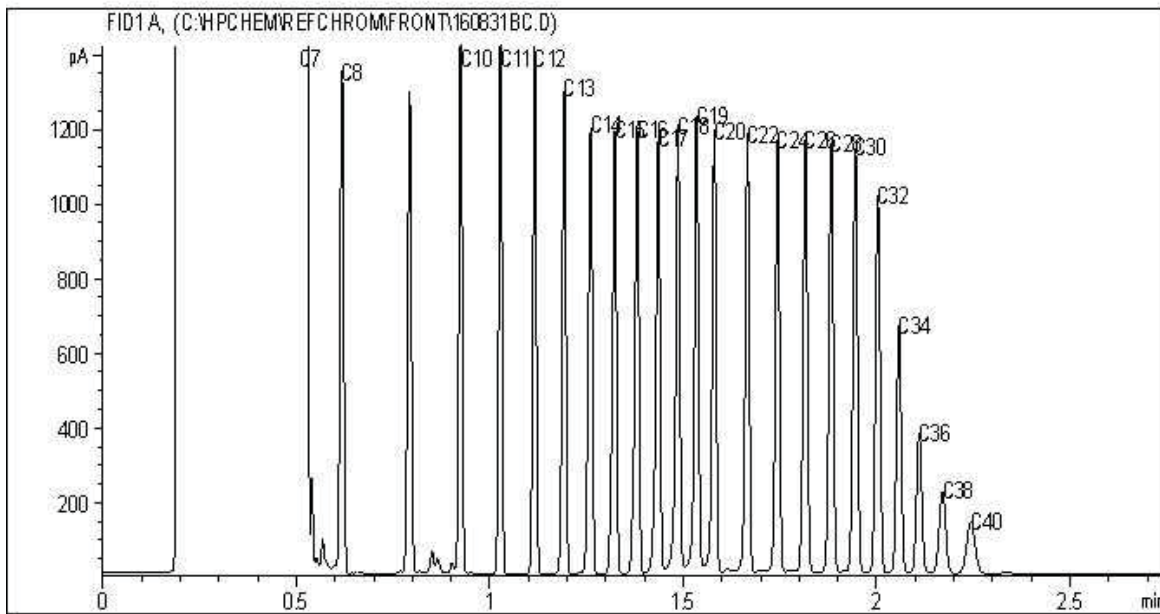
Note: This information is provided for reference purposes only. Should detailed chemist interpretation or fingerprinting be required, please contact the laboratory.



EPH in Water when PAH required Chromatogram



Carbon Range Distribution - Reference Chromatogram



TYPICAL PRODUCT CARBON NUMBER RANGES

Gasoline:	C4 - C12	Diesel:	C8 - C22
Varsol:	C8 - C12	Lubricating oils:	C20 - C40

**Note: This information is provided for reference purposes only. Should detailed chemist interpretation or fingerprinting be required, please contact the laboratory.**

Your P.O. #: 700365230  
 Your Project #: 640752  
 Site#: APEC 22C  
 Site Location: Watson Lake Airport  
 Your C.O.C. #: 08434159

**Attention: Michael Chao**

SNC LAVALIN ENVIRONMENT INC.  
 8648 COMMERCE COURT  
 BURNABY, BC  
 CANADA V5A 4N6

**Report Date: 2016/12/28**  
 Report #: R2323979  
 Version: 1 - Final

**CERTIFICATE OF ANALYSIS**

**MAXXAM JOB #: B6B2838**

**Received: 2016/12/16, 09:00**

Sample Matrix: GROUND WATER  
 # Samples Received: 5

Analyses	Date		Laboratory Method	Analytical Method
	Quantity	Date Extracted		
BTEX/MTBE LH, VH, F1 SIM/MS	4	2016/12/21	2016/12/21 BBY8SOP-00010/11/12	EPA 8260c R3 m
Hardness (calculated as CaCO3)	5	N/A	2016/12/23 BBY WI-00033	Auto Calc
Mercury (Dissolved) by CVAf	5	N/A	2016/12/23 BBY7SOP-00015	BCMOE BCLM Oct2013 m
EPH in Water when PAH required	5	2016/12/21	2016/12/21 BBY8SOP-00029	BCMOE EPH w 12/00 m
Elements by CRC ICPMS (dissolved)	5	N/A	2016/12/23 BBY7SOP-00002	EPA 6020B R2 m
PAH in Water by GC/MS (SIM)	5	2016/12/21	2016/12/22 BBY8SOP-00021	EPA 8270d R4 m
Total LMW, HMW, Total PAH Calc	5	N/A	2016/12/22 BBY WI-00033	Auto Calc
Filter and HNO3 Preserve for Metals	5	N/A	2016/12/22 BBY7 WI-00004	BCMOE Reqs 08/14
EPH less PAH in Water by GC/FID	5	N/A	2016/12/22 BBY WI-00033	Auto Calc
VOCs, VH, F1, LH in Water by HS GC/MS	1	2016/12/22	2016/12/23 BBY8SOP-00009	EPA 8260c R3 m
Volatile HC-BTEX	4	N/A	2016/12/22 BBY WI-00033	Auto Calc
Volatile HC-BTEX	1	N/A	2016/12/28 BBY WI-00033	Auto Calc

**Remarks:**

Maxxam Analytics' laboratories are accredited to ISO/IEC 17025:2005 for specific parameters on scopes of accreditation. Unless otherwise noted, procedures used by Maxxam are based upon recognized Provincial, Federal or US method compendia such as CCME, MDDELCC, EPA, APHA.

All work recorded herein has been done in accordance with procedures and practices ordinarily exercised by professionals in Maxxam's profession using accepted testing methodologies, quality assurance and quality control procedures (except where otherwise agreed by the client and Maxxam in writing). All data is in statistical control and has met quality control and method performance criteria unless otherwise noted. All method blanks are reported: unless indicated otherwise, associated sample data are not blank corrected.

Maxxam Analytics' liability is limited to the actual cost of the requested analyses, unless otherwise agreed in writing. There is no other warranty expressed or implied. Maxxam has been retained to provide analysis of samples provided by the Client using the testing methodology referenced in this report. Interpretation and use of test results are the sole responsibility of the Client and are not within the scope of services provided by Maxxam, unless otherwise agreed in writing.

Solid sample results, except biota, are based on dry weight unless otherwise indicated. Organic analyses are not recovery corrected except for isotope dilution methods. Results relate to samples tested.

This Certificate shall not be reproduced except in full, without the written approval of the laboratory.

Reference Method suffix "m" indicates test methods incorporate validated modifications from specific reference methods to improve performance.

\* RPDs calculated using raw data. The rounding of final results may result in the apparent difference.

**Attention:Michael Chao**

SNC LAVALIN ENVIRONMENT INC.  
8648 COMMERCE COURT  
BURNABY, BC  
CANADA V5A 4N6

Your P.O. #: 700365230  
Your Project #: 640752  
Site#: APEC 22C  
Site Location: Watson Lake Airport  
Your C.O.C. #: 08434159

**Report Date: 2016/12/28**  
Report #: R2323979  
Version: 1 - Final

**CERTIFICATE OF ANALYSIS**

**MAXXAM JOB #: B6B2838**

**Received: 2016/12/16, 09:00**

Encryption Key

Please direct all questions regarding this Certificate of Analysis to your Project Manager.  
Samantha Fregien, Project Manager  
Email: SFregien@maxxam.ca  
Phone# (604)639-8418

=====  
Maxxam has procedures in place to guard against improper use of the electronic signature and have the required "signatories", as per section 5.10.2 of ISO/IEC 17025:2005(E), signing the reports. For Service Group specific validation please refer to the Validation Signature Page.

Maxxam Job #: B6B2838  
Report Date: 2016/12/28

SNC LAVALIN ENVIRONMENT INC.  
Client Project #: 640752  
Site Location: Watson Lake Airport  
Your P.O. #: 700365230  
Sampler Initials: MLC

**RESULTS OF CHEMICAL ANALYSES OF GROUND WATER**

Maxxam ID		QH0826	QH0827	QH0828	QH0829	
Sampling Date		2016/12/14 15:02	2016/12/14	2016/12/15 10:35	2016/12/15 11:38	
COC Number		08434159	08434159	08434159	08434159	
	<b>UNITS</b>	<b>22C-MW16-38-161214</b>	<b>22C-MW16-A-161214</b>	<b>22C-MW16-26-161215</b>	<b>22C-MW16-29-161215</b>	<b>QC Batch</b>

<b>Calculated Parameters</b>						
Filter and HNO3 Preservation	N/A	FIELD	FIELD	FIELD	FIELD	ONSITE

Maxxam ID		QH0830	
Sampling Date		2016/12/15 12:26	
COC Number		08434159	
	<b>UNITS</b>	<b>22C-MW16-30-161215</b>	<b>QC Batch</b>

<b>Calculated Parameters</b>			
Filter and HNO3 Preservation	N/A	FIELD	ONSITE

Maxxam Job #: B6B2838  
Report Date: 2016/12/28

SNC LAVALIN ENVIRONMENT INC.  
Client Project #: 640752  
Site Location: Watson Lake Airport  
Your P.O. #: 700365230  
Sampler Initials: MLC

**CSR BTEX/VPH IN WATER (GROUND WATER)**

Maxxam ID		QH0826	QH0827	QH0829	QH0830		
Sampling Date		2016/12/14 15:02	2016/12/14	2016/12/15 11:38	2016/12/15 12:26		
COC Number		08434159	08434159	08434159	08434159		
	<b>UNITS</b>	<b>22C-MW16-38-161214</b>	<b>22C-MW16-A-161214</b>	<b>22C-MW16-29-161215</b>	<b>22C-MW16-30-161215</b>	<b>RDL</b>	<b>QC Batch</b>

<b>Volatiles</b>							
VPH (VH6 to 10 - BTEX)	ug/L	<300	<300	<300	<300	300	8507158
Methyl-tert-butylether (MTBE)	ug/L	<4.0	<4.0	<4.0	<4.0	4.0	8510158
Benzene	ug/L	<0.40	<0.40	<0.40	<0.40	0.40	8510158
Toluene	ug/L	<0.40	<0.40	<0.40	<0.40	0.40	8510158
Ethylbenzene	ug/L	<0.40	<0.40	<0.40	<0.40	0.40	8510158
m & p-Xylene	ug/L	<0.40	<0.40	<0.40	<0.40	0.40	8510158
o-Xylene	ug/L	<0.40	<0.40	<0.40	<0.40	0.40	8510158
Styrene	ug/L	<0.40	<0.40	<0.40	<0.40	0.40	8510158
Xylenes (Total)	ug/L	<0.40	<0.40	<0.40	<0.40	0.40	8510158
VH C6-C10	ug/L	<300	<300	<300	<300	300	8510158
<b>Surrogate Recovery (%)</b>							
1,4-Difluorobenzene (sur.)	%	99	102	111	102		8510158
4-Bromofluorobenzene (sur.)	%	93	87	85	80		8510158
D4-1,2-Dichloroethane (sur.)	%	105	107	114	106		8510158
RDL = Reportable Detection Limit							

Maxxam Job #: B6B2838  
Report Date: 2016/12/28

SNC LAVALIN ENVIRONMENT INC.  
Client Project #: 640752  
Site Location: Watson Lake Airport  
Your P.O. #: 700365230  
Sampler Initials: MLC

**LEPH & HEPH WITH CSR/CCME PAH IN WATER (GROUND WATER)**

Maxxam ID		QH0826	QH0827	QH0828		
Sampling Date		2016/12/14 15:02	2016/12/14	2016/12/15 10:35		
COC Number		08434159	08434159	08434159		
	<b>UNITS</b>	<b>22C-MW16-38-161214</b>	<b>22C-MW16-A-161214</b>	<b>22C-MW16-26-161215</b>	<b>RDL</b>	<b>QC Batch</b>
<b>Polycyclic Aromatics</b>						
Low Molecular Weight PAH's	ug/L	<0.24	<0.24	<0.24	0.24	8507156
High Molecular Weight PAH's	ug/L	<0.050	<0.050	<0.050	0.050	8507156
Total PAH	ug/L	<0.24	<0.24	<0.24	0.24	8507156
Naphthalene	ug/L	<0.10	<0.10	<0.10	0.10	8509571
2-Methylnaphthalene	ug/L	<0.10	<0.10	<0.10	0.10	8509571
Quinoline	ug/L	<0.24	<0.24	<0.24	0.24	8509571
Acenaphthylene	ug/L	<0.050	<0.050	<0.050	0.050	8509571
Acenaphthene	ug/L	<0.050	<0.050	<0.050	0.050	8509571
Fluorene	ug/L	<0.050	<0.050	<0.050	0.050	8509571
Phenanthrene	ug/L	<0.050	<0.050	<0.050	0.050	8509571
Anthracene	ug/L	<0.010	<0.010	<0.010	0.010	8509571
Acridine	ug/L	<0.050	<0.050	<0.050	0.050	8509571
Fluoranthene	ug/L	<0.020	<0.020	<0.020	0.020	8509571
Pyrene	ug/L	<0.020	<0.020	<0.020	0.020	8509571
Benzo(a)anthracene	ug/L	<0.010	<0.010	<0.010	0.010	8509571
Chrysene	ug/L	<0.050	<0.050	<0.050	0.050	8509571
Benzo(b&j)fluoranthene	ug/L	<0.050	<0.050	<0.050	0.050	8509571
Benzo(k)fluoranthene	ug/L	<0.050	<0.050	<0.050	0.050	8509571
Benzo(a)pyrene	ug/L	<0.0090	<0.0090	<0.0090	0.0090	8509571
Indeno(1,2,3-cd)pyrene	ug/L	<0.050	<0.050	<0.050	0.050	8509571
Dibenz(a,h)anthracene	ug/L	<0.050	<0.050	<0.050	0.050	8509571
Benzo(g,h,i)perylene	ug/L	<0.050	<0.050	<0.050	0.050	8509571
<b>Calculated Parameters</b>						
LEPH (C10-C19 less PAH)	mg/L	<0.20	<0.20	<0.20	0.20	8507157
HEPH (C19-C32 less PAH)	mg/L	<0.20	<0.20	<0.20	0.20	8507157
<b>Ext. Pet. Hydrocarbon</b>						
EPH (C10-C19)	mg/L	<0.20	<0.20	<0.20	0.20	8509581
EPH (C19-C32)	mg/L	<0.20	<0.20	<0.20	0.20	8509581
<b>Surrogate Recovery (%)</b>						
O-TERPHENYL (sur.)	%	96	95	95		8509581
RDL = Reportable Detection Limit						

Maxxam Job #: B6B2838  
Report Date: 2016/12/28

SNC LAVALIN ENVIRONMENT INC.  
Client Project #: 640752  
Site Location: Watson Lake Airport  
Your P.O. #: 700365230  
Sampler Initials: MLC

**LEPH & HEPH WITH CSR/CCME PAH IN WATER (GROUND WATER)**

Maxxam ID		QH0826	QH0827	QH0828		
Sampling Date		2016/12/14 15:02	2016/12/14	2016/12/15 10:35		
COC Number		08434159	08434159	08434159		
	<b>UNITS</b>	<b>22C-MW16-38-161214</b>	<b>22C-MW16-A-161214</b>	<b>22C-MW16-26-161215</b>	<b>RDL</b>	<b>QC Batch</b>
D10-ANTHRACENE (sur.)	%	97	103	102		8509571
D8-ACENAPHTHYLENE (sur.)	%	94	100	98		8509571
D8-NAPHTHALENE (sur.)	%	94	101	102		8509571
D9-Acridine	%	93	98	96		8509571
TERPHENYL-D14 (sur.)	%	69	74	71		8509571
RDL = Reportable Detection Limit						

Maxxam Job #: B6B2838  
Report Date: 2016/12/28

SNC LAVALIN ENVIRONMENT INC.  
Client Project #: 640752  
Site Location: Watson Lake Airport  
Your P.O. #: 700365230  
Sampler Initials: MLC

**LEPH & HEPH WITH CSR/CCME PAH IN WATER (GROUND WATER)**

Maxxam ID		QH0829	QH0830		
Sampling Date		2016/12/15 11:38	2016/12/15 12:26		
COC Number		08434159	08434159		
	<b>UNITS</b>	<b>22C-MW16-29-161215</b>	<b>22C-MW16-30-161215</b>	<b>RDL</b>	<b>QC Batch</b>
<b>Polycyclic Aromatics</b>					
Low Molecular Weight PAH's	ug/L	<0.24	0.27	0.24	8507156
High Molecular Weight PAH's	ug/L	<0.050	<0.050	0.050	8507156
Total PAH	ug/L	<0.24	0.27	0.24	8507156
Naphthalene	ug/L	<0.10	<0.10	0.10	8509571
2-Methylnaphthalene	ug/L	<0.10	0.27	0.10	8509571
Quinoline	ug/L	<0.24	<0.24	0.24	8509571
Acenaphthylene	ug/L	<0.050	<0.050	0.050	8509571
Acenaphthene	ug/L	<0.050	<0.050	0.050	8509571
Fluorene	ug/L	<0.050	<0.050	0.050	8509571
Phenanthrene	ug/L	<0.050	<0.050	0.050	8509571
Anthracene	ug/L	<0.010	<0.010	0.010	8509571
Acridine	ug/L	<0.050	<0.050	0.050	8509571
Fluoranthene	ug/L	<0.020	<0.020	0.020	8509571
Pyrene	ug/L	<0.020	<0.020	0.020	8509571
Benzo(a)anthracene	ug/L	0.012	<0.010	0.010	8509571
Chrysene	ug/L	<0.050	<0.050	0.050	8509571
Benzo(b&j)fluoranthene	ug/L	<0.050	<0.050	0.050	8509571
Benzo(k)fluoranthene	ug/L	<0.050	<0.050	0.050	8509571
Benzo(a)pyrene	ug/L	0.011	<0.0090	0.0090	8509571
Indeno(1,2,3-cd)pyrene	ug/L	<0.050	<0.050	0.050	8509571
Dibenz(a,h)anthracene	ug/L	<0.050	<0.050	0.050	8509571
Benzo(g,h,i)perylene	ug/L	<0.050	<0.050	0.050	8509571
<b>Calculated Parameters</b>					
LEPH (C10-C19 less PAH)	mg/L	<0.20	<0.20	0.20	8507157
HEPH (C19-C32 less PAH)	mg/L	<0.20	<0.20	0.20	8507157
<b>Ext. Pet. Hydrocarbon</b>					
EPH (C10-C19)	mg/L	<0.20	<0.20	0.20	8509581
EPH (C19-C32)	mg/L	<0.20	<0.20	0.20	8509581
<b>Surrogate Recovery (%)</b>					
O-TERPHENYL (sur.)	%	95	95		8509581
RDL = Reportable Detection Limit					



Maxxam Job #: B6B2838  
Report Date: 2016/12/28

SNC LAVALIN ENVIRONMENT INC.  
Client Project #: 640752  
Site Location: Watson Lake Airport  
Your P.O. #: 700365230  
Sampler Initials: MLC

**LEPH & HEPH WITH CSR/CCME PAH IN WATER (GROUND WATER)**

Maxxam ID		QH0829	QH0830		
Sampling Date		2016/12/15 11:38	2016/12/15 12:26		
COC Number		08434159	08434159		
	<b>UNITS</b>	<b>22C-MW16-29-161215</b>	<b>22C-MW16-30-161215</b>	<b>RDL</b>	<b>QC Batch</b>
D10-ANTHRACENE (sur.)	%	98	101		8509571
D8-ACENAPHTHYLENE (sur.)	%	94	98		8509571
D8-NAPHTHALENE (sur.)	%	94	98		8509571
D9-Acridine	%	93	96		8509571
TERPHENYL-D14 (sur.)	%	70	72		8509571
RDL = Reportable Detection Limit					

Maxxam Job #: B6B2838  
Report Date: 2016/12/28

SNC LAVALIN ENVIRONMENT INC.  
Client Project #: 640752  
Site Location: Watson Lake Airport  
Your P.O. #: 700365230  
Sampler Initials: MLC

**CSR/CCME DISS. METALS IN WATER W/ CV HG (GROUND WATER)**

Maxxam ID		QH0826	QH0827	QH0828	QH0829		
Sampling Date		2016/12/14 15:02	2016/12/14	2016/12/15 10:35	2016/12/15 11:38		
COC Number		08434159	08434159	08434159	08434159		
	<b>UNITS</b>	<b>22C-MW16-38-161214</b>	<b>22C-MW16-A-161214</b>	<b>22C-MW16-26-161215</b>	<b>22C-MW16-29-161215</b>	<b>RDL</b>	<b>QC Batch</b>

<b>Misc. Inorganics</b>							
Dissolved Hardness (CaCO3)	mg/L	119	120	93.1	74.0	0.50	8507154
<b>Elements</b>							
Dissolved Mercury (Hg)	ug/L	<0.010	<0.010	<0.010	<0.010	0.010	8512222
<b>Dissolved Metals by ICPMS</b>							
Dissolved Arsenic (As)	ug/L	0.67	0.68	0.59	0.16	0.10	8508568
Dissolved Cadmium (Cd)	ug/L	<0.010	<0.010	0.039	0.022	0.010	8508568
Dissolved Chromium (Cr)	ug/L	<1.0	<1.0	<1.0	<1.0	1.0	8508568
Dissolved Copper (Cu)	ug/L	<0.20	<0.20	0.21	0.26	0.20	8508568
Dissolved Lead (Pb)	ug/L	<0.20	<0.20	<0.20	<0.20	0.20	8508568
Dissolved Nickel (Ni)	ug/L	2.0	2.0	3.1	1.2	1.0	8508568
Dissolved Selenium (Se)	ug/L	<0.10	<0.10	0.62	0.37	0.10	8508568
Dissolved Zinc (Zn)	ug/L	<5.0	<5.0	<5.0	7.8	5.0	8508568
RDL = Reportable Detection Limit							

Maxxam ID		QH0830		
Sampling Date		2016/12/15 12:26		
COC Number		08434159		
	<b>UNITS</b>	<b>22C-MW16-30-161215</b>	<b>RDL</b>	<b>QC Batch</b>
<b>Misc. Inorganics</b>				
Dissolved Hardness (CaCO3)	mg/L	89.2	0.50	8507154
<b>Elements</b>				
Dissolved Mercury (Hg)	ug/L	<0.010	0.010	8512222
<b>Dissolved Metals by ICPMS</b>				
Dissolved Arsenic (As)	ug/L	0.53	0.10	8508568
Dissolved Cadmium (Cd)	ug/L	0.028	0.010	8508568
Dissolved Chromium (Cr)	ug/L	<1.0	1.0	8508568
Dissolved Copper (Cu)	ug/L	<0.20	0.20	8508568
Dissolved Lead (Pb)	ug/L	<0.20	0.20	8508568
Dissolved Nickel (Ni)	ug/L	3.9	1.0	8508568
Dissolved Selenium (Se)	ug/L	<0.10	0.10	8508568
Dissolved Zinc (Zn)	ug/L	<5.0	5.0	8508568
RDL = Reportable Detection Limit				

Maxxam Job #: B6B2838  
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SNC LAVALIN ENVIRONMENT INC.  
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Sampler Initials: MLC

**CSR VOC + VPH IN WATER (GROUND WATER)**

Maxxam ID		QH0828		
Sampling Date		2016/12/15 10:35		
COC Number		08434159		
	<b>UNITS</b>	<b>22C-MW16-26-161215</b>	<b>RDL</b>	<b>QC Batch</b>

<b>Volatiles</b>				
VPH (VH6 to 10 - BTEX)	ug/L	<300	300	8507158
Chloromethane	ug/L	<1.0	1.0	8511269
Vinyl chloride	ug/L	<0.50	0.50	8511269
Chloroethane	ug/L	<1.0	1.0	8511269
Trichlorofluoromethane	ug/L	<4.0	4.0	8511269
1,1,2Trichloro-1,2,2Trifluoroethane	ug/L	<2.0	2.0	8511269
Dichlorodifluoromethane	ug/L	<2.0	2.0	8511269
1,1-dichloroethene	ug/L	<0.50	0.50	8511269
Dichloromethane	ug/L	<2.0	2.0	8511269
trans-1,2-dichloroethene	ug/L	<1.0	1.0	8511269
1,1-dichloroethane	ug/L	<0.50	0.50	8511269
cis-1,2-dichloroethene	ug/L	<1.0	1.0	8511269
Chloroform	ug/L	<1.0	1.0	8511269
1,1,1-trichloroethane	ug/L	<0.50	0.50	8511269
1,2-dichloroethane	ug/L	<0.50	0.50	8511269
Carbon tetrachloride	ug/L	<0.50	0.50	8511269
Benzene	ug/L	<0.40	0.40	8511269
Methyl-tert-butylether (MTBE)	ug/L	<4.0	4.0	8511269
1,2-dichloropropane	ug/L	<0.50	0.50	8511269
cis-1,3-dichloropropene	ug/L	<1.0	1.0	8511269
trans-1,3-dichloropropene	ug/L	<1.0	1.0	8511269
Bromomethane	ug/L	<1.0	1.0	8511269
1,1,2-trichloroethane	ug/L	<0.50	0.50	8511269
Trichloroethene	ug/L	<0.50	0.50	8511269
Chlorodibromomethane	ug/L	<1.0	1.0	8511269
1,2-dibromoethane	ug/L	<0.20	0.20	8511269
Tetrachloroethene	ug/L	<0.50	0.50	8511269
Bromodichloromethane	ug/L	<1.0	1.0	8511269
Toluene	ug/L	<0.40	0.40	8511269
Ethylbenzene	ug/L	<0.40	0.40	8511269
RDL = Reportable Detection Limit				

Maxxam Job #: B6B2838  
Report Date: 2016/12/28

SNC LAVALIN ENVIRONMENT INC.  
Client Project #: 640752  
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Sampler Initials: MLC

**CSR VOC + VPH IN WATER (GROUND WATER)**

Maxxam ID		QH0828		
Sampling Date		2016/12/15 10:35		
COC Number		08434159		
	<b>UNITS</b>	<b>22C-MW16-26-161215</b>	<b>RDL</b>	<b>QC Batch</b>
m & p-Xylene	ug/L	<0.40	0.40	8511269
Bromoform	ug/L	<1.0	1.0	8511269
Styrene	ug/L	<0.50	0.50	8511269
o-Xylene	ug/L	<0.40	0.40	8511269
Xylenes (Total)	ug/L	<0.40	0.40	8511269
1,1,1,2-tetrachloroethane	ug/L	<0.50	0.50	8511269
1,1,2,2-tetrachloroethane	ug/L	<0.50	0.50	8511269
1,2-dichlorobenzene	ug/L	<0.50	0.50	8511269
1,3-dichlorobenzene	ug/L	<0.50	0.50	8511269
1,4-dichlorobenzene	ug/L	<0.50	0.50	8511269
Chlorobenzene	ug/L	<0.50	0.50	8511269
1,2,3-trichlorobenzene	ug/L	<2.0	2.0	8511269
1,2,4-trichlorobenzene	ug/L	<2.0	2.0	8511269
Hexachlorobutadiene	ug/L	<0.50	0.50	8511269
VH C6-C10	ug/L	<300	300	8511269
<b>Surrogate Recovery (%)</b>				
1,4-Difluorobenzene (sur.)	%	99		8511269
4-Bromofluorobenzene (sur.)	%	91		8511269
D4-1,2-Dichloroethane (sur.)	%	98		8511269
RDL = Reportable Detection Limit				

Maxxam Job #: B6B2838  
Report Date: 2016/12/28

SNC LAVALIN ENVIRONMENT INC.  
Client Project #: 640752  
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### GENERAL COMMENTS

Each temperature is the average of up to three cooler temperatures taken at receipt

Package 1	-1.3°C
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22C-MW16-26-161215 and 22C-MW16-29-161215: 2 of 3 x 40 mL glass vials for BTEX and volatiles received broken. Analysis performed with client's consent.

Analysis of BTEX/VOCs conducted on remaining, uncompromised vial received for each sample.

**Results relate only to the items tested.**

Maxxam Job #: B6B2838  
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**QUALITY ASSURANCE REPORT**

SNC LAVALIN ENVIRONMENT INC.  
Client Project #: 640752  
Site Location: Watson Lake Airport  
Your P.O. #: 700365230  
Sampler Initials: MLC

QC Batch	Parameter	Date	Matrix Spike		Spiked Blank		Method Blank		RPD	
			% Recovery	QC Limits	% Recovery	QC Limits	Value	UNITS	Value (%)	QC Limits
8509571	D10-ANTHRACENE (sur.)	2016/12/22	96	60 - 130	103	60 - 130	103	%		
8509571	D8-ACENAPHTHYLENE (sur.)	2016/12/22	127	50 - 130	99	50 - 130	97	%		
8509571	D8-NAPHTHALENE (sur.)	2016/12/22	53	50 - 130	98	50 - 130	98	%		
8509571	D9-Acridine	2016/12/22	93	50 - 130	96	50 - 130	98	%		
8509571	TERPHENYL-D14 (sur.)	2016/12/22	62	60 - 130	83	60 - 130	86	%		
8509581	O-TERPHENYL (sur.)	2016/12/21	95	50 - 130	96	50 - 130	97	%		
8510158	1,4-Difluorobenzene (sur.)	2016/12/21	97	70 - 130	95	70 - 130	105	%		
8510158	4-Bromofluorobenzene (sur.)	2016/12/21	95	70 - 130	96	70 - 130	80	%		
8510158	D4-1,2-Dichloroethane (sur.)	2016/12/21	103	70 - 130	96	70 - 130	112	%		
8511269	1,4-Difluorobenzene (sur.)	2016/12/23	106	70 - 130	99	70 - 130	101	%		
8511269	4-Bromofluorobenzene (sur.)	2016/12/23	97	70 - 130	92	70 - 130	87	%		
8511269	D4-1,2-Dichloroethane (sur.)	2016/12/23	99	70 - 130	92	70 - 130	90	%		
8508568	Dissolved Arsenic (As)	2016/12/23	97	80 - 120	98	80 - 120	<0.10	ug/L	2.7	20
8508568	Dissolved Cadmium (Cd)	2016/12/23	99	80 - 120	101	80 - 120	<0.010	ug/L		
8508568	Dissolved Chromium (Cr)	2016/12/23	96	80 - 120	104	80 - 120	<1.0	ug/L	NC	20
8508568	Dissolved Copper (Cu)	2016/12/23	96	80 - 120	100	80 - 120	<0.20	ug/L	1.9	20
8508568	Dissolved Lead (Pb)	2016/12/23	101	80 - 120	107	80 - 120	<0.20	ug/L	3.3	20
8508568	Dissolved Nickel (Ni)	2016/12/23	NC	80 - 120	102	80 - 120	<1.0	ug/L		
8508568	Dissolved Selenium (Se)	2016/12/23	100	80 - 120	98	80 - 120	<0.10	ug/L		
8508568	Dissolved Zinc (Zn)	2016/12/23	NC	80 - 120	110	80 - 120	<5.0	ug/L	NC	20
8509571	2-Methylnaphthalene	2016/12/22	NC	50 - 130	101	50 - 130	<0.10	ug/L	2.4	40
8509571	Acenaphthene	2016/12/22	105	50 - 130	107	50 - 130	<0.050	ug/L	NC	40
8509571	Acenaphthylene	2016/12/22	103	50 - 130	106	50 - 130	<0.050	ug/L	NC	40
8509571	Acridine	2016/12/22	96	50 - 130	97	50 - 130	<0.050	ug/L	NC	40
8509571	Anthracene	2016/12/22	104	60 - 130	110	60 - 130	<0.010	ug/L	NC	40
8509571	Benzo(a)anthracene	2016/12/22	114	60 - 130	117	60 - 130	<0.010	ug/L	NC	40
8509571	Benzo(a)pyrene	2016/12/22	106	60 - 130	113	60 - 130	<0.0090	ug/L	NC	40
8509571	Benzo(b&j)fluoranthene	2016/12/22	109	60 - 130	115	60 - 130	<0.050	ug/L	NC	40
8509571	Benzo(g,h,i)perylene	2016/12/22	97	60 - 130	103	60 - 130	<0.050	ug/L	NC	40
8509571	Benzo(k)fluoranthene	2016/12/22	113	60 - 130	115	60 - 130	<0.050	ug/L	NC	40

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**QUALITY ASSURANCE REPORT(CONT'D)**

SNC LAVALIN ENVIRONMENT INC.  
Client Project #: 640752  
Site Location: Watson Lake Airport  
Your P.O. #: 700365230  
Sampler Initials: MLC

QC Batch	Parameter	Date	Matrix Spike		Spiked Blank		Method Blank		RPD	
			% Recovery	QC Limits	% Recovery	QC Limits	Value	UNITS	Value (%)	QC Limits
8509571	Chrysene	2016/12/22	117	60 - 130	121	60 - 130	<0.050	ug/L	NC	40
8509571	Dibenz(a,h)anthracene	2016/12/22	110	60 - 130	117	60 - 130	<0.050	ug/L	NC	40
8509571	Fluoranthene	2016/12/22	101	60 - 130	98	60 - 130	<0.020	ug/L	NC	40
8509571	Fluorene	2016/12/22	108	50 - 130	103	50 - 130	<0.050	ug/L	NC	40
8509571	Indeno(1,2,3-cd)pyrene	2016/12/22	107	60 - 130	114	60 - 130	<0.050	ug/L	NC	40
8509571	Naphthalene	2016/12/22	NC	50 - 130	106	50 - 130	<0.10	ug/L	3.3	40
8509571	Phenanthrene	2016/12/22	102	60 - 130	104	60 - 130	<0.050	ug/L	NC	40
8509571	Pyrene	2016/12/22	100	60 - 130	100	60 - 130	<0.020	ug/L	NC	40
8509571	Quinoline	2016/12/22	126	50 - 130	117	50 - 130	<0.24	ug/L	NC	40
8509581	EPH (C10-C19)	2016/12/21	NC	50 - 130	97	50 - 130	<0.20	mg/L	0.82	30
8509581	EPH (C19-C32)	2016/12/21	99	50 - 130	96	50 - 130	<0.20	mg/L	NC	30
8510158	Benzene	2016/12/21	105	N/A	91	70 - 130	<0.40	ug/L	NC	30
8510158	Ethylbenzene	2016/12/21	119	N/A	110	70 - 130	<0.40	ug/L	NC	30
8510158	m & p-Xylene	2016/12/21	118	N/A	109	70 - 130	<0.40	ug/L	NC	30
8510158	Methyl-tert-butylether (MTBE)	2016/12/21	106	N/A	96	70 - 130	<4.0	ug/L	NC	30
8510158	o-Xylene	2016/12/21	113	N/A	106	70 - 130	<0.40	ug/L	NC	30
8510158	Styrene	2016/12/21	116	N/A	110	70 - 130	<0.40	ug/L	NC	30
8510158	Toluene	2016/12/21	116	N/A	101	70 - 130	<0.40	ug/L	NC	30
8510158	VH C6-C10	2016/12/21			97	70 - 130	<300	ug/L	NC	30
8510158	Xylenes (Total)	2016/12/21					<0.40	ug/L	NC	30
8511269	1,1,1,2-tetrachloroethane	2016/12/23	101	70 - 130	101	70 - 130	<0.50	ug/L	NC	30
8511269	1,1,1-trichloroethane	2016/12/23	87	70 - 130	86	70 - 130	<0.50	ug/L	NC	30
8511269	1,1,2,2-tetrachloroethane	2016/12/23	90	70 - 130	91	70 - 130	<0.50	ug/L	NC	30
8511269	1,1,2Trichloro-1,2,2Trifluoroethane	2016/12/23					<2.0	ug/L	NC	30
8511269	1,1,2-trichloroethane	2016/12/23	86	70 - 130	82	70 - 130	<0.50	ug/L	NC	30
8511269	1,1-dichloroethane	2016/12/23	82	70 - 130	81	70 - 130	<0.50	ug/L	NC	30
8511269	1,1-dichloroethene	2016/12/23	82	70 - 130	81	70 - 130	<0.50	ug/L	NC	30
8511269	1,2,3-trichlorobenzene	2016/12/23	87	70 - 130	88	70 - 130	<2.0	ug/L	NC	30
8511269	1,2,4-trichlorobenzene	2016/12/23	90	70 - 130	87	70 - 130	<2.0	ug/L	NC	30
8511269	1,2-dibromoethane	2016/12/23	87	70 - 130	88	70 - 130	<0.20	ug/L	NC	30

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**QUALITY ASSURANCE REPORT(CONT'D)**

SNC LAVALIN ENVIRONMENT INC.  
Client Project #: 640752  
Site Location: Watson Lake Airport  
Your P.O. #: 700365230  
Sampler Initials: MLC

QC Batch	Parameter	Date	Matrix Spike		Spiked Blank		Method Blank		RPD	
			% Recovery	QC Limits	% Recovery	QC Limits	Value	UNITS	Value (%)	QC Limits
8511269	1,2-dichlorobenzene	2016/12/23	91	70 - 130	92	70 - 130	<0.50	ug/L	NC	30
8511269	1,2-dichloroethane	2016/12/23	84	70 - 130	87	70 - 130	<0.50	ug/L	NC	30
8511269	1,2-dichloropropane	2016/12/23	84	70 - 130	89	70 - 130	<0.50	ug/L	NC	30
8511269	1,3-dichlorobenzene	2016/12/23	89	70 - 130	86	70 - 130	<0.50	ug/L	NC	30
8511269	1,4-dichlorobenzene	2016/12/23	91	70 - 130	87	70 - 130	<0.50	ug/L	NC	30
8511269	Benzene	2016/12/23	87	70 - 130	87	70 - 130	<0.40	ug/L	NC	30
8511269	Bromodichloromethane	2016/12/23	97	70 - 130	98	70 - 130	<1.0	ug/L	NC	30
8511269	Bromoform	2016/12/23	119	70 - 130	118	70 - 130	<1.0	ug/L	NC	30
8511269	Bromomethane	2016/12/23	79	60 - 140	71	60 - 140	<1.0	ug/L	NC	30
8511269	Carbon tetrachloride	2016/12/23	105	70 - 130	101	70 - 130	<0.50	ug/L	NC	30
8511269	Chlorobenzene	2016/12/23	86	70 - 130	89	70 - 130	<0.50	ug/L	NC	30
8511269	Chlorodibromomethane	2016/12/23	94	70 - 130	109	70 - 130	<1.0	ug/L	NC	30
8511269	Chloroethane	2016/12/23	118	60 - 140	79	60 - 140	<1.0	ug/L	NC	30
8511269	Chloroform	2016/12/23	84	70 - 130	84	70 - 130	<1.0	ug/L	NC	30
8511269	Chloromethane	2016/12/23	83	60 - 140	82	60 - 140	<1.0	ug/L	NC	30
8511269	cis-1,2-dichloroethene	2016/12/23	83	70 - 130	80	70 - 130	<1.0	ug/L	NC	30
8511269	cis-1,3-dichloropropene	2016/12/23	94	70 - 130	91	70 - 130	<1.0	ug/L	NC	30
8511269	Dichlorodifluoromethane	2016/12/23	84	60 - 140	84	60 - 140	<2.0	ug/L	NC	30
8511269	Dichloromethane	2016/12/23	90	70 - 130	92	70 - 130	<2.0	ug/L	NC	30
8511269	Ethylbenzene	2016/12/23	88	70 - 130	86	70 - 130	<0.40	ug/L	NC	30
8511269	Hexachlorobutadiene	2016/12/23	89	70 - 130	87	70 - 130	<0.50	ug/L	NC	30
8511269	m & p-Xylene	2016/12/23	87	70 - 130	86	70 - 130	<0.40	ug/L	NC	30
8511269	Methyl-tert-butylether (MTBE)	2016/12/23	83	70 - 130	82	70 - 130	<4.0	ug/L	NC	30
8511269	o-Xylene	2016/12/23	87	70 - 130	88	70 - 130	<0.40	ug/L	NC	30
8511269	Styrene	2016/12/23	83	70 - 130	83	70 - 130	<0.50	ug/L	NC	30
8511269	Tetrachloroethene	2016/12/23	86	70 - 130	84	70 - 130	<0.50	ug/L	NC	30
8511269	Toluene	2016/12/23	84	70 - 130	84	70 - 130	<0.40	ug/L	NC	30
8511269	trans-1,2-dichloroethene	2016/12/23	82	70 - 130	81	70 - 130	<1.0	ug/L	NC	30
8511269	trans-1,3-dichloropropene	2016/12/23	62 (1)	70 - 130	61 (1)	70 - 130	<1.0	ug/L	NC	30
8511269	Trichloroethene	2016/12/23	85	70 - 130	84	70 - 130	<0.50	ug/L	NC	30



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**QUALITY ASSURANCE REPORT(CONT'D)**

SNC LAVALIN ENVIRONMENT INC.  
Client Project #: 640752  
Site Location: Watson Lake Airport  
Your P.O. #: 700365230  
Sampler Initials: MLC

QC Batch	Parameter	Date	Matrix Spike		Spiked Blank		Method Blank		RPD	
			% Recovery	QC Limits	% Recovery	QC Limits	Value	UNITS	Value (%)	QC Limits
8511269	Trichlorofluoromethane	2016/12/23	103	60 - 140	102	60 - 140	<4.0	ug/L	NC	30
8511269	VH C6-C10	2016/12/23			80	70 - 130	<300	ug/L	NC	30
8511269	Vinyl chloride	2016/12/23	89	60 - 140	88	60 - 140	<0.50	ug/L	NC	30
8511269	Xylenes (Total)	2016/12/23					<0.40	ug/L	NC	30
8512222	Dissolved Mercury (Hg)	2016/12/23	101	80 - 120	101	80 - 120	<0.010	ug/L	NC	20

Duplicate: Paired analysis of a separate portion of the same sample. Used to evaluate the variance in the measurement.

Matrix Spike: A sample to which a known amount of the analyte of interest has been added. Used to evaluate sample matrix interference.

Spiked Blank: A blank matrix sample to which a known amount of the analyte, usually from a second source, has been added. Used to evaluate method accuracy.

Method Blank: A blank matrix containing all reagents used in the analytical procedure. Used to identify laboratory contamination.

Surrogate: A pure or isotopically labeled compound whose behavior mirrors the analytes of interest. Used to evaluate extraction efficiency.

NC (Matrix Spike): The recovery in the matrix spike was not calculated. The relative difference between the concentration in the parent sample and the spiked amount was too small to permit a reliable recovery calculation (matrix spike concentration was less than 2x that of the native sample concentration).

NC (Duplicate RPD): The duplicate RPD was not calculated. The concentration in the sample and/or duplicate was too low to permit a reliable RPD calculation (one or both samples < 5x RDL).

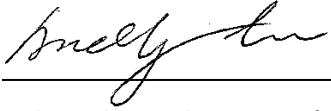
(1) Recovery or RPD for this parameter is outside control limits. The overall quality control for this analysis meets acceptability criteria.

Maxxam Job #: B6B2838  
Report Date: 2016/12/28

SNC LAVALIN ENVIRONMENT INC.  
Client Project #: 640752  
Site Location: Watson Lake Airport  
Your P.O. #: 700365230  
Sampler Initials: MLC

### VALIDATION SIGNATURE PAGE

The analytical data and all QC contained in this report were reviewed and validated by the following individual(s).



Andy Lu, Ph.D., P.Chem., Scientific Specialist

---

Maxxam has procedures in place to guard against improper use of the electronic signature and have the required "signatories", as per section 5.10.2 of ISO/IEC 17025:2005(E), signing the reports. For Service Group specific validation please refer to the Validation Signature Page.



Robert Price  
pwgsc -  
tpsgc.gc.ca

Invoice Information		Report Information (if differs from invoice)				Project Information (where applicable)				Time (TAT) Required		
Company Name: #1756 PWGSC	Company Name: SWC-Lavalin	Quotation #: B61631	<input checked="" type="checkbox"/> Regular TAT 5 days (Most analyses)		PLEASE PROVIDE ADVANCE NOTICE FOR RUSH PROJECTS							
Contact Name: Jordan Stines	Contact Name: Marta Rosa	P.O. #/AFER: 700765230	Rush TAT (Surcharges will be applied)		<input type="checkbox"/> Same Day <input type="checkbox"/> 2 Days <input type="checkbox"/> 1 Day <input type="checkbox"/> 3 Days							
Address: 64180 Burnard St Vancouver BC V6Z 2W8	Address: 8418 Commerce Court Burnaby, BC V5K 4H6	Project #: 840752	Site Location: Watson Lake Airport		Date Required:							
Phone: 604-775-6810	Phone: 604-515-5151	Site #: APEC 22C	Sampled By: MLC									
Email: [redacted]	Email: marta.rosa@swclavalin.com											
Regulatory Criteria		Special Instructions				Analysis Requested				Rush Confirmation #:		
<input checked="" type="checkbox"/> YUKON CSR (H <sub>2</sub> O) Water <input type="checkbox"/> CCME (Specify) <input checked="" type="checkbox"/> Drinking Water Freshwater <input type="checkbox"/> BC CSR Water <input type="checkbox"/> Other (Specify) <input type="checkbox"/> BC Water Quality		<input type="checkbox"/> Return Cooler <input type="checkbox"/> Ship Sample Bottles (Please Specify)				SELECT METALS Dissolved As, Cd, Pb, Hg, Cr, Cu, Ni, Se, Zn						
SAMPLES MUST BE KEPT COOL (< 10 °C) FROM TIME OF SAMPLING UNTIL DELIVERY TO MAXXAM												
Sample Identification		Lab Identification	Date Sampled (YYYY/MM/DD)	Time Sampled (HH:MM)	Matrix	BTEX / VPH / VH	LEPH / HEPH	PAH	VOC	SELECT METALS	# OF CONTAINERS SUBMITTED	HOLD - DO NOT ANALYZE
1	22C-MW16-38-161214		2016/12/14	15:02	GW	X	X	X		X	4	1
2	22C-MW16-A-161214		"	-	GW	X	X	X		X	4	1
3	22C-MW16-26-161215		2016/12/15	10:35	GW	X	X	X	X	X	4	1
4	22C-MW16-29-161215		↓	11:38	↓	X	X	X		X	4	1
5	22C-MW16-30-161215		↓	12:26	↓	X	X	X		X	4	1
6												
7												
8												
9												
10												
RELINQUISHED BY: (Signature/Print)		DATE: (YYYY/MM/DD)	TIME: (HH:MM)	RECEIVED BY: (Signature/Print)		DATE: (YYYY/MM/DD)	TIME: (HH:MM)	MAXXAM JOB #				
[Signature] Mike Chao		2016/12/15	18:00	[Signature] KEVIN GLOW		2016/12/19	09:25					

LABORATORY USE ONLY

CUSTODY SEAL		COOLER TEMPERATURES	
Present	Intact	1	1
4	4	1	2

COOLING MEDIA PRESENT (Y/N)

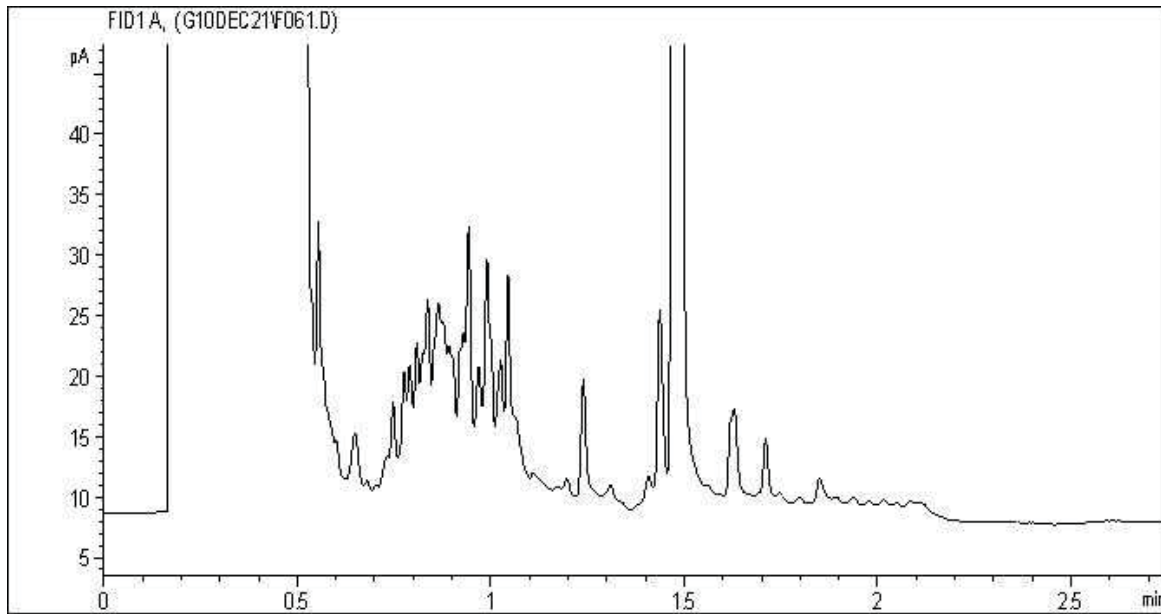
COMMENTS

RECEIVED IN WHITEHORSE  
BY: [Signature] 2016-12-16  
TEMP: 0 / -2 / -2

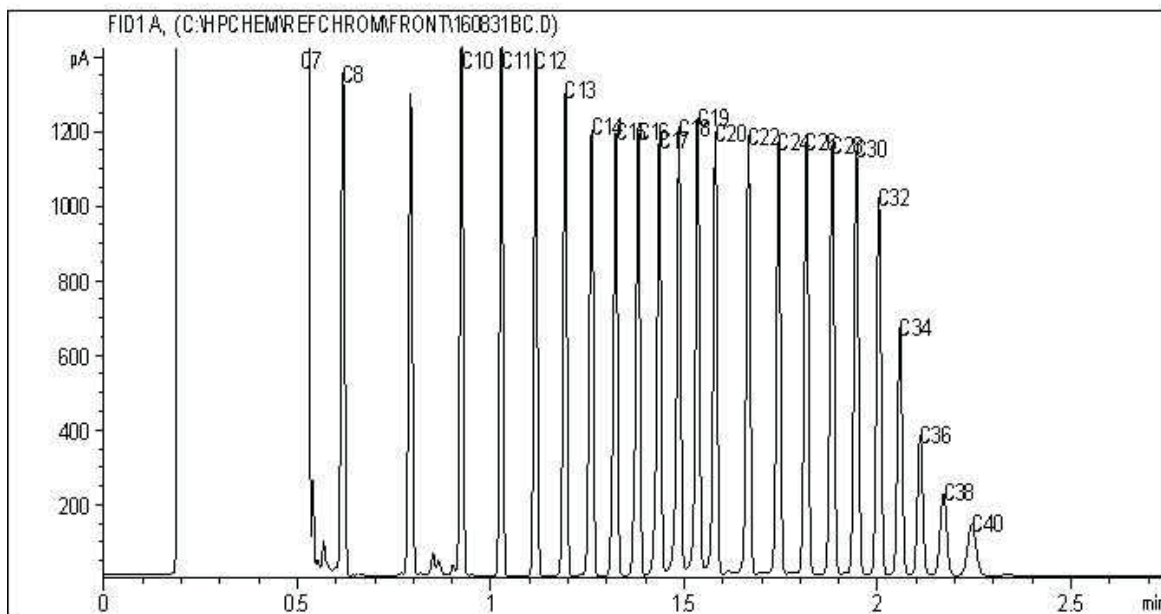
Zero headspace due to weather



EPH in Water when PAH required Chromatogram



Carbon Range Distribution - Reference Chromatogram

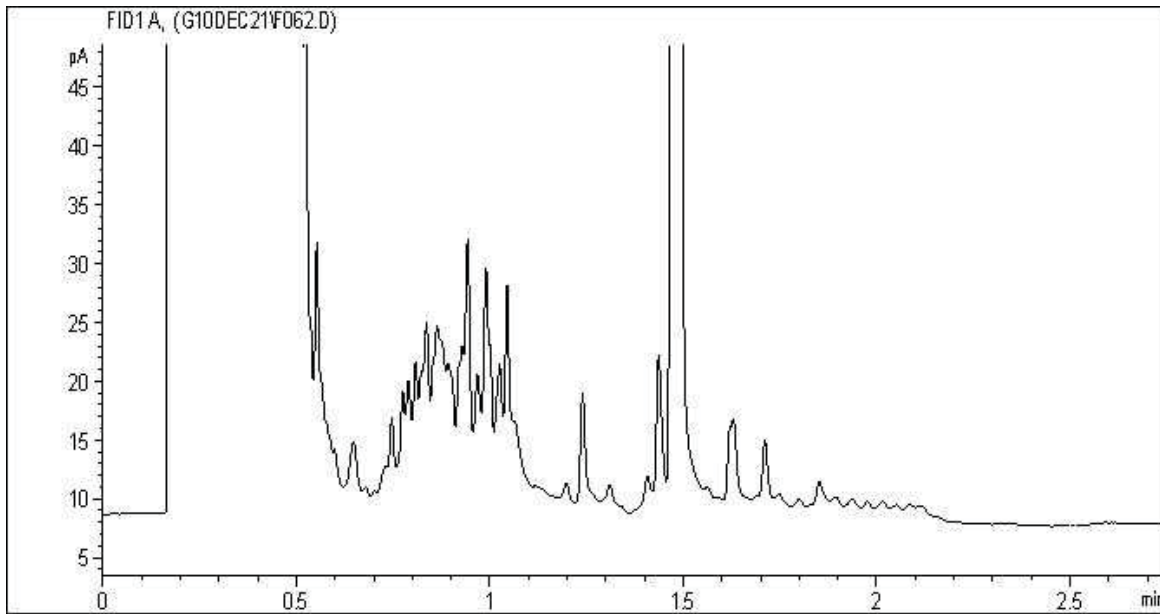


TYPICAL PRODUCT CARBON NUMBER RANGES

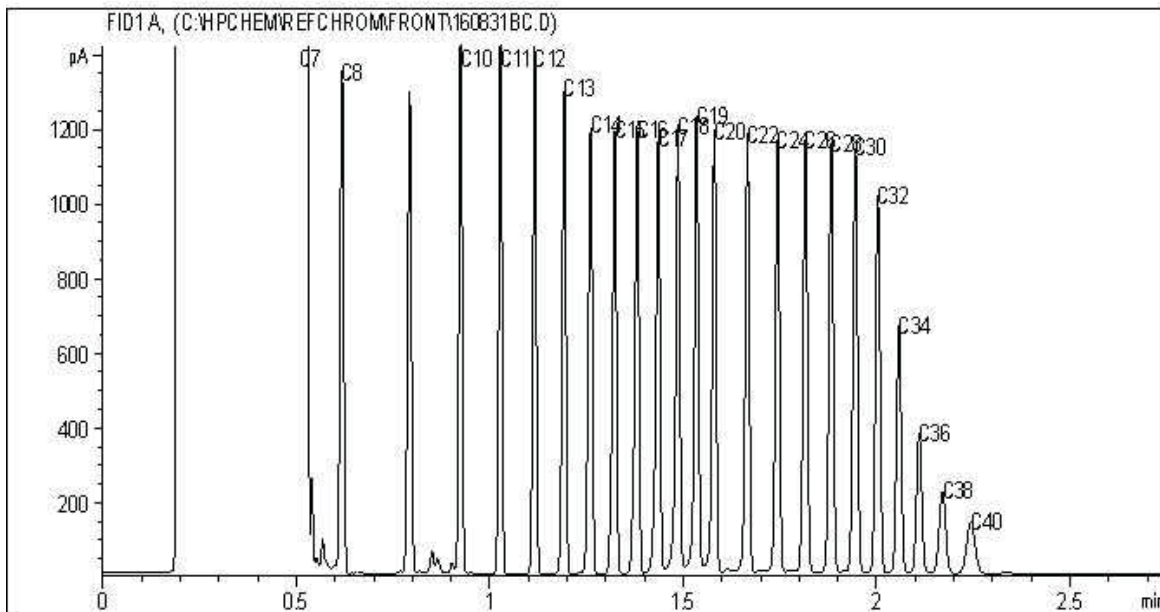
Gasoline:	C4 - C12	Diesel:	C8 - C22
Varsol:	C8 - C12	Lubricating oils:	C20 - C40

**Note: This information is provided for reference purposes only. Should detailed chemist interpretation or fingerprinting be required, please contact the laboratory.**

EPH in Water when PAH required Chromatogram



Carbon Range Distribution - Reference Chromatogram



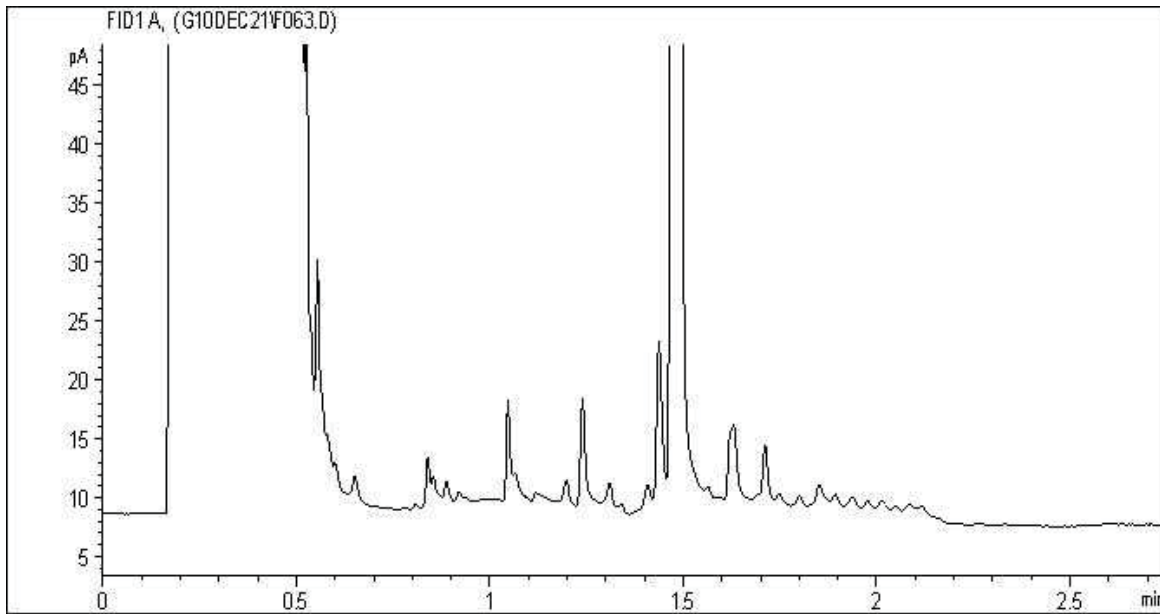
TYPICAL PRODUCT CARBON NUMBER RANGES

Gasoline:	C4 - C12	Diesel:	C8 - C22
Varsol:	C8 - C12	Lubricating oils:	C20 - C40

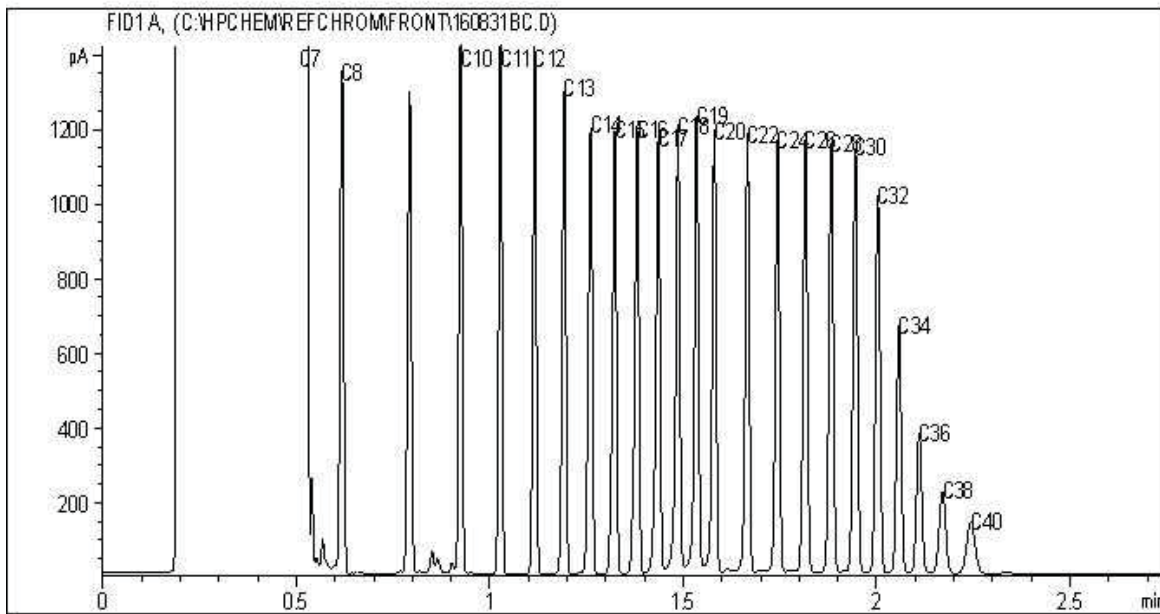
**Note: This information is provided for reference purposes only. Should detailed chemist interpretation or fingerprinting be required, please contact the laboratory.**



EPH in Water when PAH required Chromatogram



Carbon Range Distribution - Reference Chromatogram

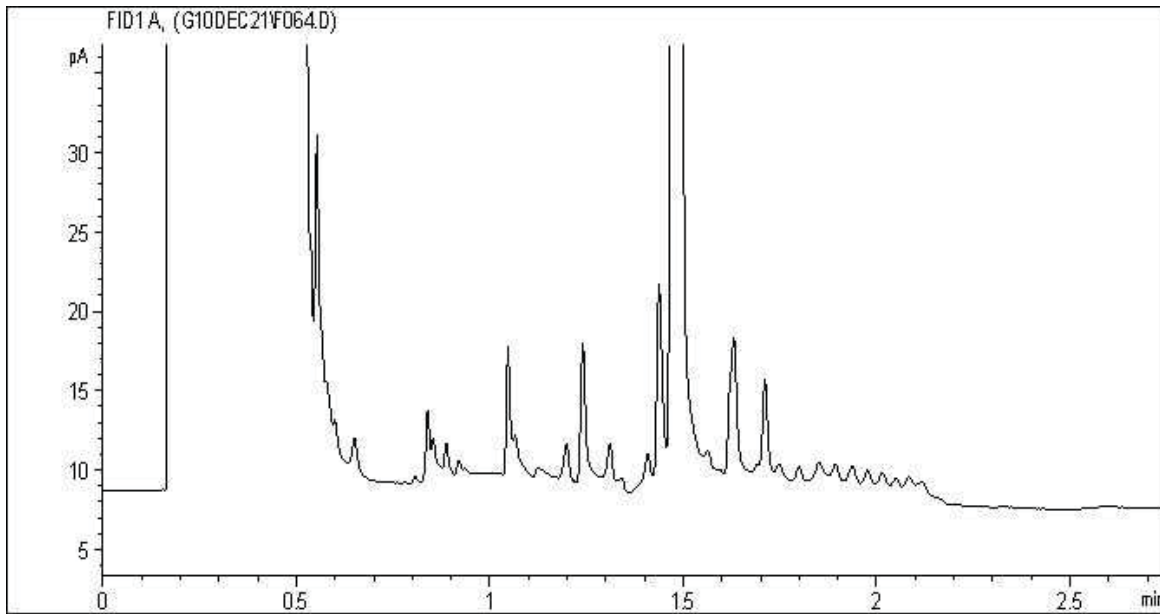


TYPICAL PRODUCT CARBON NUMBER RANGES

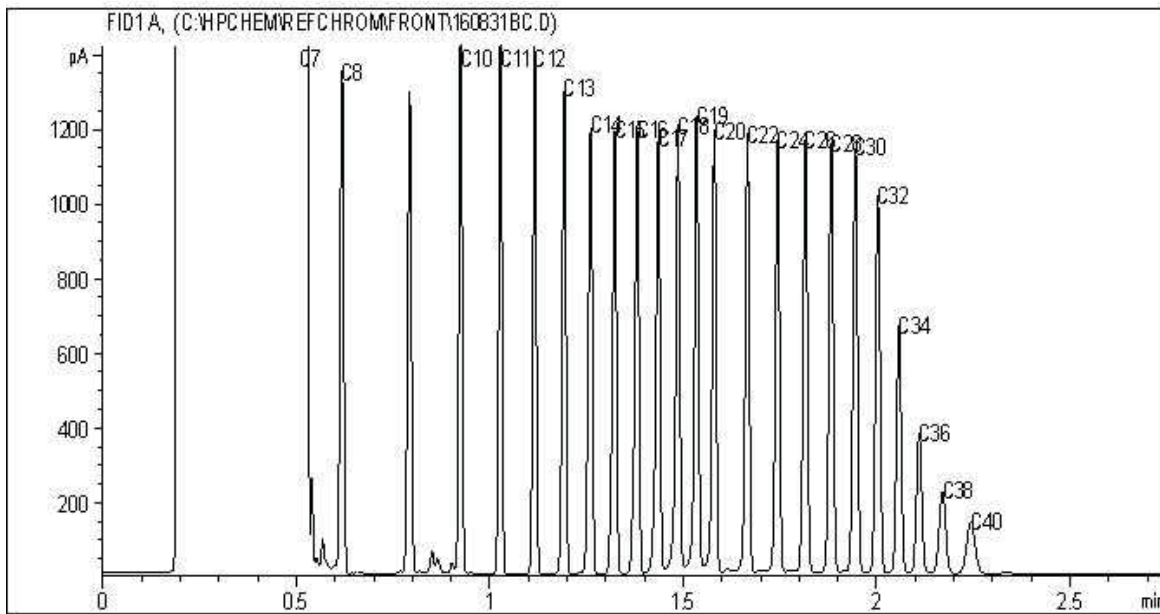
Gasoline:	C4 - C12	Diesel:	C8 - C22
Varsol:	C8 - C12	Lubricating oils:	C20 - C40

**Note: This information is provided for reference purposes only. Should detailed chemist interpretation or fingerprinting be required, please contact the laboratory.**

EPH in Water when PAH required Chromatogram



Carbon Range Distribution - Reference Chromatogram

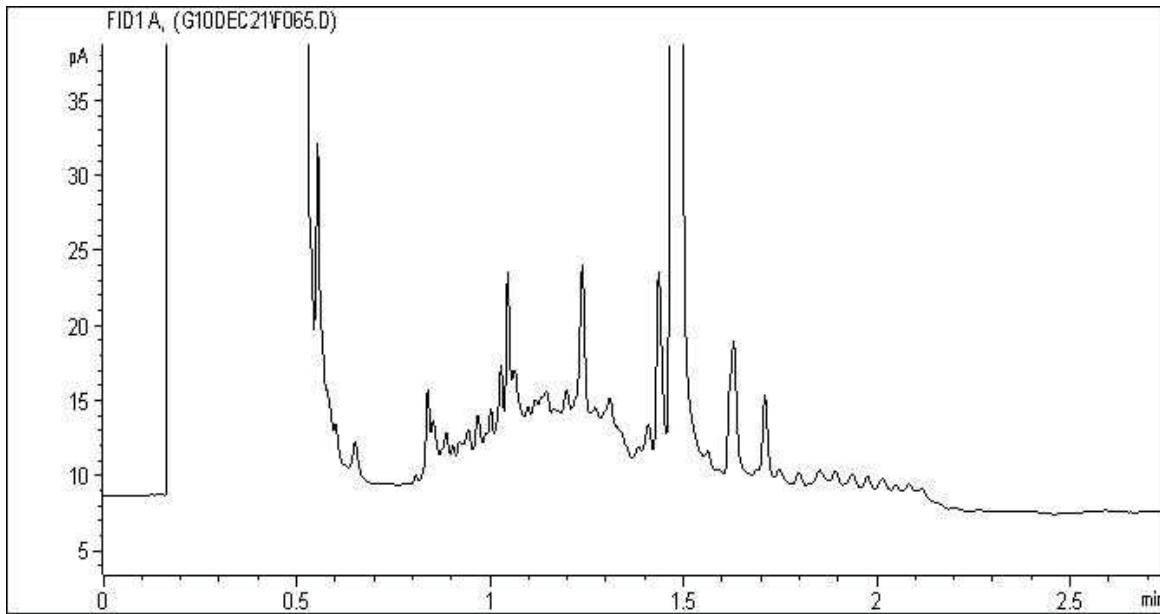


TYPICAL PRODUCT CARBON NUMBER RANGES

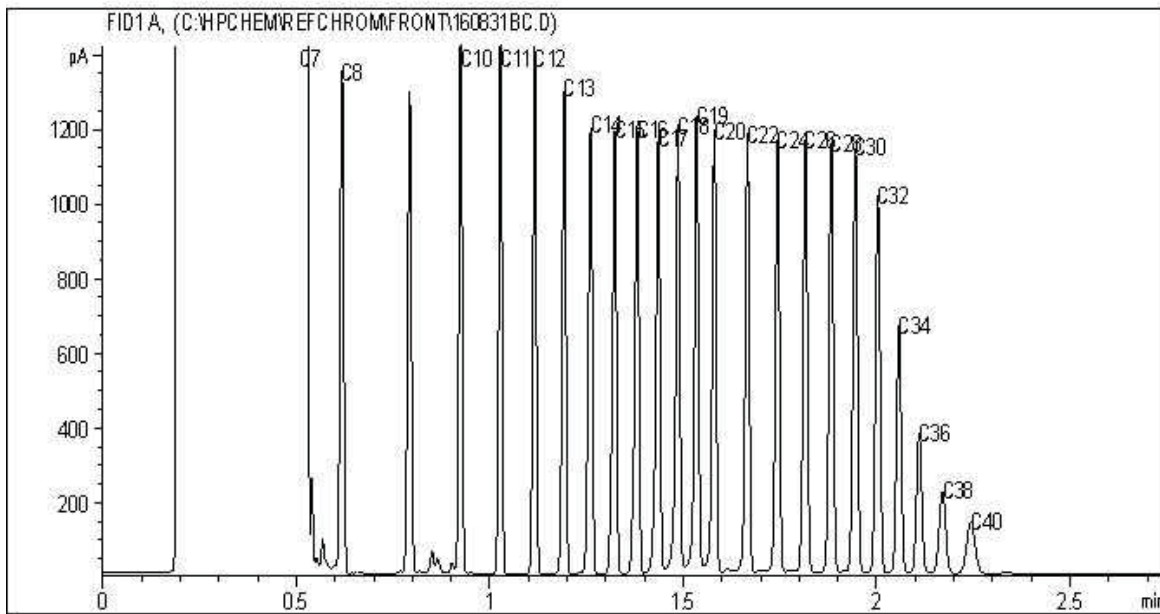
Gasoline:	C4 - C12	Diesel:	C8 - C22
Varsol:	C8 - C12	Lubricating oils:	C20 - C40

**Note: This information is provided for reference purposes only. Should detailed chemist interpretation or fingerprinting be required, please contact the laboratory.**

EPH in Water when PAH required Chromatogram



Carbon Range Distribution - Reference Chromatogram



TYPICAL PRODUCT CARBON NUMBER RANGES

Gasoline:	C4 - C12	Diesel:	C8 - C22
Varsol:	C8 - C12	Lubricating oils:	C20 - C40

**Note: This information is provided for reference purposes only. Should detailed chemist interpretation or fingerprinting be required, please contact the laboratory.**



**Attention: Michael Chao**

SNC LAVALIN ENVIRONMENT INC.  
8648 COMMERCE COURT  
BURNABY, BC  
CANADA V5A 4N6

Your P.O. #: 700365230  
Your Project #: 640752  
Site#: APEC 22E  
Site Location: WATSON LAKE AIRPORT  
Your C.O.C. #: 513078-01-01

**Report Date: 2016/12/28**  
Report #: R2323908  
Version: 1 - Final

**CERTIFICATE OF ANALYSIS**

**MAXXAM JOB #: B6B2850**

**Received: 2016/12/16, 09:00**

Sample Matrix: GROUND WATER  
# Samples Received: 1

Analyses	Quantity	Date		Laboratory Method	Analytical Method
		Extracted	Analyzed		
BTEX/MTBE LH, VH, F1 SIM/MS	1	2016/12/21	2016/12/21	BBY8SOP-00010/11/12	EPA 8260c R3 m
Hardness (calculated as CaCO3)	1	N/A	2016/12/23	BBY WI-00033	Auto Calc
Mercury (Dissolved) by CVAf	1	N/A	2016/12/23	BBY7SOP-00015	BCMOE BCLM Oct2013 m
EPH in Water when PAH required	1	2016/12/21	2016/12/21	BBY8SOP-00029	BCMOE EPH w 12/00 m
Elements by CRC ICPMS (dissolved)	1	N/A	2016/12/23	BBY7SOP-00002	EPA 6020B R2 m
PAH in Water by GC/MS (SIM)	1	2016/12/21	2016/12/22	BBY8SOP-00021	EPA 8270d R4 m
Total LMW, HMW, Total PAH Calc	1	N/A	2016/12/22	BBY WI-00033	Auto Calc
Filter and HNO3 Preserve for Metals	1	N/A	2016/12/23	BBY7 WI-00004	BCMOE Reqs 08/14
EPH less PAH in Water by GC/FID	1	N/A	2016/12/22	BBY WI-00033	Auto Calc
Volatile HC-BTEX	1	N/A	2016/12/22	BBY WI-00033	Auto Calc

**Remarks:**

Maxxam Analytics' laboratories are accredited to ISO/IEC 17025:2005 for specific parameters on scopes of accreditation. Unless otherwise noted, procedures used by Maxxam are based upon recognized Provincial, Federal or US method compendia such as CCME, MDDELCC, EPA, APHA.

All work recorded herein has been done in accordance with procedures and practices ordinarily exercised by professionals in Maxxam's profession using accepted testing methodologies, quality assurance and quality control procedures (except where otherwise agreed by the client and Maxxam in writing). All data is in statistical control and has met quality control and method performance criteria unless otherwise noted. All method blanks are reported: unless indicated otherwise, associated sample data are not blank corrected.

Maxxam Analytics' liability is limited to the actual cost of the requested analyses, unless otherwise agreed in writing. There is no other warranty expressed or implied. Maxxam has been retained to provide analysis of samples provided by the Client using the testing methodology referenced in this report. Interpretation and use of test results are the sole responsibility of the Client and are not within the scope of services provided by Maxxam, unless otherwise agreed in writing.

Solid sample results, except biota, are based on dry weight unless otherwise indicated. Organic analyses are not recovery corrected except for isotope dilution methods. Results relate to samples tested.

This Certificate shall not be reproduced except in full, without the written approval of the laboratory.

Reference Method suffix "m" indicates test methods incorporate validated modifications from specific reference methods to improve performance.

\* RPDs calculated using raw data. The rounding of final results may result in the apparent difference.

**Attention:Michael Chao**

SNC LAVALIN ENVIRONMENT INC.  
8648 COMMERCE COURT  
BURNABY, BC  
CANADA V5A 4N6

Your P.O. #: 700365230  
Your Project #: 640752  
Site#: APEC 22E  
Site Location: WATSON LAKE AIRPORT  
Your C.O.C. #: 513078-01-01

**Report Date: 2016/12/28**  
Report #: R2323908  
Version: 1 - Final

**CERTIFICATE OF ANALYSIS**

**MAXXAM JOB #: B6B2850**

**Received: 2016/12/16, 09:00**

Encryption Key

Please direct all questions regarding this Certificate of Analysis to your Project Manager.  
Samantha Fregien, Project Manager  
Email: SFregien@maxxam.ca  
Phone# (604)639-8418

=====  
Maxxam has procedures in place to guard against improper use of the electronic signature and have the required "signatories", as per section 5.10.2 of ISO/IEC 17025:2005(E), signing the reports. For Service Group specific validation please refer to the Validation Signature Page.

Maxxam Job #: B6B2850  
Report Date: 2016/12/28

SNC LAVALIN ENVIRONMENT INC.  
Client Project #: 640752  
Site Location: WATSON LAKE AIRPORT  
Your P.O. #: 700365230  
Sampler Initials: MLC

**RESULTS OF CHEMICAL ANALYSES OF GROUND WATER**

Maxxam ID		QH0936	
Sampling Date		2016/12/15 14:11	
COC Number		513078-01-01	
	<b>UNITS</b>	<b>22E-MW16-6-161215</b>	<b>QC Batch</b>

<b>Calculated Parameters</b>			
Filter and HNO3 Preservation	N/A	FIELD	ONSITE

Maxxam Job #: B6B2850  
Report Date: 2016/12/28

SNC LAVALIN ENVIRONMENT INC.  
Client Project #: 640752  
Site Location: WATSON LAKE AIRPORT  
Your P.O. #: 700365230  
Sampler Initials: MLC

**CSR BTEX/VPH IN WATER (GROUND WATER)**

Maxxam ID		QH0936		
Sampling Date		2016/12/15 14:11		
COC Number		513078-01-01		
	<b>UNITS</b>	<b>22E-MW16-6-161215</b>	<b>RDL</b>	<b>QC Batch</b>
<b>Volatiles</b>				
VPH (VH6 to 10 - BTEX)	ug/L	<300	300	8507158
Methyl-tert-butylether (MTBE)	ug/L	<4.0	4.0	8510158
Benzene	ug/L	<0.40	0.40	8510158
Toluene	ug/L	<0.40	0.40	8510158
Ethylbenzene	ug/L	<0.40	0.40	8510158
m & p-Xylene	ug/L	<0.40	0.40	8510158
o-Xylene	ug/L	<0.40	0.40	8510158
Styrene	ug/L	<0.40	0.40	8510158
Xylenes (Total)	ug/L	<0.40	0.40	8510158
VH C6-C10	ug/L	<300	300	8510158
<b>Surrogate Recovery (%)</b>				
1,4-Difluorobenzene (sur.)	%	103		8510158
4-Bromofluorobenzene (sur.)	%	81		8510158
D4-1,2-Dichloroethane (sur.)	%	108		8510158
RDL = Reportable Detection Limit				

Maxxam Job #: B6B2850  
Report Date: 2016/12/28

SNC LAVALIN ENVIRONMENT INC.  
Client Project #: 640752  
Site Location: WATSON LAKE AIRPORT  
Your P.O. #: 700365230  
Sampler Initials: MLC

**LEPH & HEPH WITH CSR/CCME PAH IN WATER (GROUND WATER)**

Maxxam ID		QH0936		
Sampling Date		2016/12/15 14:11		
COC Number		513078-01-01		
	<b>UNITS</b>	<b>22E-MW16-6-161215</b>	<b>RDL</b>	<b>QC Batch</b>

<b>Polycyclic Aromatics</b>				
Low Molecular Weight PAH's	ug/L	3.3	0.24	8507156
High Molecular Weight PAH's	ug/L	<0.050	0.050	8507156
Total PAH	ug/L	3.3	0.24	8507156
Naphthalene	ug/L	0.15	0.10	8509571
2-Methylnaphthalene	ug/L	2.4	0.10	8509571
Quinoline	ug/L	<0.24	0.24	8509571
Acenaphthylene	ug/L	<0.050	0.050	8509571
Acenaphthene	ug/L	0.20 (1)	0.050	8509571
Fluorene	ug/L	0.45	0.050	8509571
Phenanthrene	ug/L	0.066	0.050	8509571
Anthracene	ug/L	<0.010	0.010	8509571
Acridine	ug/L	<0.050	0.050	8509571
Fluoranthene	ug/L	<0.020	0.020	8509571
Pyrene	ug/L	<0.020	0.020	8509571
Benzo(a)anthracene	ug/L	<0.010	0.010	8509571
Chrysene	ug/L	<0.050	0.050	8509571
Benzo(b&j)fluoranthene	ug/L	<0.050	0.050	8509571
Benzo(k)fluoranthene	ug/L	<0.050	0.050	8509571
Benzo(a)pyrene	ug/L	<0.0090	0.0090	8509571
Indeno(1,2,3-cd)pyrene	ug/L	<0.050	0.050	8509571
Dibenz(a,h)anthracene	ug/L	<0.050	0.050	8509571
Benzo(g,h,i)perylene	ug/L	<0.050	0.050	8509571
<b>Calculated Parameters</b>				
LEPH (C10-C19 less PAH)	mg/L	<0.20	0.20	8507157
HEPH (C19-C32 less PAH)	mg/L	<0.20	0.20	8507157
<b>Ext. Pet. Hydrocarbon</b>				
EPH (C10-C19)	mg/L	<0.20	0.20	8509581
EPH (C19-C32)	mg/L	<0.20	0.20	8509581
RDL = Reportable Detection Limit				
(1) Qualifying ion outside of acceptance criteria. Results are tentatively identified and potentially biased high.				

Maxxam Job #: B6B2850  
Report Date: 2016/12/28

SNC LAVALIN ENVIRONMENT INC.  
Client Project #: 640752  
Site Location: WATSON LAKE AIRPORT  
Your P.O. #: 700365230  
Sampler Initials: MLC

**LEPH & HEPH WITH CSR/CCME PAH IN WATER (GROUND WATER)**

Maxxam ID		QH0936		
Sampling Date		2016/12/15 14:11		
COC Number		513078-01-01		
	<b>UNITS</b>	<b>22E-MW16-6-161215</b>	<b>RDL</b>	<b>QC Batch</b>

<b>Surrogate Recovery (%)</b>				
O-TERPHENYL (sur.)	%	95		8509581
D10-ANTHRACENE (sur.)	%	104		8509571
D8-ACENAPHTHYLENE (sur.)	%	102		8509571
D8-NAPHTHALENE (sur.)	%	102		8509571
D9-Acridine	%	100		8509571
TERPHENYL-D14 (sur.)	%	74		8509571
RDL = Reportable Detection Limit				

Maxxam Job #: B6B2850  
Report Date: 2016/12/28

SNC LAVALIN ENVIRONMENT INC.  
Client Project #: 640752  
Site Location: WATSON LAKE AIRPORT  
Your P.O. #: 700365230  
Sampler Initials: MLC

**CSR/CCME DISS. METALS IN WATER W/ CV HG (GROUND WATER)**

Maxxam ID		QH0936		
Sampling Date		2016/12/15 14:11		
COC Number		513078-01-01		
	<b>UNITS</b>	<b>22E-MW16-6-161215</b>	<b>RDL</b>	<b>QC Batch</b>
<b>Misc. Inorganics</b>				
Dissolved Hardness (CaCO3)	mg/L	125	0.50	8507154
<b>Elements</b>				
Dissolved Mercury (Hg)	ug/L	<0.010	0.010	8512222
<b>Dissolved Metals by ICPMS</b>				
Dissolved Arsenic (As)	ug/L	0.47	0.10	8508568
Dissolved Cadmium (Cd)	ug/L	<0.010	0.010	8508568
Dissolved Chromium (Cr)	ug/L	<1.0	1.0	8508568
Dissolved Copper (Cu)	ug/L	<0.20	0.20	8508568
Dissolved Lead (Pb)	ug/L	<0.20	0.20	8508568
Dissolved Nickel (Ni)	ug/L	2.0	1.0	8508568
Dissolved Selenium (Se)	ug/L	0.47	0.10	8508568
Dissolved Zinc (Zn)	ug/L	<5.0	5.0	8508568
RDL = Reportable Detection Limit				

Maxxam Job #: B6B2850  
Report Date: 2016/12/28

SNC LAVALIN ENVIRONMENT INC.  
Client Project #: 640752  
Site Location: WATSON LAKE AIRPORT  
Your P.O. #: 700365230  
Sampler Initials: MLC

### GENERAL COMMENTS

Each temperature is the average of up to three cooler temperatures taken at receipt

Package 1	-1.3°C
-----------	--------

**Results relate only to the items tested.**



Maxxam Job #: B6B2850  
Report Date: 2016/12/28

**QUALITY ASSURANCE REPORT**

SNC LAVALIN ENVIRONMENT INC.  
Client Project #: 640752  
Site Location: WATSON LAKE AIRPORT  
Your P.O. #: 700365230  
Sampler Initials: MLC

QC Batch	Parameter	Date	Matrix Spike		Spiked Blank		Method Blank		RPD	
			% Recovery	QC Limits	% Recovery	QC Limits	Value	UNITS	Value (%)	QC Limits
8509571	D10-ANTHRACENE (sur.)	2016/12/22	96	60 - 130	103	60 - 130	103	%		
8509571	D8-ACENAPHTHYLENE (sur.)	2016/12/22	127	50 - 130	99	50 - 130	97	%		
8509571	D8-NAPHTHALENE (sur.)	2016/12/22	53	50 - 130	98	50 - 130	98	%		
8509571	D9-Acridine	2016/12/22	93	50 - 130	96	50 - 130	98	%		
8509571	TERPHENYL-D14 (sur.)	2016/12/22	62	60 - 130	83	60 - 130	86	%		
8509581	O-TERPHENYL (sur.)	2016/12/21	95	50 - 130	96	50 - 130	97	%		
8510158	1,4-Difluorobenzene (sur.)	2016/12/21	97	70 - 130	95	70 - 130	105	%		
8510158	4-Bromofluorobenzene (sur.)	2016/12/21	95	70 - 130	96	70 - 130	80	%		
8510158	D4-1,2-Dichloroethane (sur.)	2016/12/21	103	70 - 130	96	70 - 130	112	%		
8508568	Dissolved Arsenic (As)	2016/12/23	97	80 - 120	98	80 - 120	<0.10	ug/L	2.7	20
8508568	Dissolved Cadmium (Cd)	2016/12/23	99	80 - 120	101	80 - 120	<0.010	ug/L		
8508568	Dissolved Chromium (Cr)	2016/12/23	96	80 - 120	104	80 - 120	<1.0	ug/L	NC	20
8508568	Dissolved Copper (Cu)	2016/12/23	96	80 - 120	100	80 - 120	<0.20	ug/L	1.9	20
8508568	Dissolved Lead (Pb)	2016/12/23	101	80 - 120	107	80 - 120	<0.20	ug/L	3.3	20
8508568	Dissolved Nickel (Ni)	2016/12/23	NC	80 - 120	102	80 - 120	<1.0	ug/L		
8508568	Dissolved Selenium (Se)	2016/12/23	100	80 - 120	98	80 - 120	<0.10	ug/L		
8508568	Dissolved Zinc (Zn)	2016/12/23	NC	80 - 120	110	80 - 120	<5.0	ug/L	NC	20
8509571	2-Methylnaphthalene	2016/12/22	NC	50 - 130	101	50 - 130	<0.10	ug/L	2.4	40
8509571	Acenaphthene	2016/12/22	105	50 - 130	107	50 - 130	<0.050	ug/L	NC	40
8509571	Acenaphthylene	2016/12/22	103	50 - 130	106	50 - 130	<0.050	ug/L	NC	40
8509571	Acridine	2016/12/22	96	50 - 130	97	50 - 130	<0.050	ug/L	NC	40
8509571	Anthracene	2016/12/22	104	60 - 130	110	60 - 130	<0.010	ug/L	NC	40
8509571	Benzo(a)anthracene	2016/12/22	114	60 - 130	117	60 - 130	<0.010	ug/L	NC	40
8509571	Benzo(a)pyrene	2016/12/22	106	60 - 130	113	60 - 130	<0.0090	ug/L	NC	40
8509571	Benzo(b&j)fluoranthene	2016/12/22	109	60 - 130	115	60 - 130	<0.050	ug/L	NC	40
8509571	Benzo(g,h,i)perylene	2016/12/22	97	60 - 130	103	60 - 130	<0.050	ug/L	NC	40
8509571	Benzo(k)fluoranthene	2016/12/22	113	60 - 130	115	60 - 130	<0.050	ug/L	NC	40
8509571	Chrysene	2016/12/22	117	60 - 130	121	60 - 130	<0.050	ug/L	NC	40
8509571	Dibenz(a,h)anthracene	2016/12/22	110	60 - 130	117	60 - 130	<0.050	ug/L	NC	40
8509571	Fluoranthene	2016/12/22	101	60 - 130	98	60 - 130	<0.020	ug/L	NC	40

Maxxam Job #: B6B2850  
Report Date: 2016/12/28

**QUALITY ASSURANCE REPORT(CONT'D)**

SNC LAVALIN ENVIRONMENT INC.  
Client Project #: 640752  
Site Location: WATSON LAKE AIRPORT  
Your P.O. #: 700365230  
Sampler Initials: MLC

QC Batch	Parameter	Date	Matrix Spike		Spiked Blank		Method Blank		RPD	
			% Recovery	QC Limits	% Recovery	QC Limits	Value	UNITS	Value (%)	QC Limits
8509571	Fluorene	2016/12/22	108	50 - 130	103	50 - 130	<0.050	ug/L	NC	40
8509571	Indeno(1,2,3-cd)pyrene	2016/12/22	107	60 - 130	114	60 - 130	<0.050	ug/L	NC	40
8509571	Naphthalene	2016/12/22	NC	50 - 130	106	50 - 130	<0.10	ug/L	3.3	40
8509571	Phenanthrene	2016/12/22	102	60 - 130	104	60 - 130	<0.050	ug/L	NC	40
8509571	Pyrene	2016/12/22	100	60 - 130	100	60 - 130	<0.020	ug/L	NC	40
8509571	Quinoline	2016/12/22	126	50 - 130	117	50 - 130	<0.24	ug/L	NC	40
8509581	EPH (C10-C19)	2016/12/21	NC	50 - 130	97	50 - 130	<0.20	mg/L	0.82	30
8509581	EPH (C19-C32)	2016/12/21	99	50 - 130	96	50 - 130	<0.20	mg/L	NC	30
8510158	Benzene	2016/12/21	105	N/A	91	70 - 130	<0.40	ug/L	NC	30
8510158	Ethylbenzene	2016/12/21	119	N/A	110	70 - 130	<0.40	ug/L	NC	30
8510158	m & p-Xylene	2016/12/21	118	N/A	109	70 - 130	<0.40	ug/L	NC	30
8510158	Methyl-tert-butylether (MTBE)	2016/12/21	106	N/A	96	70 - 130	<4.0	ug/L	NC	30
8510158	o-Xylene	2016/12/21	113	N/A	106	70 - 130	<0.40	ug/L	NC	30
8510158	Styrene	2016/12/21	116	N/A	110	70 - 130	<0.40	ug/L	NC	30
8510158	Toluene	2016/12/21	116	N/A	101	70 - 130	<0.40	ug/L	NC	30
8510158	VH C6-C10	2016/12/21			97	70 - 130	<300	ug/L	NC	30
8510158	Xylenes (Total)	2016/12/21					<0.40	ug/L	NC	30
8512222	Dissolved Mercury (Hg)	2016/12/23	101	80 - 120	101	80 - 120	<0.010	ug/L	NC	20

Duplicate: Paired analysis of a separate portion of the same sample. Used to evaluate the variance in the measurement.

Matrix Spike: A sample to which a known amount of the analyte of interest has been added. Used to evaluate sample matrix interference.

Spiked Blank: A blank matrix sample to which a known amount of the analyte, usually from a second source, has been added. Used to evaluate method accuracy.

Method Blank: A blank matrix containing all reagents used in the analytical procedure. Used to identify laboratory contamination.

Surrogate: A pure or isotopically labeled compound whose behavior mirrors the analytes of interest. Used to evaluate extraction efficiency.

NC (Matrix Spike): The recovery in the matrix spike was not calculated. The relative difference between the concentration in the parent sample and the spiked amount was too small to permit a reliable recovery calculation (matrix spike concentration was less than 2x that of the native sample concentration).

NC (Duplicate RPD): The duplicate RPD was not calculated. The concentration in the sample and/or duplicate was too low to permit a reliable RPD calculation (one or both samples < 5x RDL).

Maxxam Job #: B6B2850  
Report Date: 2016/12/28

SNC LAVALIN ENVIRONMENT INC.  
Client Project #: 640752  
Site Location: WATSON LAKE AIRPORT  
Your P.O. #: 700365230  
Sampler Initials: MLC

### VALIDATION SIGNATURE PAGE

The analytical data and all QC contained in this report were reviewed and validated by the following individual(s).



Andy Lu, Ph.D., P.Chem., Scientific Specialist

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Maxxam has procedures in place to guard against improper use of the electronic signature and have the required "signatories", as per section 5.10.2 of ISO/IEC 17025:2005(E), signing the reports. For Service Group specific validation please refer to the Validation Signature Page.

<b>INVOICE TO:</b>		<b>Report Information</b>		<b>Project Information</b>	
Company Name	#1756 PUBLIC WORKS & GOVERNMENT SERVICE	Company Name	#26479 SNC LAVALIN ENVIRONMENT INC.	Quotation #	B61631
Contact Name	Jordan Stones	Contact Name	Michael Chao <i>Marta Rosa</i>	P.O. #	700365230
Address	641- 800 BURRARD STREET VANCOUVER BC V6Z 2V8	Address	8648 COMMERCE COURT BURNABY BC V5A 4N6	Project #	640752
Phone	(604) 775-6610 Fax: (604) 775-6650	Phone	(604) 515-5151 Fax: <i>26479</i>	Project Name	<i>Watson Lake Airport</i>
Email	robert.price@pwgsc-lpsgc.gc.ca	Email	Michael.Chao@snciavalin.com, <i>Marta Rosa</i>	Site #	APEC 22E
				Sampled By	MLC



B6B2850\_COC

Order #:  
513078  
Project Manager  
Samantha Fregien

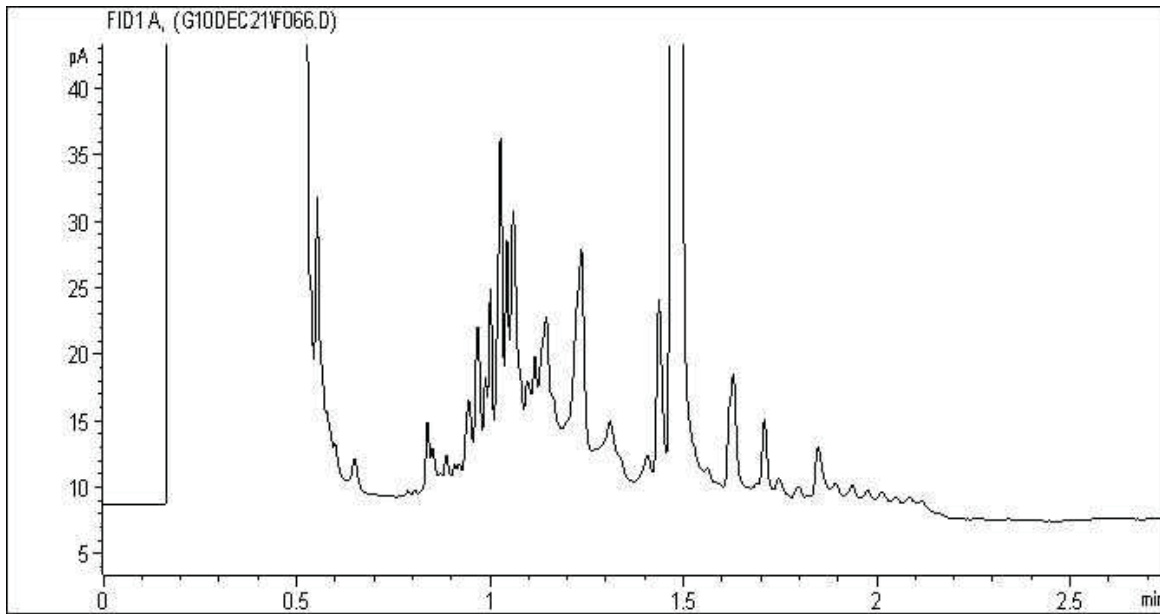
Regulatory Criteria	Special Instructions	Analysis Requested	Turnaround Time (TAT) Required
<i>Yukon CSR Water Drinking/Freshwater</i>			Please provide advance notice for rush projects
<p>Note: For regulated drinking water samples - please use the Drinking Water Chain of Custody Form</p> <p>Samples must be kept cool (&lt; 10°C) from time of sampling until delivery to maxxam</p>		Regulated Drinking Water? (Y/N) Metals Field Filtered? (Y/N) CSR BTEX/VPH in Water LEPH & HEPH with CSR/CCME PAH in Water CSR/CCME Diss. Metals in Water w/ CV Hg CSR VOC + VPH in Water Diss. As, Cd, Pb, Hg, Cr, Cu, Ni, Se, Zn	Regular (Standard) TAT (will be applied if Rush TAT is not specified) Standard TAT = 5-7 Working days for most tests. Please note: Standard TAT for certain tests such as BOD and Dioxine/Furans are > 5 days - contact your Project Manager for details. Job Specific Rush TAT (if applies to entire submission) Date Required: _____ Time Required: _____ Rush Confirmation Number: _____ (call lab for #)

Sample Barcode Label	Sample (Location) Identification	Date Sampled	Time Sampled	Matrix	Regulated Drinking Water? (Y/N)	Metals Field Filtered? (Y/N)	CSR BTEX/VPH in Water	LEPH & HEPH with CSR/CCME PAH in Water	CSR/CCME Diss. Metals in Water w/ CV Hg	CSR VOC + VPH in Water	Diss. As, Cd, Pb, Hg, Cr, Cu, Ni, Se, Zn	# of Bottles	Comments
1	22E-MW16-6-161215	16/12/15	14:11	GW	Y	X	X			X		67	BTEX vials may not contain zero headspace due to climate.
2													RECEIVED IN WHITEHORSE
3													BY: <i>SWENO@0900</i>
4													2016-12-16
5													TEMP: 0 1-2 1-2
6													
7													
8													
9													
10													

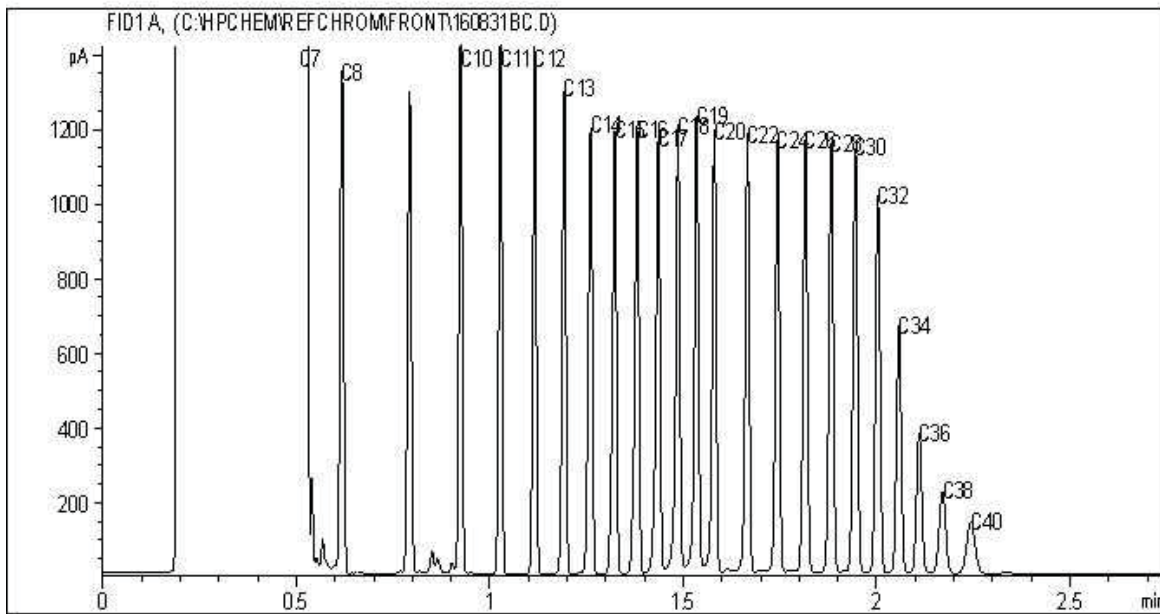
* RELINQUISHED BY: (Signature/Print)	Date: (YY/MM/DD)	Time	RECEIVED BY: (Signature/Print)	Date: (YY/MM/DD)	Time	# jars used and not submitted	Lab Use Only
<i>Michael Chao</i> Mike Chao	16/12/15	18:00	<i>KEVIN CHOW</i> KEVIN CHOW	2016/12/19	09:25	NA	Time Sensitive: <input type="checkbox"/> Temperature (°C) on Receipt: 1, 1, 2 Custody Seal Intact on Cooler? <input checked="" type="checkbox"/> Yes <input type="checkbox"/> No

\* IT IS THE RESPONSIBILITY OF THE RELINQUISHER TO ENSURE THE ACCURACY OF THE CHAIN OF CUSTODY RECORD. AN INCOMPLETE CHAIN OF CUSTODY MAY RESULT IN ANALYTICAL TAT DELAYS.

EPH in Water when PAH required Chromatogram



Carbon Range Distribution - Reference Chromatogram



TYPICAL PRODUCT CARBON NUMBER RANGES

Gasoline:	C4 - C12	Diesel:	C8 - C22
Varsol:	C8 - C12	Lubricating oils:	C20 - C40

**Note: This information is provided for reference purposes only. Should detailed chemist interpretation or fingerprinting be required, please contact the laboratory.**

**Attention: Marta Rosa**

SNC LAVALIN ENVIRONMENT INC.  
8648 COMMERCE COURT  
BURNABY, BC  
CANADA V5A 4N6

Your P.O. #: 700365230  
Your Project #: 640752  
Site#: APEC 22B  
Site Location: WATSON LAKE AIRPORT  
Your C.O.C. #: 08434157

**Report Date: 2016/12/23**

Report #: R2322219

Version: 1 - Final

**CERTIFICATE OF ANALYSIS**

**MAXXAM JOB #: B6B2853**

**Received: 2016/12/16, 09:00**

Sample Matrix: GROUND WATER  
# Samples Received: 1

Analyses	Quantity	Date		Laboratory Method	Analytical Method
		Extracted	Analyzed		
BTEX/MTBE LH, VH, F1 SIM/MS	1	2016/12/21	2016/12/21	BBY8SOP-00010/11/12	EPA 8260c R3 m
Hardness (calculated as CaCO3)	1	N/A	2016/12/19	BBY WI-00033	Auto Calc
Mercury (Dissolved) by CVAf	1	N/A	2016/12/23	BBY7SOP-00015	BCMOE BCLM Oct2013 m
EPH in Water when PAH required	1	2016/12/19	2016/12/19	BBY8SOP-00029	BCMOE EPH w 12/00 m
Elements by CRC ICPMS (dissolved)	1	N/A	2016/12/19	BBY7SOP-00002	EPA 6020B R2 m
PAH in Water by GC/MS (SIM)	1	2016/12/19	2016/12/19	BBY8SOP-00021	EPA 8270d R4 m
Total LMW, HMW, Total PAH Calc	1	N/A	2016/12/19	BBY WI-00033	Auto Calc
Filter and HNO3 Preserve for Metals	1	N/A	2016/12/20	BBY7 WI-00004	BCMOE Reqs 08/14
EPH less PAH in Water by GC/FID	1	N/A	2016/12/20	BBY WI-00033	Auto Calc
Volatile HC-BTEX	1	N/A	2016/12/22	BBY WI-00033	Auto Calc

**Remarks:**

Maxxam Analytics' laboratories are accredited to ISO/IEC 17025:2005 for specific parameters on scopes of accreditation. Unless otherwise noted, procedures used by Maxxam are based upon recognized Provincial, Federal or US method compendia such as CCME, MDDELCC, EPA, APHA.

All work recorded herein has been done in accordance with procedures and practices ordinarily exercised by professionals in Maxxam's profession using accepted testing methodologies, quality assurance and quality control procedures (except where otherwise agreed by the client and Maxxam in writing). All data is in statistical control and has met quality control and method performance criteria unless otherwise noted. All method blanks are reported: unless indicated otherwise, associated sample data are not blank corrected.

Maxxam Analytics' liability is limited to the actual cost of the requested analyses, unless otherwise agreed in writing. There is no other warranty expressed or implied. Maxxam has been retained to provide analysis of samples provided by the Client using the testing methodology referenced in this report. Interpretation and use of test results are the sole responsibility of the Client and are not within the scope of services provided by Maxxam, unless otherwise agreed in writing.

Solid sample results, except biota, are based on dry weight unless otherwise indicated. Organic analyses are not recovery corrected except for isotope dilution methods. Results relate to samples tested.

This Certificate shall not be reproduced except in full, without the written approval of the laboratory.

Reference Method suffix "m" indicates test methods incorporate validated modifications from specific reference methods to improve performance.

\* RPDs calculated using raw data. The rounding of final results may result in the apparent difference.



**Attention:Marta Rosa**

SNC LAVALIN ENVIRONMENT INC.  
8648 COMMERCE COURT  
BURNABY, BC  
CANADA V5A 4N6

Your P.O. #: 700365230  
Your Project #: 640752  
Site#: APEC 22B  
Site Location: WATSON LAKE AIRPORT  
Your C.O.C. #: 08434157

**Report Date: 2016/12/23**  
Report #: R2322219  
Version: 1 - Final

**CERTIFICATE OF ANALYSIS**

**MAXXAM JOB #: B6B2853**

**Received: 2016/12/16, 09:00**

Encryption Key

Please direct all questions regarding this Certificate of Analysis to your Project Manager.  
Samantha Fregien, Project Manager  
Email: SFregien@maxxam.ca  
Phone# (604)639-8418

=====  
Maxxam has procedures in place to guard against improper use of the electronic signature and have the required "signatories", as per section 5.10.2 of ISO/IEC 17025:2005(E), signing the reports. For Service Group specific validation please refer to the Validation Signature Page.

Maxxam Job #: B6B2853  
Report Date: 2016/12/23

SNC LAVALIN ENVIRONMENT INC.  
Client Project #: 640752  
Site Location: WATSON LAKE AIRPORT  
Your P.O. #: 700365230  
Sampler Initials: MLC

**RESULTS OF CHEMICAL ANALYSES OF GROUND WATER**

Maxxam ID		QH0961	
Sampling Date		2016/12/14 13:40	
COC Number		08434157	
	<b>UNITS</b>	<b>22B-MW16-9-161214</b>	<b>QC Batch</b>
<b>Calculated Parameters</b>			
Filter and HNO3 Preservation	N/A	FIELD	ONSITE



Maxxam Job #: B6B2853  
Report Date: 2016/12/23

SNC LAVALIN ENVIRONMENT INC.  
Client Project #: 640752  
Site Location: WATSON LAKE AIRPORT  
Your P.O. #: 700365230  
Sampler Initials: MLC

**CSR BTEX/VPH IN WATER (GROUND WATER)**

Maxxam ID		QH0961		
Sampling Date		2016/12/14 13:40		
COC Number		08434157		
	<b>UNITS</b>	<b>22B-MW16-9-161214</b>	<b>RDL</b>	<b>QC Batch</b>
<b>Volatiles</b>				
VPH (VH6 to 10 - BTEX)	ug/L	<300	300	8507158
Methyl-tert-butylether (MTBE)	ug/L	<4.0	4.0	8510158
Benzene	ug/L	<0.40	0.40	8510158
Toluene	ug/L	<0.40	0.40	8510158
Ethylbenzene	ug/L	<0.40	0.40	8510158
m & p-Xylene	ug/L	<0.40	0.40	8510158
o-Xylene	ug/L	<0.40	0.40	8510158
Styrene	ug/L	<0.40	0.40	8510158
Xylenes (Total)	ug/L	<0.40	0.40	8510158
VH C6-C10	ug/L	<300	300	8510158
<b>Surrogate Recovery (%)</b>				
1,4-Difluorobenzene (sur.)	%	113		8510158
4-Bromofluorobenzene (sur.)	%	91		8510158
D4-1,2-Dichloroethane (sur.)	%	121		8510158
RDL = Reportable Detection Limit				

Maxxam Job #: B6B2853  
Report Date: 2016/12/23

SNC LAVALIN ENVIRONMENT INC.  
Client Project #: 640752  
Site Location: WATSON LAKE AIRPORT  
Your P.O. #: 700365230  
Sampler Initials: MLC

**LEPH & HEPH WITH CSR/CCME PAH IN WATER (GROUND WATER)**

Maxxam ID		QH0961		
Sampling Date		2016/12/14 13:40		
COC Number		08434157		
	<b>UNITS</b>	<b>22B-MW16-9-161214</b>	<b>RDL</b>	<b>QC Batch</b>
<b>Polycyclic Aromatics</b>				
Low Molecular Weight PAH's	ug/L	<0.24	0.24	8507156
High Molecular Weight PAH's	ug/L	<0.050	0.050	8507156
Total PAH	ug/L	<0.24	0.24	8507156
Naphthalene	ug/L	<0.10	0.10	8507527
2-Methylnaphthalene	ug/L	<0.10	0.10	8507527
Quinoline	ug/L	<0.24	0.24	8507527
Acenaphthylene	ug/L	<0.050	0.050	8507527
Acenaphthene	ug/L	<0.050	0.050	8507527
Fluorene	ug/L	<0.050	0.050	8507527
Phenanthrene	ug/L	<0.050	0.050	8507527
Anthracene	ug/L	<0.010	0.010	8507527
Acridine	ug/L	<0.050	0.050	8507527
Fluoranthene	ug/L	<0.020	0.020	8507527
Pyrene	ug/L	<0.020	0.020	8507527
Benzo(a)anthracene	ug/L	<0.010	0.010	8507527
Chrysene	ug/L	<0.050	0.050	8507527
Benzo(b&j)fluoranthene	ug/L	<0.050	0.050	8507527
Benzo(k)fluoranthene	ug/L	<0.050	0.050	8507527
Benzo(a)pyrene	ug/L	<0.0090	0.0090	8507527
Indeno(1,2,3-cd)pyrene	ug/L	<0.050	0.050	8507527
Dibenz(a,h)anthracene	ug/L	<0.050	0.050	8507527
Benzo(g,h,i)perylene	ug/L	<0.050	0.050	8507527
<b>Calculated Parameters</b>				
LEPH (C10-C19 less PAH)	mg/L	<0.20	0.20	8507157
HEPH (C19-C32 less PAH)	mg/L	<0.20	0.20	8507157
<b>Ext. Pet. Hydrocarbon</b>				
EPH (C10-C19)	mg/L	<0.20	0.20	8507546
EPH (C19-C32)	mg/L	<0.20	0.20	8507546
<b>Surrogate Recovery (%)</b>				
O-TERPHENYL (sur.)	%	92		8507546
RDL = Reportable Detection Limit				

Maxxam Job #: B6B2853  
Report Date: 2016/12/23

SNC LAVALIN ENVIRONMENT INC.  
Client Project #: 640752  
Site Location: WATSON LAKE AIRPORT  
Your P.O. #: 700365230  
Sampler Initials: MLC

**LEPH & HEPH WITH CSR/CCME PAH IN WATER (GROUND WATER)**

Maxxam ID		QH0961		
Sampling Date		2016/12/14 13:40		
COC Number		08434157		
	<b>UNITS</b>	<b>22B-MW16-9-161214</b>	<b>RDL</b>	<b>QC Batch</b>
D10-ANTHRACENE (sur.)	%	105		8507527
D8-ACENAPHTHYLENE (sur.)	%	105		8507527
D8-NAPHTHALENE (sur.)	%	120		8507527
D9-Acridine	%	102		8507527
TERPHENYL-D14 (sur.)	%	76		8507527
RDL = Reportable Detection Limit				

Maxxam Job #: B6B2853  
Report Date: 2016/12/23

SNC LAVALIN ENVIRONMENT INC.  
Client Project #: 640752  
Site Location: WATSON LAKE AIRPORT  
Your P.O. #: 700365230  
Sampler Initials: MLC

**CSR/CCME DISS. METALS IN WATER W/ CV HG (GROUND WATER)**

Maxxam ID		QH0961		
Sampling Date		2016/12/14 13:40		
COC Number		08434157		
	<b>UNITS</b>	<b>22B-MW16-9-161214</b>	<b>RDL</b>	<b>QC Batch</b>

<b>Misc. Inorganics</b>				
Dissolved Hardness (CaCO3)	mg/L	114	0.50	8507154
<b>Elements</b>				
Dissolved Mercury (Hg)	ug/L	<0.010	0.010	8512222
<b>Dissolved Metals by ICPMS</b>				
Dissolved Arsenic (As)	ug/L	0.13	0.10	8507871
Dissolved Cadmium (Cd)	ug/L	0.040	0.010	8507871
Dissolved Chromium (Cr)	ug/L	<1.0	1.0	8507871
Dissolved Copper (Cu)	ug/L	0.36	0.20	8507871
Dissolved Lead (Pb)	ug/L	<0.20	0.20	8507871
Dissolved Nickel (Ni)	ug/L	2.5	1.0	8507871
Dissolved Selenium (Se)	ug/L	0.32	0.10	8507871
Dissolved Zinc (Zn)	ug/L	<5.0	5.0	8507871
RDL = Reportable Detection Limit				

Maxxam Job #: B6B2853  
Report Date: 2016/12/23

SNC LAVALIN ENVIRONMENT INC.  
Client Project #: 640752  
Site Location: WATSON LAKE AIRPORT  
Your P.O. #: 700365230  
Sampler Initials: MLC

### GENERAL COMMENTS

Each temperature is the average of up to three cooler temperatures taken at receipt

Package 1	1.0°C
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**Results relate only to the items tested.**

Maxxam Job #: B6B2853  
Report Date: 2016/12/23

**QUALITY ASSURANCE REPORT**

SNC LAVALIN ENVIRONMENT INC.  
Client Project #: 640752  
Site Location: WATSON LAKE AIRPORT  
Your P.O. #: 700365230  
Sampler Initials: MLC

QC Batch	Parameter	Date	Matrix Spike		Spiked Blank		Method Blank		RPD	
			% Recovery	QC Limits	% Recovery	QC Limits	Value	UNITS	Value (%)	QC Limits
8507527	D10-ANTHRACENE (sur.)	2016/12/19	107	60 - 130	103	60 - 130	106	%		
8507527	D8-ACENAPHTHYLENE (sur.)	2016/12/19	104	50 - 130	98	50 - 130	101	%		
8507527	D8-NAPHTHALENE (sur.)	2016/12/19	127	50 - 130	116	50 - 130	111	%		
8507527	D9-Acridine	2016/12/19	105	50 - 130	100	50 - 130	99	%		
8507527	TERPHENYL-D14 (sur.)	2016/12/19	89	60 - 130	85	60 - 130	86	%		
8507546	O-TERPHENYL (sur.)	2016/12/19	102	50 - 130	101	50 - 130	91	%		
8510158	1,4-Difluorobenzene (sur.)	2016/12/21	97	70 - 130	95	70 - 130	105	%		
8510158	4-Bromofluorobenzene (sur.)	2016/12/21	95	70 - 130	96	70 - 130	80	%		
8510158	D4-1,2-Dichloroethane (sur.)	2016/12/21	103	70 - 130	96	70 - 130	112	%		
8507527	2-Methylnaphthalene	2016/12/20	96	50 - 130	87	50 - 130	<0.10	ug/L	4.6	40
8507527	Acenaphthene	2016/12/20	98	50 - 130	92	50 - 130	<0.050	ug/L	1.5	40
8507527	Acenaphthylene	2016/12/20	99	50 - 130	95	50 - 130	<0.050	ug/L	14	40
8507527	Acridine	2016/12/20	92	50 - 130	89	50 - 130	<0.050	ug/L	NC	40
8507527	Anthracene	2016/12/20	98	60 - 130	97	60 - 130	<0.010	ug/L	NC	40
8507527	Benzo(a)anthracene	2016/12/20	100	60 - 130	99	60 - 130	<0.010	ug/L	NC	40
8507527	Benzo(a)pyrene	2016/12/20	100	60 - 130	97	60 - 130	<0.0090	ug/L	NC	40
8507527	Benzo(b&j)fluoranthene	2016/12/20	100	60 - 130	97	60 - 130	<0.050	ug/L	NC	40
8507527	Benzo(g,h,i)perylene	2016/12/20	99	60 - 130	95	60 - 130	<0.050	ug/L	NC	40
8507527	Benzo(k)fluoranthene	2016/12/20	98	60 - 130	96	60 - 130	<0.050	ug/L	NC	40
8507527	Chrysene	2016/12/20	99	60 - 130	98	60 - 130	<0.050	ug/L	NC	40
8507527	Dibenz(a,h)anthracene	2016/12/20	99	60 - 130	95	60 - 130	<0.050	ug/L	NC	40
8507527	Fluoranthene	2016/12/20	100	60 - 130	98	60 - 130	<0.020	ug/L	NC	40
8507527	Fluorene	2016/12/20	99	50 - 130	96	50 - 130	<0.050	ug/L	1.4	40
8507527	Indeno(1,2,3-cd)pyrene	2016/12/20	82	60 - 130	95	60 - 130	<0.050	ug/L	NC	40
8507527	Naphthalene	2016/12/20	97	50 - 130	89	50 - 130	<0.10	ug/L	3.4	40
8507527	Phenanthrene	2016/12/20	99	60 - 130	96	60 - 130	<0.050	ug/L	8.7	40
8507527	Pyrene	2016/12/20	100	60 - 130	97	60 - 130	<0.020	ug/L	NC	40
8507527	Quinoline	2016/12/20	108	50 - 130	109	50 - 130	<0.24	ug/L	NC	40
8507546	EPH (C10-C19)	2016/12/19	103	50 - 130	103	50 - 130	<0.20	mg/L	16	30
8507546	EPH (C19-C32)	2016/12/19	99	50 - 130	98	50 - 130	<0.20	mg/L	NC	30

Maxxam Job #: B6B2853  
Report Date: 2016/12/23

**QUALITY ASSURANCE REPORT(CONT'D)**

SNC LAVALIN ENVIRONMENT INC.  
Client Project #: 640752  
Site Location: WATSON LAKE AIRPORT  
Your P.O. #: 700365230  
Sampler Initials: MLC

QC Batch	Parameter	Date	Matrix Spike		Spiked Blank		Method Blank		RPD	
			% Recovery	QC Limits	% Recovery	QC Limits	Value	UNITS	Value (%)	QC Limits
8507871	Dissolved Arsenic (As)	2016/12/19	110	80 - 120	105	80 - 120	<0.10	ug/L	NC	20
8507871	Dissolved Cadmium (Cd)	2016/12/19	101	80 - 120	101	80 - 120	<0.010	ug/L	NC	20
8507871	Dissolved Chromium (Cr)	2016/12/19	98	80 - 120	102	80 - 120	<1.0	ug/L	NC	20
8507871	Dissolved Copper (Cu)	2016/12/19	91	80 - 120	102	80 - 120	<0.20	ug/L	NC	20
8507871	Dissolved Lead (Pb)	2016/12/19	98	80 - 120	97	80 - 120	<0.20	ug/L	NC	20
8507871	Dissolved Nickel (Ni)	2016/12/19	92	80 - 120	102	80 - 120	<1.0	ug/L	NC	20
8507871	Dissolved Selenium (Se)	2016/12/19	111	80 - 120	106	80 - 120	<0.10	ug/L	NC	20
8507871	Dissolved Zinc (Zn)	2016/12/19	102	80 - 120	105	80 - 120	<5.0	ug/L	NC	20
8510158	Benzene	2016/12/21	105	N/A	91	70 - 130	<0.40	ug/L	NC	30
8510158	Ethylbenzene	2016/12/21	119	N/A	110	70 - 130	<0.40	ug/L	NC	30
8510158	m & p-Xylene	2016/12/21	118	N/A	109	70 - 130	<0.40	ug/L	NC	30
8510158	Methyl-tert-butylether (MTBE)	2016/12/21	106	N/A	96	70 - 130	<4.0	ug/L	NC	30
8510158	o-Xylene	2016/12/21	113	N/A	106	70 - 130	<0.40	ug/L	NC	30
8510158	Styrene	2016/12/21	116	N/A	110	70 - 130	<0.40	ug/L	NC	30
8510158	Toluene	2016/12/21	116	N/A	101	70 - 130	<0.40	ug/L	NC	30
8510158	VH C6-C10	2016/12/21			97	70 - 130	<300	ug/L	NC	30
8510158	Xylenes (Total)	2016/12/21					<0.40	ug/L	NC	30
8512222	Dissolved Mercury (Hg)	2016/12/23	101	80 - 120	101	80 - 120	<0.010	ug/L	NC	20

Duplicate: Paired analysis of a separate portion of the same sample. Used to evaluate the variance in the measurement.

Matrix Spike: A sample to which a known amount of the analyte of interest has been added. Used to evaluate sample matrix interference.

Spiked Blank: A blank matrix sample to which a known amount of the analyte, usually from a second source, has been added. Used to evaluate method accuracy.

Method Blank: A blank matrix containing all reagents used in the analytical procedure. Used to identify laboratory contamination.

Surrogate: A pure or isotopically labeled compound whose behavior mirrors the analytes of interest. Used to evaluate extraction efficiency.

NC (Duplicate RPD): The duplicate RPD was not calculated. The concentration in the sample and/or duplicate was too low to permit a reliable RPD calculation (one or both samples < 5x RDL).

Maxxam Job #: B6B2853  
Report Date: 2016/12/23

SNC LAVALIN ENVIRONMENT INC.  
Client Project #: 640752  
Site Location: WATSON LAKE AIRPORT  
Your P.O. #: 700365230  
Sampler Initials: MLC

### VALIDATION SIGNATURE PAGE

The analytical data and all QC contained in this report were reviewed and validated by the following individual(s).



Andy Lu, Ph.D., P.Chem., Scientific Specialist

---

Maxxam has procedures in place to guard against improper use of the electronic signature and have the required "signatories", as per section 5.10.2 of ISO/IEC 17025:2005(E), signing the reports. For Service Group specific validation please refer to the Validation Signature Page.



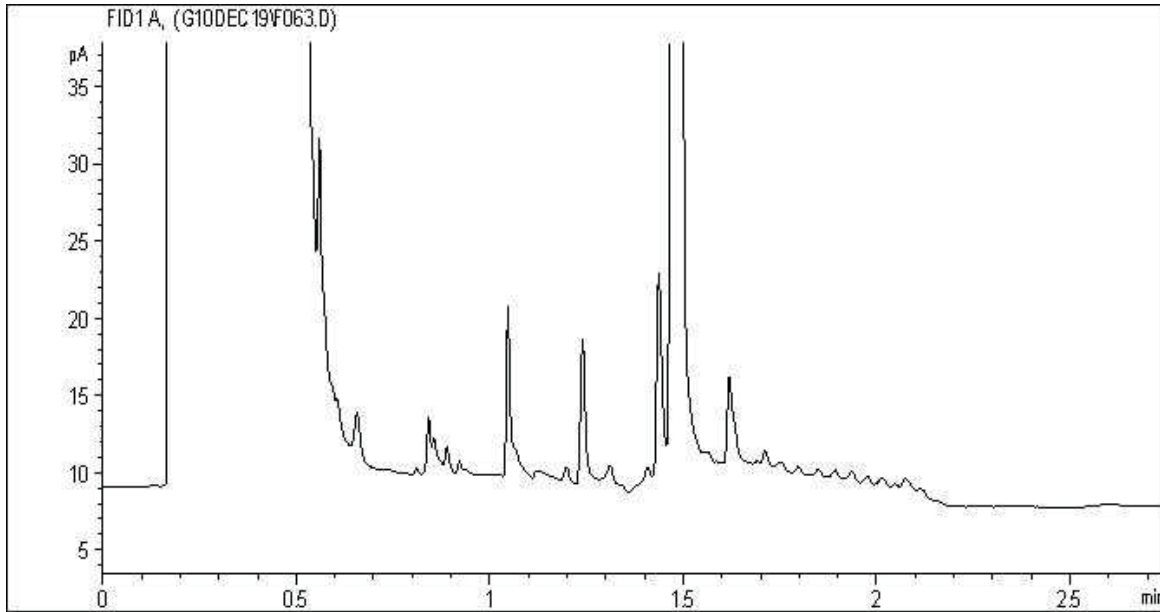
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tpsqc.ca

Invoice Information		Report Information (if differs from invoice)				Project Information (where applicable)				Time (TAT) Required	
Company Name: # FSG PWGSC		Company Name: SAIC-Lambton				Quotation #: B61631				<input checked="" type="checkbox"/> Regular TAT 5 days (Most analyses)	
Contact Name: Jordan Stones		Contact Name: Marta Rosa				P.O. #/AFE#: 700365230				<b>PLEASE PROVIDE ADVANCE NOTICE FOR RUSH PROJECTS</b>	
Address: 641-800 Vancouver BC		Address: Burnaby BC 8148 Commerce				Subject #: 640752				Rush TAT (Surcharges will be applied)	
Phone: 604-275-6810		Phone: 604-515-2151				Site Location: Watson Lake Airport				<input type="checkbox"/> Same Day <input type="checkbox"/> 2 Days	
Email: pwgsc@maxxam.com		Email: marta.rosa@saic-lambton.com				Site #: APEC 22B				<input type="checkbox"/> 1 Day <input type="checkbox"/> 3 Days	
Regulatory Criteria		Special Instructions				Analysis Requested				Date Required:	
<input checked="" type="checkbox"/> Yukon CER Contaminants <input type="checkbox"/> BC CER Water <input type="checkbox"/> Other (Specify) <input checked="" type="checkbox"/> Drinking Water <input type="checkbox"/> BC Water Quality		<input type="checkbox"/> Return Cooler <input type="checkbox"/> Ship Sample Bottles (Please Specify)				Diss. As, Cd, Pb, Hg, Cr, Cu, Ni, Se, Zn				Rush Confirmation #:	
SAMPLES MUST BE KEPT COOL (< 10 °C) FROM TIME OF SAMPLING UNTIL DELIVERY TO MAXXAM											
Sample Identification	Lab Identification	Date Sampled (YYYY/MM/DD)	Time Sampled (HH:MM)	Matrix	BTEX / VPH / NH	LEPH / HEPH	PAH	VOC	SELECT METALS	LABORATORY USE ONLY	
1	22B-MW16-9-161214	2016/12/14	13:40	GW	X	X	X	X	X	CUSTODY SEAL: 0 / N Present: <input checked="" type="checkbox"/> Intact: <input checked="" type="checkbox"/> COOLER TEMPERATURES: 1, 1, 2 CDDUNG MEDIA PRESENT: 0 / 1 / N COMMENTS:	
2										RECEIVED IN WHITEHORSE BY: <u>Shyona@2016</u> 2016-12-16 TEMP: 0 / -2 / -2	
3										(1) BTEX vials may not have 200 headspace due to weather	
4											
5											
6											
7											
8											
9											
10											
RELINQUISHED BY: (Signature/Print)		DATE: (YYYY/MM/DD)	TIME: (HH:MM)	RECEIVED BY: (Signature/Print)		DATE: (YYYY/MM/DD)	TIME: (HH:MM)				
<u>Michelle Chao</u>		2016/12/14	18:00	<u>KEVIN OHAN</u>		2016/12/19	09:25				

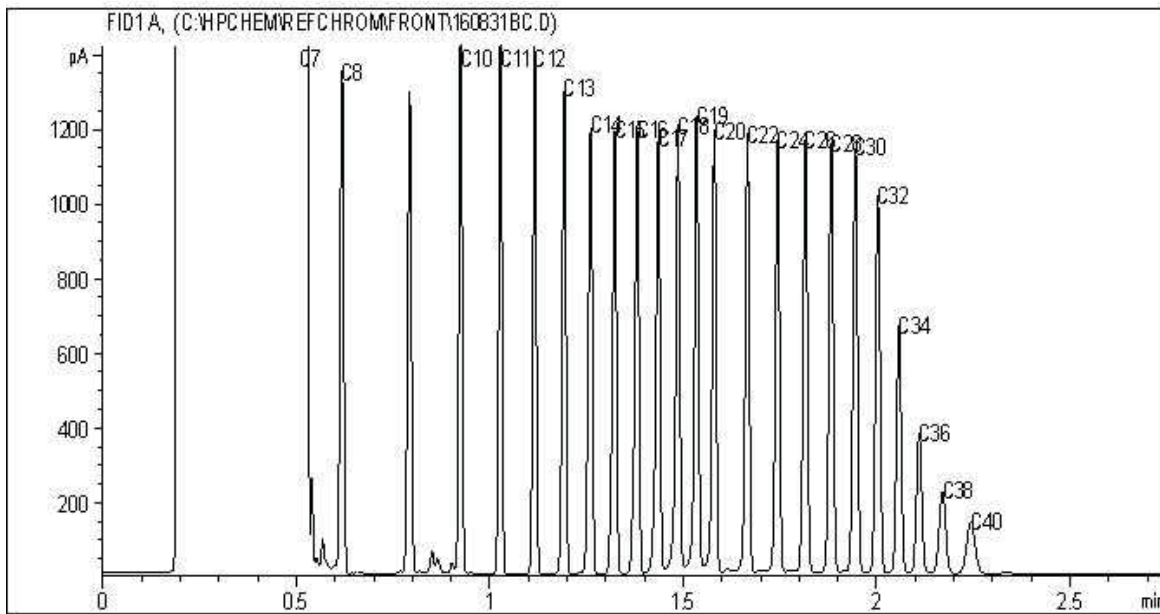


B6B2853\_COC

EPH in Water when PAH required Chromatogram



Carbon Range Distribution - Reference Chromatogram



TYPICAL PRODUCT CARBON NUMBER RANGES

Gasoline:	C4 - C12	Diesel:	C8 - C22
Varsol:	C8 - C12	Lubricating oils:	C20 - C40

**Note: This information is provided for reference purposes only. Should detailed chemist interpretation or fingerprinting be required, please contact the laboratory.**

**Attention: Michael Chao**

SNC LAVALIN ENVIRONMENT INC.  
8648 COMMERCE COURT  
BURNABY, BC  
CANADA V5A 4N6

Your P.O. #: 700365230  
Your Project #: 640752  
Site#: APEC 22A  
Site Location: WATSON LAKE AIRPORT  
Your C.O.C. #: 08434158

**Report Date: 2016/12/23**  
Report #: R2322031  
Version: 1 - Final

**CERTIFICATE OF ANALYSIS**

**MAXXAM JOB #: B6B2856**

**Received: 2016/12/16, 09:00**

Sample Matrix: GROUND WATER  
# Samples Received: 3

Analyses	Quantity	Date		Laboratory Method	Analytical Method
		Extracted	Analyzed		
BTEX/MTBE LH, VH, F1 SIM/MS	3	2016/12/20	2016/12/20	BBY8SOP-00010/11/12	EPA 8260c R3 m
Hardness (calculated as CaCO3)	3	N/A	2016/12/23	BBY WI-00033	Auto Calc
Mercury (Dissolved) by CVAf	3	N/A	2016/12/22	BBY7SOP-00015	BCMOE BCLM Oct2013 m
EPH in Water when PAH required	3	2016/12/21	2016/12/21	BBY8SOP-00029	BCMOE EPH w 12/00 m
Elements by CRC ICPMS (dissolved)	1	N/A	2016/12/22	BBY7SOP-00002	EPA 6020B R2 m
Elements by CRC ICPMS (dissolved)	2	N/A	2016/12/23	BBY7SOP-00002	EPA 6020B R2 m
PAH in Water by GC/MS (SIM)	3	2016/12/21	2016/12/21	BBY8SOP-00021	EPA 8270d R4 m
Total LMW, HMW, Total PAH Calc	3	N/A	2016/12/22	BBY WI-00033	Auto Calc
Filter and HNO3 Preserve for Metals	3	N/A	2016/12/22	BBY7 WI-00004	BCMOE Reqs 08/14
EPH less PAH in Water by GC/FID	3	N/A	2016/12/22	BBY WI-00033	Auto Calc
Volatile HC-BTEX	3	N/A	2016/12/21	BBY WI-00033	Auto Calc

**Remarks:**

Maxxam Analytics' laboratories are accredited to ISO/IEC 17025:2005 for specific parameters on scopes of accreditation. Unless otherwise noted, procedures used by Maxxam are based upon recognized Provincial, Federal or US method compendia such as CCME, MDDELCC, EPA, APHA.

All work recorded herein has been done in accordance with procedures and practices ordinarily exercised by professionals in Maxxam's profession using accepted testing methodologies, quality assurance and quality control procedures (except where otherwise agreed by the client and Maxxam in writing). All data is in statistical control and has met quality control and method performance criteria unless otherwise noted. All method blanks are reported: unless indicated otherwise, associated sample data are not blank corrected.

Maxxam Analytics' liability is limited to the actual cost of the requested analyses, unless otherwise agreed in writing. There is no other warranty expressed or implied. Maxxam has been retained to provide analysis of samples provided by the Client using the testing methodology referenced in this report. Interpretation and use of test results are the sole responsibility of the Client and are not within the scope of services provided by Maxxam, unless otherwise agreed in writing.

Solid sample results, except biota, are based on dry weight unless otherwise indicated. Organic analyses are not recovery corrected except for isotope dilution methods. Results relate to samples tested.

This Certificate shall not be reproduced except in full, without the written approval of the laboratory.

Reference Method suffix "m" indicates test methods incorporate validated modifications from specific reference methods to improve performance.

\* RPDs calculated using raw data. The rounding of final results may result in the apparent difference.

**Attention:Michael Chao**

SNC LAVALIN ENVIRONMENT INC.  
8648 COMMERCE COURT  
BURNABY, BC  
CANADA V5A 4N6

Your P.O. #: 700365230  
Your Project #: 640752  
Site#: APEC 22A  
Site Location: WATSON LAKE AIRPORT  
Your C.O.C. #: 08434158

**Report Date: 2016/12/23**  
Report #: R2322031  
Version: 1 - Final

**CERTIFICATE OF ANALYSIS**

**MAXXAM JOB #: B6B2856**

**Received: 2016/12/16, 09:00**

Encryption Key

Please direct all questions regarding this Certificate of Analysis to your Project Manager.  
Samantha Fregien, Project Manager  
Email: SFregien@maxxam.ca  
Phone# (604)639-8418

=====  
Maxxam has procedures in place to guard against improper use of the electronic signature and have the required "signatories", as per section 5.10.2 of ISO/IEC 17025:2005(E), signing the reports. For Service Group specific validation please refer to the Validation Signature Page.

Maxxam Job #: B6B2856  
Report Date: 2016/12/23

SNC LAVALIN ENVIRONMENT INC.  
Client Project #: 640752  
Site Location: WATSON LAKE AIRPORT  
Your P.O. #: 700365230  
Sampler Initials: MLC

**RESULTS OF CHEMICAL ANALYSES OF GROUND WATER**

Maxxam ID		QH0975	QH0976	QH0977	
Sampling Date		2016/12/14 10:30	2016/12/14 11:45	2016/12/14 12:48	
COC Number		08434158	08434158	08434158	
	<b>UNITS</b>	<b>22A-MW16-25-161214</b>	<b>22A-MW16-30-161214</b>	<b>22A-MW16-32-161214</b>	<b>QC Batch</b>
<b>Calculated Parameters</b>					
Filter and HNO3 Preservation	N/A	FIELD	FIELD	FIELD	ONSITE

Maxxam Job #: B6B2856  
Report Date: 2016/12/23

SNC LAVALIN ENVIRONMENT INC.  
Client Project #: 640752  
Site Location: WATSON LAKE AIRPORT  
Your P.O. #: 700365230  
Sampler Initials: MLC

**CSR BTEX/VPH IN WATER (GROUND WATER)**

Maxxam ID		QH0975	QH0976	QH0977		
Sampling Date		2016/12/14 10:30	2016/12/14 11:45	2016/12/14 12:48		
COC Number		08434158	08434158	08434158		
	<b>UNITS</b>	<b>22A-MW16-25-161214</b>	<b>22A-MW16-30-161214</b>	<b>22A-MW16-32-161214</b>	<b>RDL</b>	<b>QC Batch</b>
<b>Volatiles</b>						
VPH (VH6 to 10 - BTEX)	ug/L	<300	<300	<300	300	8507158
Methyl-tert-butylether (MTBE)	ug/L	<4.0	<4.0	<4.0	4.0	8508540
Benzene	ug/L	<0.40	<0.40	<0.40	0.40	8508540
Toluene	ug/L	<0.40	<0.40	<0.40	0.40	8508540
Ethylbenzene	ug/L	<0.40	<0.40	<0.40	0.40	8508540
m & p-Xylene	ug/L	<0.40	1.2	<0.40	0.40	8508540
o-Xylene	ug/L	<0.40	<0.40	<0.40	0.40	8508540
Styrene	ug/L	<0.40	<0.40	<0.40	0.40	8508540
Xylenes (Total)	ug/L	<0.40	1.2	<0.40	0.40	8508540
VH C6-C10	ug/L	<300	<300	<300	300	8508540
<b>Surrogate Recovery (%)</b>						
1,4-Difluorobenzene (sur.)	%	102	111	105		8508540
4-Bromofluorobenzene (sur.)	%	98	111	100		8508540
D4-1,2-Dichloroethane (sur.)	%	106	112	105		8508540
RDL = Reportable Detection Limit						



Maxxam Job #: B6B2856  
Report Date: 2016/12/23

SNC LAVALIN ENVIRONMENT INC.  
Client Project #: 640752  
Site Location: WATSON LAKE AIRPORT  
Your P.O. #: 700365230  
Sampler Initials: MLC

**LEPH & HEPH WITH CSR/CCME PAH IN WATER (GROUND WATER)**

Maxxam ID		QH0975	QH0976	QH0977		
Sampling Date		2016/12/14 10:30	2016/12/14 11:45	2016/12/14 12:48		
COC Number		08434158	08434158	08434158		
	<b>UNITS</b>	<b>22A-MW16-25-161214</b>	<b>22A-MW16-30-161214</b>	<b>22A-MW16-32-161214</b>	<b>RDL</b>	<b>QC Batch</b>
<b>Polycyclic Aromatics</b>						
Low Molecular Weight PAH's	ug/L	<0.24	13	<0.24	0.24	8507156
High Molecular Weight PAH's	ug/L	<0.050	<0.050	<0.050	0.050	8507156
Total PAH	ug/L	<0.24	13	<0.24	0.24	8507156
Naphthalene	ug/L	<0.10	2.8	<0.10	0.10	8509465
2-Methylnaphthalene	ug/L	<0.10	8.4	<0.10	0.10	8509465
Quinoline	ug/L	<0.24	<0.24	<0.24	0.24	8509465
Acenaphthylene	ug/L	<0.050	0.11 (1)	<0.050	0.050	8509465
Acenaphthene	ug/L	<0.050	0.58	<0.050	0.050	8509465
Fluorene	ug/L	<0.050	0.89	<0.050	0.050	8509465
Phenanthrene	ug/L	<0.050	0.21	<0.050	0.050	8509465
Anthracene	ug/L	<0.010	0.017 (1)	<0.010	0.010	8509465
Acridine	ug/L	<0.050	<0.050	<0.050	0.050	8509465
Fluoranthene	ug/L	<0.020	<0.020	<0.020	0.020	8509465
Pyrene	ug/L	<0.020	<0.020	<0.020	0.020	8509465
Benzo(a)anthracene	ug/L	<0.010	<0.010	<0.010	0.010	8509465
Chrysene	ug/L	<0.050	<0.050	<0.050	0.050	8509465
Benzo(b&j)fluoranthene	ug/L	<0.050	<0.050	<0.050	0.050	8509465
Benzo(k)fluoranthene	ug/L	<0.050	<0.050	<0.050	0.050	8509465
Benzo(a)pyrene	ug/L	<0.0090	<0.0090	<0.0090	0.0090	8509465
Indeno(1,2,3-cd)pyrene	ug/L	<0.050	<0.050	<0.050	0.050	8509465
Dibenz(a,h)anthracene	ug/L	<0.050	<0.050	<0.050	0.050	8509465
Benzo(g,h,i)perylene	ug/L	<0.050	<0.050	<0.050	0.050	8509465
<b>Calculated Parameters</b>						
LEPH (C10-C19 less PAH)	mg/L	<0.20	0.90	<0.20	0.20	8507157
HEPH (C19-C32 less PAH)	mg/L	<0.20	<0.20	<0.20	0.20	8507157
<b>Ext. Pet. Hydrocarbon</b>						
EPH (C10-C19)	mg/L	<0.20	0.90	<0.20	0.20	8509476
EPH (C19-C32)	mg/L	<0.20	<0.20	<0.20	0.20	8509476
<b>Surrogate Recovery (%)</b>						
O-TERPHENYL (sur.)	%	94	96	93		8509476
RDL = Reportable Detection Limit						
(1) Qualifying ion outside of acceptance criteria. Results are tentatively identified and potentially biased high.						

Maxxam Job #: B6B2856  
Report Date: 2016/12/23

SNC LAVALIN ENVIRONMENT INC.  
Client Project #: 640752  
Site Location: WATSON LAKE AIRPORT  
Your P.O. #: 700365230  
Sampler Initials: MLC

**LEPH & HEPH WITH CSR/CCME PAH IN WATER (GROUND WATER)**

Maxxam ID		QH0975	QH0976	QH0977		
Sampling Date		2016/12/14 10:30	2016/12/14 11:45	2016/12/14 12:48		
COC Number		08434158	08434158	08434158		
	<b>UNITS</b>	<b>22A-MW16-25-161214</b>	<b>22A-MW16-30-161214</b>	<b>22A-MW16-32-161214</b>	<b>RDL</b>	<b>QC Batch</b>
D10-ANTHRACENE (sur.)	%	103	113	115		8509465
D8-ACENAPHTHYLENE (sur.)	%	104	106	104		8509465
D8-NAPHTHALENE (sur.)	%	73	74	77		8509465
D9-Acridine	%	95	100	104		8509465
TERPHENYL-D14 (sur.)	%	94	103	104		8509465
RDL = Reportable Detection Limit						



Maxxam Job #: B6B2856  
Report Date: 2016/12/23

SNC LAVALIN ENVIRONMENT INC.  
Client Project #: 640752  
Site Location: WATSON LAKE AIRPORT  
Your P.O. #: 700365230  
Sampler Initials: MLC

**CSR/CCME DISS. METALS IN WATER W/ CV HG (GROUND WATER)**

Maxxam ID		QH0975	QH0976		QH0977		
Sampling Date		2016/12/14 10:30	2016/12/14 11:45		2016/12/14 12:48		
COC Number		08434158	08434158		08434158		
	<b>UNITS</b>	<b>22A-MW16-25-161214</b>	<b>22A-MW16-30-161214</b>	<b>QC Batch</b>	<b>22A-MW16-32-161214</b>	<b>RDL</b>	<b>QC Batch</b>
<b>Misc. Inorganics</b>							
Dissolved Hardness (CaCO3)	mg/L	118	115	8507154	124	0.50	8507154
<b>Elements</b>							
Dissolved Mercury (Hg)	ug/L	<0.010	<0.010	8510625	<0.010	0.010	8510625
<b>Dissolved Metals by ICPMS</b>							
Dissolved Arsenic (As)	ug/L	0.49	1.72	8508568	0.52	0.10	8511431
Dissolved Cadmium (Cd)	ug/L	0.033	<0.010	8508568	0.010	0.010	8511431
Dissolved Chromium (Cr)	ug/L	<1.0	<1.0	8508568	<1.0	1.0	8511431
Dissolved Copper (Cu)	ug/L	<0.20	<0.20	8508568	<0.20	0.20	8511431
Dissolved Lead (Pb)	ug/L	<0.20	<0.20	8508568	<0.20	0.20	8511431
Dissolved Nickel (Ni)	ug/L	7.0	<1.0	8508568	1.6	1.0	8511431
Dissolved Selenium (Se)	ug/L	0.24	<0.10	8508568	<0.10	0.10	8511431
Dissolved Zinc (Zn)	ug/L	<5.0	<5.0	8508568	<5.0	5.0	8511431
RDL = Reportable Detection Limit							

Maxxam Job #: B6B2856  
Report Date: 2016/12/23

SNC LAVALIN ENVIRONMENT INC.  
Client Project #: 640752  
Site Location: WATSON LAKE AIRPORT  
Your P.O. #: 700365230  
Sampler Initials: MLC

### GENERAL COMMENTS

Each temperature is the average of up to three cooler temperatures taken at receipt

Package 1	-1.3°C
-----------	--------

**Results relate only to the items tested.**

Maxxam Job #: B6B2856  
Report Date: 2016/12/23

**QUALITY ASSURANCE REPORT**

SNC LAVALIN ENVIRONMENT INC.  
Client Project #: 640752  
Site Location: WATSON LAKE AIRPORT  
Your P.O. #: 700365230  
Sampler Initials: MLC

QC Batch	Parameter	Date	Matrix Spike		Spiked Blank		Method Blank		RPD	
			% Recovery	QC Limits	% Recovery	QC Limits	Value	UNITS	Value (%)	QC Limits
8508540	1,4-Difluorobenzene (sur.)	2016/12/20	103	70 - 130	101	70 - 130	102	%		
8508540	4-Bromofluorobenzene (sur.)	2016/12/20	104	70 - 130	100	70 - 130	104	%		
8508540	D4-1,2-Dichloroethane (sur.)	2016/12/20	101	70 - 130	98	70 - 130	104	%		
8509465	D10-ANTHRACENE (sur.)	2016/12/21	89	60 - 130	96	60 - 130	99	%		
8509465	D8-ACENAPHTHYLENE (sur.)	2016/12/21	107	50 - 130	104	50 - 130	106	%		
8509465	D8-NAPHTHALENE (sur.)	2016/12/21	88	50 - 130	87	50 - 130	91	%		
8509465	D9-Acridine	2016/12/21	95	50 - 130	93	50 - 130	90	%		
8509465	TERPHENYL-D14 (sur.)	2016/12/21	89	60 - 130	89	60 - 130	99	%		
8509476	O-TERPHENYL (sur.)	2016/12/21	96	50 - 130	89	50 - 130	97	%		
8508540	Benzene	2016/12/20	101	70 - 130	99	70 - 130	<0.40	ug/L	NC	30
8508540	Ethylbenzene	2016/12/20	105	70 - 130	98	70 - 130	<0.40	ug/L	NC	30
8508540	m & p-Xylene	2016/12/20	104	70 - 130	102	70 - 130	<0.40	ug/L	NC	30
8508540	Methyl-tert-butylether (MTBE)	2016/12/20	99	70 - 130	95	70 - 130	<4.0	ug/L	NC	30
8508540	o-Xylene	2016/12/20	109	70 - 130	107	70 - 130	<0.40	ug/L	NC	30
8508540	Styrene	2016/12/20	105	70 - 130	102	70 - 130	<0.40	ug/L	NC	30
8508540	Toluene	2016/12/20	100	70 - 130	96	70 - 130	<0.40	ug/L	NC	30
8508540	VH C6-C10	2016/12/20			88	70 - 130	<300	ug/L	NC	30
8508540	Xylenes (Total)	2016/12/20					<0.40	ug/L	NC	30
8508568	Dissolved Arsenic (As)	2016/12/23	97	80 - 120	98	80 - 120	<0.10	ug/L	2.7	20
8508568	Dissolved Cadmium (Cd)	2016/12/23	99	80 - 120	101	80 - 120	<0.010	ug/L		
8508568	Dissolved Chromium (Cr)	2016/12/23	96	80 - 120	104	80 - 120	<1.0	ug/L	NC	20
8508568	Dissolved Copper (Cu)	2016/12/23	96	80 - 120	100	80 - 120	<0.20	ug/L	1.9	20
8508568	Dissolved Lead (Pb)	2016/12/23	101	80 - 120	107	80 - 120	<0.20	ug/L	3.3	20
8508568	Dissolved Nickel (Ni)	2016/12/23	NC	80 - 120	102	80 - 120	<1.0	ug/L		
8508568	Dissolved Selenium (Se)	2016/12/23	100	80 - 120	98	80 - 120	<0.10	ug/L		
8508568	Dissolved Zinc (Zn)	2016/12/23	NC	80 - 120	110	80 - 120	<5.0	ug/L	NC	20
8509465	2-Methylnaphthalene	2016/12/22	99	40 - 130	94	50 - 130	<0.10	ug/L	NC	40
8509465	Acenaphthene	2016/12/22	107	40 - 130	106	50 - 130	<0.050	ug/L	NC	40
8509465	Acenaphthylene	2016/12/22	104	40 - 130	103	50 - 130	<0.050	ug/L	NC	40
8509465	Acridine	2016/12/22	90	40 - 130	90	50 - 130	<0.050	ug/L	NC	40

Maxxam Job #: B6B2856  
Report Date: 2016/12/23

**QUALITY ASSURANCE REPORT(CONT'D)**

SNC LAVALIN ENVIRONMENT INC.  
Client Project #: 640752  
Site Location: WATSON LAKE AIRPORT  
Your P.O. #: 700365230  
Sampler Initials: MLC

QC Batch	Parameter	Date	Matrix Spike		Spiked Blank		Method Blank		RPD	
			% Recovery	QC Limits	% Recovery	QC Limits	Value	UNITS	Value (%)	QC Limits
8509465	Anthracene	2016/12/22	92	40 - 130	93	60 - 130	<0.010	ug/L	NC	40
8509465	Benzo(a)anthracene	2016/12/22	97	40 - 130	96	60 - 130	<0.010	ug/L	NC	40
8509465	Benzo(a)pyrene	2016/12/22	84	40 - 130	94	60 - 130	<0.0090	ug/L	NC	40
8509465	Benzo(b&j)fluoranthene	2016/12/22	91	40 - 130	102	60 - 130	<0.050	ug/L	NC	40
8509465	Benzo(g,h,i)perylene	2016/12/22	58	40 - 130	91	60 - 130	<0.050	ug/L	NC	40
8509465	Benzo(k)fluoranthene	2016/12/22	90	40 - 130	105	60 - 130	<0.050	ug/L	NC	40
8509465	Chrysene	2016/12/22	100	40 - 130	101	60 - 130	<0.050	ug/L	NC	40
8509465	Dibenz(a,h)anthracene	2016/12/22	57	40 - 130	99	60 - 130	<0.050	ug/L	NC	40
8509465	Fluoranthene	2016/12/22	93	40 - 130	91	60 - 130	<0.020	ug/L	NC	40
8509465	Fluorene	2016/12/22	103	40 - 130	102	50 - 130	<0.050	ug/L	NC	40
8509465	Indeno(1,2,3-cd)pyrene	2016/12/22	61	40 - 130	104	60 - 130	<0.050	ug/L	NC	40
8509465	Naphthalene	2016/12/22	89	40 - 130	84	50 - 130	<0.10	ug/L	NC	40
8509465	Phenanthrene	2016/12/22	100	40 - 130	104	60 - 130	<0.050	ug/L	NC	40
8509465	Pyrene	2016/12/22	96	40 - 130	93	60 - 130	<0.020	ug/L	NC	40
8509465	Quinoline	2016/12/22	108	40 - 130	113	50 - 130	<0.24	ug/L	NC	40
8509476	EPH (C10-C19)	2016/12/21	90	50 - 130	90	50 - 130	<0.20	mg/L	NC	30
8509476	EPH (C19-C32)	2016/12/21	93	50 - 130	94	50 - 130	<0.20	mg/L	NC	30
8510625	Dissolved Mercury (Hg)	2016/12/22	103	80 - 120	106	80 - 120	<0.010	ug/L	NC	20
8511431	Dissolved Arsenic (As)	2016/12/22	104	80 - 120	101	80 - 120	<0.10	ug/L	0.19	20
8511431	Dissolved Cadmium (Cd)	2016/12/22	104	80 - 120	102	80 - 120	<0.010	ug/L	NC	20
8511431	Dissolved Chromium (Cr)	2016/12/22	100	80 - 120	103	80 - 120	<1.0	ug/L	NC	20
8511431	Dissolved Copper (Cu)	2016/12/22	97	80 - 120	102	80 - 120	<0.20	ug/L	NC	20
8511431	Dissolved Lead (Pb)	2016/12/22	101	80 - 120	102	80 - 120	<0.20	ug/L	NC	20
8511431	Dissolved Nickel (Ni)	2016/12/22	99	80 - 120	104	80 - 120	<1.0	ug/L	NC	20
8511431	Dissolved Selenium (Se)	2016/12/22	102	80 - 120	107	80 - 120	<0.10	ug/L	NC	20

Maxxam Job #: B6B2856  
Report Date: 2016/12/23

**QUALITY ASSURANCE REPORT(CONT'D)**

SNC LAVALIN ENVIRONMENT INC.  
Client Project #: 640752  
Site Location: WATSON LAKE AIRPORT  
Your P.O. #: 700365230  
Sampler Initials: MLC

QC Batch	Parameter	Date	Matrix Spike		Spiked Blank		Method Blank		RPD	
			% Recovery	QC Limits	% Recovery	QC Limits	Value	UNITS	Value (%)	QC Limits
8511431	Dissolved Zinc (Zn)	2016/12/22	103	80 - 120	103	80 - 120	<5.0	ug/L	NC	20

Duplicate: Paired analysis of a separate portion of the same sample. Used to evaluate the variance in the measurement.

Matrix Spike: A sample to which a known amount of the analyte of interest has been added. Used to evaluate sample matrix interference.

Spiked Blank: A blank matrix sample to which a known amount of the analyte, usually from a second source, has been added. Used to evaluate method accuracy.

Method Blank: A blank matrix containing all reagents used in the analytical procedure. Used to identify laboratory contamination.

Surrogate: A pure or isotopically labeled compound whose behavior mirrors the analytes of interest. Used to evaluate extraction efficiency.

NC (Matrix Spike): The recovery in the matrix spike was not calculated. The relative difference between the concentration in the parent sample and the spiked amount was too small to permit a reliable recovery calculation (matrix spike concentration was less than 2x that of the native sample concentration).

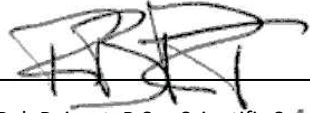
NC (Duplicate RPD): The duplicate RPD was not calculated. The concentration in the sample and/or duplicate was too low to permit a reliable RPD calculation (one or both samples < 5x RDL).

Maxxam Job #: B6B2856  
Report Date: 2016/12/23

SNC LAVALIN ENVIRONMENT INC.  
Client Project #: 640752  
Site Location: WATSON LAKE AIRPORT  
Your P.O. #: 700365230  
Sampler Initials: MLC

### VALIDATION SIGNATURE PAGE

The analytical data and all QC contained in this report were reviewed and validated by the following individual(s).



Rob Reinert, B.Sc., Scientific Spécialist

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Maxxam has procedures in place to guard against improper use of the electronic signature and have the required "signatories", as per section 5.10.2 of ISO/IEC 17025:2005(E), signing the reports. For Service Group specific validation please refer to the Validation Signature Page.



Robert-price  
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Invoice Information		Report Information (if differs from invoice)				Project Information (where applicable)				Regular (TAT) Required	
Company Name: #1756 PWGSC		Company Name: <del>SAVANA WOODS</del> SLE				Quotation #: B61631				<input checked="" type="checkbox"/> Regular TAT 5 days (Most analyses)	
Contact Name: Marta Rosa Jordan Stokes		Contact Name: Marta Rosa				P.O. #/ A/E #: 700 865230				<b>PLEASE PROVIDE ADVANCE NOTICE FOR RUSH PROJECTS</b>	
Address: 691-800 Burnaby St Vancouver BC V6B 2V8		Address: 8418 Commercial Court Burnaby, BC V5A 4W6				Project #: 640752				Rush TAT (Surcharges will be applied)	
Phone: 604-735-6810		Phone: 604-515-5151				Site Location: Watson Lake Airport				<input type="checkbox"/> Same Day <input type="checkbox"/> 2 Days	
Email: marta.rosa@enclawdlp.com		Email: marta.rosa@enclawdlp.com				Site #: APEC 22A				<input type="checkbox"/> 1 Day <input type="checkbox"/> 3 Days	
						Sampled By: MLC				Date Required:	
Regulatory Criteria		Special Instructions				Analysis Requested				Rush Confirmation #:	
<input checked="" type="checkbox"/> Drinking Water <input checked="" type="checkbox"/> Freshwater <input checked="" type="checkbox"/> BE CSR Water <input type="checkbox"/> Other (Specify) <input type="checkbox"/> Other (Specify) <input type="checkbox"/> Other (Specify)		<input type="checkbox"/> Return Cooler <input type="checkbox"/> Ship Sample Bottles (Please Specify)				BTEX / VPH / VH LEPH / HEPH PAH VOC SELECT METALS Dissolved As, Cd, Pb, Hg, Cr, Cu, Ni, Se, Zn				LABORATORY USE ONLY	
SAMPLES MUST BE KEPT COOL (< 10 °C) FROM TIME OF SAMPLING UNTIL DELIVERY TO MAXXAM										CUSTODY SEAL Present: <input checked="" type="checkbox"/> Intact: <input checked="" type="checkbox"/> COOLER TEMPERATURES: 11.2 CDDING MEDIA PRESENT: <input type="checkbox"/> Y <input type="checkbox"/> N COMMENTS:	
Sample Identification	Lab Identification	Date Sampled (YYYY/MM/DD)	Time Sampled (HH-MM)	Matrix	BTEX / VPH / VH	LEPH / HEPH	PAH	VOC	SELECT METALS	# OF CONTAINERS SUBMITTED	HOLD - DO NOT ANALYZE
1 22A-MW16-25-161214		2016/12/14	10:30	GW	X	X	X		X	87	
2 22A-MW16-30-161214		↓	11:45	↓	X	X	X		X	87	
3 22A-MW16-32-161214		↓	12:48	↓	X	X	X		X	87	
4											
5											
6											
7											
8											
9											
10											
RELINQUISHED BY: (Signature/Print)		DATE: (YYYY/MM/DD)	TIME: (HH-MM)	RECEIVED BY: (Signature/Print)		DATE: (YYYY/MM/DD)	TIME: (HH-MM)				
Marta Rosa		16/12/14	18:00	ICEVIN CHONG		2016/12/19	09:25				

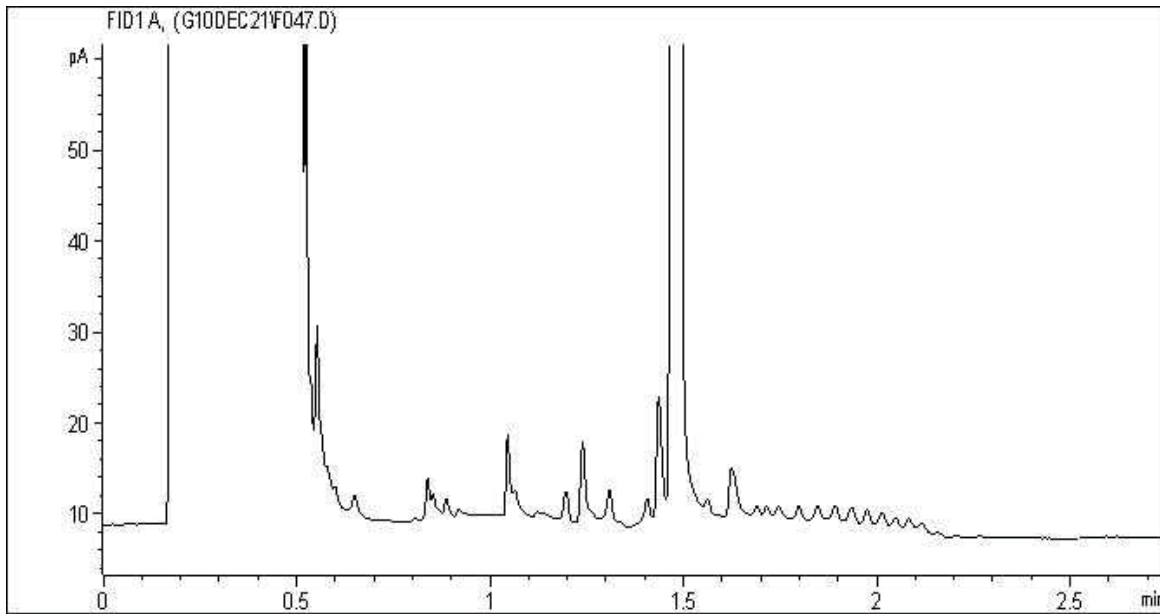
RECEIVED IN WHITEHORSE  
BY: Slymna@0900  
2016-12-16  
TEMP: 01-21-2

1) BTEX vials may not have zero headspace due to weather

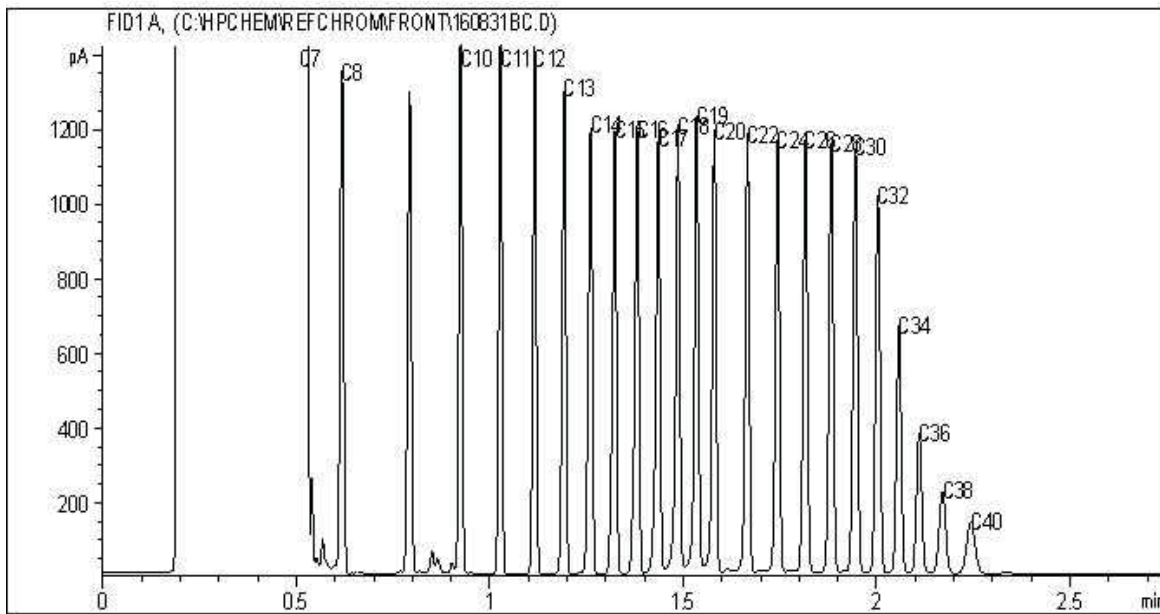


B6B2856\_COC

EPH in Water when PAH required Chromatogram



Carbon Range Distribution - Reference Chromatogram



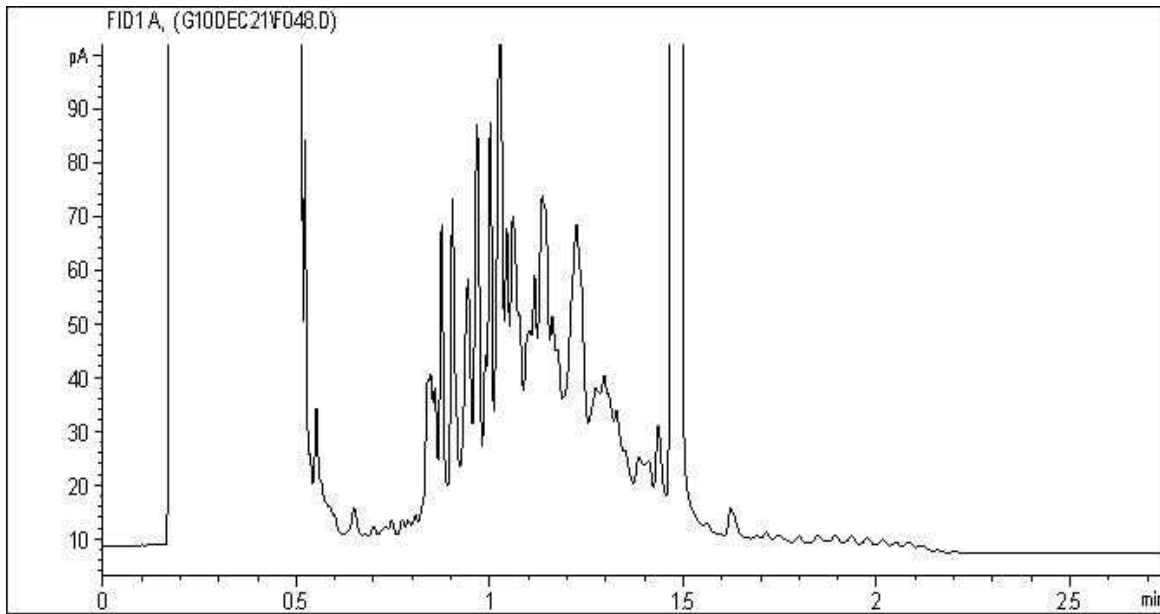
TYPICAL PRODUCT CARBON NUMBER RANGES

Gasoline:	C4 - C12	Diesel:	C8 - C22
Varsol:	C8 - C12	Lubricating oils:	C20 - C40

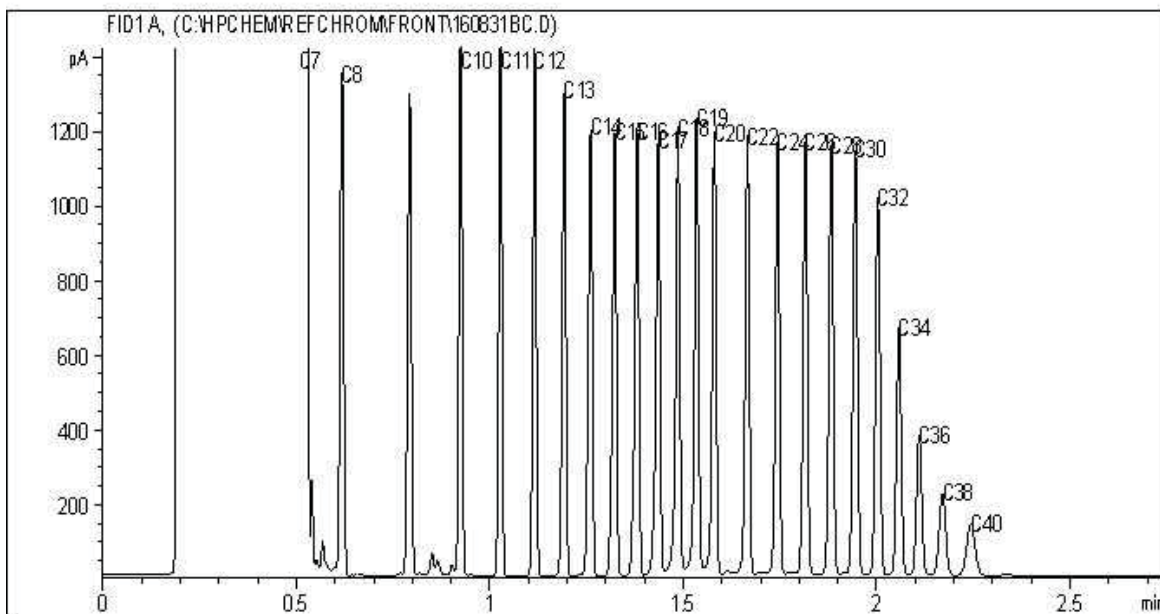
Note: This information is provided for reference purposes only. Should detailed chemist interpretation or fingerprinting be required, please contact the laboratory.



EPH in Water when PAH required Chromatogram



Carbon Range Distribution - Reference Chromatogram

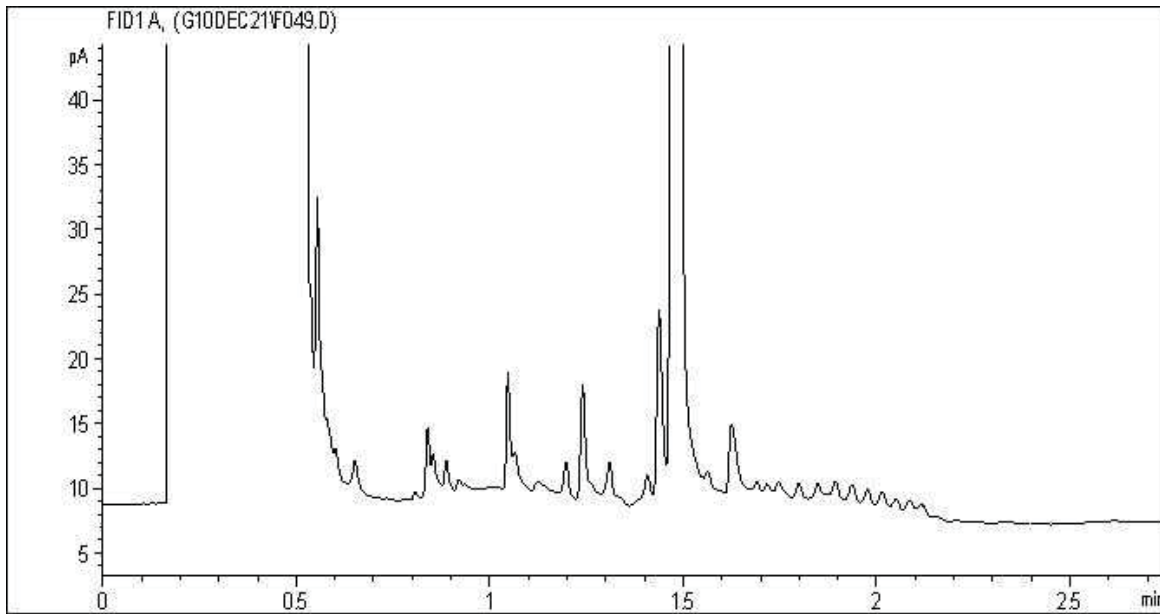


TYPICAL PRODUCT CARBON NUMBER RANGES

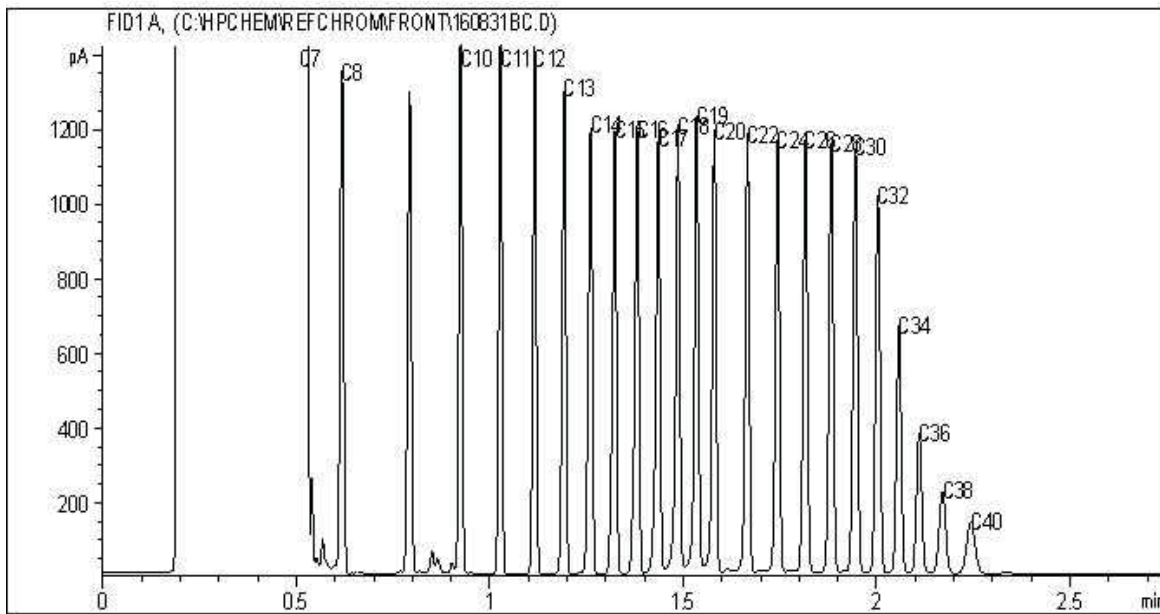
Gasoline:	C4 - C12	Diesel:	C8 - C22
Varsol:	C8 - C12	Lubricating oils:	C20 - C40

Note: This information is provided for reference purposes only. Should detailed chemist interpretation or fingerprinting be required, please contact the laboratory.

EPH in Water when PAH required Chromatogram



Carbon Range Distribution - Reference Chromatogram



TYPICAL PRODUCT CARBON NUMBER RANGES

Gasoline:	C4 - C12	Diesel:	C8 - C22
Varsol:	C8 - C12	Lubricating oils:	C20 - C40

**Note: This information is provided for reference purposes only. Should detailed chemist interpretation or fingerprinting be required, please contact the laboratory.**

**Attention: Michael Chao**

SNC LAVALIN ENVIRONMENT INC.  
8648 COMMERCE COURT  
BURNABY, BC  
CANADA V5A 4N6

Your P.O. #: Pending  
Your Project #: 640752  
Site#: AEC 22E  
Site Location: Watson Lake Airport  
Your C.O.C. #: 510054-14-01

**Report Date: 2016/11/15**

Report #: R2300726

Version: 1 - Final

**CERTIFICATE OF ANALYSIS**

**MAXXAM JOB #: B699544**

**Received: 2016/11/04, 12:00**

Sample Matrix: Soil  
# Samples Received: 4

Analyses	Quantity	Date Extracted	Date Analyzed	Laboratory Method	Analytical Method
BTEX/MTBE Soil LH, VH, F1 SIM/MS	3	2016/11/08	2016/11/10	BBY8SOP-00010/11/12	EPA 8260c R3 m
Elements by ICPMS (total)	2	2016/11/10	2016/11/10	BBY7SOP-00017,	BC SALM,EPA 6020bR2m
Moisture	3	2016/11/08	2016/11/09	BBY8SOP-00017	BCMOE BCLM Dec2000 m
Moisture	1	2016/11/10	2016/11/11	BBY8SOP-00017	BCMOE BCLM Dec2000 m
PAH in Soil by GC/MS (SIM)	3	2016/11/08	2016/11/10	BBY8SOP-00022	EPA 8270d R5 m
PAH in Soil by GC/MS (SIM)	1	2016/11/10	2016/11/13	BBY8SOP-00022	EPA 8270d R5 m
Total PAH and B(a)P Calculation	3	N/A	2016/11/10	BBY WI-00033	Auto Calc
Total PAH and B(a)P Calculation	1	N/A	2016/11/15	BBY WI-00033	Auto Calc
pH (2:1 DI Water Extract)	2	2016/11/10	2016/11/11	BBY6SOP-00028	BCMOE BCLM Mar2005 m
EPH less PAH in Soil By GC/FID	3	N/A	2016/11/10	BBY WI-00033	Auto Calc
EPH less PAH in Soil By GC/FID	1	N/A	2016/11/15	BBY WI-00033	Auto Calc
EPH in Soil by GC/FID	3	2016/11/08	2016/11/09	BBY8SOP-00029	BCMOE EPH s 07/99 m
EPH in Soil by GC/FID	1	2016/11/10	2016/11/13	BBY8SOP-00029	BCMOE EPH s 07/99 m
VOCs, VH, F1, LH in Soil by HS GC/MS	1	2016/11/10	2016/11/11	BBY8-SOP-00009	EPA 8260c R3 m
Volatile HC-BTEX for Soil	1	N/A	2016/11/13	BBY WI-00033	Auto Calc
Volatile HC-BTEX for Soil	3	N/A	2016/11/14	BBY WI-00033	Auto Calc

**Remarks:**

Maxxam Analytics' laboratories are accredited to ISO/IEC 17025:2005 for specific parameters on scopes of accreditation. Unless otherwise noted, procedures used by Maxxam are based upon recognized Provincial, Federal or US method compendia such as CCME, MDDELCC, EPA, APHA.

All work recorded herein has been done in accordance with procedures and practices ordinarily exercised by professionals in Maxxam's profession using accepted testing methodologies, quality assurance and quality control procedures (except where otherwise agreed by the client and Maxxam in writing). All data is in statistical control and has met quality control and method performance criteria unless otherwise noted. All method blanks are reported: unless indicated otherwise, associated sample data are not blank corrected.

Maxxam Analytics' liability is limited to the actual cost of the requested analyses, unless otherwise agreed in writing. There is no other warranty expressed or implied. Maxxam has been retained to provide analysis of samples provided by the Client using the testing methodology referenced in this report. Interpretation and use of test results are the sole responsibility of the Client and are not within the scope of services provided by Maxxam, unless otherwise agreed in writing.

Solid sample results, except biota, are based on dry weight unless otherwise indicated. Organic analyses are not recovery corrected except for isotope dilution methods. Results relate to samples tested.

**Attention:Michael Chao**

SNC LAVALIN ENVIRONMENT INC.  
8648 COMMERCE COURT  
BURNABY, BC  
CANADA V5A 4N6

Your P.O. #: Pending  
Your Project #: 640752  
Site#: AEC 22E  
Site Location: Watson Lake Airport  
Your C.O.C. #: 510054-14-01

**Report Date: 2016/11/15**  
Report #: R2300726  
Version: 1 - Final

**CERTIFICATE OF ANALYSIS**

**MAXXAM JOB #: B699544**

**Received: 2016/11/04, 12:00**

This Certificate shall not be reproduced except in full, without the written approval of the laboratory.

Reference Method suffix "m" indicates test methods incorporate validated modifications from specific reference methods to improve performance.

\* RPDs calculated using raw data. The rounding of final results may result in the apparent difference.

**Encryption Key**

Please direct all questions regarding this Certificate of Analysis to your Project Manager.

Samantha Fregien, Project Manager

Email: SFregien@maxxam.ca

Phone# (604)639-8418

=====  
Maxxam has procedures in place to guard against improper use of the electronic signature and have the required "signatories", as per section 5.10.2 of ISO/IEC 17025:2005(E), signing the reports. For Service Group specific validation please refer to the Validation Signature Page.

Maxxam Job #: B699544  
Report Date: 2016/11/15

SNC LAVALIN ENVIRONMENT INC.  
Client Project #: 640752  
Site Location: Watson Lake Airport  
Your P.O. #: Pending  
Sampler Initials: MLC

**PHYSICAL TESTING (SOIL)**

Maxxam ID		PZ1411		PZ1412	PZ1413	PZ1414		
Sampling Date		2016/11/01 12:00		2016/11/01 12:05	2016/11/01 12:20	2016/11/01 12:25		
COC Number		510054-14-01		510054-14-01	510054-14-01	510054-14-01		
	<b>UNITS</b>	<b>22E-BH16-5-1</b>	<b>QC Batch</b>	<b>22E-BH16-5-2</b>	<b>22E-BH16-6-1</b>	<b>22E-BH16-6-2</b>	<b>RDL</b>	<b>QC Batch</b>

<b>Physical Properties</b>								
Moisture	%	5.8	8466148	11	3.3	16	0.30	8464202
RDL = Reportable Detection Limit								

Maxxam Job #: B699544  
Report Date: 2016/11/15

SNC LAVALIN ENVIRONMENT INC.  
Client Project #: 640752  
Site Location: Watson Lake Airport  
Your P.O. #: Pending  
Sampler Initials: MLC

**CSR BTEX/VPH BY HS IN SOIL (SOIL)**

Maxxam ID		PZ1412		PZ1413	PZ1414		
Sampling Date		2016/11/01 12:05		2016/11/01 12:20	2016/11/01 12:25		
COC Number		510054-14-01		510054-14-01	510054-14-01		
	<b>UNITS</b>	<b>22E-BH16-5-2</b>	<b>QC Batch</b>	<b>22E-BH16-6-1</b>	<b>22E-BH16-6-2</b>	<b>RDL</b>	<b>QC Batch</b>
<b>Volatiles</b>							
VPH (VH6 to 10 - BTEX)	mg/kg	<10	8462150	<10	49	10	8462150
Methyl-tert-butylether (MTBE)	mg/kg	<0.10	8467004	<0.10	<0.10	0.10	8467013
Benzene	mg/kg	<0.0050	8467004	<0.0050	<0.0050	0.0050	8467013
Toluene	mg/kg	<0.020	8467004	<0.020	<0.020	0.020	8467013
Ethylbenzene	mg/kg	<0.010	8467004	<0.010	<0.010	0.010	8467013
m & p-Xylene	mg/kg	<0.040	8467004	<0.040	<0.040	0.040	8467013
o-Xylene	mg/kg	<0.040	8467004	<0.040	<0.040	0.040	8467013
Styrene	mg/kg	<0.030	8467004	<0.030	<0.030	0.030	8467013
Xylenes (Total)	mg/kg	<0.040	8467004	<0.040	<0.040	0.040	8467013
VH C6-C10	mg/kg	<10	8467004	<10	49	10	8467013
<b>Surrogate Recovery (%)</b>							
1,4-Difluorobenzene (sur.)	%	100	8467004	100	101		8467013
4-Bromofluorobenzene (sur.)	%	108	8467004	101	100		8467013
D10-ETHYLBENZENE (sur.)	%	103	8467004	95	97		8467013
D4-1,2-Dichloroethane (sur.)	%	109	8467004	101	99		8467013
RDL = Reportable Detection Limit							

Maxxam Job #: B699544  
Report Date: 2016/11/15

SNC LAVALIN ENVIRONMENT INC.  
Client Project #: 640752  
Site Location: Watson Lake Airport  
Your P.O. #: Pending  
Sampler Initials: MLC

**LEPH & HEPH WITH PAH FOR CSR IN SOIL (SOIL)**

Maxxam ID		PZ1411		PZ1412	PZ1413	PZ1414		
Sampling Date		2016/11/01 12:00		2016/11/01 12:05	2016/11/01 12:20	2016/11/01 12:25		
COC Number		510054-14-01		510054-14-01	510054-14-01	510054-14-01		
	UNITS	22E-BH16-5-1	QC Batch	22E-BH16-5-2	22E-BH16-6-1	22E-BH16-6-2	RDL	QC Batch
<b>Polycyclic Aromatics</b>								
Naphthalene	mg/kg	<0.050	8468649	<0.050	<0.050	<0.050	0.050	8465362
2-Methylnaphthalene	mg/kg	<0.050	8468649	<0.050	<0.050	2.1	0.050	8465362
Acenaphthylene	mg/kg	<0.050	8468649	<0.050	<0.050	<0.050	0.050	8465362
Acenaphthene	mg/kg	<0.050	8468649	<0.050	<0.050	0.23	0.050	8465362
Fluorene	mg/kg	<0.050	8468649	<0.050	<0.050	0.62	0.050	8465362
Phenanthrene	mg/kg	0.45	8468649	0.34	<0.050	0.23	0.050	8465362
Anthracene	mg/kg	0.072	8468649	0.054	<0.050	<0.050	0.050	8465362
Fluoranthene	mg/kg	0.75	8468649	0.52	<0.050	<0.050	0.050	8465362
Pyrene	mg/kg	0.61	8468649	0.40	<0.050	<0.050	0.050	8465362
Benzo(a)anthracene	mg/kg	0.28	8468649	0.19	<0.050	<0.050	0.050	8465362
Chrysene	mg/kg	0.41	8468649	0.26	<0.050	<0.050	0.050	8465362
Benzo(b&j)fluoranthene	mg/kg	0.54	8468649	0.34	<0.050	<0.050	0.050	8465362
Benzo(b)fluoranthene	mg/kg	0.34	8468649	0.20	<0.050	<0.050	0.050	8465362
Benzo(k)fluoranthene	mg/kg	0.18	8468649	0.11	<0.050	<0.050	0.050	8465362
Benzo(a)pyrene	mg/kg	0.32	8468649	0.21	<0.050	<0.050	0.050	8465362
Indeno(1,2,3-cd)pyrene	mg/kg	0.21	8468649	0.11	<0.050	<0.050	0.050	8465362
Dibenz(a,h)anthracene	mg/kg	0.061	8468649	<0.050	<0.050	<0.050	0.050	8465362
Benzo(g,h,i)perylene	mg/kg	0.28	8468649	0.15	<0.050	<0.050	0.050	8465362
Low Molecular Weight PAH's	mg/kg	0.52	8463127	0.39	<0.050	3.2	0.050	8463127
High Molecular Weight PAH's	mg/kg	3.6	8463127	2.3	<0.050	<0.050	0.050	8463127
Total PAH	mg/kg	4.2	8463127	2.7	<0.050	3.2	0.050	8463127
<b>Calculated Parameters</b>								
LEPH (C10-C19 less PAH)	mg/kg	120	8463128	<100	<100	4900	100	8463128
HEPH (C19-C32 less PAH)	mg/kg	390	8463128	290	<100	170	100	8463128
<b>Hydrocarbons</b>								
EPH (C10-C19)	mg/kg	120	8468654	<100	<100	4900	100	8465354
EPH (C19-C32)	mg/kg	390	8468654	290	<100	170	100	8465354
<b>Surrogate Recovery (%)</b>								
D10-ANTHRACENE (sur.)	%	92	8468649	97	100	103		8465362
D8-ACENAPHTHYLENE (sur.)	%	86	8468649	90	95	89		8465362
RDL = Reportable Detection Limit								

Maxxam Job #: B699544  
Report Date: 2016/11/15

SNC LAVALIN ENVIRONMENT INC.  
Client Project #: 640752  
Site Location: Watson Lake Airport  
Your P.O. #: Pending  
Sampler Initials: MLC

**LEPH & HEPH WITH PAH FOR CSR IN SOIL (SOIL)**

Maxxam ID		PZ1411		PZ1412	PZ1413	PZ1414		
Sampling Date		2016/11/01 12:00		2016/11/01 12:05	2016/11/01 12:20	2016/11/01 12:25		
COC Number		510054-14-01		510054-14-01	510054-14-01	510054-14-01		
	<b>UNITS</b>	<b>22E-BH16-5-1</b>	<b>QC Batch</b>	<b>22E-BH16-5-2</b>	<b>22E-BH16-6-1</b>	<b>22E-BH16-6-2</b>	<b>RDL</b>	<b>QC Batch</b>
D8-NAPHTHALENE (sur.)	%	86	8468649	89	93	102		8465362
TERPHENYL-D14 (sur.)	%	77	8468649	82	90	96		8465362
O-TERPHENYL (sur.)	%	93	8468654	95	97	115		8465354
RDL = Reportable Detection Limit								



Maxxam Job #: B699544  
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SNC LAVALIN ENVIRONMENT INC.  
Client Project #: 640752  
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Your P.O. #: Pending  
Sampler Initials: MLC

**CSR/CCME METALS IN SOIL (SOIL)**

Maxxam ID		PZ1411	PZ1413		
Sampling Date		2016/11/01 12:00	2016/11/01 12:20		
COC Number		510054-14-01	510054-14-01		
	<b>UNITS</b>	<b>22E-BH16-5-1</b>	<b>22E-BH16-6-1</b>	<b>RDL</b>	<b>QC Batch</b>
<b>Physical Properties</b>					
Soluble (2:1) pH	pH	6.65	7.69	N/A	8466413
<b>Total Metals by ICPMS</b>					
Total Aluminum (Al)	mg/kg	4500	3750	100	8466406
Total Antimony (Sb)	mg/kg	0.53	0.66	0.10	8466406
Total Arsenic (As)	mg/kg	5.19	4.77	0.50	8466406
Total Barium (Ba)	mg/kg	125	73.8	0.10	8466406
Total Beryllium (Be)	mg/kg	<0.40	<0.40	0.40	8466406
Total Bismuth (Bi)	mg/kg	<0.10	<0.10	0.10	8466406
Total Cadmium (Cd)	mg/kg	0.356	0.114	0.050	8466406
Total Calcium (Ca)	mg/kg	1940	975	100	8466406
Total Chromium (Cr)	mg/kg	12.3	14.1	1.0	8466406
Total Cobalt (Co)	mg/kg	5.71	4.29	0.30	8466406
Total Copper (Cu)	mg/kg	15.7	9.58	0.50	8466406
Total Iron (Fe)	mg/kg	10700	9790	100	8466406
Total Lead (Pb)	mg/kg	9.26	4.54	0.10	8466406
Total Lithium (Li)	mg/kg	5.6	<5.0	5.0	8466406
Total Magnesium (Mg)	mg/kg	1560	2100	100	8466406
Total Manganese (Mn)	mg/kg	239	293	0.20	8466406
Total Mercury (Hg)	mg/kg	0.068	<0.050	0.050	8466406
Total Molybdenum (Mo)	mg/kg	0.53	0.49	0.10	8466406
Total Nickel (Ni)	mg/kg	14.5	14.7	0.80	8466406
Total Phosphorus (P)	mg/kg	434	272	10	8466406
Total Potassium (K)	mg/kg	375	363	100	8466406
Total Selenium (Se)	mg/kg	<0.50	<0.50	0.50	8466406
Total Silver (Ag)	mg/kg	0.084	<0.050	0.050	8466406
Total Sodium (Na)	mg/kg	<100	<100	100	8466406
Total Strontium (Sr)	mg/kg	12.8	6.61	0.10	8466406
Total Thallium (Tl)	mg/kg	0.053	<0.050	0.050	8466406
Total Tin (Sn)	mg/kg	0.44	<0.10	0.10	8466406
Total Titanium (Ti)	mg/kg	97.4	95.3	1.0	8466406
RDL = Reportable Detection Limit N/A = Not Applicable					

Maxxam Job #: B699544  
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SNC LAVALIN ENVIRONMENT INC.  
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Sampler Initials: MLC

**CSR/CCME METALS IN SOIL (SOIL)**

Maxxam ID		PZ1411	PZ1413		
Sampling Date		2016/11/01 12:00	2016/11/01 12:20		
COC Number		510054-14-01	510054-14-01		
	<b>UNITS</b>	<b>22E-BH16-5-1</b>	<b>22E-BH16-6-1</b>	<b>RDL</b>	<b>QC Batch</b>
Total Uranium (U)	mg/kg	0.660	0.280	0.050	8466406
Total Vanadium (V)	mg/kg	14.1	12.2	2.0	8466406
Total Zinc (Zn)	mg/kg	41.2	21.8	1.0	8466406
Total Zirconium (Zr)	mg/kg	0.84	1.16	0.50	8466406
RDL = Reportable Detection Limit					

Maxxam Job #: B699544  
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SNC LAVALIN ENVIRONMENT INC.  
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Site Location: Watson Lake Airport  
Your P.O. #: Pending  
Sampler Initials: MLC

**CSR VOC + VPH IN SOIL (SOIL)**

Maxxam ID		PZ1411		
Sampling Date		2016/11/01 12:00		
COC Number		510054-14-01		
	<b>UNITS</b>	<b>22E-BH16-5-1</b>	<b>RDL</b>	<b>QC Batch</b>
<b>Volatiles</b>				
VPH (VH6 to 10 - BTEX)	mg/kg	<10	10	8462150
Vinyl chloride	mg/kg	<0.060	0.060	8466980
Bromomethane	mg/kg	<0.30	0.30	8466980
Chloroethane	mg/kg	<0.10	0.10	8466980
Trichlorofluoromethane	mg/kg	<0.20	0.20	8466980
1,1-dichloroethene	mg/kg	<0.025	0.025	8466980
Dichloromethane	mg/kg	<0.10	0.10	8466980
trans-1,2-dichloroethene	mg/kg	<0.025	0.025	8466980
1,1-dichloroethane	mg/kg	<0.025	0.025	8466980
cis-1,2-dichloroethene	mg/kg	<0.025	0.025	8466980
Chloroform	mg/kg	<0.050	0.050	8466980
1,1,1-trichloroethane	mg/kg	<0.025	0.025	8466980
1,2-dichloroethane	mg/kg	<0.025	0.025	8466980
Carbon tetrachloride	mg/kg	<0.025	0.025	8466980
Benzene	mg/kg	<0.0050	0.0050	8466980
Methyl-tert-butylether (MTBE)	mg/kg	<0.10	0.10	8466980
1,2-dichloropropane	mg/kg	<0.025	0.025	8466980
Trichloroethene	mg/kg	<0.0050	0.0050	8466980
Bromodichloromethane	mg/kg	<0.050	0.050	8466980
cis-1,3-dichloropropene	mg/kg	<0.050	0.050	8466980
trans-1,3-dichloropropene	mg/kg	<0.050	0.050	8466980
1,1,2-trichloroethane	mg/kg	<0.025	0.025	8466980
Toluene	mg/kg	<0.020	0.020	8466980
Chlorodibromomethane	mg/kg	<0.050	0.050	8466980
1,2-dibromoethane	mg/kg	<0.025	0.025	8466980
Tetrachloroethene	mg/kg	<0.025	0.025	8466980
Chlorobenzene	mg/kg	<0.025	0.025	8466980
1,1,1,2-tetrachloroethane	mg/kg	<0.025	0.025	8466980
Ethylbenzene	mg/kg	<0.010	0.010	8466980
m & p-Xylene	mg/kg	<0.040	0.040	8466980
RDL = Reportable Detection Limit				

Maxxam Job #: B699544  
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SNC LAVALIN ENVIRONMENT INC.  
Client Project #: 640752  
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Your P.O. #: Pending  
Sampler Initials: MLC

**CSR VOC + VPH IN SOIL (SOIL)**

Maxxam ID		PZ1411		
Sampling Date		2016/11/01 12:00		
COC Number		510054-14-01		
	<b>UNITS</b>	<b>22E-BH16-5-1</b>	<b>RDL</b>	<b>QC Batch</b>
Bromoform	mg/kg	<0.050	0.050	8466980
Styrene	mg/kg	<0.030	0.030	8466980
o-Xylene	mg/kg	<0.040	0.040	8466980
Xylenes (Total)	mg/kg	<0.040	0.040	8466980
1,1,2-tetrachloroethane	mg/kg	<0.025	0.025	8466980
1,2-dichlorobenzene	mg/kg	<0.025	0.025	8466980
1,3-dichlorobenzene	mg/kg	<0.025	0.025	8466980
1,4-dichlorobenzene	mg/kg	<0.025	0.025	8466980
1,2,3-trichlorobenzene	mg/kg	<0.025	0.025	8466980
Hexachlorobutadiene	mg/kg	<0.20	0.20	8466980
1,2,4-trichlorobenzene	mg/kg	<0.025	0.025	8466980
VH C6-C10	mg/kg	<10	10	8466980
<b>Surrogate Recovery (%)</b>				
1,4-Difluorobenzene (sur.)	%	98		8466980
4-Bromofluorobenzene (sur.)	%	100		8466980
D10-ETHYLBENZENE (sur.)	%	106		8466980
D4-1,2-Dichloroethane (sur.)	%	92		8466980
RDL = Reportable Detection Limit				

Maxxam Job #: B699544  
Report Date: 2016/11/15

SNC LAVALIN ENVIRONMENT INC.  
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### GENERAL COMMENTS

Each temperature is the average of up to three cooler temperatures taken at receipt

Package 1	2.0°C
Package 2	2.0°C

Sample PZ1411 [22E-BH16-5-1] : Sample(s) received was not in compliance with BC CSR sampling requirements for VOC, BTEX and VPH in soil. on Volatiles Batch: 8466980

Sample PZ1412 [22E-BH16-5-2] : Sample(s) received was not in compliance with BC CSR sampling requirements for VOC, BTEX and VPH in soil. on Volatiles Batch: 8467004

Sample PZ1413 [22E-BH16-6-1] : Sample(s) received was not in compliance with BC CSR sampling requirements for VOC, BTEX and VPH in soil. on Volatiles Batch: 8467013

Sample PZ1414 [22E-BH16-6-2] : Sample(s) received was not in compliance with BC CSR sampling requirements for VOC, BTEX and VPH in soil. on Volatiles Batch: 8467013

**Results relate only to the items tested.**

Maxxam Job #: B699544  
Report Date: 2016/11/15

**QUALITY ASSURANCE REPORT**

SNC LAVALIN ENVIRONMENT INC.  
Client Project #: 640752  
Site Location: Watson Lake Airport  
Your P.O. #: Pending  
Sampler Initials: MLC

QC Batch	Parameter	Date	Matrix Spike		Spiked Blank		Method Blank		RPD		QC Standard	
			% Recovery	QC Limits	% Recovery	QC Limits	Value	UNITS	Value (%)	QC Limits	% Recovery	QC Limits
8465354	O-TERPHENYL (sur.)	2016/11/09	102	50 - 130	97	50 - 130	97	%				
8465362	D10-ANTHRACENE (sur.)	2016/11/09	94	60 - 130	90	60 - 130	97	%				
8465362	D8-ACENAPHTHYLENE (sur.)	2016/11/09	89	50 - 130	87	50 - 130	92	%				
8465362	D8-NAPHTHALENE (sur.)	2016/11/09	86	50 - 130	91	50 - 130	95	%				
8465362	TERPHENYL-D14 (sur.)	2016/11/09	80	60 - 130	79	60 - 130	87	%				
8466980	1,4-Difluorobenzene (sur.)	2016/11/11	93	70 - 130	94	70 - 130	98	%				
8466980	4-Bromofluorobenzene (sur.)	2016/11/11	117	70 - 130	114	70 - 130	105	%				
8466980	D10-ETHYLBENZENE (sur.)	2016/11/11	101	50 - 130	92	50 - 130	106	%				
8466980	D4-1,2-Dichloroethane (sur.)	2016/11/11	103	70 - 130	107	70 - 130	92	%				
8467004	1,4-Difluorobenzene (sur.)	2016/11/10	99	60 - 140	96	60 - 140	98	%				
8467004	4-Bromofluorobenzene (sur.)	2016/11/10	107	70 - 140	107	70 - 140	107	%				
8467004	D10-ETHYLBENZENE (sur.)	2016/11/10	87	60 - 130	94	60 - 130	100	%				
8467004	D4-1,2-Dichloroethane (sur.)	2016/11/10	92	60 - 140	102	60 - 140	103	%				
8467013	1,4-Difluorobenzene (sur.)	2016/11/10	98	60 - 140	98	60 - 140	97	%				
8467013	4-Bromofluorobenzene (sur.)	2016/11/10	100	70 - 140	101	70 - 140	103	%				
8467013	D10-ETHYLBENZENE (sur.)	2016/11/10	96	60 - 130	92	60 - 130	101	%				
8467013	D4-1,2-Dichloroethane (sur.)	2016/11/10	97	60 - 140	97	60 - 140	101	%				
8468649	D10-ANTHRACENE (sur.)	2016/11/13	86	60 - 130	89	60 - 130	99	%				
8468649	D8-ACENAPHTHYLENE (sur.)	2016/11/13	86	50 - 130	87	50 - 130	93	%				
8468649	D8-NAPHTHALENE (sur.)	2016/11/13	91	50 - 130	88	50 - 130	94	%				
8468649	TERPHENYL-D14 (sur.)	2016/11/13	76	60 - 130	77	60 - 130	82	%				
8468654	O-TERPHENYL (sur.)	2016/11/13	97	50 - 130	97	50 - 130	95	%				
8464202	Moisture	2016/11/09					<0.30	%	9.5	20		
8465354	EPH (C10-C19)	2016/11/09	NC	50 - 130	109	50 - 130	<100	mg/kg	6.3	40		
8465354	EPH (C19-C32)	2016/11/09	114	50 - 130	111	50 - 130	<100	mg/kg	NC	40		
8465362	2-Methylnaphthalene	2016/11/10	79	50 - 130	82	50 - 130	<0.050	mg/kg	NC	50		
8465362	Acenaphthene	2016/11/10	83	50 - 130	83	50 - 130	<0.050	mg/kg	NC	50		
8465362	Acenaphthylene	2016/11/10	79	50 - 130	80	50 - 130	<0.050	mg/kg	NC	50		
8465362	Anthracene	2016/11/10	80	60 - 130	80	60 - 130	<0.050	mg/kg	NC	50		
8465362	Benzo(a)anthracene	2016/11/10	74	60 - 130	74	60 - 130	<0.050	mg/kg	NC	50		

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**QUALITY ASSURANCE REPORT(CONT'D)**

SNC LAVALIN ENVIRONMENT INC.  
Client Project #: 640752  
Site Location: Watson Lake Airport  
Your P.O. #: Pending  
Sampler Initials: MLC

QC Batch	Parameter	Date	Matrix Spike		Spiked Blank		Method Blank		RPD		QC Standard	
			% Recovery	QC Limits	% Recovery	QC Limits	Value	UNITS	Value (%)	QC Limits	% Recovery	QC Limits
8465362	Benzo(a)pyrene	2016/11/10	78	60 - 130	79	60 - 130	<0.050	mg/kg	NC	50		
8465362	Benzo(b&j)fluoranthene	2016/11/10	81	60 - 130	83	60 - 130	<0.050	mg/kg	NC	50		
8465362	Benzo(b)fluoranthene	2016/11/10	76	60 - 130	79	60 - 130	<0.050	mg/kg	NC	50		
8465362	Benzo(g,h,i)perylene	2016/11/10	70	60 - 130	69	60 - 130	<0.050	mg/kg	NC	50		
8465362	Benzo(k)fluoranthene	2016/11/10	79	60 - 130	78	60 - 130	<0.050	mg/kg	NC	50		
8465362	Chrysene	2016/11/10	76	60 - 130	77	60 - 130	<0.050	mg/kg	NC	50		
8465362	Dibenz(a,h)anthracene	2016/11/10	71	60 - 130	71	60 - 130	<0.050	mg/kg	NC	50		
8465362	Fluoranthene	2016/11/10	79	60 - 130	82	60 - 130	<0.050	mg/kg	NC	50		
8465362	Fluorene	2016/11/10	77	50 - 130	79	50 - 130	<0.050	mg/kg	NC	50		
8465362	Indeno(1,2,3-cd)pyrene	2016/11/10	73	60 - 130	72	60 - 130	<0.050	mg/kg	NC	50		
8465362	Naphthalene	2016/11/10	80	50 - 130	82	50 - 130	<0.050	mg/kg	NC	50		
8465362	Phenanthrene	2016/11/10	76	60 - 130	80	60 - 130	<0.050	mg/kg	NC	50		
8465362	Pyrene	2016/11/10	78	60 - 130	80	60 - 130	<0.050	mg/kg	NC	50		
8466148	Moisture	2016/11/10					<0.30	%	0.92	20		
8466406	Total Aluminum (Al)	2016/11/11					<100	mg/kg	0.67	35	93	70 - 130
8466406	Total Antimony (Sb)	2016/11/11	89	75 - 125	94	75 - 125	<0.10	mg/kg	NC	30	102	70 - 130
8466406	Total Arsenic (As)	2016/11/11	93	75 - 125	93	75 - 125	<0.50	mg/kg	NC	30	97	70 - 130
8466406	Total Barium (Ba)	2016/11/11	NC	75 - 125	98	75 - 125	<0.10	mg/kg	2.2	35	97	70 - 130
8466406	Total Beryllium (Be)	2016/11/11	103	75 - 125	99	75 - 125	<0.40	mg/kg	NC	30	103	70 - 130
8466406	Total Bismuth (Bi)	2016/11/11					<0.10	mg/kg	NC	30		
8466406	Total Cadmium (Cd)	2016/11/11	104	75 - 125	107	75 - 125	<0.050	mg/kg	NC	30	126	70 - 130
8466406	Total Calcium (Ca)	2016/11/11					<100	mg/kg	2.0	30	96	70 - 130
8466406	Total Chromium (Cr)	2016/11/11	NC	75 - 125	96	75 - 125	<1.0	mg/kg	0.29	30	104	70 - 130
8466406	Total Cobalt (Co)	2016/11/11	82	75 - 125	97	75 - 125	<0.30	mg/kg	6.4	30	97	70 - 130
8466406	Total Copper (Cu)	2016/11/11	NC	75 - 125	98	75 - 125	<0.50	mg/kg	4.4	30	101	70 - 130
8466406	Total Iron (Fe)	2016/11/11					<100	mg/kg	1.8	30	93	70 - 130
8466406	Total Lead (Pb)	2016/11/11	99	75 - 125	99	75 - 125	<0.10	mg/kg	6.9	35	104	70 - 130
8466406	Total Lithium (Li)	2016/11/11	97	75 - 125	96	75 - 125	<5.0	mg/kg	NC	30	101	70 - 130
8466406	Total Magnesium (Mg)	2016/11/11					<100	mg/kg	2.5	30	92	70 - 130
8466406	Total Manganese (Mn)	2016/11/11	NC	75 - 125	99	75 - 125	<0.20	mg/kg	3.0	30	98	70 - 130

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**QUALITY ASSURANCE REPORT(CONT'D)**

SNC LAVALIN ENVIRONMENT INC.  
Client Project #: 640752  
Site Location: Watson Lake Airport  
Your P.O. #: Pending  
Sampler Initials: MLC

QC Batch	Parameter	Date	Matrix Spike		Spiked Blank		Method Blank		RPD		QC Standard	
			% Recovery	QC Limits	% Recovery	QC Limits	Value	UNITS	Value (%)	QC Limits	% Recovery	QC Limits
8466406	Total Mercury (Hg)	2016/11/11	97	75 - 125	102	75 - 125	<0.050	mg/kg	NC	35	104	70 - 130
8466406	Total Molybdenum (Mo)	2016/11/11	100	75 - 125	94	75 - 125	<0.10	mg/kg	16	35	189 (2)	70 - 130
8466406	Total Nickel (Ni)	2016/11/11	NC	75 - 125	96	75 - 125	<0.80	mg/kg	0.74	30	119	70 - 130
8466406	Total Phosphorus (P)	2016/11/11					<10	mg/kg	2.4	30	97	70 - 130
8466406	Total Potassium (K)	2016/11/11					<100	mg/kg	0.76	35	84	70 - 130
8466406	Total Selenium (Se)	2016/11/11	99	75 - 125	99	75 - 125	<0.50	mg/kg	NC	30		
8466406	Total Silver (Ag)	2016/11/11	68 (1)	75 - 125	66 (3)	75 - 125	<0.050	mg/kg	NC	35	84	70 - 130
8466406	Total Sodium (Na)	2016/11/11					<100	mg/kg	3.4	35	84	70 - 130
8466406	Total Strontium (Sr)	2016/11/11	NC	75 - 125	93	75 - 125	<0.10	mg/kg	1.2	35	99	70 - 130
8466406	Total Thallium (Tl)	2016/11/11	96	75 - 125	96	75 - 125	<0.050	mg/kg	NC	30	89	70 - 130
8466406	Total Tin (Sn)	2016/11/11	89	75 - 125	89	75 - 125	<0.10	mg/kg	39 (1)	35	85	70 - 130
8466406	Total Titanium (Ti)	2016/11/11	NC	75 - 125	94	75 - 125	<1.0	mg/kg	0.68	35		
8466406	Total Uranium (U)	2016/11/11	96	75 - 125	97	75 - 125	<0.050	mg/kg	2.7	30	98	70 - 130
8466406	Total Vanadium (V)	2016/11/11	NC	75 - 125	95	75 - 125	<2.0	mg/kg	1.4	30	97	70 - 130
8466406	Total Zinc (Zn)	2016/11/11	NC	75 - 125	103	75 - 125	<1.0	mg/kg	2.5	30	107	70 - 130
8466406	Total Zirconium (Zr)	2016/11/11					<0.50	mg/kg	14	30		
8466413	Soluble (2:1) pH	2016/11/11			100	97 - 103			0.55	N/A		
8466980	1,1,1,2-tetrachloroethane	2016/11/11	89	60 - 140	87	60 - 140	<0.025	mg/kg	NC	40		
8466980	1,1,1-trichloroethane	2016/11/11	84	60 - 140	83	60 - 140	<0.025	mg/kg	NC	40		
8466980	1,1,2,2-tetrachloroethane	2016/11/11	112	60 - 140	90	60 - 140	<0.025	mg/kg	NC	40		
8466980	1,1,2-trichloroethane	2016/11/11	92	60 - 140	88	60 - 140	<0.025	mg/kg	NC	40		
8466980	1,1-dichloroethane	2016/11/11	76	60 - 140	75	60 - 140	<0.025	mg/kg	NC	40		
8466980	1,1-dichloroethene	2016/11/11	77	60 - 140	76	60 - 140	<0.025	mg/kg	NC	40		
8466980	1,2,3-trichlorobenzene	2016/11/11	139	60 - 140	105	60 - 140	<0.025	mg/kg	NC	40		
8466980	1,2,4-trichlorobenzene	2016/11/11	121	60 - 140	98	60 - 140	<0.025	mg/kg	NC	40		
8466980	1,2-dibromoethane	2016/11/11	97	60 - 140	94	60 - 140	<0.025	mg/kg	NC	40		
8466980	1,2-dichlorobenzene	2016/11/11	113	60 - 140	103	60 - 140	<0.025	mg/kg	NC	40		
8466980	1,2-dichloroethane	2016/11/11	92	60 - 140	86	60 - 140	<0.025	mg/kg	NC	40		
8466980	1,2-dichloropropane	2016/11/11	87	60 - 140	86	60 - 140	<0.025	mg/kg	NC	40		
8466980	1,3-dichlorobenzene	2016/11/11	105	60 - 140	100	60 - 140	<0.025	mg/kg	NC	40		



Maxxam Job #: B699544  
Report Date: 2016/11/15

**QUALITY ASSURANCE REPORT(CONT'D)**

SNC LAVALIN ENVIRONMENT INC.  
Client Project #: 640752  
Site Location: Watson Lake Airport  
Your P.O. #: Pending  
Sampler Initials: MLC

QC Batch	Parameter	Date	Matrix Spike		Spiked Blank		Method Blank		RPD		QC Standard	
			% Recovery	QC Limits	% Recovery	QC Limits	Value	UNITS	Value (%)	QC Limits	% Recovery	QC Limits
8466980	1,4-dichlorobenzene	2016/11/11	103	60 - 140	98	60 - 140	<0.025	mg/kg	NC	40		
8466980	Benzene	2016/11/11	91	60 - 140	90	60 - 140	<0.0050	mg/kg	NC	40		
8466980	Bromodichloromethane	2016/11/11	85	60 - 140	84	60 - 140	<0.050	mg/kg	NC	40		
8466980	Bromoform	2016/11/11	94	60 - 140	85	60 - 140	<0.050	mg/kg	NC	40		
8466980	Bromomethane	2016/11/11	59	50 - 150	61	50 - 150	<0.30	mg/kg	NC	40		
8466980	Carbon tetrachloride	2016/11/11	80	60 - 140	83	60 - 140	<0.025	mg/kg	NC	40		
8466980	Chlorobenzene	2016/11/11	101	60 - 140	98	60 - 140	<0.025	mg/kg	NC	40		
8466980	Chlorodibromomethane	2016/11/11	95	60 - 140	92	60 - 140	<0.050	mg/kg	NC	40		
8466980	Chloroethane	2016/11/11	47 (1)	50 - 150	87	50 - 150	<0.10	mg/kg	NC	40		
8466980	Chloroform	2016/11/11	81	60 - 140	81	60 - 140	<0.050	mg/kg	NC	40		
8466980	cis-1,2-dichloroethene	2016/11/11	84	60 - 140	83	60 - 140	<0.025	mg/kg	NC	40		
8466980	cis-1,3-dichloropropene	2016/11/11	79	60 - 140	77	60 - 140	<0.050	mg/kg	NC	40		
8466980	Dichloromethane	2016/11/11	90	60 - 140	89	60 - 140	<0.10	mg/kg	NC	40		
8466980	Ethylbenzene	2016/11/11	112	60 - 140	110	60 - 140	<0.010	mg/kg	NC	40		
8466980	Hexachlorobutadiene	2016/11/11	89	50 - 150	84	50 - 150	<0.20	mg/kg	NC	40		
8466980	m & p-Xylene	2016/11/11	114	60 - 140	112	60 - 140	<0.040	mg/kg	NC	40		
8466980	Methyl-tert-butylether (MTBE)	2016/11/11					<0.10	mg/kg	NC	40		
8466980	o-Xylene	2016/11/11	117	60 - 140	114	60 - 140	<0.040	mg/kg	NC	40		
8466980	Styrene	2016/11/11	90	60 - 140	86	60 - 140	<0.030	mg/kg	NC	40		
8466980	Tetrachloroethene	2016/11/11	92	60 - 140	91	60 - 140	<0.025	mg/kg	NC	40		
8466980	Toluene	2016/11/11	100	60 - 140	98	60 - 140	<0.020	mg/kg	NC	40		
8466980	trans-1,2-dichloroethene	2016/11/11	78	60 - 140	78	60 - 140	<0.025	mg/kg	NC	40		
8466980	trans-1,3-dichloropropene	2016/11/11	82	60 - 140	79	60 - 140	<0.050	mg/kg	NC	40		
8466980	Trichloroethene	2016/11/11	83	60 - 140	83	60 - 140	<0.0050	mg/kg	NC	40		
8466980	Trichlorofluoromethane	2016/11/11	76	50 - 150	75	50 - 150	<0.20	mg/kg	NC	40		
8466980	VH C6-C10	2016/11/11			97	60 - 140	<10	mg/kg	NC	40		
8466980	Vinyl chloride	2016/11/11	63	50 - 150	60	50 - 150	<0.060	mg/kg	NC	40		
8466980	Xylenes (Total)	2016/11/11					<0.040	mg/kg	NC	40		
8467004	Benzene	2016/11/10	82	60 - 140	103	60 - 140	<0.0050	mg/kg	NC	40		
8467004	Ethylbenzene	2016/11/10	86	60 - 140	104	60 - 140	<0.010	mg/kg	NC	40		

Maxxam Job #: B699544  
Report Date: 2016/11/15

**QUALITY ASSURANCE REPORT(CONT'D)**

SNC LAVALIN ENVIRONMENT INC.  
Client Project #: 640752  
Site Location: Watson Lake Airport  
Your P.O. #: Pending  
Sampler Initials: MLC

QC Batch	Parameter	Date	Matrix Spike		Spiked Blank		Method Blank		RPD		QC Standard	
			% Recovery	QC Limits	% Recovery	QC Limits	Value	UNITS	Value (%)	QC Limits	% Recovery	QC Limits
8467004	m & p-Xylene	2016/11/10	84	60 - 140	101	60 - 140	<0.040	mg/kg	NC	40		
8467004	Methyl-tert-butylether (MTBE)	2016/11/10					<0.10	mg/kg	NC	40		
8467004	o-Xylene	2016/11/10	84	60 - 140	100	60 - 140	<0.040	mg/kg	NC	40		
8467004	Styrene	2016/11/10					<0.030	mg/kg	NC	40		
8467004	Toluene	2016/11/10	81	60 - 140	100	60 - 140	<0.020	mg/kg	NC	40		
8467004	VH C6-C10	2016/11/10			97	60 - 140	<10	mg/kg	NC	40		
8467004	Xylenes (Total)	2016/11/10					<0.040	mg/kg	NC	40		
8467013	Benzene	2016/11/10	98	60 - 140	94	60 - 140	<0.0050	mg/kg	NC	40		
8467013	Ethylbenzene	2016/11/10	97	60 - 140	92	60 - 140	<0.010	mg/kg	NC	40		
8467013	m & p-Xylene	2016/11/10	96	60 - 140	92	60 - 140	<0.040	mg/kg	NC	40		
8467013	Methyl-tert-butylether (MTBE)	2016/11/10					<0.10	mg/kg	NC	40		
8467013	o-Xylene	2016/11/10	102	60 - 140	97	60 - 140	<0.040	mg/kg	NC	40		
8467013	Styrene	2016/11/10					<0.030	mg/kg	NC	40		
8467013	Toluene	2016/11/10	94	60 - 140	90	60 - 140	<0.020	mg/kg	NC	40		
8467013	VH C6-C10	2016/11/10			99	60 - 140	<10	mg/kg	NC	40		
8467013	Xylenes (Total)	2016/11/10					<0.040	mg/kg	NC	40		
8468649	2-Methylnaphthalene	2016/11/14	82	50 - 130	87	50 - 130	<0.050	mg/kg	NC	50		
8468649	Acenaphthene	2016/11/14	86	50 - 130	90	50 - 130	<0.050	mg/kg	NC	50		
8468649	Acenaphthylene	2016/11/14	84	50 - 130	88	50 - 130	<0.050	mg/kg	NC	50		
8468649	Anthracene	2016/11/14	82	60 - 130	87	60 - 130	<0.050	mg/kg	NC	50		
8468649	Benzo(a)anthracene	2016/11/14	76	60 - 130	82	60 - 130	<0.050	mg/kg	NC	50		
8468649	Benzo(a)pyrene	2016/11/14	83	60 - 130	84	60 - 130	<0.050	mg/kg	NC	50		
8468649	Benzo(b&j)fluoranthene	2016/11/14	83	60 - 130	89	60 - 130	<0.050	mg/kg	NC	50		
8468649	Benzo(b)fluoranthene	2016/11/14	85	60 - 130	86	60 - 130	<0.050	mg/kg	NC	50		
8468649	Benzo(g,h,i)perylene	2016/11/14	83	60 - 130	79	60 - 130	<0.050	mg/kg	NC	50		
8468649	Benzo(k)fluoranthene	2016/11/14	82	60 - 130	84	60 - 130	<0.050	mg/kg	NC	50		
8468649	Chrysene	2016/11/14	79	60 - 130	87	60 - 130	<0.050	mg/kg	NC	50		
8468649	Dibenz(a,h)anthracene	2016/11/14	86	60 - 130	82	60 - 130	<0.050	mg/kg	NC	50		
8468649	Fluoranthene	2016/11/14	80	60 - 130	87	60 - 130	<0.050	mg/kg	NC	50		
8468649	Fluorene	2016/11/14	77	50 - 130	82	50 - 130	<0.050	mg/kg	NC	50		

Maxxam Job #: B699544  
Report Date: 2016/11/15

**QUALITY ASSURANCE REPORT(CONT'D)**

SNC LAVALIN ENVIRONMENT INC.  
Client Project #: 640752  
Site Location: Watson Lake Airport  
Your P.O. #: Pending  
Sampler Initials: MLC

QC Batch	Parameter	Date	Matrix Spike		Spiked Blank		Method Blank		RPD		QC Standard	
			% Recovery	QC Limits	% Recovery	QC Limits	Value	UNITS	Value (%)	QC Limits	% Recovery	QC Limits
8468649	Indeno(1,2,3-cd)pyrene	2016/11/14	84	60 - 130	83	60 - 130	<0.050	mg/kg	NC	50		
8468649	Naphthalene	2016/11/14	81	50 - 130	84	50 - 130	<0.050	mg/kg	NC	50		
8468649	Phenanthrene	2016/11/14	79	60 - 130	84	60 - 130	<0.050	mg/kg	NC	50		
8468649	Pyrene	2016/11/14	82	60 - 130	87	60 - 130	<0.050	mg/kg	NC	50		
8468654	EPH (C10-C19)	2016/11/13	91	50 - 130	94	50 - 130	<100	mg/kg	NC	40		
8468654	EPH (C19-C32)	2016/11/13	93	50 - 130	95	50 - 130	<100	mg/kg	NC	40		

N/A = Not Applicable

Duplicate: Paired analysis of a separate portion of the same sample. Used to evaluate the variance in the measurement.

Matrix Spike: A sample to which a known amount of the analyte of interest has been added. Used to evaluate sample matrix interference.

QC Standard: A sample of known concentration prepared by an external agency under stringent conditions. Used as an independent check of method accuracy.

Spiked Blank: A blank matrix sample to which a known amount of the analyte, usually from a second source, has been added. Used to evaluate method accuracy.

Method Blank: A blank matrix containing all reagents used in the analytical procedure. Used to identify laboratory contamination.

Surrogate: A pure or isotopically labeled compound whose behavior mirrors the analytes of interest. Used to evaluate extraction efficiency.

NC (Matrix Spike): The recovery in the matrix spike was not calculated. The relative difference between the concentration in the parent sample and the spiked amount was too small to permit a reliable recovery calculation (matrix spike concentration was less than 2x that of the native sample concentration).

NC (Duplicate RPD): The duplicate RPD was not calculated. The concentration in the sample and/or duplicate was too low to permit a reliable RPD calculation (one or both samples < 5x RDL).

(1) Recovery or RPD for this parameter is outside control limits. The overall quality control for this analysis meets acceptability criteria.

(2) Reference Material exceeds acceptance criteria for Mo. 10% of analytes failure in multielement scan is allowed.

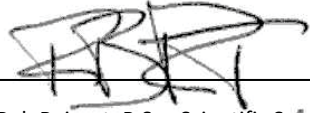
(3) Spike exceeds acceptance limits for Ag. 10% of analytes failure is allowed for multielement scans.

Maxxam Job #: B699544  
Report Date: 2016/11/15

SNC LAVALIN ENVIRONMENT INC.  
Client Project #: 640752  
Site Location: Watson Lake Airport  
Your P.O. #: Pending  
Sampler Initials: MLC

### VALIDATION SIGNATURE PAGE

The analytical data and all QC contained in this report were reviewed and validated by the following individual(s).



Rob Reinert, B.Sc., Scientific Spécialist

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Maxxam has procedures in place to guard against improper use of the electronic signature and have the required "signatories", as per section 5.10.2 of ISO/IEC 17025:2005(E), signing the reports. For Service Group specific validation please refer to the Validation Signature Page.



Maxxam Analytics International Corporation o/a Maxxam Analytics  
 4606 Canada Way, Burnaby, British Columbia Canada V5G 1K5 Tel: (604) 734 7276 Toll-free: 800-663-6266 Fax: (604) 731 2385 www.maxxam.ca

**INVOICE TO:**

Company Name: #1756 PUBLIC WORKS & GOVERNMENT SERVICE  
 Contact Name: Robert Price  
 Address: 641- 800 BURRARD STREET  
 VANCOUVER BC V6Z 2V8  
 Phone: (604) 775-6810 Fax: (604) 775-6650  
 Email: robert.price@pwgsc-tpsgc.gc.ca

**Report Information**

Company Name: #26479 SNC LAVALIN ENVIRONMENT INC.  
 Contact Name: Michael Chao *Marta Rosa*  
 Address: 8648 COMMERCE COURT  
 BURNABY BC V5A 4N6  
 Phone: (604) 515-5151 Fax:  
 Email: Michael.Chao@snc-lavalin.com ; *marta.rosa@snc-lavalin.com*

**Project Information**

Quotation #: B61631  
 P.O. #: Pending  
 Project #: 640752  
 Project Name: ~~640752~~ *MLC* AEC 22E  
 Site #: Watson Lake Airport  
 Sampled By: *MLC*



B699544\_COC

Bottle Order #:

510054

Chain Of Custody Record

Project Manager



Samantha Fregien

**Regulatory Criteria**

*Yukon CSR Water  
 Drinking / Freshwater*

**Special Instructions**

**Analysis Requested**

Regulated Drinking Water? (Y/N)	
Metals Field Filtered? (Y/N)	
CSR BTEX/VPH	X
LEPH & HEPH with CSR PAH	X
CSR/CCME Diss. Metals in Water w/ CV Hg	
CSR VOC + VPH	
CSR/CCME Metals in Soil	X

**Turnaround Time (TAT) Required**

Please provide advance notice for rush projects

Regular (Standard) TAT   
 (will be applied if Rush TAT is not specified)  
 Standard TAT = 5-7 Working days for most tests.  
 Please note: Standard TAT for certain tests such as BOD and Dioxins/Furans are > 5 days - contact your Project Manager for details.

Job Specific Rush TAT (if applies to entire submission)  
 Date Required: \_\_\_\_\_ Time Required: \_\_\_\_\_  
 Rush Confirmation Number: \_\_\_\_\_ (call lab for #)

Note: For regulated drinking water samples - please use the Drinking Water Chain of Custody Form

Samples must be kept cool (< 10°C) from time of sampling until delivery to maxxam

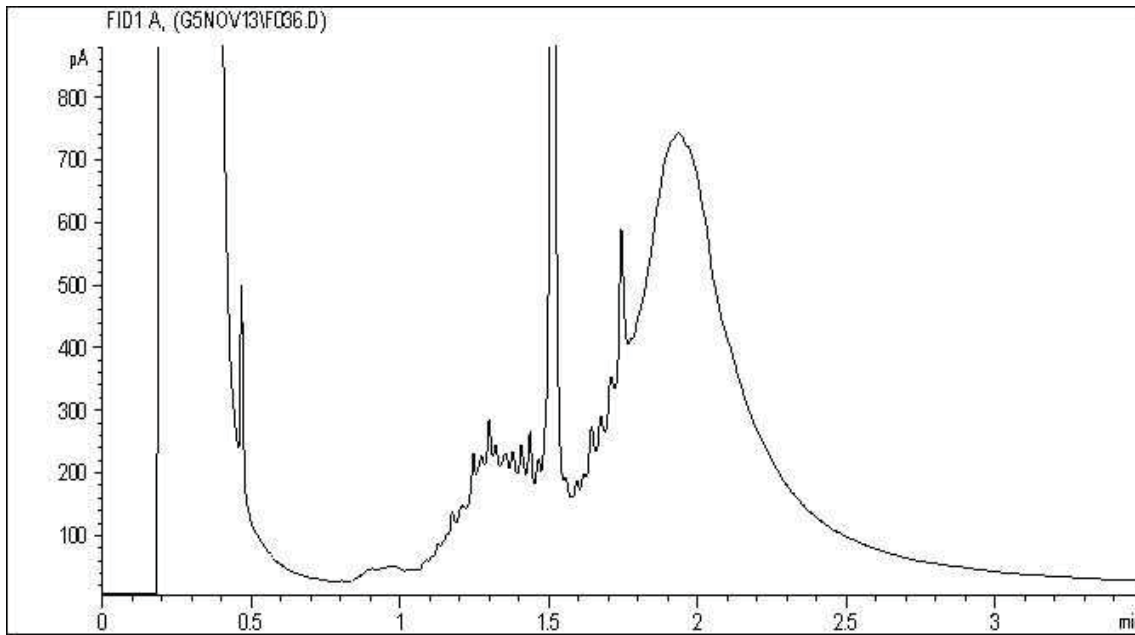
Sample Barcode Label	Sample (Location) Identification	Date Sampled	Time Sampled	Matrix	Regulated Drinking Water? (Y/N)	Metals Field Filtered? (Y/N)	CSR BTEX/VPH	LEPH & HEPH with CSR PAH	CSR/CCME Diss. Metals in Water w/ CV Hg	CSR VOC + VPH	CSR/CCME Metals in Soil	# of Bottles	Comments
1	22E-BH16-5-1	16/11/01	12:00	Soil			X	X			X	2	
2	22E-BH16-5-2	↓	12:05	↓			X	X			X <i>MLC</i>	2	
3	22E-BH16-6-1	↓	12:20	↓			X	X			X	2	
4	22E-BH16-6-2	↓	12:25	↓			X	X			X <i>MLC</i>	2	
5													RECEIVED IN WHITEHORSE BY: <i>Suzeno 12/28/07</i>
6													2016-11-04
7													TEMP: <i>2 1 2 1 2 → 1<sup>#</sup></i> <i>2 2 2 → 2</i> cooler
8													
9													
10													

RELINQUISHED BY: (Signature/Print) <i>Mike Chao</i>	Date: (YY/MM/DD) 16/11/03	Time 17:00	RECEIVED BY: (Signature/Print) <i>Michael Chao</i>	Date: (YY/MM/DD) 2016/11/07	Time 10:00	# Jars used and not submitted	Time Sensitive <input type="checkbox"/>	Temperature (°C) on Receipt 223/143	Custody Seal Intact on Cooler? <input checked="" type="checkbox"/> Yes <input type="checkbox"/> No
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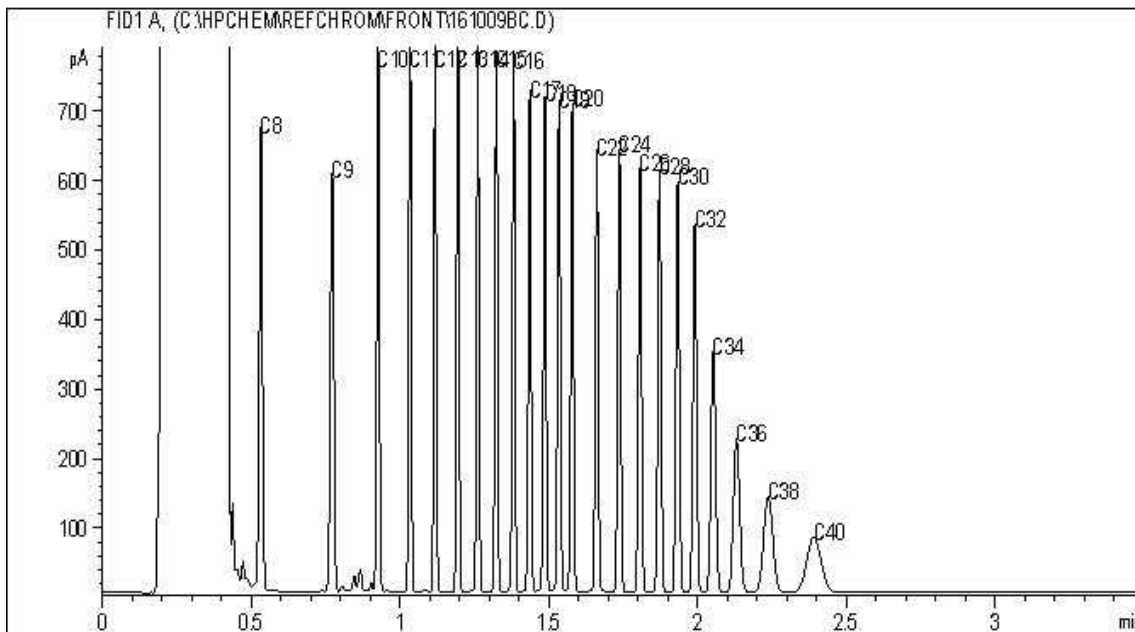
\* IT IS THE RESPONSIBILITY OF THE RELINQUISHER TO ENSURE THE ACCURACY OF THE CHAIN OF CUSTODY RECORD. AN INCOMPLETE CHAIN OF CUSTODY MAY RESULT IN ANALYTICAL TAT DELAYS.



EPH in Soil by GC/FID Chromatogram



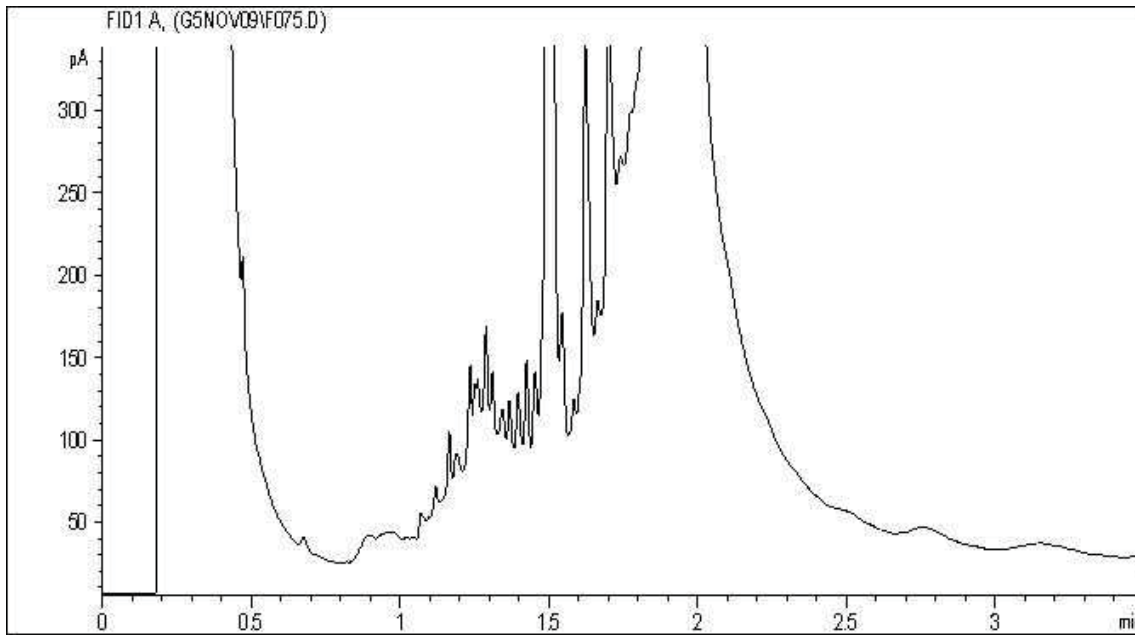
Carbon Range Distribution - Reference Chromatogram



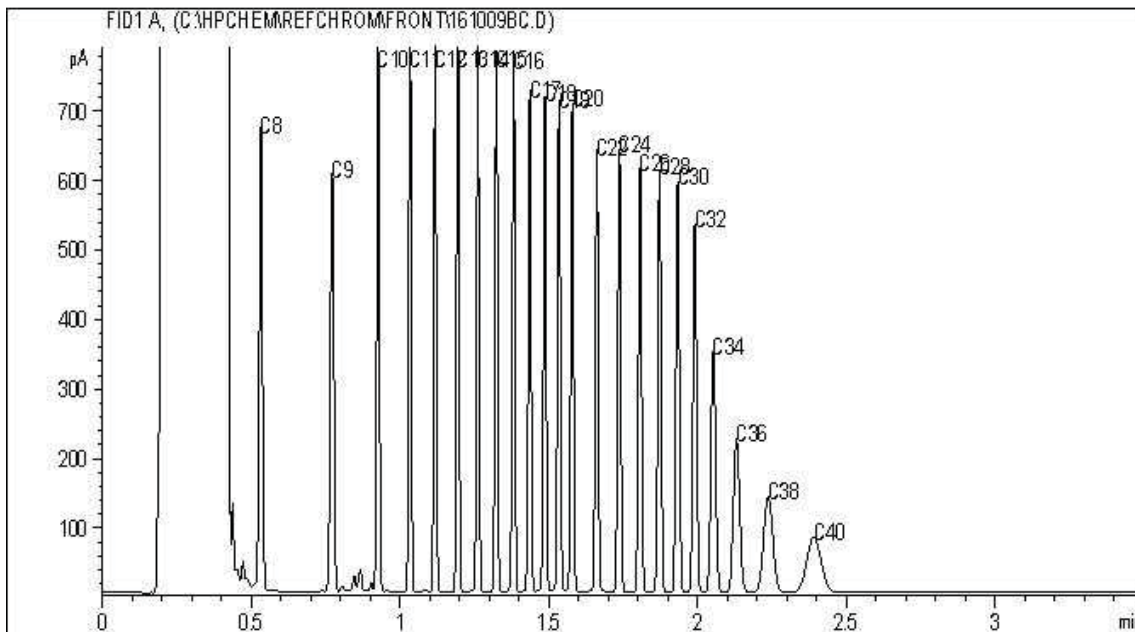
TYPICAL PRODUCT CARBON NUMBER RANGES

Note: This information is provided for reference purposes only. Should detailed chemist interpretation or fingerprinting be required, please contact the laboratory.

EPH in Soil by GC/FID Chromatogram



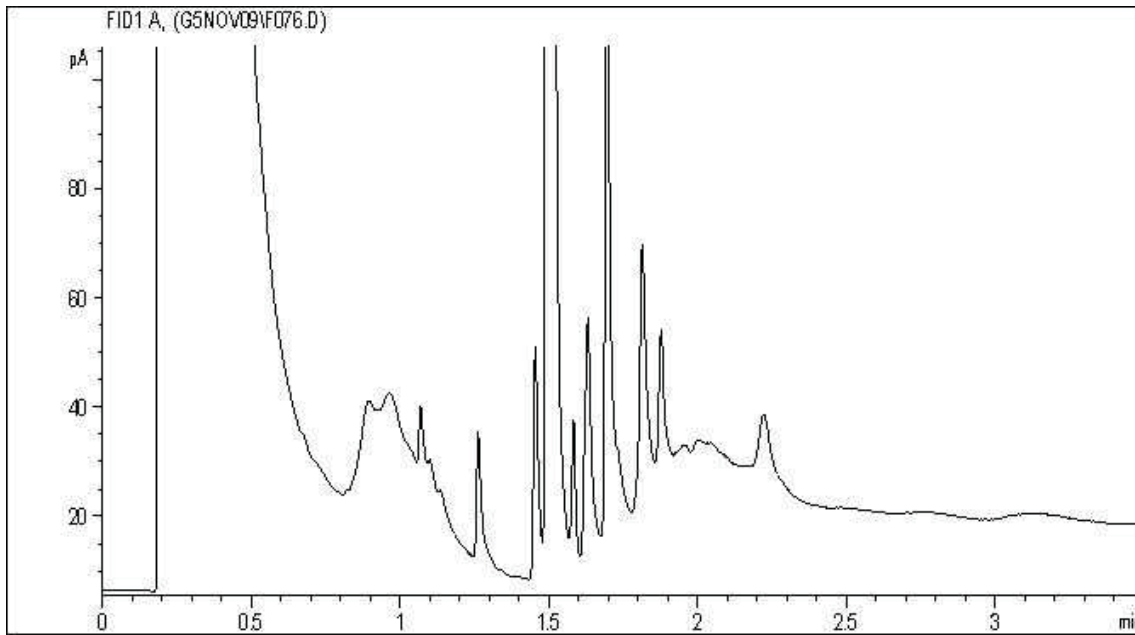
Carbon Range Distribution - Reference Chromatogram



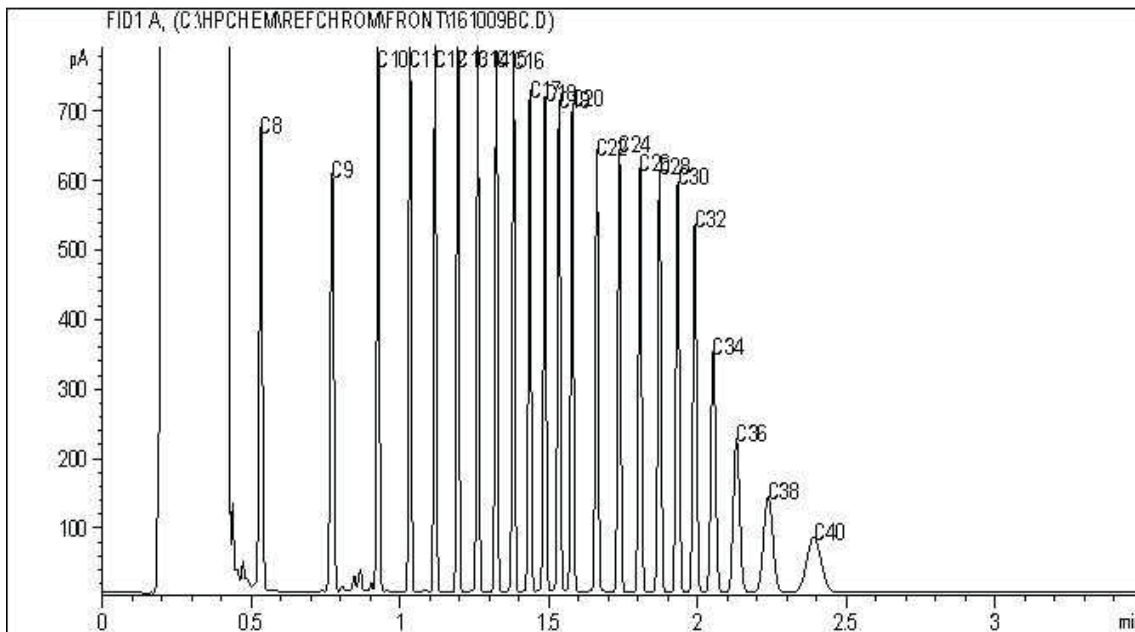
TYPICAL PRODUCT CARBON NUMBER RANGES

Note: This information is provided for reference purposes only. Should detailed chemist interpretation or fingerprinting be required, please contact the laboratory.

EPH in Soil by GC/FID Chromatogram



Carbon Range Distribution - Reference Chromatogram

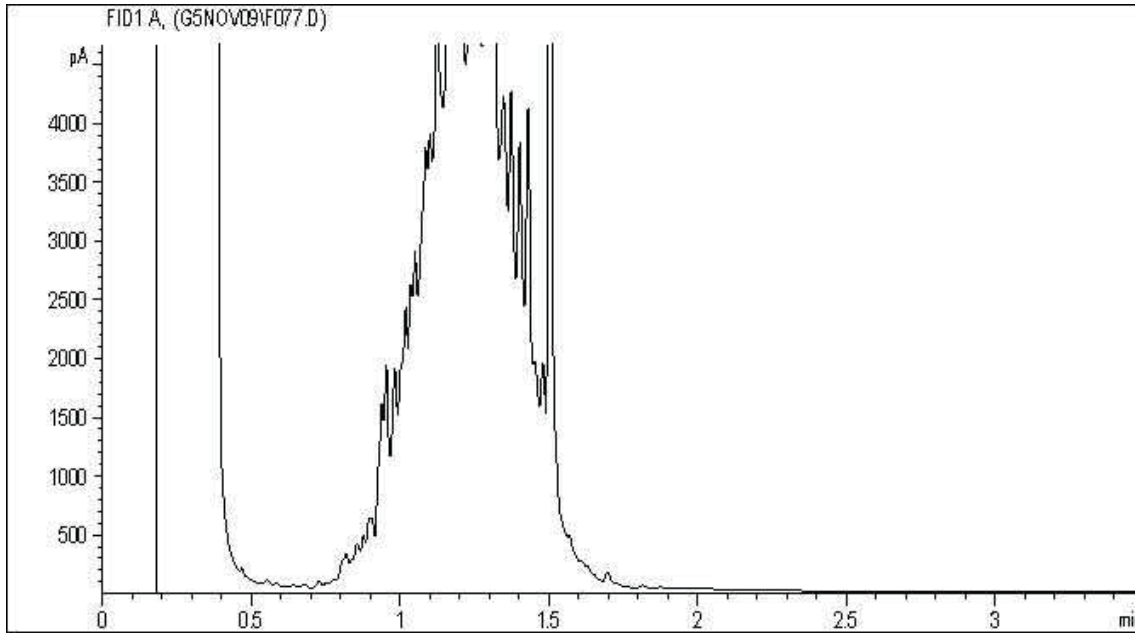


TYPICAL PRODUCT CARBON NUMBER RANGES

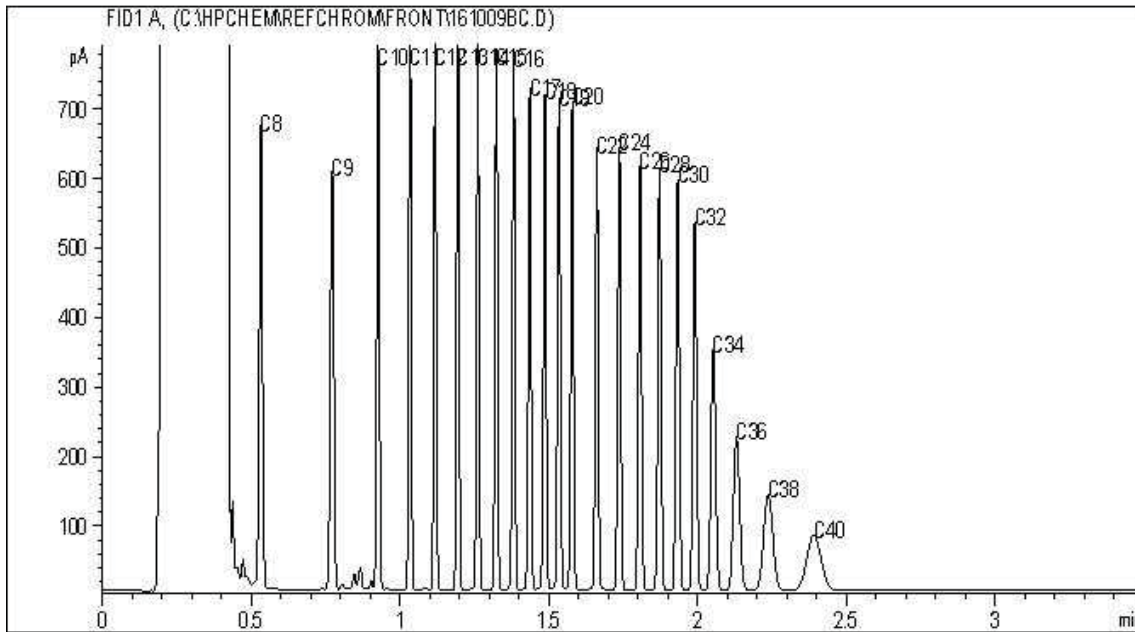
Note: This information is provided for reference purposes only. Should detailed chemist interpretation or fingerprinting be required, please contact the laboratory.



EPH in Soil by GC/FID Chromatogram



Carbon Range Distribution - Reference Chromatogram



TYPICAL PRODUCT CARBON NUMBER RANGES

Note: This information is provided for reference purposes only. Should detailed chemist interpretation or fingerprinting be required, please contact the laboratory.

**Attention: Michael Chao**

SNC LAVALIN ENVIRONMENT INC.  
8648 COMMERCE COURT  
BURNABY, BC  
CANADA V5A 4N6

Your P.O. #: Pending  
Your Project #: 640752  
Site#: AEC 22A  
Site Location: Watson Lake Airport  
Your C.O.C. #: 510054-10-01

**Report Date: 2016/11/15**

Report #: R2300727

Version: 1 - Final

**CERTIFICATE OF ANALYSIS**

**MAXXAM JOB #: B699546**

**Received: 2016/11/04, 12:00**

Sample Matrix: Soil  
# Samples Received: 9

Analyses	Quantity	Date Extracted	Date Analyzed	Laboratory Method	Analytical Method
BTEX/MTBE Soil LH, VH, F1 SIM/MS	4	2016/11/09	2016/11/10	BBY8SOP-00010/11/12	EPA 8260c R3 m
Elements by ICPMS (total)	5	2016/11/09	2016/11/09	BBY7SOP-00017,	BC SALM,EPA 6020bR2m
Moisture	4	2016/11/09	2016/11/10	BBY8SOP-00017	BCMOE BCLM Dec2000 m
Moisture	1	2016/11/09	2016/11/11	BBY8SOP-00017	BCMOE BCLM Dec2000 m
Moisture	4	2016/11/10	2016/11/11	BBY8SOP-00017	BCMOE BCLM Dec2000 m
PAH in Soil by GC/MS (SIM)	4	2016/11/09	2016/11/13	BBY8SOP-00022	EPA 8270d R5 m
PAH in Soil by GC/MS (SIM)	5	2016/11/10	2016/11/13	BBY8SOP-00022	EPA 8270d R5 m
Total PAH and B(a)P Calculation	2	N/A	2016/11/14	BBY WI-00033	Auto Calc
Total PAH and B(a)P Calculation	7	N/A	2016/11/15	BBY WI-00033	Auto Calc
pH (2:1 DI Water Extract)	5	2016/11/09	2016/11/09	BBY6SOP-00028	BCMOE BCLM Mar2005 m
EPH less PAH in Soil By GC/FID	2	N/A	2016/11/14	BBY WI-00033	Auto Calc
EPH less PAH in Soil By GC/FID	7	N/A	2016/11/15	BBY WI-00033	Auto Calc
EPH in Soil by GC/FID	4	2016/11/09	2016/11/13	BBY8SOP-00029	BCMOE EPH s 07/99 m
EPH in Soil by GC/FID	5	2016/11/10	2016/11/13	BBY8SOP-00029	BCMOE EPH s 07/99 m
Volatile HC-BTEX for Soil	4	N/A	2016/11/14	BBY WI-00033	Auto Calc

**Remarks:**

Maxxam Analytics' laboratories are accredited to ISO/IEC 17025:2005 for specific parameters on scopes of accreditation. Unless otherwise noted, procedures used by Maxxam are based upon recognized Provincial, Federal or US method compendia such as CCME, MDDELCC, EPA, APHA.

All work recorded herein has been done in accordance with procedures and practices ordinarily exercised by professionals in Maxxam's profession using accepted testing methodologies, quality assurance and quality control procedures (except where otherwise agreed by the client and Maxxam in writing). All data is in statistical control and has met quality control and method performance criteria unless otherwise noted. All method blanks are reported: unless indicated otherwise, associated sample data are not blank corrected.

Maxxam Analytics' liability is limited to the actual cost of the requested analyses, unless otherwise agreed in writing. There is no other warranty expressed or implied. Maxxam has been retained to provide analysis of samples provided by the Client using the testing methodology referenced in this report. Interpretation and use of test results are the sole responsibility of the Client and are not within the scope of services provided by Maxxam, unless otherwise agreed in writing.

Solid sample results, except biota, are based on dry weight unless otherwise indicated. Organic analyses are not recovery corrected except for isotope dilution methods. Results relate to samples tested.

This Certificate shall not be reproduced except in full, without the written approval of the laboratory.

**Attention:Michael Chao**

SNC LAVALIN ENVIRONMENT INC.  
8648 COMMERCE COURT  
BURNABY, BC  
CANADA V5A 4N6

Your P.O. #: Pending  
Your Project #: 640752  
Site#: AEC 22A  
Site Location: Watson Lake Airport  
Your C.O.C. #: 510054-10-01

**Report Date: 2016/11/15**  
Report #: R2300727  
Version: 1 - Final

**CERTIFICATE OF ANALYSIS**

**MAXXAM JOB #: B699546**

**Received: 2016/11/04, 12:00**

Reference Method suffix "m" indicates test methods incorporate validated modifications from specific reference methods to improve performance.

\* RPDs calculated using raw data. The rounding of final results may result in the apparent difference.

Encryption Key

Please direct all questions regarding this Certificate of Analysis to your Project Manager.

Samantha Fregien, Project Manager

Email: SFregien@maxxam.ca

Phone# (604)639-8418

=====  
Maxxam has procedures in place to guard against improper use of the electronic signature and have the required "signatories", as per section 5.10.2 of ISO/IEC 17025:2005(E), signing the reports. For Service Group specific validation please refer to the Validation Signature Page.

Maxxam Job #: B699546  
Report Date: 2016/11/15

SNC LAVALIN ENVIRONMENT INC.  
Client Project #: 640752  
Site Location: Watson Lake Airport  
Your P.O. #: Pending  
Sampler Initials: MLC

**PHYSICAL TESTING (SOIL)**

Maxxam ID		PZ1418		PZ1419	PZ1420		PZ1421		
Sampling Date		2016/11/03 12:35		2016/11/03 12:40	2016/11/03 12:45		2016/11/03 12:50		
COC Number		510054-10-01		510054-10-01	510054-10-01		510054-10-01		
	<b>UNITS</b>	<b>22A-BH16-23-2</b>	<b>QC Batch</b>	<b>22A-BH16-23-3</b>	<b>22A-BH16-23-4</b>	<b>QC Batch</b>	<b>22A-BH16-24-1</b>	<b>RDL</b>	<b>QC Batch</b>

<b>Physical Properties</b>									
Moisture	%	11	8466144	12	14	8466148	12	0.30	8466416
RDL = Reportable Detection Limit									

Maxxam ID		PZ1422		PZ1423		PZ1424		PZ1425		
Sampling Date		2016/11/03 12:55		2016/11/03 13:00		2016/11/03 13:05		2016/11/03 14:45		
COC Number		510054-10-01		510054-10-01		510054-10-01		510054-10-01		
	<b>UNITS</b>	<b>22A-BH16-24-2</b>	<b>QC Batch</b>	<b>22A-BH16-25-1</b>	<b>QC Batch</b>	<b>22A-BH16-25-2</b>	<b>QC Batch</b>	<b>22A-BH16-26-1</b>	<b>RDL</b>	<b>QC Batch</b>

<b>Physical Properties</b>										
Moisture	%	8.8	8466416	3.7	8464841	6.2	8465682	12	0.30	8464841
RDL = Reportable Detection Limit										

Maxxam ID		PZ1426		
Sampling Date		2016/11/03 14:50		
COC Number		510054-10-01		
	<b>UNITS</b>	<b>22A-BH16-26-2</b>	<b>RDL</b>	<b>QC Batch</b>

<b>Physical Properties</b>				
Moisture	%	14	0.30	8464841
RDL = Reportable Detection Limit				

Maxxam Job #: B699546  
Report Date: 2016/11/15

SNC LAVALIN ENVIRONMENT INC.  
Client Project #: 640752  
Site Location: Watson Lake Airport  
Your P.O. #: Pending  
Sampler Initials: MLC

**CSR BTEX/VPH BY HS IN SOIL (SOIL)**

Maxxam ID		PZ1423	PZ1424	PZ1425	PZ1426		
Sampling Date		2016/11/03 13:00	2016/11/03 13:05	2016/11/03 14:45	2016/11/03 14:50		
COC Number		510054-10-01	510054-10-01	510054-10-01	510054-10-01		
	<b>UNITS</b>	<b>22A-BH16-25-1</b>	<b>22A-BH16-25-2</b>	<b>22A-BH16-26-1</b>	<b>22A-BH16-26-2</b>	<b>RDL</b>	<b>QC Batch</b>
<b>Volatiles</b>							
VPH (VH6 to 10 - BTEX)	mg/kg	<10	<10	<10	<10	10	8462150
Methyl-tert-butylether (MTBE)	mg/kg	<0.10	<0.10	<0.10	<0.10	0.10	8467013
Benzene	mg/kg	<0.0050	<0.0050	<0.0050	<0.0050	0.0050	8467013
Toluene	mg/kg	<0.020	<0.020	<0.020	<0.020	0.020	8467013
Ethylbenzene	mg/kg	<0.010	<0.010	<0.010	<0.010	0.010	8467013
m & p-Xylene	mg/kg	<0.040	<0.040	<0.040	<0.040	0.040	8467013
o-Xylene	mg/kg	<0.040	<0.040	<0.040	<0.040	0.040	8467013
Styrene	mg/kg	<0.030	<0.030	<0.030	<0.030	0.030	8467013
Xylenes (Total)	mg/kg	<0.040	<0.040	<0.040	<0.040	0.040	8467013
VH C6-C10	mg/kg	<10	<10	<10	<10	10	8467013
<b>Surrogate Recovery (%)</b>							
1,4-Difluorobenzene (sur.)	%	99	98	98	99		8467013
4-Bromofluorobenzene (sur.)	%	100	101	101	101		8467013
D10-ETHYLBENZENE (sur.)	%	91	96	96	99		8467013
D4-1,2-Dichloroethane (sur.)	%	102	100	102	102		8467013
RDL = Reportable Detection Limit							

Maxxam Job #: B699546  
Report Date: 2016/11/15

SNC LAVALIN ENVIRONMENT INC.  
Client Project #: 640752  
Site Location: Watson Lake Airport  
Your P.O. #: Pending  
Sampler Initials: MLC

**LEPH & HEPH WITH PAH FOR CSR IN SOIL (SOIL)**

Maxxam ID		PZ1418	PZ1419		PZ1420		PZ1421		
Sampling Date		2016/11/03 12:35	2016/11/03 12:40		2016/11/03 12:45		2016/11/03 12:50		
COC Number		510054-10-01	510054-10-01		510054-10-01		510054-10-01		
	UNITS	22A-BH16-23-2	22A-BH16-23-3	QC Batch	22A-BH16-23-4	QC Batch	22A-BH16-24-1	RDL	QC Batch
<b>Polycyclic Aromatics</b>									
Naphthalene	mg/kg	<0.050	<0.050	8468649	<0.050	8468649	<0.050	0.050	8468442
2-Methylnaphthalene	mg/kg	<0.050	<0.050	8468649	<0.050	8468649	<0.050	0.050	8468442
Acenaphthylene	mg/kg	<0.050	<0.050	8468649	<0.050	8468649	<0.050	0.050	8468442
Acenaphthene	mg/kg	<0.050	<0.050	8468649	<0.050	8468649	<0.050	0.050	8468442
Fluorene	mg/kg	<0.050	<0.050	8468649	<0.050	8468649	<0.050	0.050	8468442
Phenanthrene	mg/kg	<0.050	<0.050	8468649	<0.050	8468649	<0.050	0.050	8468442
Anthracene	mg/kg	<0.050	<0.050	8468649	<0.050	8468649	<0.050	0.050	8468442
Fluoranthene	mg/kg	<0.050	<0.050	8468649	<0.050	8468649	<0.050	0.050	8468442
Pyrene	mg/kg	<0.050	<0.050	8468649	<0.050	8468649	<0.050	0.050	8468442
Benzo(a)anthracene	mg/kg	<0.050	<0.050	8468649	<0.050	8468649	<0.050	0.050	8468442
Chrysene	mg/kg	<0.050	<0.050	8468649	<0.050	8468649	<0.050	0.050	8468442
Benzo(b&j)fluoranthene	mg/kg	<0.050	<0.050	8468649	<0.050	8468649	<0.050	0.050	8468442
Benzo(b)fluoranthene	mg/kg	<0.050	<0.050	8468649	<0.050	8468649	<0.050	0.050	8468442
Benzo(k)fluoranthene	mg/kg	<0.050	<0.050	8468649	<0.050	8468649	<0.050	0.050	8468442
Benzo(a)pyrene	mg/kg	<0.050	<0.050	8468649	<0.050	8468649	<0.050	0.050	8468442
Indeno(1,2,3-cd)pyrene	mg/kg	<0.050	<0.050	8468649	<0.050	8468649	<0.050	0.050	8468442
Dibenz(a,h)anthracene	mg/kg	<0.050	<0.050	8468649	<0.050	8468649	<0.050	0.050	8468442
Benzo(g,h,i)perylene	mg/kg	<0.050	<0.050	8468649	<0.050	8468649	<0.050	0.050	8468442
Low Molecular Weight PAH's	mg/kg	<0.050	<0.050	8463127	<0.050	8463483	<0.050	0.050	8463127
High Molecular Weight PAH's	mg/kg	<0.050	<0.050	8463127	<0.050	8463483	<0.050	0.050	8463127
Total PAH	mg/kg	<0.050	<0.050	8463127	<0.050	8463483	<0.050	0.050	8463127
<b>Calculated Parameters</b>									
LEPH (C10-C19 less PAH)	mg/kg	220	820	8463128	<100	8463484	<100	100	8463128
HEPH (C19-C32 less PAH)	mg/kg	<100	<100	8463128	<100	8463484	<100	100	8463128
<b>Hydrocarbons</b>									
EPH (C10-C19)	mg/kg	220	820	8468654	<100	8468654	<100	100	8468443
EPH (C19-C32)	mg/kg	<100	<100	8468654	<100	8468654	<100	100	8468443
<b>Surrogate Recovery (%)</b>									
D10-ANTHRACENE (sur.)	%	94	93	8468649	93	8468649	117		8468442
D8-ACENAPHTHYLENE (sur.)	%	80	79	8468649	86	8468649	115		8468442
RDL = Reportable Detection Limit									

Maxxam Job #: B699546  
Report Date: 2016/11/15

SNC LAVALIN ENVIRONMENT INC.  
Client Project #: 640752  
Site Location: Watson Lake Airport  
Your P.O. #: Pending  
Sampler Initials: MLC

**LEPH & HEPH WITH PAH FOR CSR IN SOIL (SOIL)**

Maxxam ID		PZ1418	PZ1419		PZ1420		PZ1421		
Sampling Date		2016/11/03 12:35	2016/11/03 12:40		2016/11/03 12:45		2016/11/03 12:50		
COC Number		510054-10-01	510054-10-01		510054-10-01		510054-10-01		
	<b>UNITS</b>	<b>22A-BH16-23-2</b>	<b>22A-BH16-23-3</b>	<b>QC Batch</b>	<b>22A-BH16-23-4</b>	<b>QC Batch</b>	<b>22A-BH16-24-1</b>	<b>RDL</b>	<b>QC Batch</b>
D8-NAPHTHALENE (sur.)	%	79	81	8468649	85	8468649	114		8468442
TERPHENYL-D14 (sur.)	%	78	77	8468649	77	8468649	104		8468442
O-TERPHENYL (sur.)	%	90	99	8468654	94	8468654	94		8468443
RDL = Reportable Detection Limit									

Maxxam Job #: B699546  
Report Date: 2016/11/15

SNC LAVALIN ENVIRONMENT INC.  
Client Project #: 640752  
Site Location: Watson Lake Airport  
Your P.O. #: Pending  
Sampler Initials: MLC

**LEPH & HEPH WITH PAH FOR CSR IN SOIL (SOIL)**

Maxxam ID		PZ1422	PZ1423		PZ1424		PZ1425		
Sampling Date		2016/11/03 12:55	2016/11/03 13:00		2016/11/03 13:05		2016/11/03 14:45		
COC Number		510054-10-01	510054-10-01		510054-10-01		510054-10-01		
	UNITS	22A-BH16-24-2	22A-BH16-25-1	QC Batch	22A-BH16-25-2	QC Batch	22A-BH16-26-1	RDL	QC Batch
<b>Polycyclic Aromatics</b>									
Naphthalene	mg/kg	<0.050	<0.050	8468649	<0.050	8468442	<0.050	0.050	8468649
2-Methylnaphthalene	mg/kg	<0.050	<0.050	8468649	<0.050	8468442	<0.050	0.050	8468649
Acenaphthylene	mg/kg	<0.050	<0.050	8468649	<0.050	8468442	<0.050	0.050	8468649
Acenaphthene	mg/kg	<0.050	<0.050	8468649	<0.050	8468442	<0.050	0.050	8468649
Fluorene	mg/kg	<0.050	<0.050	8468649	<0.050	8468442	<0.050	0.050	8468649
Phenanthrene	mg/kg	<0.050	<0.050	8468649	<0.050	8468442	<0.050	0.050	8468649
Anthracene	mg/kg	<0.050	<0.050	8468649	<0.050	8468442	<0.050	0.050	8468649
Fluoranthene	mg/kg	<0.050	<0.050	8468649	<0.050	8468442	<0.050	0.050	8468649
Pyrene	mg/kg	<0.050	<0.050	8468649	<0.050	8468442	<0.050	0.050	8468649
Benzo(a)anthracene	mg/kg	<0.050	<0.050	8468649	<0.050	8468442	<0.050	0.050	8468649
Chrysene	mg/kg	<0.050	<0.050	8468649	<0.050	8468442	<0.050	0.050	8468649
Benzo(b&j)fluoranthene	mg/kg	<0.050	<0.050	8468649	<0.050	8468442	<0.050	0.050	8468649
Benzo(b)fluoranthene	mg/kg	<0.050	<0.050	8468649	<0.050	8468442	<0.050	0.050	8468649
Benzo(k)fluoranthene	mg/kg	<0.050	<0.050	8468649	<0.050	8468442	<0.050	0.050	8468649
Benzo(a)pyrene	mg/kg	<0.050	<0.050	8468649	<0.050	8468442	<0.050	0.050	8468649
Indeno(1,2,3-cd)pyrene	mg/kg	<0.050	<0.050	8468649	<0.050	8468442	<0.050	0.050	8468649
Dibenz(a,h)anthracene	mg/kg	<0.050	<0.050	8468649	<0.050	8468442	<0.050	0.050	8468649
Benzo(g,h,i)perylene	mg/kg	<0.050	<0.050	8468649	<0.050	8468442	<0.050	0.050	8468649
Low Molecular Weight PAH's	mg/kg	<0.050	<0.050	8463127	<0.050	8463127	<0.050	0.050	8463127
High Molecular Weight PAH's	mg/kg	<0.050	<0.050	8463127	<0.050	8463127	<0.050	0.050	8463127
Total PAH	mg/kg	<0.050	<0.050	8463127	<0.050	8463127	<0.050	0.050	8463127
<b>Calculated Parameters</b>									
LEPH (C10-C19 less PAH)	mg/kg	<100	<100	8463128	<100	8463128	<100	100	8463128
HEPH (C19-C32 less PAH)	mg/kg	<100	<100	8463128	<100	8463128	<100	100	8463128
<b>Hydrocarbons</b>									
EPH (C10-C19)	mg/kg	<100	<100	8468654	<100	8468443	<100	100	8468654
EPH (C19-C32)	mg/kg	<100	<100	8468654	<100	8468443	<100	100	8468654
<b>Surrogate Recovery (%)</b>									
D10-ANTHRACENE (sur.)	%	94	99	8468649	118	8468442	102		8468649
D8-ACENAPHTHYLENE (sur.)	%	87	91	8468649	113	8468442	90		8468649
RDL = Reportable Detection Limit									



Maxxam Job #: B699546  
Report Date: 2016/11/15

SNC LAVALIN ENVIRONMENT INC.  
Client Project #: 640752  
Site Location: Watson Lake Airport  
Your P.O. #: Pending  
Sampler Initials: MLC

**LEPH & HEPH WITH PAH FOR CSR IN SOIL (SOIL)**

Maxxam ID		PZ1422	PZ1423		PZ1424		PZ1425		
Sampling Date		2016/11/03 12:55	2016/11/03 13:00		2016/11/03 13:05		2016/11/03 14:45		
COC Number		510054-10-01	510054-10-01		510054-10-01		510054-10-01		
	<b>UNITS</b>	<b>22A-BH16-24-2</b>	<b>22A-BH16-25-1</b>	<b>QC Batch</b>	<b>22A-BH16-25-2</b>	<b>QC Batch</b>	<b>22A-BH16-26-1</b>	<b>RDL</b>	<b>QC Batch</b>
D8-NAPHTHALENE (sur.)	%	86	91	8468649	112	8468442	90		8468649
TERPHENYL-D14 (sur.)	%	78	82	8468649	106	8468442	85		8468649
O-TERPHENYL (sur.)	%	91	92	8468654	97	8468443	91		8468654
RDL = Reportable Detection Limit									

Maxxam Job #: B699546  
Report Date: 2016/11/15

SNC LAVALIN ENVIRONMENT INC.  
Client Project #: 640752  
Site Location: Watson Lake Airport  
Your P.O. #: Pending  
Sampler Initials: MLC

**LEPH & HEPH WITH PAH FOR CSR IN SOIL (SOIL)**

Maxxam ID		PZ1426		
Sampling Date		2016/11/03 14:50		
COC Number		510054-10-01		
	<b>UNITS</b>	<b>22A-BH16-26-2</b>	<b>RDL</b>	<b>QC Batch</b>
<b>Polycyclic Aromatics</b>				
Naphthalene	mg/kg	<0.050	0.050	8468649
2-Methylnaphthalene	mg/kg	<0.050	0.050	8468649
Acenaphthylene	mg/kg	<0.050	0.050	8468649
Acenaphthene	mg/kg	<0.050	0.050	8468649
Fluorene	mg/kg	<0.050	0.050	8468649
Phenanthrene	mg/kg	<0.050	0.050	8468649
Anthracene	mg/kg	<0.050	0.050	8468649
Fluoranthene	mg/kg	<0.050	0.050	8468649
Pyrene	mg/kg	<0.050	0.050	8468649
Benzo(a)anthracene	mg/kg	<0.050	0.050	8468649
Chrysene	mg/kg	<0.050	0.050	8468649
Benzo(b&j)fluoranthene	mg/kg	<0.050	0.050	8468649
Benzo(b)fluoranthene	mg/kg	<0.050	0.050	8468649
Benzo(k)fluoranthene	mg/kg	<0.050	0.050	8468649
Benzo(a)pyrene	mg/kg	<0.050	0.050	8468649
Indeno(1,2,3-cd)pyrene	mg/kg	<0.050	0.050	8468649
Dibenz(a,h)anthracene	mg/kg	<0.050	0.050	8468649
Benzo(g,h,i)perylene	mg/kg	<0.050	0.050	8468649
Low Molecular Weight PAH`s	mg/kg	<0.050	0.050	8463127
High Molecular Weight PAH`s	mg/kg	<0.050	0.050	8463127
Total PAH	mg/kg	<0.050	0.050	8463127
<b>Calculated Parameters</b>				
LEPH (C10-C19 less PAH)	mg/kg	<100	100	8463128
HEPH (C19-C32 less PAH)	mg/kg	<100	100	8463128
<b>Hydrocarbons</b>				
EPH (C10-C19)	mg/kg	<100	100	8468654
EPH (C19-C32)	mg/kg	<100	100	8468654
<b>Surrogate Recovery (%)</b>				
D10-ANTHRACENE (sur.)	%	100		8468649
D8-ACENAPHTHYLENE (sur.)	%	92		8468649
RDL = Reportable Detection Limit				

Maxxam Job #: B699546  
Report Date: 2016/11/15

SNC LAVALIN ENVIRONMENT INC.  
Client Project #: 640752  
Site Location: Watson Lake Airport  
Your P.O. #: Pending  
Sampler Initials: MLC

**LEPH & HEPH WITH PAH FOR CSR IN SOIL (SOIL)**

Maxxam ID		PZ1426		
Sampling Date		2016/11/03 14:50		
COC Number		510054-10-01		
	<b>UNITS</b>	<b>22A-BH16-26-2</b>	<b>RDL</b>	<b>QC Batch</b>
D8-NAPHTHALENE (sur.)	%	91		8468649
TERPHENYL-D14 (sur.)	%	84		8468649
O-TERPHENYL (sur.)	%	88		8468654
RDL = Reportable Detection Limit				

Maxxam Job #: B699546  
Report Date: 2016/11/15

SNC LAVALIN ENVIRONMENT INC.  
Client Project #: 640752  
Site Location: Watson Lake Airport  
Your P.O. #: Pending  
Sampler Initials: MLC

**CSR/CCME METALS IN SOIL (SOIL)**

Maxxam ID		PZ1418	PZ1419	PZ1421	PZ1423	PZ1425		
Sampling Date		2016/11/03 12:35	2016/11/03 12:40	2016/11/03 12:50	2016/11/03 13:00	2016/11/03 14:45		
COC Number		510054-10-01	510054-10-01	510054-10-01	510054-10-01	510054-10-01		
	<b>UNITS</b>	<b>22A-BH16-23-2</b>	<b>22A-BH16-23-3</b>	<b>22A-BH16-24-1</b>	<b>22A-BH16-25-1</b>	<b>22A-BH16-26-1</b>	<b>RDL</b>	<b>QC Batch</b>

<b>Physical Properties</b>								
Soluble (2:1) pH	pH	6.27	6.14	6.28	6.82	7.36	N/A	8465002
<b>Total Metals by ICPMS</b>								
Total Aluminum (Al)	mg/kg	4440	4910	9520	6010	5790	100	8464998
Total Antimony (Sb)	mg/kg	0.45	0.49	0.53	0.90 (1)	0.61	0.10	8464998
Total Arsenic (As)	mg/kg	3.92	3.75	5.31	6.37	3.97	0.50	8464998
Total Barium (Ba)	mg/kg	92.1	103	175	58.5	132	0.10	8464998
Total Beryllium (Be)	mg/kg	<0.40	<0.40	<0.40	<0.40	<0.40	0.40	8464998
Total Bismuth (Bi)	mg/kg	<0.10	<0.10	0.12	<0.10	<0.10	0.10	8464998
Total Cadmium (Cd)	mg/kg	0.198	0.205	0.260	0.110	0.161	0.050	8464998
Total Calcium (Ca)	mg/kg	1110	1490	3610	1140	2620	100	8464998
Total Chromium (Cr)	mg/kg	13.2	18.2	24.3	26.0	17.8	1.0	8464998
Total Cobalt (Co)	mg/kg	5.16	5.74	6.52	5.93	5.26	0.30	8464998
Total Copper (Cu)	mg/kg	9.00	10.2	12.1	11.7	9.91	0.50	8464998
Total Iron (Fe)	mg/kg	8460	9140	17600	14300	12200	100	8464998
Total Lead (Pb)	mg/kg	15.9	11.1	10.5	5.73	8.97	0.10	8464998
Total Lithium (Li)	mg/kg	<5.0	<5.0	8.9	<5.0	5.3	5.0	8464998
Total Magnesium (Mg)	mg/kg	1810	2260	2970	3010	2400	100	8464998
Total Manganese (Mn)	mg/kg	112	133	439	249	245	0.20	8464998
Total Mercury (Hg)	mg/kg	<0.050	<0.050	<0.050	<0.050	<0.050	0.050	8464998
Total Molybdenum (Mo)	mg/kg	0.36	0.41	0.56	0.86	0.38	0.10	8464998
Total Nickel (Ni)	mg/kg	13.2	16.8	20.1	19.7	15.6	0.80	8464998
Total Phosphorus (P)	mg/kg	273	279	1080	410	793	10	8464998
Total Potassium (K)	mg/kg	353	383	458	448	387	100	8464998
Total Selenium (Se)	mg/kg	<0.50	<0.50	<0.50	<0.50	<0.50	0.50	8464998
Total Silver (Ag)	mg/kg	0.052	0.078	0.103	<0.050	0.083	0.050	8464998
Total Sodium (Na)	mg/kg	<100	<100	<100	<100	<100	100	8464998
Total Strontium (Sr)	mg/kg	6.41	7.95	21.9	5.85	12.8	0.10	8464998
Total Thallium (Tl)	mg/kg	<0.050	<0.050	0.067	<0.050	<0.050	0.050	8464998
Total Tin (Sn)	mg/kg	0.28	0.35	0.42	0.17	0.55	0.10	8464998

RDL = Reportable Detection Limit

N/A = Not Applicable

(1) Duplicate exceeds acceptance criteria for Sb. 10% of analytes failure in multielement scan is allowed.

Maxxam Job #: B699546  
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SNC LAVALIN ENVIRONMENT INC.  
Client Project #: 640752  
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Your P.O. #: Pending  
Sampler Initials: MLC

**CSR/CCME METALS IN SOIL (SOIL)**

Maxxam ID		PZ1418	PZ1419	PZ1421	PZ1423	PZ1425		
Sampling Date		2016/11/03 12:35	2016/11/03 12:40	2016/11/03 12:50	2016/11/03 13:00	2016/11/03 14:45		
COC Number		510054-10-01	510054-10-01	510054-10-01	510054-10-01	510054-10-01		
	<b>UNITS</b>	<b>22A-BH16-23-2</b>	<b>22A-BH16-23-3</b>	<b>22A-BH16-24-1</b>	<b>22A-BH16-25-1</b>	<b>22A-BH16-26-1</b>	<b>RDL</b>	<b>QC Batch</b>
Total Titanium (Ti)	mg/kg	151	174	238	159	194	1.0	8464998
Total Uranium (U)	mg/kg	0.341	0.399	0.793	0.293	0.398	0.050	8464998
Total Vanadium (V)	mg/kg	13.9	14.7	26.4	17.8	17.8	2.0	8464998
Total Zinc (Zn)	mg/kg	36.2	33.2	52.6	28.4	31.1	1.0	8464998
Total Zirconium (Zr)	mg/kg	0.63	0.98	0.74	1.13	1.56	0.50	8464998
RDL = Reportable Detection Limit								

Maxxam Job #: B699546  
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### GENERAL COMMENTS

Each temperature is the average of up to three cooler temperatures taken at receipt

Package 1	2.0°C
Package 2	2.0°C

Sample PZ1423 [22A-BH16-25-1] : Sample(s) received was not in compliance with BC CSR sampling requirements for VOC, BTEX and VPH in soil. on Volatiles Batch: 8467013

Sample PZ1424 [22A-BH16-25-2] : Sample(s) received was not in compliance with BC CSR sampling requirements for VOC, BTEX and VPH in soil. on Volatiles Batch: 8467013

Sample PZ1425 [22A-BH16-26-1] : Sample(s) received was not in compliance with BC CSR sampling requirements for VOC, BTEX and VPH in soil. on Volatiles Batch: 8467013

Sample PZ1426 [22A-BH16-26-2] : Sample(s) received was not in compliance with BC CSR sampling requirements for VOC, BTEX and VPH in soil. on Volatiles Batch: 8467013

**Results relate only to the items tested.**

Maxxam Job #: B699546  
Report Date: 2016/11/15

**QUALITY ASSURANCE REPORT**

SNC LAVALIN ENVIRONMENT INC.  
Client Project #: 640752  
Site Location: Watson Lake Airport  
Your P.O. #: Pending  
Sampler Initials: MLC

QC Batch	Parameter	Date	Matrix Spike		Spiked Blank		Method Blank		RPD		QC Standard	
			% Recovery	QC Limits	% Recovery	QC Limits	Value	UNITS	Value (%)	QC Limits	% Recovery	QC Limits
8467013	1,4-Difluorobenzene (sur.)	2016/11/10	98	60 - 140	98	60 - 140	97	%				
8467013	4-Bromofluorobenzene (sur.)	2016/11/10	100	70 - 140	101	70 - 140	103	%				
8467013	D10-ETHYLBENZENE (sur.)	2016/11/10	96	60 - 130	92	60 - 130	101	%				
8467013	D4-1,2-Dichloroethane (sur.)	2016/11/10	97	60 - 140	97	60 - 140	101	%				
8468442	D10-ANTHRACENE (sur.)	2016/11/13	124	60 - 130	90	60 - 130	91	%				
8468442	D8-ACENAPHTHYLENE (sur.)	2016/11/13	121	50 - 130	85	50 - 130	91	%				
8468442	D8-NAPHTHALENE (sur.)	2016/11/13	120	50 - 130	84	50 - 130	91	%				
8468442	TERPHENYL-D14 (sur.)	2016/11/13	113	60 - 130	81	60 - 130	83	%				
8468443	O-TERPHENYL (sur.)	2016/11/13	98	50 - 130	99	50 - 130	98	%				
8468649	D10-ANTHRACENE (sur.)	2016/11/13	86	60 - 130	89	60 - 130	99	%				
8468649	D8-ACENAPHTHYLENE (sur.)	2016/11/13	86	50 - 130	87	50 - 130	93	%				
8468649	D8-NAPHTHALENE (sur.)	2016/11/13	91	50 - 130	88	50 - 130	94	%				
8468649	TERPHENYL-D14 (sur.)	2016/11/13	76	60 - 130	77	60 - 130	82	%				
8468654	O-TERPHENYL (sur.)	2016/11/13	97	50 - 130	97	50 - 130	95	%				
8464841	Moisture	2016/11/10					<0.30	%	0.40	20		
8464998	Total Aluminum (Al)	2016/11/09					<100	mg/kg	5.4	35	90	70 - 130
8464998	Total Antimony (Sb)	2016/11/09	91	75 - 125	97	75 - 125	<0.10	mg/kg	33 (2)	30	114	70 - 130
8464998	Total Arsenic (As)	2016/11/09	90	75 - 125	94	75 - 125	<0.50	mg/kg	4.4	30	84	70 - 130
8464998	Total Barium (Ba)	2016/11/09	NC	75 - 125	94	75 - 125	0.39, RDL=0.10 (1)	mg/kg	4.2	35	92	70 - 130
8464998	Total Beryllium (Be)	2016/11/09	99	75 - 125	99	75 - 125	<0.40	mg/kg	NC	30	107	70 - 130
8464998	Total Bismuth (Bi)	2016/11/09					<0.10	mg/kg	NC	30		
8464998	Total Cadmium (Cd)	2016/11/09	107	75 - 125	106	75 - 125	<0.050	mg/kg	NC	30	117	70 - 130
8464998	Total Calcium (Ca)	2016/11/09					<100	mg/kg	14	30	100	70 - 130
8464998	Total Chromium (Cr)	2016/11/09	NC	75 - 125	98	75 - 125	<1.0	mg/kg	9.4	30	98	70 - 130
8464998	Total Cobalt (Co)	2016/11/09	101	75 - 125	100	75 - 125	<0.30	mg/kg	2.6	30	96	70 - 130
8464998	Total Copper (Cu)	2016/11/09	94	75 - 125	101	75 - 125	<0.50	mg/kg	1.1	30	93	70 - 130
8464998	Total Iron (Fe)	2016/11/09					<100	mg/kg	2.3	30	98	70 - 130
8464998	Total Lead (Pb)	2016/11/09	96	75 - 125	99	75 - 125	<0.10	mg/kg	2.0	35	102	70 - 130
8464998	Total Lithium (Li)	2016/11/09	100	75 - 125	96	75 - 125	<5.0	mg/kg	NC	30	93	70 - 130

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**QUALITY ASSURANCE REPORT(CONT'D)**

SNC LAVALIN ENVIRONMENT INC.  
Client Project #: 640752  
Site Location: Watson Lake Airport  
Your P.O. #: Pending  
Sampler Initials: MLC

QC Batch	Parameter	Date	Matrix Spike		Spiked Blank		Method Blank		RPD		QC Standard	
			% Recovery	QC Limits	% Recovery	QC Limits	Value	UNITS	Value (%)	QC Limits	% Recovery	QC Limits
8464998	Total Magnesium (Mg)	2016/11/09					<100	mg/kg	4.6	30	105	70 - 130
8464998	Total Manganese (Mn)	2016/11/09	NC	75 - 125	100	75 - 125	<0.20	mg/kg	6.8	30	98	70 - 130
8464998	Total Mercury (Hg)	2016/11/09	106	75 - 125	103	75 - 125	<0.050	mg/kg	NC	35	104	70 - 130
8464998	Total Molybdenum (Mo)	2016/11/09	93	75 - 125	93	75 - 125	<0.10	mg/kg	2.1	35	120	70 - 130
8464998	Total Nickel (Ni)	2016/11/09	97	75 - 125	94	75 - 125	<0.80	mg/kg	5.5	30	101	70 - 130
8464998	Total Phosphorus (P)	2016/11/09					<10	mg/kg	1.1	30	92	70 - 130
8464998	Total Potassium (K)	2016/11/09					<100	mg/kg	NC	35	86	70 - 130
8464998	Total Selenium (Se)	2016/11/09	99	75 - 125	100	75 - 125	<0.50	mg/kg	NC	30		
8464998	Total Silver (Ag)	2016/11/09	89	75 - 125	91	75 - 125	<0.050	mg/kg	NC	35	105	70 - 130
8464998	Total Sodium (Na)	2016/11/09					<100	mg/kg	NC	35	96	70 - 130
8464998	Total Strontium (Sr)	2016/11/09	91	75 - 125	93	75 - 125	<0.10	mg/kg	3.2	35	95	70 - 130
8464998	Total Thallium (Tl)	2016/11/09	99	75 - 125	104	75 - 125	<0.050	mg/kg	NC	30	82	70 - 130
8464998	Total Tin (Sn)	2016/11/09	93	75 - 125	94	75 - 125	<0.10	mg/kg	NC	35	94	70 - 130
8464998	Total Titanium (Ti)	2016/11/09	NC	75 - 125	97	75 - 125	<1.0	mg/kg	3.0	35		
8464998	Total Uranium (U)	2016/11/09	95	75 - 125	96	75 - 125	<0.050	mg/kg	7.4	30	96	70 - 130
8464998	Total Vanadium (V)	2016/11/09	87	75 - 125	97	75 - 125	<2.0	mg/kg	5.0	30	99	70 - 130
8464998	Total Zinc (Zn)	2016/11/09	NC	75 - 125	105	75 - 125	<1.0	mg/kg	4.4	30	102	70 - 130
8464998	Total Zirconium (Zr)	2016/11/09					<0.50	mg/kg	NC	30		
8465002	Soluble (2:1) pH	2016/11/09			100	97 - 103			0.29	N/A		
8465682	Moisture	2016/11/10					<0.30	%	7.7	20		
8466144	Moisture	2016/11/11					<0.30	%	4.7	20		
8466148	Moisture	2016/11/10					<0.30	%	0.92	20		
8466416	Moisture	2016/11/11					<0.30	%	2.6	20		
8467013	Benzene	2016/11/10	98	60 - 140	94	60 - 140	<0.0050	mg/kg	NC	40		
8467013	Ethylbenzene	2016/11/10	97	60 - 140	92	60 - 140	<0.010	mg/kg	NC	40		
8467013	m & p-Xylene	2016/11/10	96	60 - 140	92	60 - 140	<0.040	mg/kg	NC	40		
8467013	Methyl-tert-butylether (MTBE)	2016/11/10					<0.10	mg/kg	NC	40		
8467013	o-Xylene	2016/11/10	102	60 - 140	97	60 - 140	<0.040	mg/kg	NC	40		
8467013	Styrene	2016/11/10					<0.030	mg/kg	NC	40		
8467013	Toluene	2016/11/10	94	60 - 140	90	60 - 140	<0.020	mg/kg	NC	40		



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**QUALITY ASSURANCE REPORT(CONT'D)**

SNC LAVALIN ENVIRONMENT INC.  
Client Project #: 640752  
Site Location: Watson Lake Airport  
Your P.O. #: Pending  
Sampler Initials: MLC

QC Batch	Parameter	Date	Matrix Spike		Spiked Blank		Method Blank		RPD		QC Standard	
			% Recovery	QC Limits	% Recovery	QC Limits	Value	UNITS	Value (%)	QC Limits	% Recovery	QC Limits
8467013	VH C6-C10	2016/11/10			99	60 - 140	<10	mg/kg	NC	40		
8467013	Xylenes (Total)	2016/11/10					<0.040	mg/kg	NC	40		
8468442	2-Methylnaphthalene	2016/11/13	114	50 - 130	79	50 - 130	<0.050	mg/kg	NC	50		
8468442	Acenaphthene	2016/11/13	120	50 - 130	86	50 - 130	<0.050	mg/kg	NC	50		
8468442	Acenaphthylene	2016/11/13	114	50 - 130	81	50 - 130	<0.050	mg/kg	NC	50		
8468442	Anthracene	2016/11/13	113	60 - 130	85	60 - 130	<0.050	mg/kg	NC	50		
8468442	Benzo(a)anthracene	2016/11/13	107	60 - 130	78	60 - 130	<0.050	mg/kg	NC	50		
8468442	Benzo(a)pyrene	2016/11/13	109	60 - 130	81	60 - 130	<0.050	mg/kg	NC	50		
8468442	Benzo(b&j)fluoranthene	2016/11/13	115	60 - 130	84	60 - 130	<0.050	mg/kg	NC	50		
8468442	Benzo(b)fluoranthene	2016/11/13	112	60 - 130	83	60 - 130	<0.050	mg/kg	NC	50		
8468442	Benzo(g,h,i)perylene	2016/11/13	109	60 - 130	81	60 - 130	<0.050	mg/kg	NC	50		
8468442	Benzo(k)fluoranthene	2016/11/13	109	60 - 130	86	60 - 130	<0.050	mg/kg	NC	50		
8468442	Chrysene	2016/11/13	109	60 - 130	79	60 - 130	<0.050	mg/kg	NC	50		
8468442	Dibenz(a,h)anthracene	2016/11/13	109	60 - 130	82	60 - 130	<0.050	mg/kg	NC	50		
8468442	Fluoranthene	2016/11/13	124	60 - 130	87	60 - 130	<0.050	mg/kg	NC	50		
8468442	Fluorene	2016/11/13	113	50 - 130	81	50 - 130	<0.050	mg/kg	NC	50		
8468442	Indeno(1,2,3-cd)pyrene	2016/11/13	112	60 - 130	84	60 - 130	<0.050	mg/kg	NC	50		
8468442	Naphthalene	2016/11/13	117	50 - 130	77	50 - 130	<0.050	mg/kg	NC	50		
8468442	Phenanthrene	2016/11/13	114	60 - 130	82	60 - 130	<0.050	mg/kg	NC	50		
8468442	Pyrene	2016/11/13	123	60 - 130	88	60 - 130	<0.050	mg/kg	NC	50		
8468443	EPH (C10-C19)	2016/11/13	NC	50 - 130	99	50 - 130	<100	mg/kg	30	40		
8468443	EPH (C19-C32)	2016/11/13	107	50 - 130	100	50 - 130	<100	mg/kg	NC	40		
8468649	2-Methylnaphthalene	2016/11/14	82	50 - 130	87	50 - 130	<0.050	mg/kg	NC	50		
8468649	Acenaphthene	2016/11/14	86	50 - 130	90	50 - 130	<0.050	mg/kg	NC	50		
8468649	Acenaphthylene	2016/11/14	84	50 - 130	88	50 - 130	<0.050	mg/kg	NC	50		
8468649	Anthracene	2016/11/14	82	60 - 130	87	60 - 130	<0.050	mg/kg	NC	50		
8468649	Benzo(a)anthracene	2016/11/14	76	60 - 130	82	60 - 130	<0.050	mg/kg	NC	50		
8468649	Benzo(a)pyrene	2016/11/14	83	60 - 130	84	60 - 130	<0.050	mg/kg	NC	50		
8468649	Benzo(b&j)fluoranthene	2016/11/14	83	60 - 130	89	60 - 130	<0.050	mg/kg	NC	50		
8468649	Benzo(b)fluoranthene	2016/11/14	85	60 - 130	86	60 - 130	<0.050	mg/kg	NC	50		

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**QUALITY ASSURANCE REPORT(CONT'D)**

SNC LAVALIN ENVIRONMENT INC.  
Client Project #: 640752  
Site Location: Watson Lake Airport  
Your P.O. #: Pending  
Sampler Initials: MLC

QC Batch	Parameter	Date	Matrix Spike		Spiked Blank		Method Blank		RPD		QC Standard	
			% Recovery	QC Limits	% Recovery	QC Limits	Value	UNITS	Value (%)	QC Limits	% Recovery	QC Limits
8468649	Benzo(g,h,i)perylene	2016/11/14	83	60 - 130	79	60 - 130	<0.050	mg/kg	NC	50		
8468649	Benzo(k)fluoranthene	2016/11/14	82	60 - 130	84	60 - 130	<0.050	mg/kg	NC	50		
8468649	Chrysene	2016/11/14	79	60 - 130	87	60 - 130	<0.050	mg/kg	NC	50		
8468649	Dibenz(a,h)anthracene	2016/11/14	86	60 - 130	82	60 - 130	<0.050	mg/kg	NC	50		
8468649	Fluoranthene	2016/11/14	80	60 - 130	87	60 - 130	<0.050	mg/kg	NC	50		
8468649	Fluorene	2016/11/14	77	50 - 130	82	50 - 130	<0.050	mg/kg	NC	50		
8468649	Indeno(1,2,3-cd)pyrene	2016/11/14	84	60 - 130	83	60 - 130	<0.050	mg/kg	NC	50		
8468649	Naphthalene	2016/11/14	81	50 - 130	84	50 - 130	<0.050	mg/kg	NC	50		
8468649	Phenanthrene	2016/11/14	79	60 - 130	84	60 - 130	<0.050	mg/kg	NC	50		
8468649	Pyrene	2016/11/14	82	60 - 130	87	60 - 130	<0.050	mg/kg	NC	50		
8468654	EPH (C10-C19)	2016/11/13	91	50 - 130	94	50 - 130	<100	mg/kg	NC	40		
8468654	EPH (C19-C32)	2016/11/13	93	50 - 130	95	50 - 130	<100	mg/kg	NC	40		

N/A = Not Applicable

Duplicate: Paired analysis of a separate portion of the same sample. Used to evaluate the variance in the measurement.

Matrix Spike: A sample to which a known amount of the analyte of interest has been added. Used to evaluate sample matrix interference.

QC Standard: A sample of known concentration prepared by an external agency under stringent conditions. Used as an independent check of method accuracy.

Spiked Blank: A blank matrix sample to which a known amount of the analyte, usually from a second source, has been added. Used to evaluate method accuracy.

Method Blank: A blank matrix containing all reagents used in the analytical procedure. Used to identify laboratory contamination.

Surrogate: A pure or isotopically labeled compound whose behavior mirrors the analytes of interest. Used to evaluate extraction efficiency.

NC (Matrix Spike): The recovery in the matrix spike was not calculated. The relative difference between the concentration in the parent sample and the spiked amount was too small to permit a reliable recovery calculation (matrix spike concentration was less than 2x that of the native sample concentration).

NC (Duplicate RPD): The duplicate RPD was not calculated. The concentration in the sample and/or duplicate was too low to permit a reliable RPD calculation (one or both samples < 5x RDL).

(1) Method Blank exceeds acceptance limits for Ba. Sample values for Ba are >20x the concentration of the method blank and the contamination is considered irrelevant.

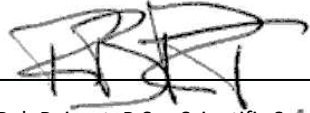
(2) Recovery or RPD for this parameter is outside control limits. The overall quality control for this analysis meets acceptability criteria.

Maxxam Job #: B699546  
Report Date: 2016/11/15

SNC LAVALIN ENVIRONMENT INC.  
Client Project #: 640752  
Site Location: Watson Lake Airport  
Your P.O. #: Pending  
Sampler Initials: MLC

### VALIDATION SIGNATURE PAGE

The analytical data and all QC contained in this report were reviewed and validated by the following individual(s).



Rob Reinert, B.Sc., Scientific Spécialist

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Maxxam has procedures in place to guard against improper use of the electronic signature and have the required "signatories", as per section 5.10.2 of ISO/IEC 17025:2005(E), signing the reports. For Service Group specific validation please refer to the Validation Signature Page.

**INVOICE TO:**

Company Name: #1756 PUBLIC WORKS & GOVERNMENT SERVICE  
 Contact Name: Robert Price  
 Address: 641-800 BURNARD STREET  
 VANCOUVER BC V6Z 2V8  
 Phone: (604) 775-6810 Fax: (604) 775-6650  
 Email: robert.price@pwgsc-lpsgc.gc.ca

**Report Information**

Company Name: #26479 SNC LAVALIN ENVIRONMENT INC.  
 Contact Name: Michael Chao ; Marta Rosa  
 Address: 8648 COMMERCE COURT  
 BURNABY BC V5A 4N6  
 Phone: (604) 515-5151 Fax:  
 Email: Michael.Chao@snclavalin.com marta.rosa@snclavalin.com

**Project Information**

Quotation #: B61631  
 P.O. #: Pending  
 Project #: 640752  
 Project Name: AEC 22A  
 Site #: Watson Lake Airport  
 Sampled by: M/C



**only**

Bottle Order #: 510054  
 Project Manager: Samantha Fregian

**Regulatory Criteria**

Yukon CSR Water  
 Drinking / Freshwater

**Special Instructions**

Regulated Drinking Water? (Y/N)	Metals Field Filtered? (Y/N)	CSR BTEX/VPH	LEPH & HEPH with CSR PAH	CSR/CCME Diss. Metals in Water w/ CV Hg	CSR VOC + VPH	CSR/CCME Metals in Soil
---------------------------------	------------------------------	--------------	--------------------------	---	---------------	-------------------------

**Turnaround Time (TAT) Required**

Please provide advance notice for rush projects.

Regular (Standard) TAT   
 (will be applied if Rush TAT is not specified)  
 Standard TAT = 5-7 Working days for most tests.  
 Please note: Standard TAT for certain tests such as BOD and Dioxins/Furans are > 5 days - contact your Project Manager for details.

Job Specific Rush TAT (if applies to entire submission)  
 Date Required: \_\_\_\_\_ Time Required: \_\_\_\_\_  
 Rush Confirmation Number: \_\_\_\_\_ (call lab for #)

Note: For regulated drinking water samples - please use the Drinking Water Chain of Custody Form

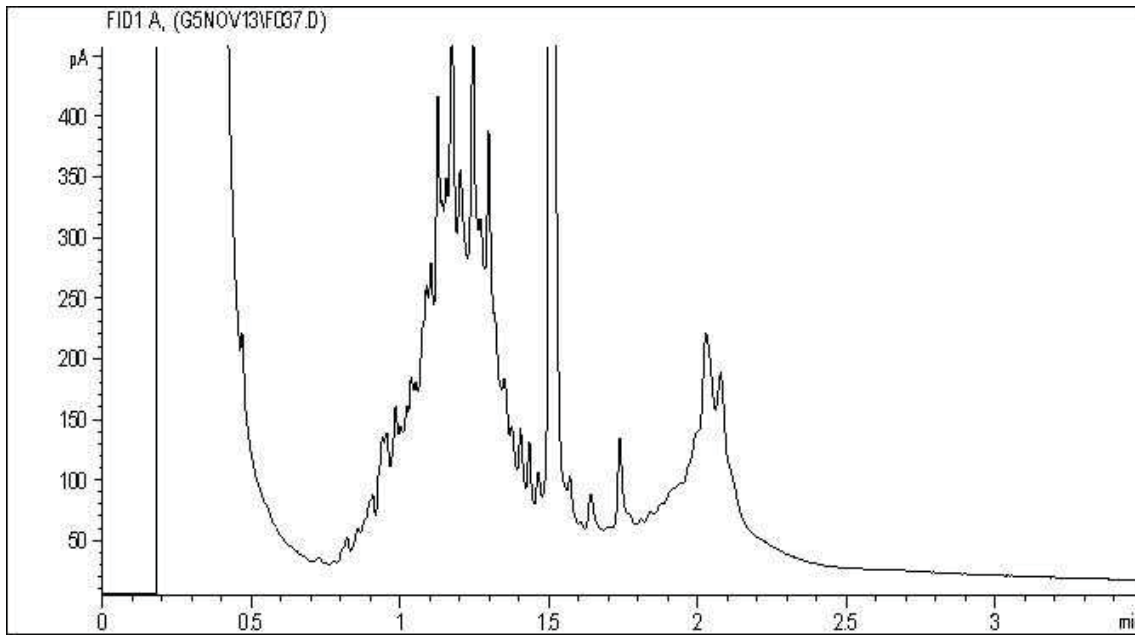
Samples must be kept cool (< 10°C) from time of sampling until delivery to maxxam

Sample Barcode Label	Sample (Location) Identification	Date Sampled	Time Sampled	Matrix	Regulated Drinking Water? (Y/N)	Metals Field Filtered? (Y/N)	CSR BTEX/VPH	LEPH & HEPH with CSR PAH	CSR/CCME Diss. Metals in Water w/ CV Hg	CSR VOC + VPH	CSR/CCME Metals in Soil	# of Bottles	Comments
1	22A-BH16-23-1	16/11/03	12:30	Soil			X	X			X	2	RECEIVED IN WHITEHORSE BY: <i>[Signature]</i> @ 1200
2	22A-BH16-23-2		12:35				X	X				2	2016-11-04
3	22A-BH16-23-3		12:40				X	X				2	TEMP: 2   2   2 → 1 2   2   2 → 2
4	22A-BH16-23-4		12:45				X	X				2	
5	22A-BH16-24-1		12:50				X	X			X	2	
6	22A-BH16-24-2		12:55				X	X				2	
7	22A-BH16-25-1		13:00				X	X			X	2	
8	22A-BH16-25-2		13:05				X	X				2	
9	22A-BH16-26-1		14:45				X	X			X	2	
10	22A-BH16-26-2		14:50				X	X				2	

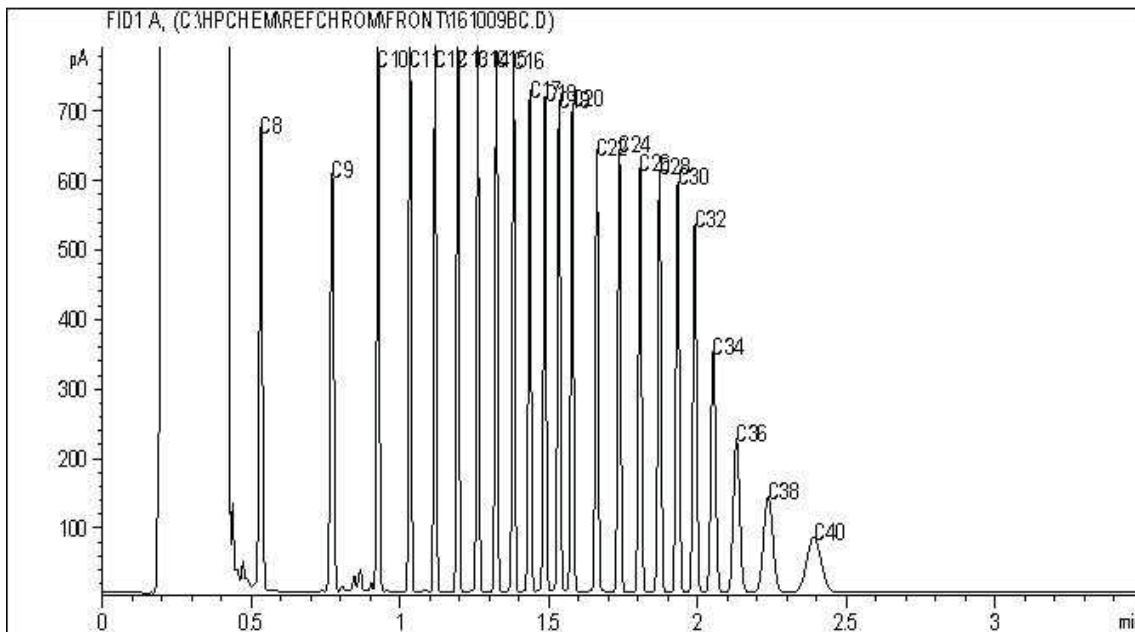
RELINQUISHED BY: (Signature/Print) <i>[Signature]</i> Mike Chao	Date: (YY/MM/DD) 16/11/03	Time 17:00	RECEIVED BY: (Signature/Print) <i>[Signature]</i> Laurence [unclear]	Date: (YY/MM/DD) 2016/11/07	Time 10:00	# Jars used and not submitted	Time Sensitive <input type="checkbox"/>	Temperature (°C) on Receipt 22.3/14.3	Custody Seal Intact on Cooler? <input checked="" type="checkbox"/> Yes <input type="checkbox"/> No
--	------------------------------	---------------	---	--------------------------------	---------------	-------------------------------	---	--	--

\* IT IS THE RESPONSIBILITY OF THE RELINQUISHER TO ENSURE THE ACCURACY OF THE CHAIN OF CUSTODY RECORD. AN INCOMPLETE CHAIN OF CUSTODY MAY RESULT IN ANALYTICAL TAT DELAYS.

EPH in Soil by GC/FID Chromatogram



Carbon Range Distribution - Reference Chromatogram

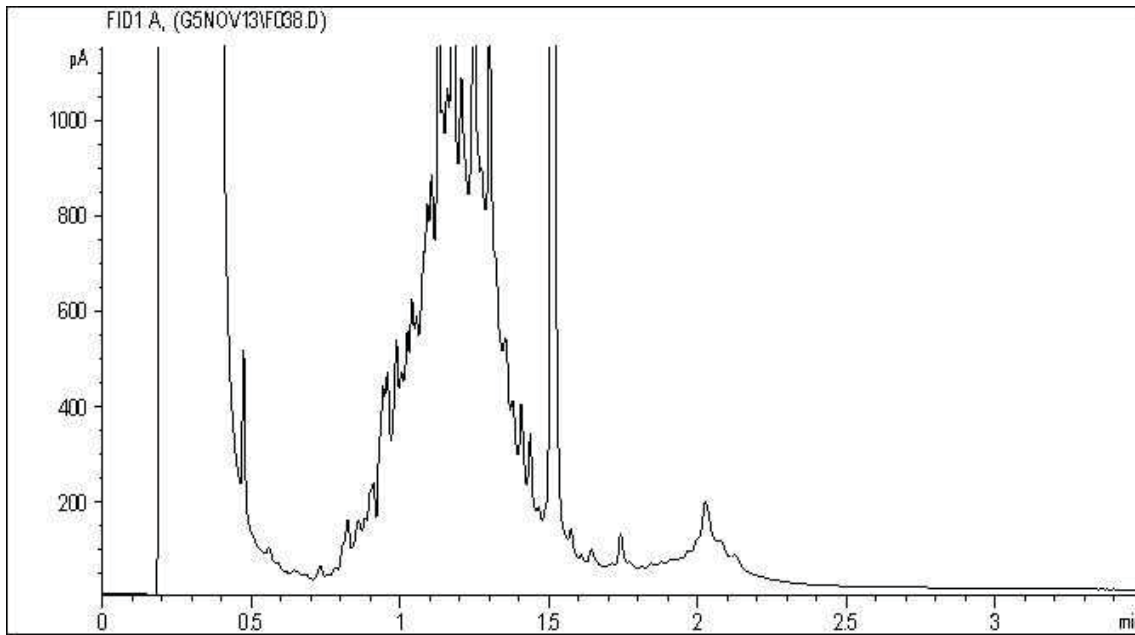


TYPICAL PRODUCT CARBON NUMBER RANGES

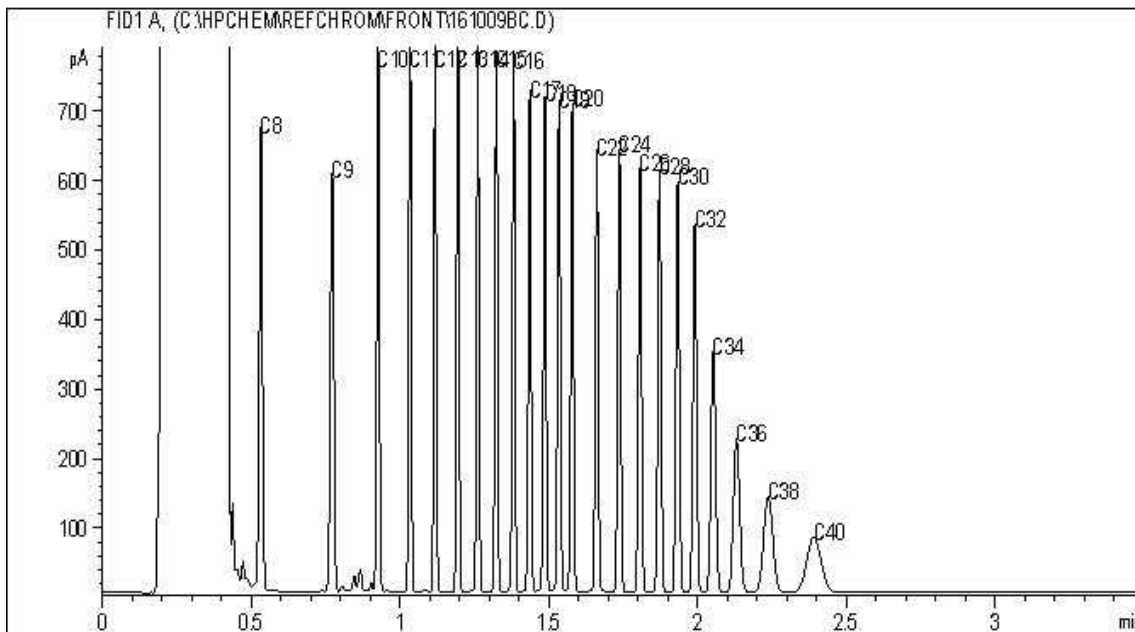
Note: This information is provided for reference purposes only. Should detailed chemist interpretation or fingerprinting be required, please contact the laboratory.



EPH in Soil by GC/FID Chromatogram



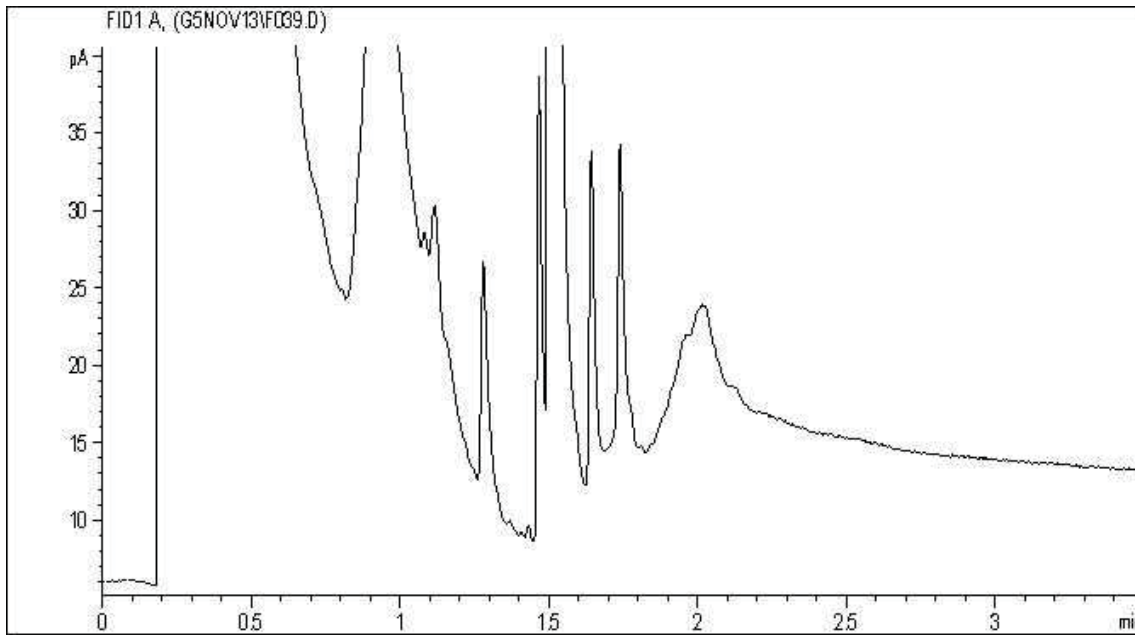
Carbon Range Distribution - Reference Chromatogram



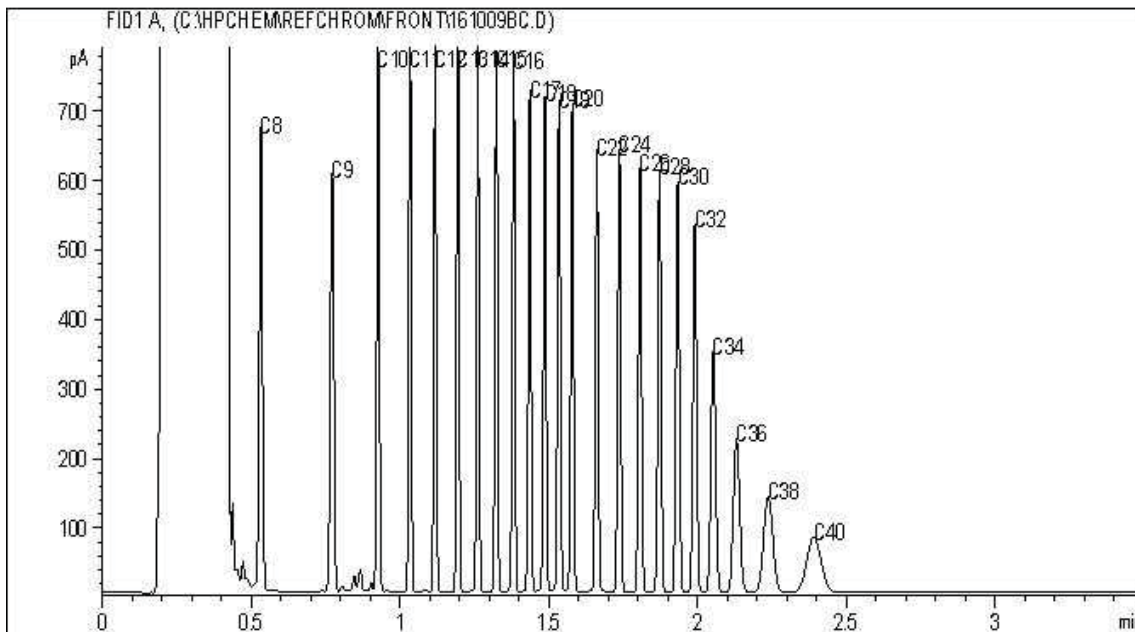
TYPICAL PRODUCT CARBON NUMBER RANGES

**Note:** This information is provided for reference purposes only. Should detailed chemist interpretation or fingerprinting be required, please contact the laboratory.

EPH in Soil by GC/FID Chromatogram



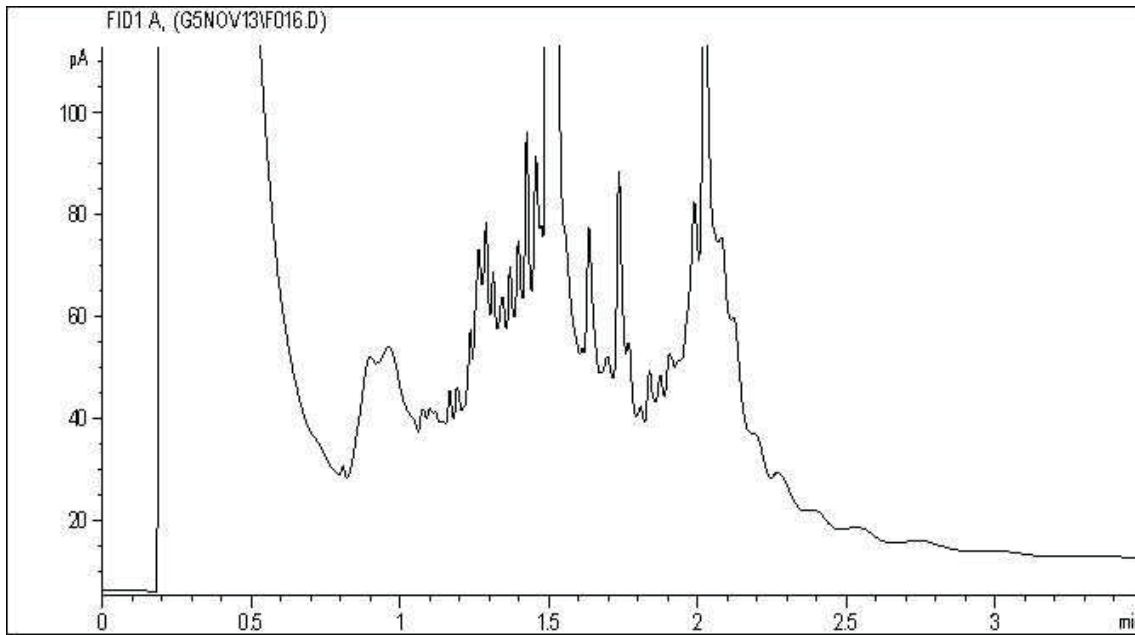
Carbon Range Distribution - Reference Chromatogram



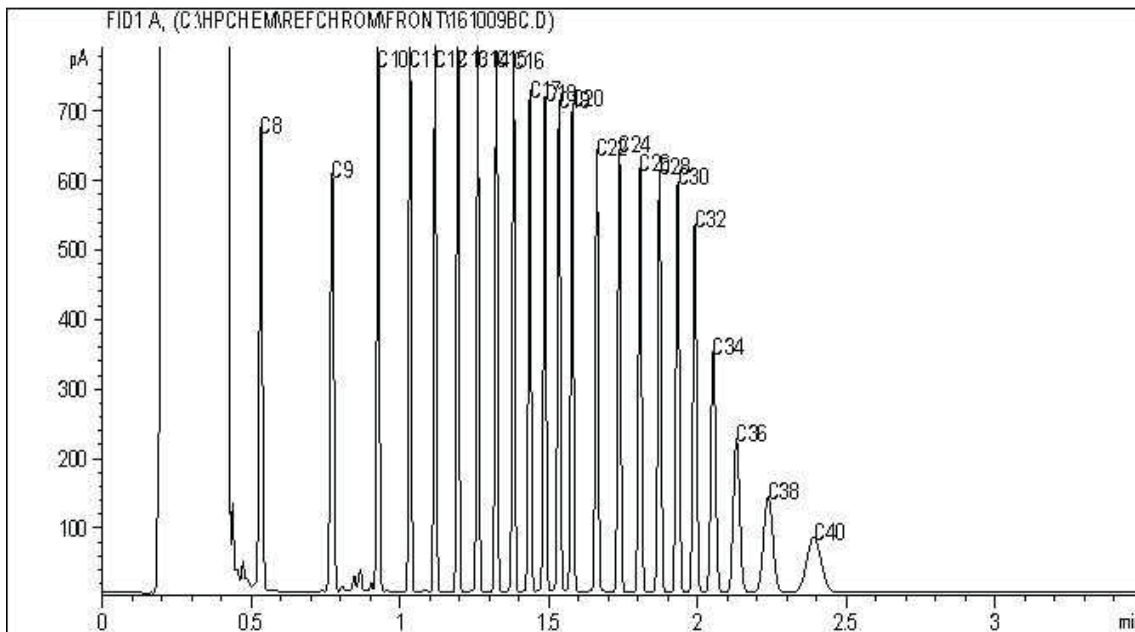
TYPICAL PRODUCT CARBON NUMBER RANGES

Note: This information is provided for reference purposes only. Should detailed chemist interpretation or fingerprinting be required, please contact the laboratory.

EPH in Soil by GC/FID Chromatogram



Carbon Range Distribution - Reference Chromatogram

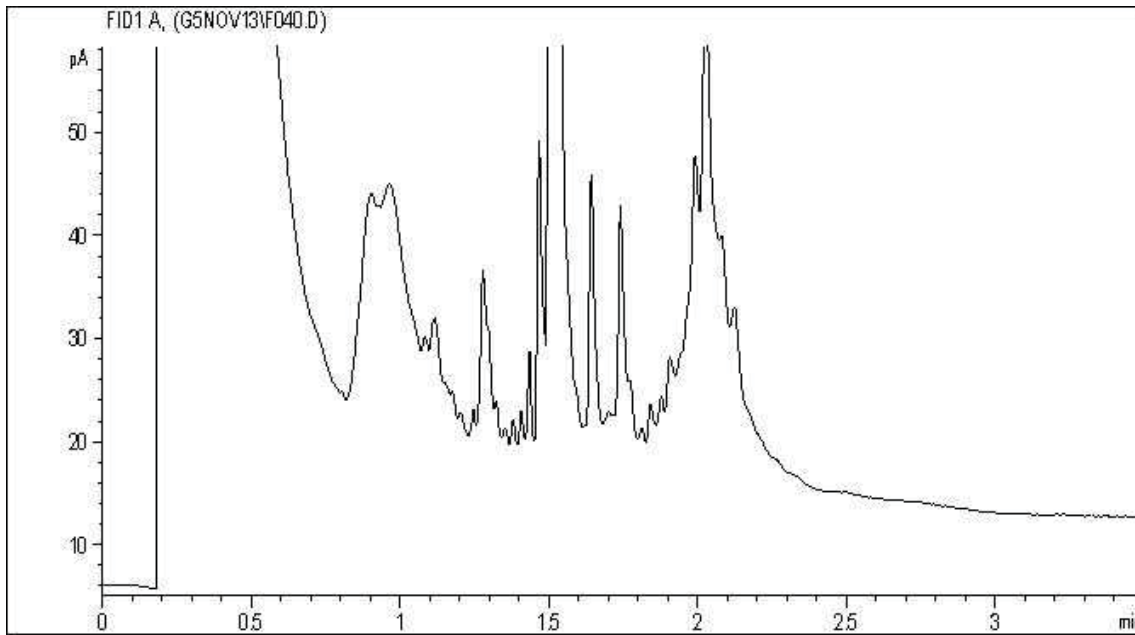


TYPICAL PRODUCT CARBON NUMBER RANGES

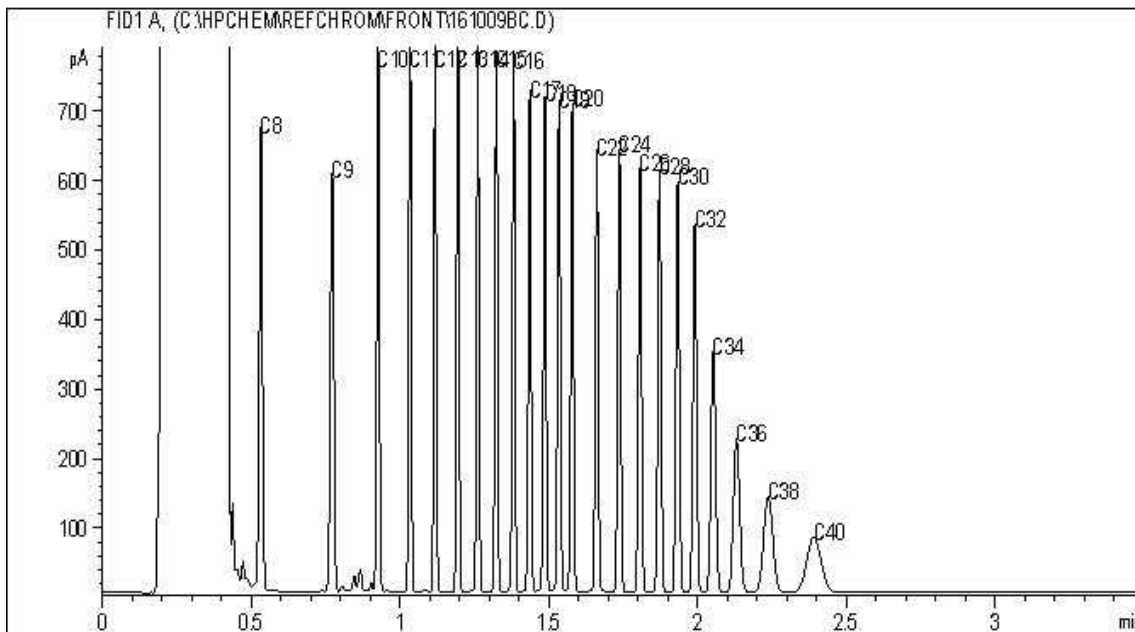
**Note: This information is provided for reference purposes only. Should detailed chemist interpretation or fingerprinting be required, please contact the laboratory.**



EPH in Soil by GC/FID Chromatogram



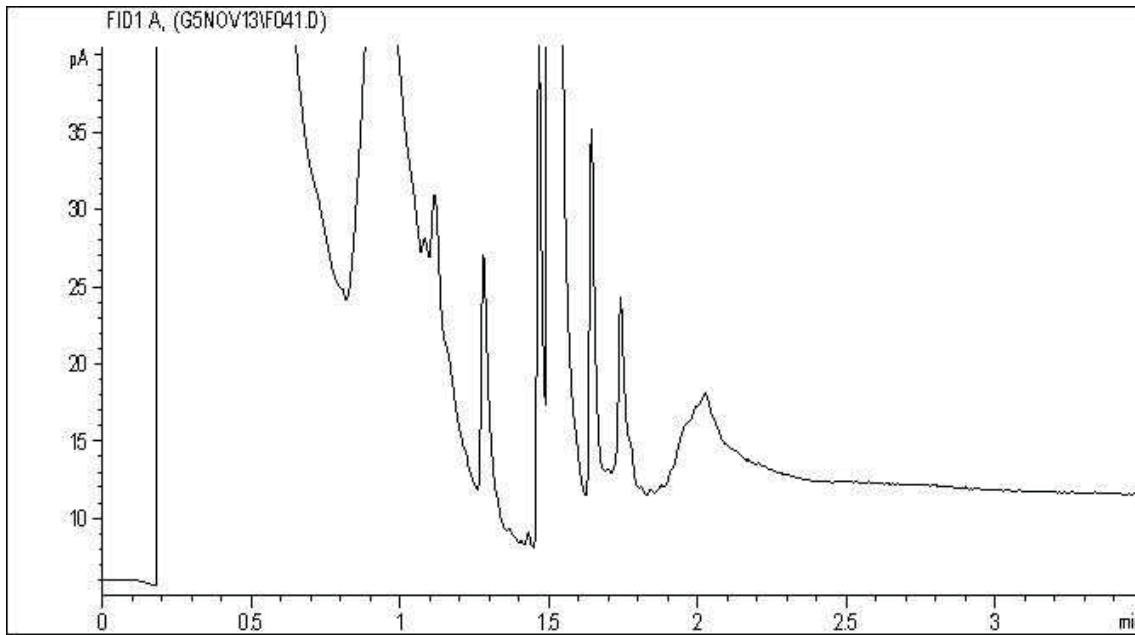
Carbon Range Distribution - Reference Chromatogram



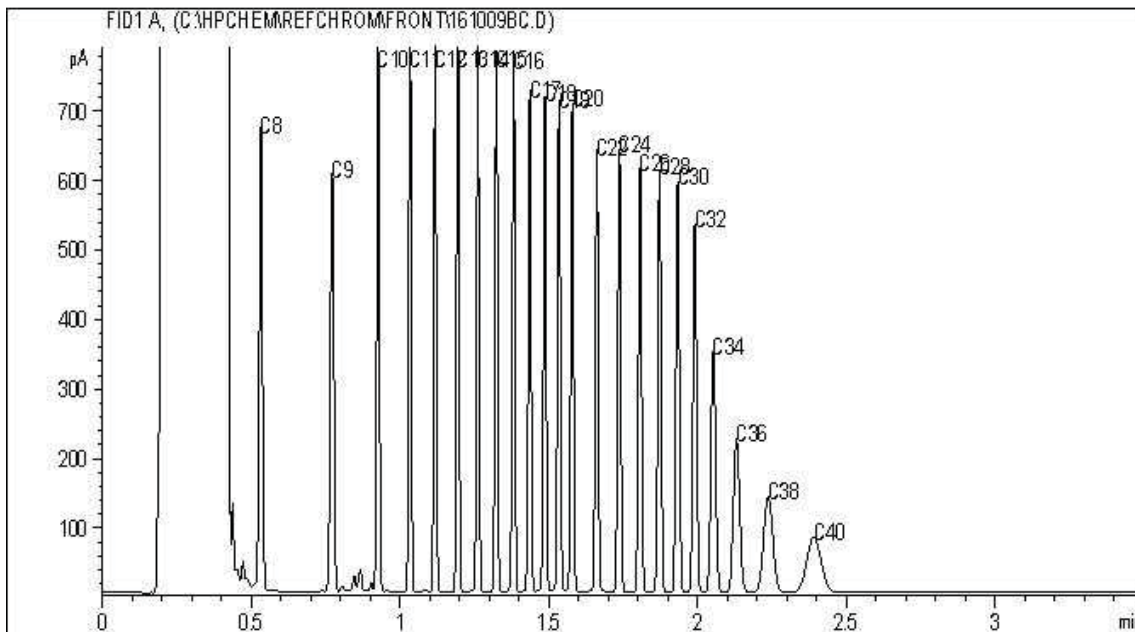
TYPICAL PRODUCT CARBON NUMBER RANGES

**Note:** This information is provided for reference purposes only. Should detailed chemist interpretation or fingerprinting be required, please contact the laboratory.

EPH in Soil by GC/FID Chromatogram



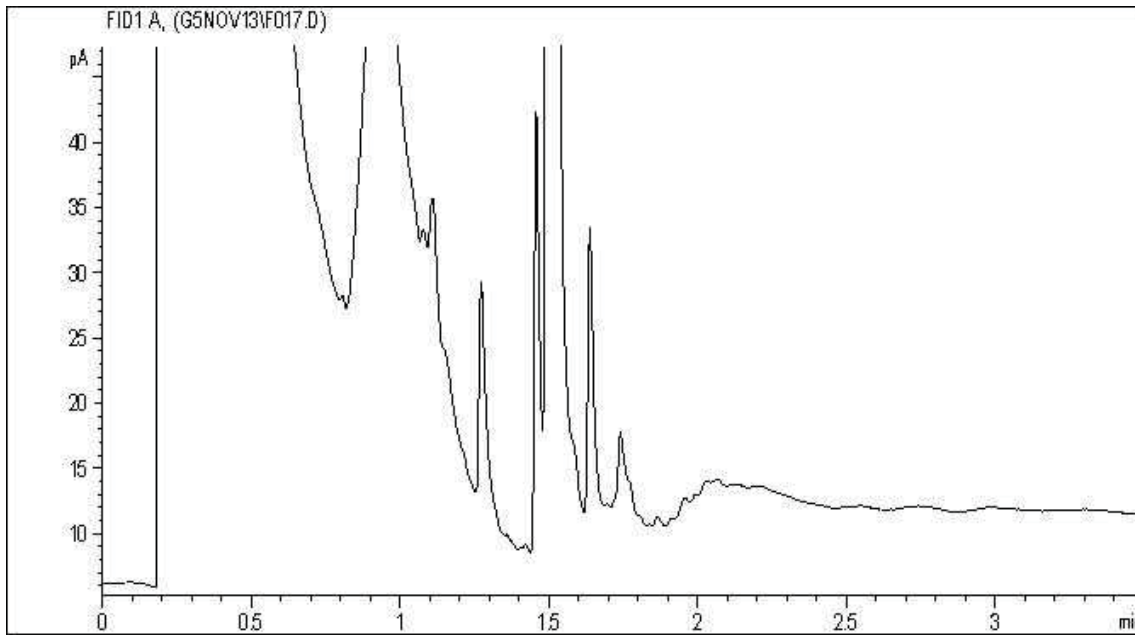
Carbon Range Distribution - Reference Chromatogram



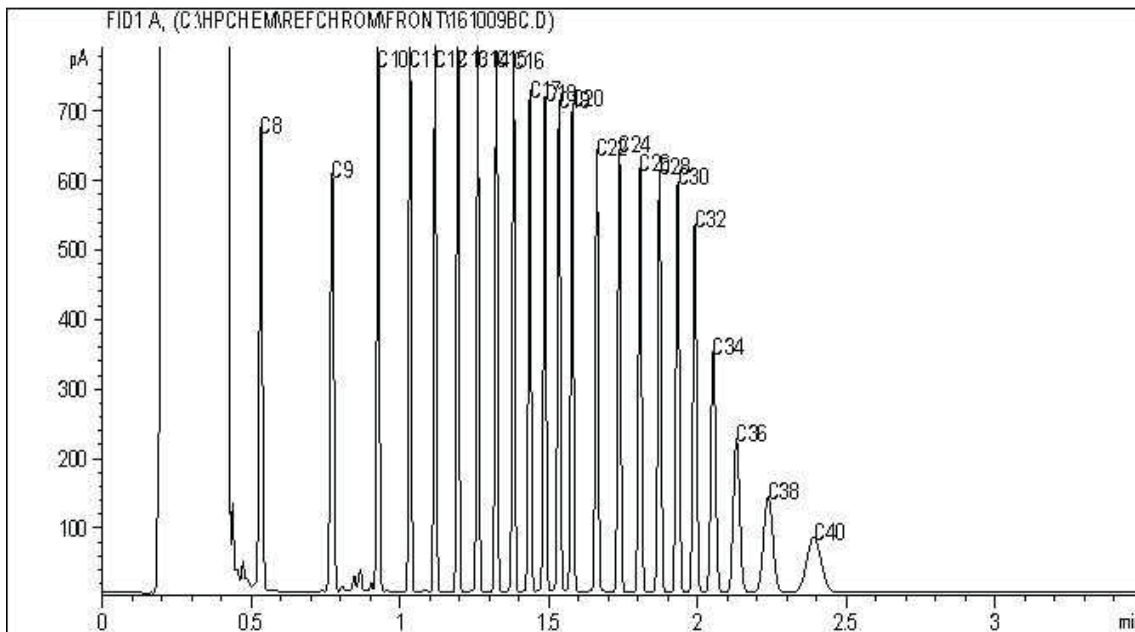
TYPICAL PRODUCT CARBON NUMBER RANGES

Note: This information is provided for reference purposes only. Should detailed chemist interpretation or fingerprinting be required, please contact the laboratory.

EPH in Soil by GC/FID Chromatogram



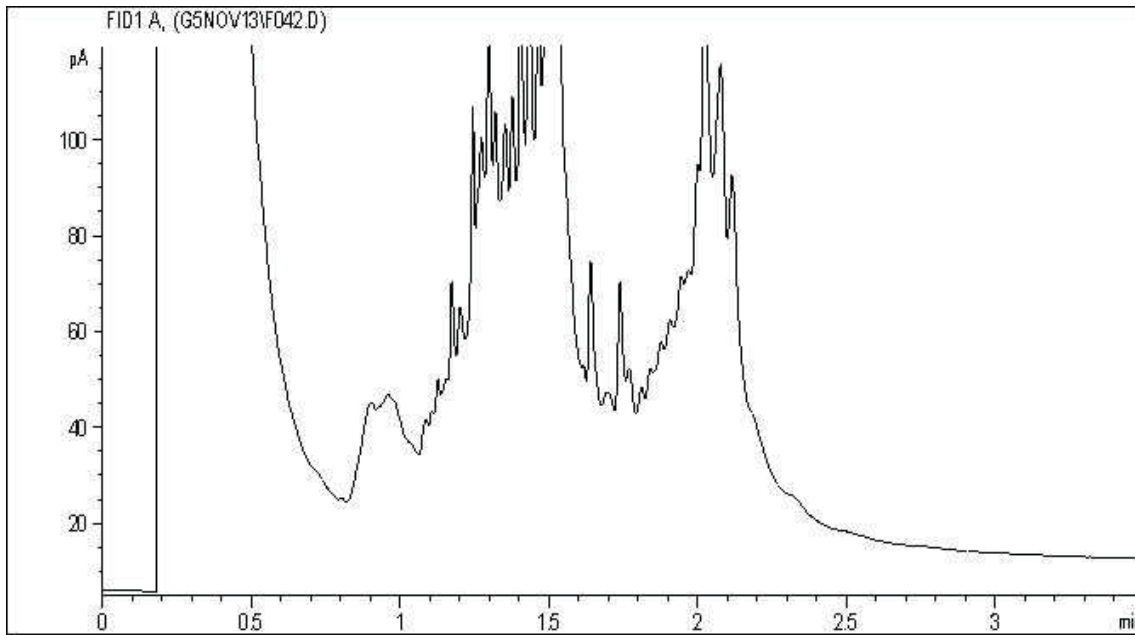
Carbon Range Distribution - Reference Chromatogram



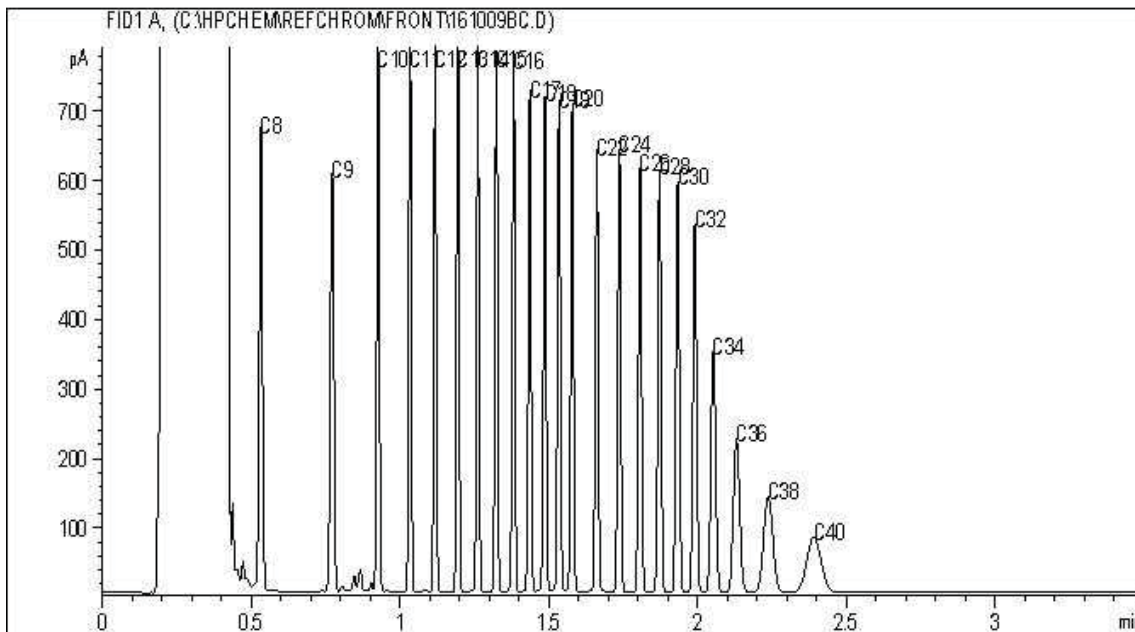
TYPICAL PRODUCT CARBON NUMBER RANGES

Note: This information is provided for reference purposes only. Should detailed chemist interpretation or fingerprinting be required, please contact the laboratory.

EPH in Soil by GC/FID Chromatogram



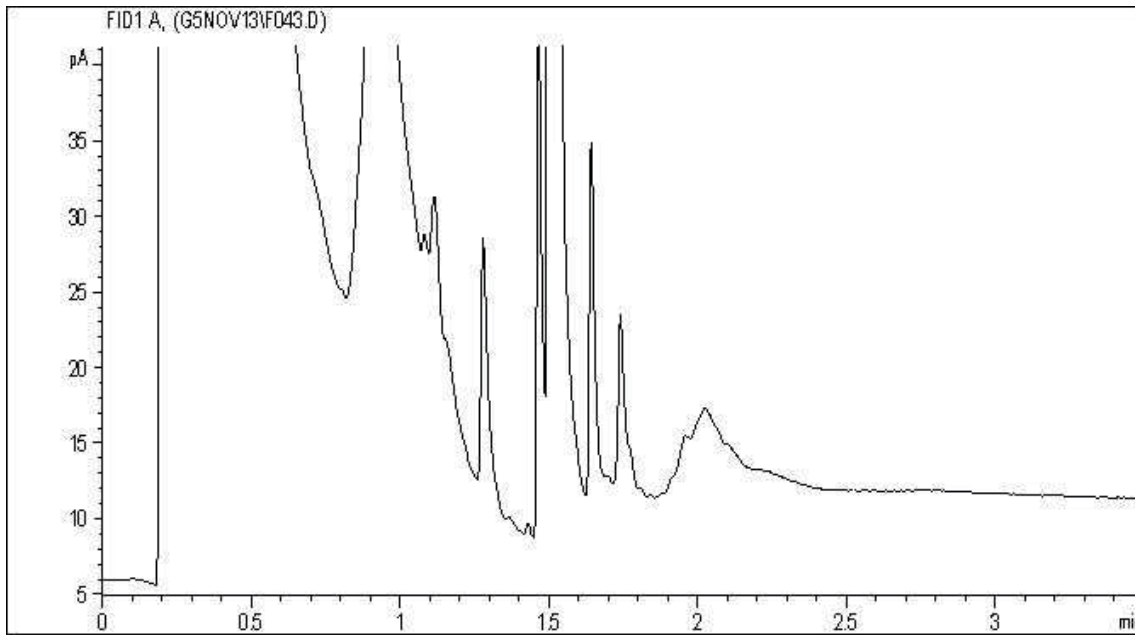
Carbon Range Distribution - Reference Chromatogram



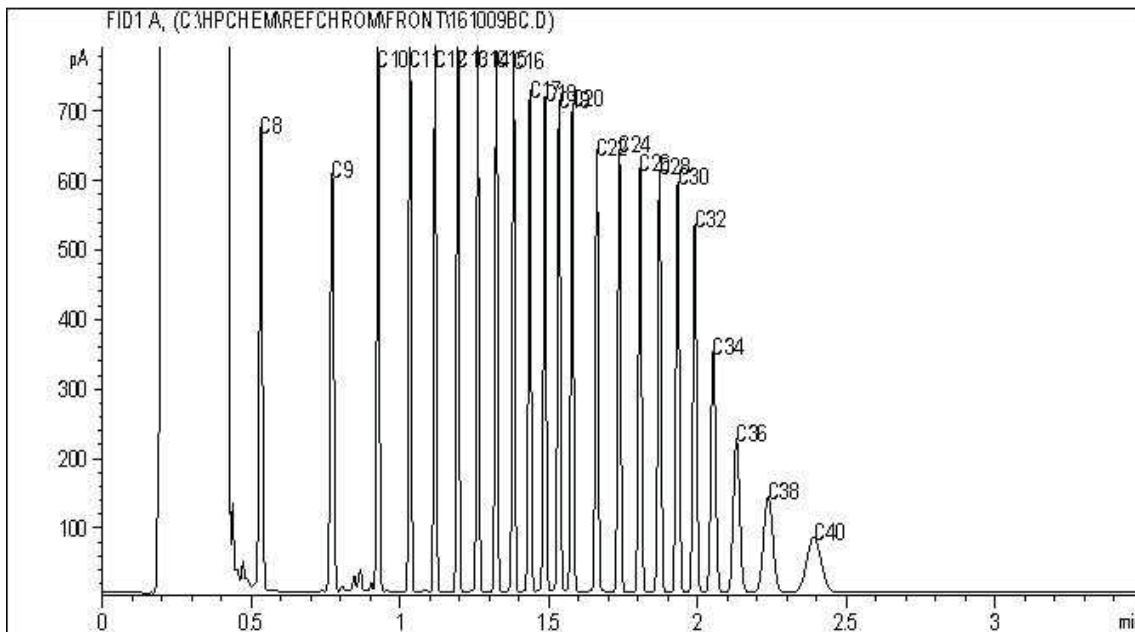
TYPICAL PRODUCT CARBON NUMBER RANGES

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EPH in Soil by GC/FID Chromatogram



Carbon Range Distribution - Reference Chromatogram



TYPICAL PRODUCT CARBON NUMBER RANGES

Note: This information is provided for reference purposes only. Should detailed chemist interpretation or fingerprinting be required, please contact the laboratory.

Your P.O. #: Pending  
Your Project #: 640752  
Site#: AEC 22C  
Site Location: Watson Lake Airport

**Attention: Michael Chao**

SNC LAVALIN ENVIRONMENT INC.  
8648 COMMERCE COURT  
BURNABY, BC  
CANADA V5A 4N6

Your C.O.C. #: 510054-12-01, 510054-11-01, 510054-13-01, 510054-09-01

**Report Date: 2016/11/16**  
Report #: R2301694  
Version: 1 - Final

**CERTIFICATE OF ANALYSIS**

**MAXXAM JOB #: B699547**

**Received: 2016/11/04, 12:00**

Sample Matrix: Soil  
# Samples Received: 31

<b>Analyses</b>	<b>Quantity</b>	<b>Date Extracted</b>	<b>Date Analyzed</b>	<b>Laboratory Method</b>	<b>Analytical Method</b>
BTEX/MTBE Soil LH, VH, F1 SIM/MS	21	2016/11/08	2016/11/10	BBY8SOP-00010/11/12	EPA 8260c R3 m
BTEX/MTBE Soil LH, VH, F1 SIM/MS	8	2016/11/09	2016/11/10	BBY8SOP-00010/11/12	EPA 8260c R3 m
BTEX/MTBE Soil LH, VH, F1 SIM/MS	1	2016/11/10	2016/11/10	BBY8SOP-00010/11/12	EPA 8260c R3 m
Elements by ICPMS (total)	15	2016/11/09	2016/11/09	BBY7SOP-00017,	BC SALM,EPA 6020bR2m
Moisture	21	2016/11/08	2016/11/09	BBY8SOP-00017	BCMOE BCLM Dec2000 m
Moisture	8	2016/11/09	2016/11/10	BBY8SOP-00017	BCMOE BCLM Dec2000 m
Moisture	1	2016/11/09	2016/11/11	BBY8SOP-00017	BCMOE BCLM Dec2000 m
Moisture	1	2016/11/10	2016/11/11	BBY8SOP-00017	BCMOE BCLM Dec2000 m
PAH in Soil by GC/MS (SIM)	12	2016/11/08	2016/11/10	BBY8SOP-00022	EPA 8270d R5 m
PAH in Soil by GC/MS (SIM)	8	2016/11/08	2016/11/13	BBY8SOP-00022	EPA 8270d R5 m
PAH in Soil by GC/MS (SIM)	1	2016/11/08	2016/11/15	BBY8SOP-00022	EPA 8270d R5 m
PAH in Soil by GC/MS (SIM)	1	2016/11/09	2016/11/12	BBY8SOP-00022	EPA 8270d R5 m
PAH in Soil by GC/MS (SIM)	3	2016/11/09	2016/11/13	BBY8SOP-00022	EPA 8270d R5 m
PAH in Soil by GC/MS (SIM)	4	2016/11/09	2016/11/14	BBY8SOP-00022	EPA 8270d R5 m
PAH in Soil by GC/MS (SIM)	2	2016/11/10	2016/11/13	BBY8SOP-00022	EPA 8270d R5 m
Total PAH and B(a)P Calculation	12	N/A	2016/11/10	BBY WI-00033	Auto Calc
Total PAH and B(a)P Calculation	4	N/A	2016/11/14	BBY WI-00033	Auto Calc
Total PAH and B(a)P Calculation	15	N/A	2016/11/15	BBY WI-00033	Auto Calc
pH (2:1 DI Water Extract)	15	2016/11/09	2016/11/09	BBY6SOP-00028	BCMOE BCLM Mar2005 m
EPH less PAH in Soil By GC/FID	12	N/A	2016/11/10	BBY WI-00033	Auto Calc
EPH less PAH in Soil By GC/FID	4	N/A	2016/11/14	BBY WI-00033	Auto Calc
EPH less PAH in Soil By GC/FID	15	N/A	2016/11/15	BBY WI-00033	Auto Calc
EPH in Soil by GC/FID	11	2016/11/08	2016/11/09	BBY8SOP-00029	BCMOE EPH s 07/99 m
EPH in Soil by GC/FID	1	2016/11/08	2016/11/10	BBY8SOP-00029	BCMOE EPH s 07/99 m
EPH in Soil by GC/FID	9	2016/11/08	2016/11/13	BBY8SOP-00029	BCMOE EPH s 07/99 m
EPH in Soil by GC/FID	1	2016/11/09	2016/11/10	BBY8SOP-00029	BCMOE EPH s 07/99 m
EPH in Soil by GC/FID	7	2016/11/09	2016/11/13	BBY8SOP-00029	BCMOE EPH s 07/99 m

Your P.O. #: Pending  
 Your Project #: 640752  
 Site#: AEC 22C  
 Site Location: Watson Lake Airport

**Attention: Michael Chao**

SNC LAVALIN ENVIRONMENT INC.  
 8648 COMMERCE COURT  
 BURNABY, BC  
 CANADA V5A 4N6

Your C.O.C. #: 510054-12-01, 510054-11-01, 510054-13-01, 510054-09-01

**Report Date: 2016/11/16**  
 Report #: R2301694  
 Version: 1 - Final

**CERTIFICATE OF ANALYSIS**

**MAXXAM JOB #: B699547**

**Received: 2016/11/04, 12:00**

Sample Matrix: Soil  
 # Samples Received: 31

<b>Analyses</b>	<b>Quantity</b>	<b>Date Extracted</b>	<b>Date Analyzed</b>	<b>Laboratory Method</b>	<b>Analytical Method</b>
EPH in Soil by GC/FID	2	2016/11/10	2016/11/13	BBY8SOP-00029	BCMOE EPH s 07/99 m
VOCs, VH, F1, LH in Soil by HS GC/MS	1	2016/11/10	2016/11/15	BBY8-SOP-00009	EPA 8260c R3 m
Volatile HC-BTEX for Soil	19	N/A	2016/11/13	BBY WI-00033	Auto Calc
Volatile HC-BTEX for Soil	11	N/A	2016/11/14	BBY WI-00033	Auto Calc
Volatile HC-BTEX for Soil	1	N/A	2016/11/15	BBY WI-00033	Auto Calc

**Remarks:**

Maxxam Analytics' laboratories are accredited to ISO/IEC 17025:2005 for specific parameters on scopes of accreditation. Unless otherwise noted, procedures used by Maxxam are based upon recognized Provincial, Federal or US method compendia such as CCME, MDDELCC, EPA, APHA.

All work recorded herein has been done in accordance with procedures and practices ordinarily exercised by professionals in Maxxam's profession using accepted testing methodologies, quality assurance and quality control procedures (except where otherwise agreed by the client and Maxxam in writing). All data is in statistical control and has met quality control and method performance criteria unless otherwise noted. All method blanks are reported: unless indicated otherwise, associated sample data are not blank corrected.

Maxxam Analytics' liability is limited to the actual cost of the requested analyses, unless otherwise agreed in writing. There is no other warranty expressed or implied. Maxxam has been retained to provide analysis of samples provided by the Client using the testing methodology referenced in this report. Interpretation and use of test results are the sole responsibility of the Client and are not within the scope of services provided by Maxxam, unless otherwise agreed in writing.

Solid sample results, except biota, are based on dry weight unless otherwise indicated. Organic analyses are not recovery corrected except for isotope dilution methods. Results relate to samples tested.

This Certificate shall not be reproduced except in full, without the written approval of the laboratory.

Reference Method suffix "m" indicates test methods incorporate validated modifications from specific reference methods to improve performance.

\* RPDs calculated using raw data. The rounding of final results may result in the apparent difference.

Your P.O. #: Pending  
Your Project #: 640752  
Site#: AEC 22C  
Site Location: Watson Lake Airport

**Attention:Michael Chao**

SNC LAVALIN ENVIRONMENT INC.  
8648 COMMERCE COURT  
BURNABY, BC  
CANADA V5A 4N6

Your C.O.C. #: 510054-12-01, 510054-11-01, 510054-13-01, 510054-09-01

**Report Date: 2016/11/16**  
Report #: R2301694  
Version: 1 - Final

**CERTIFICATE OF ANALYSIS**

**MAXXAM JOB #: B699547**  
**Received: 2016/11/04, 12:00**

Encryption Key

Please direct all questions regarding this Certificate of Analysis to your Project Manager.  
Samantha Fregien, Project Manager  
Email: SFregien@maxxam.ca  
Phone# (604)639-8418  
=====

Maxxam has procedures in place to guard against improper use of the electronic signature and have the required "signatories", as per section 5.10.2 of ISO/IEC 17025:2005(E), signing the reports. For Service Group specific validation please refer to the Validation Signature Page.



Maxxam Job #: B699547  
Report Date: 2016/11/16

SNC LAVALIN ENVIRONMENT INC.  
Client Project #: 640752  
Site Location: Watson Lake Airport  
Your P.O. #: Pending  
Sampler Initials: MLC

**PHYSICAL TESTING (SOIL)**

Maxxam ID		PZ1427		PZ1428	PZ1429	PZ1430	PZ1431		
Sampling Date		2016/11/01 13:45		2016/11/01 13:50	2016/11/01 14:15	2016/11/01 14:20	2016/11/01 14:30		
COC Number		510054-12-01		510054-12-01	510054-12-01	510054-12-01	510054-12-01		
	<b>UNITS</b>	<b>22C-BH16-26-1</b>	<b>QC Batch</b>	<b>22C-BH16-26-2</b>	<b>22C-BH16-27-1</b>	<b>22C-BH16-27-2</b>	<b>22C-BH16-28-1</b>	<b>RDL</b>	<b>QC Batch</b>

**Physical Properties**

Moisture	%	5.9	8466144	15	10	15	2.3	0.30	8463705
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RDL = Reportable Detection Limit

Maxxam ID		PZ1432	PZ1433	PZ1434	PZ1435	PZ1436	PZ1437		
Sampling Date		2016/11/01 14:35	2016/11/01 14:40	2016/11/02 10:00	2016/11/02 10:05	2016/11/02 11:00	2016/11/02 11:05		
COC Number		510054-12-01	510054-12-01	510054-12-01	510054-12-01	510054-12-01	510054-11-01		
	<b>UNITS</b>	<b>22C-BH16-28-2</b>	<b>22C-BH16-28-3</b>	<b>22C-BH16-29-1</b>	<b>22C-BH16-29-2</b>	<b>22C-BH16-30-1</b>	<b>22C-BH16-30-2</b>	<b>RDL</b>	<b>QC Batch</b>

**Physical Properties**

Moisture	%	3.3	1.9	13	9.5	4.5	7.5	0.30	8464202
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RDL = Reportable Detection Limit

Maxxam ID		PZ1438	PZ1439	PZ1440	PZ1441	PZ1442	PZ1443		
Sampling Date		2016/11/02 11:10	2016/11/02 12:30	2016/11/02 12:35	2016/11/02 14:00	2016/11/02 14:10	2016/11/02 14:45		
COC Number		510054-11-01	510054-11-01	510054-11-01	510054-11-01	510054-11-01	510054-11-01		
	<b>UNITS</b>	<b>22C-BH16-30-3</b>	<b>22C-BH16-31-1</b>	<b>22C-BH16-31-2</b>	<b>22C-BH16-32-1</b>	<b>22C-BH16-32-2</b>	<b>22C-BH16-33-1</b>	<b>RDL</b>	<b>QC Batch</b>

**Physical Properties**

Moisture	%	9.9	11	16	14	15	17	0.30	8464202
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RDL = Reportable Detection Limit

Maxxam ID		PZ1444	PZ1445	PZ1446	PZ1454		PZ1455		
Sampling Date		2016/11/02 14:50	2016/11/02 15:15	2016/11/02 15:20	2016/11/02 15:30		2016/11/02 15:35		
COC Number		510054-11-01	510054-11-01	510054-11-01	510054-13-01		510054-13-01		
	<b>UNITS</b>	<b>22C-BH16-33-2</b>	<b>22C-BH16-34-1</b>	<b>22C-BH16-34-2</b>	<b>22C-BH16-35-1</b>	<b>QC Batch</b>	<b>22C-BH16-35-2</b>	<b>RDL</b>	<b>QC Batch</b>

**Physical Properties**

Moisture	%	2.5	6.4	8.7	6.1	8464202	13	0.30	8463705
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RDL = Reportable Detection Limit

Maxxam Job #: B699547  
Report Date: 2016/11/16

SNC LAVALIN ENVIRONMENT INC.  
Client Project #: 640752  
Site Location: Watson Lake Airport  
Your P.O. #: Pending  
Sampler Initials: MLC

**PHYSICAL TESTING (SOIL)**

Maxxam ID		PZ1456		PZ1457	PZ1458	PZ1459	PZ1460		
Sampling Date		2016/11/03 09:00		2016/11/03 09:05	2016/11/03 09:40	2016/11/03 09:45	2016/11/03 10:15		
COC Number		510054-13-01		510054-13-01	510054-13-01	510054-13-01	510054-13-01		
	<b>UNITS</b>	<b>22C-BH16-36-1</b>	<b>QC Batch</b>	<b>22C-BH16-36-2</b>	<b>22C-BH16-37-1</b>	<b>22C-BH16-37-2</b>	<b>22C-BH16-38-1</b>	<b>RDL</b>	<b>QC Batch</b>

**Physical Properties**

Moisture	%	13	8466148	4.4	8.6	6.7	4.2	0.30	8464841
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RDL = Reportable Detection Limit

Maxxam ID		PZ1461	PZ1462	PZ1469	PZ1470		
Sampling Date		2016/11/03 10:20	2016/11/03 10:25	2016/11/03 11:15	2016/11/03 11:20		
COC Number		510054-13-01	510054-13-01	510054-09-01	510054-09-01		
	<b>UNITS</b>	<b>22C-BH16-38-2</b>	<b>22C-BH16-38-3</b>	<b>22C-BH16-39-1</b>	<b>22C-BH16-39-2</b>	<b>RDL</b>	<b>QC Batch</b>

**Physical Properties**

Moisture	%	8.9	7.0	9.4	8.3	0.30	8464841
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RDL = Reportable Detection Limit

Maxxam Job #: B699547  
Report Date: 2016/11/16

SNC LAVALIN ENVIRONMENT INC.  
Client Project #: 640752  
Site Location: Watson Lake Airport  
Your P.O. #: Pending  
Sampler Initials: MLC

**CSR BTEX/VPH BY HS IN SOIL (SOIL)**

Maxxam ID		PZ1428		PZ1429	PZ1430		PZ1431		
Sampling Date		2016/11/01 13:50		2016/11/01 14:15	2016/11/01 14:20		2016/11/01 14:30		
COC Number		510054-12-01		510054-12-01	510054-12-01		510054-12-01		
	<b>UNITS</b>	<b>22C-BH16-26-2</b>	<b>QC Batch</b>	<b>22C-BH16-27-1</b>	<b>22C-BH16-27-2</b>	<b>QC Batch</b>	<b>22C-BH16-28-1</b>	<b>RDL</b>	<b>QC Batch</b>

<b>Volatiles</b>									
VPH (VH6 to 10 - BTEX)	mg/kg	<10	8462150	<10	<10	8462150	<10	10	8462150
Methyl-tert-butylether (MTBE)	mg/kg	<0.10	8467013	<0.10	<0.10	8467004	<0.10	0.10	8467013
Benzene	mg/kg	<0.0050	8467013	<0.0050	<0.0050	8467004	<0.0050	0.0050	8467013
Toluene	mg/kg	<0.020	8467013	<0.020	<0.020	8467004	<0.020	0.020	8467013
Ethylbenzene	mg/kg	<0.010	8467013	<0.010	<0.010	8467004	<0.010	0.010	8467013
m & p-Xylene	mg/kg	<0.040	8467013	<0.040	<0.040	8467004	<0.040	0.040	8467013
o-Xylene	mg/kg	<0.040	8467013	<0.040	<0.040	8467004	<0.040	0.040	8467013
Styrene	mg/kg	<0.030	8467013	<0.030	<0.030	8467004	<0.030	0.030	8467013
Xylenes (Total)	mg/kg	<0.040	8467013	<0.040	<0.040	8467004	<0.040	0.040	8467013
VH C6-C10	mg/kg	<10	8467013	<10	<10	8467004	<10	10	8467013

<b>Surrogate Recovery (%)</b>									
1,4-Difluorobenzene (sur.)	%	98	8467013	96	97	8467004	100		8467013
4-Bromofluorobenzene (sur.)	%	101	8467013	109	108	8467004	99		8467013
D10-ETHYLBENZENE (sur.)	%	97	8467013	105	107	8467004	97		8467013
D4-1,2-Dichloroethane (sur.)	%	101	8467013	110	109	8467004	102		8467013

RDL = Reportable Detection Limit

Maxxam Job #: B699547  
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SNC LAVALIN ENVIRONMENT INC.  
Client Project #: 640752  
Site Location: Watson Lake Airport  
Your P.O. #: Pending  
Sampler Initials: MLC

**CSR BTEX/VPH BY HS IN SOIL (SOIL)**

Maxxam ID		PZ1432	PZ1433	PZ1434	PZ1435	PZ1436		
Sampling Date		2016/11/01 14:35	2016/11/01 14:40	2016/11/02 10:00	2016/11/02 10:05	2016/11/02 11:00		
COC Number		510054-12-01	510054-12-01	510054-12-01	510054-12-01	510054-12-01		
	<b>UNITS</b>	<b>22C-BH16-28-2</b>	<b>22C-BH16-28-3</b>	<b>22C-BH16-29-1</b>	<b>22C-BH16-29-2</b>	<b>22C-BH16-30-1</b>	<b>RDL</b>	<b>QC Batch</b>
<b>Volatiles</b>								
VPH (VH6 to 10 - BTEX)	mg/kg	<10	<10	<10	<10	<10	10	8462150
Methyl-tert-butylether (MTBE)	mg/kg	<0.10	<0.10	<0.10	<0.10	<0.10	0.10	8467004
Benzene	mg/kg	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	0.0050	8467004
Toluene	mg/kg	<0.020	<0.020	<0.020	<0.020	<0.020	0.020	8467004
Ethylbenzene	mg/kg	<0.010	<0.010	<0.010	<0.010	<0.010	0.010	8467004
m & p-Xylene	mg/kg	<0.040	<0.040	<0.040	<0.040	<0.040	0.040	8467004
o-Xylene	mg/kg	<0.040	<0.040	<0.040	<0.040	<0.040	0.040	8467004
Styrene	mg/kg	<0.030	<0.030	<0.030	<0.030	<0.030	0.030	8467004
Xylenes (Total)	mg/kg	<0.040	<0.040	<0.040	<0.040	<0.040	0.040	8467004
VH C6-C10	mg/kg	<10	<10	<10	<10	<10	10	8467004
<b>Surrogate Recovery (%)</b>								
1,4-Difluorobenzene (sur.)	%	98	98	106	104	104		8467004
4-Bromofluorobenzene (sur.)	%	109	110	104	104	105		8467004
D10-ETHYLBENZENE (sur.)	%	106	103	85	87	87		8467004
D4-1,2-Dichloroethane (sur.)	%	113	108	97	96	99		8467004
RDL = Reportable Detection Limit								

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SNC LAVALIN ENVIRONMENT INC.  
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Your P.O. #: Pending  
Sampler Initials: MLC

**CSR BTEX/VPH BY HS IN SOIL (SOIL)**

Maxxam ID		PZ1437		PZ1438		PZ1439	PZ1440		
Sampling Date		2016/11/02 11:05		2016/11/02 11:10		2016/11/02 12:30	2016/11/02 12:35		
COC Number		510054-11-01		510054-11-01		510054-11-01	510054-11-01		
	<b>UNITS</b>	<b>22C-BH16-30-2</b>	<b>QC Batch</b>	<b>22C-BH16-30-3</b>	<b>QC Batch</b>	<b>22C-BH16-31-1</b>	<b>22C-BH16-31-2</b>	<b>RDL</b>	<b>QC Batch</b>
<b>Volatiles</b>									
VPH (VH6 to 10 - BTEX)	mg/kg	160	8462150	60	8462150	<10	<10	10	8462150
Methyl-tert-butylether (MTBE)	mg/kg	<0.10	8467004	<0.10	8467013	<0.10	<0.10	0.10	8467004
Benzene	mg/kg	<0.0050	8467004	<0.0050	8467013	<0.0050	<0.0050	0.0050	8467004
Toluene	mg/kg	<0.020	8467004	<0.020	8467013	<0.020	<0.020	0.020	8467004
Ethylbenzene	mg/kg	<0.010	8467004	<0.010	8467013	<0.010	<0.010	0.010	8467004
m & p-Xylene	mg/kg	<0.040	8467004	<0.040	8467013	<0.040	<0.040	0.040	8467004
o-Xylene	mg/kg	<0.040	8467004	<0.040	8467013	<0.040	<0.040	0.040	8467004
Styrene	mg/kg	<0.030	8467004	<0.030	8467013	<0.030	<0.030	0.030	8467004
Xylenes (Total)	mg/kg	<0.040	8467004	<0.040	8467013	<0.040	<0.040	0.040	8467004
VH C6-C10	mg/kg	160	8467004	60	8467013	<10	<10	10	8467004
<b>Surrogate Recovery (%)</b>									
1,4-Difluorobenzene (sur.)	%	88	8467004	97	8467013	104	103		8467004
4-Bromofluorobenzene (sur.)	%	130	8467004	99	8467013	103	104		8467004
D10-ETHYLBENZENE (sur.)	%	90	8467004	95	8467013	89	88		8467004
D4-1,2-Dichloroethane (sur.)	%	83	8467004	100	8467013	96	98		8467004
RDL = Reportable Detection Limit									

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SNC LAVALIN ENVIRONMENT INC.  
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Sampler Initials: MLC

**CSR BTEX/VPH BY HS IN SOIL (SOIL)**

Maxxam ID		PZ1441	PZ1442	PZ1443	PZ1444	PZ1445		
Sampling Date		2016/11/02 14:00	2016/11/02 14:10	2016/11/02 14:45	2016/11/02 14:50	2016/11/02 15:15		
COC Number		510054-11-01	510054-11-01	510054-11-01	510054-11-01	510054-11-01		
	<b>UNITS</b>	<b>22C-BH16-32-1</b>	<b>22C-BH16-32-2</b>	<b>22C-BH16-33-1</b>	<b>22C-BH16-33-2</b>	<b>22C-BH16-34-1</b>	<b>RDL</b>	<b>QC Batch</b>
<b>Volatiles</b>								
VPH (VH6 to 10 - BTEX)	mg/kg	<10	<10	<10	<10	<10	10	8462150
Methyl-tert-butylether (MTBE)	mg/kg	<0.10	<0.10	<0.10	<0.10	<0.10	0.10	8467004
Benzene	mg/kg	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	0.0050	8467004
Toluene	mg/kg	<0.020	<0.020	<0.020	<0.020	<0.020	0.020	8467004
Ethylbenzene	mg/kg	<0.010	<0.010	<0.010	<0.010	<0.010	0.010	8467004
m & p-Xylene	mg/kg	<0.040	<0.040	<0.040	<0.040	<0.040	0.040	8467004
o-Xylene	mg/kg	<0.040	<0.040	<0.040	<0.040	<0.040	0.040	8467004
Styrene	mg/kg	<0.030	<0.030	<0.030	<0.030	<0.030	0.030	8467004
Xylenes (Total)	mg/kg	<0.040	<0.040	<0.040	<0.040	<0.040	0.040	8467004
VH C6-C10	mg/kg	<10	<10	<10	<10	<10	10	8467004
<b>Surrogate Recovery (%)</b>								
1,4-Difluorobenzene (sur.)	%	105	105	106	105	105		8467004
4-Bromofluorobenzene (sur.)	%	106	105	104	104	104		8467004
D10-ETHYLBENZENE (sur.)	%	89	89	93	86	87		8467004
D4-1,2-Dichloroethane (sur.)	%	103	96	97	98	95		8467004
RDL = Reportable Detection Limit								

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SNC LAVALIN ENVIRONMENT INC.  
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Sampler Initials: MLC

**CSR BTEX/VPH BY HS IN SOIL (SOIL)**

Maxxam ID		PZ1446	PZ1454		PZ1455		PZ1456		
Sampling Date		2016/11/02 15:20	2016/11/02 15:30		2016/11/02 15:35		2016/11/03 09:00		
COC Number		510054-11-01	510054-13-01		510054-13-01		510054-13-01		
	UNITS	22C-BH16-34-2	22C-BH16-35-1	QC Batch	22C-BH16-35-2	QC Batch	22C-BH16-36-1	RDL	QC Batch
<b>Volatiles</b>									
VPH (VH6 to 10 - BTEX)	mg/kg	<10	<10	8462150	<10	8462150	<10	10	8462150
Methyl-tert-butylether (MTBE)	mg/kg	<0.10	<0.10	8467004	<0.10	8467013	<0.10	0.10	8467004
Benzene	mg/kg	<0.0050	<0.0050	8467004	<0.0050	8467013	<0.0050	0.0050	8467004
Toluene	mg/kg	<0.020	<0.020	8467004	<0.020	8467013	<0.020	0.020	8467004
Ethylbenzene	mg/kg	<0.010	<0.010	8467004	<0.010	8467013	<0.010	0.010	8467004
m & p-Xylene	mg/kg	<0.040	<0.040	8467004	<0.040	8467013	<0.040	0.040	8467004
o-Xylene	mg/kg	<0.040	<0.040	8467004	<0.040	8467013	<0.040	0.040	8467004
Styrene	mg/kg	<0.030	<0.030	8467004	<0.030	8467013	<0.030	0.030	8467004
Xylenes (Total)	mg/kg	<0.040	<0.040	8467004	<0.040	8467013	<0.040	0.040	8467004
VH C6-C10	mg/kg	<10	<10	8467004	<10	8467013	<10	10	8467004
<b>Surrogate Recovery (%)</b>									
1,4-Difluorobenzene (sur.)	%	108	106	8467004	100	8467013	105		8467004
4-Bromofluorobenzene (sur.)	%	107	104	8467004	100	8467013	104		8467004
D10-ETHYLBENZENE (sur.)	%	91	88	8467004	97	8467013	89		8467004
D4-1,2-Dichloroethane (sur.)	%	104	99	8467004	100	8467013	96		8467004
RDL = Reportable Detection Limit									

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SNC LAVALIN ENVIRONMENT INC.  
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Sampler Initials: MLC

**CSR BTEX/VPH BY HS IN SOIL (SOIL)**

Maxxam ID		PZ1457	PZ1458		PZ1459		PZ1460		
Sampling Date		2016/11/03 09:05	2016/11/03 09:40		2016/11/03 09:45		2016/11/03 10:15		
COC Number		510054-13-01	510054-13-01		510054-13-01		510054-13-01		
	<b>UNITS</b>	<b>22C-BH16-36-2</b>	<b>22C-BH16-37-1</b>	<b>QC Batch</b>	<b>22C-BH16-37-2</b>	<b>QC Batch</b>	<b>22C-BH16-38-1</b>	<b>RDL</b>	<b>QC Batch</b>

<b>Volatiles</b>									
VPH (VH6 to 10 - BTEX)	mg/kg	<10	<10	8462150	<10	8462150	<10	10	8462150
Methyl-tert-butylether (MTBE)	mg/kg	<0.10	<0.10	8467013	<0.10	8467004	<0.10	0.10	8467013
Benzene	mg/kg	<0.0050	<0.0050	8467013	<0.0050	8467004	<0.0050	0.0050	8467013
Toluene	mg/kg	<0.020	<0.020	8467013	<0.020	8467004	<0.020	0.020	8467013
Ethylbenzene	mg/kg	<0.010	<0.010	8467013	<0.010	8467004	<0.010	0.010	8467013
m & p-Xylene	mg/kg	<0.040	<0.040	8467013	<0.040	8467004	<0.040	0.040	8467013
o-Xylene	mg/kg	<0.040	<0.040	8467013	<0.040	8467004	<0.040	0.040	8467013
Styrene	mg/kg	<0.030	<0.030	8467013	<0.030	8467004	<0.030	0.030	8467013
Xylenes (Total)	mg/kg	<0.040	<0.040	8467013	<0.040	8467004	<0.040	0.040	8467013
VH C6-C10	mg/kg	<10	<10	8467013	<10	8467004	<10	10	8467013

<b>Surrogate Recovery (%)</b>									
1,4-Difluorobenzene (sur.)	%	99	100	8467013	102	8467004	99		8467013
4-Bromofluorobenzene (sur.)	%	99	99	8467013	107	8467004	101		8467013
D10-ETHYLBENZENE (sur.)	%	96	97	8467013	103	8467004	98		8467013
D4-1,2-Dichloroethane (sur.)	%	100	99	8467013	111	8467004	103		8467013

RDL = Reportable Detection Limit



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SNC LAVALIN ENVIRONMENT INC.  
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Sampler Initials: MLC

**CSR BTEX/VPH BY HS IN SOIL (SOIL)**

Maxxam ID		PZ1461	PZ1462	PZ1469	PZ1470		
Sampling Date		2016/11/03 10:20	2016/11/03 10:25	2016/11/03 11:15	2016/11/03 11:20		
COC Number		510054-13-01	510054-13-01	510054-09-01	510054-09-01		
	<b>UNITS</b>	<b>22C-BH16-38-2</b>	<b>22C-BH16-38-3</b>	<b>22C-BH16-39-1</b>	<b>22C-BH16-39-2</b>	<b>RDL</b>	<b>QC Batch</b>
<b>Volatiles</b>							
VPH (VH6 to 10 - BTEX)	mg/kg	17	12	<10	<10	10	8462150
Methyl-tert-butylether (MTBE)	mg/kg	<0.10	<0.10	<0.10	<0.10	0.10	8467013
Benzene	mg/kg	<0.0050	<0.0050	<0.0050	<0.0050	0.0050	8467013
Toluene	mg/kg	<0.020	<0.020	<0.020	<0.020	0.020	8467013
Ethylbenzene	mg/kg	<0.010	<0.010	<0.010	<0.010	0.010	8467013
m & p-Xylene	mg/kg	<0.040	<0.040	<0.040	<0.040	0.040	8467013
o-Xylene	mg/kg	<0.040	<0.040	<0.040	<0.040	0.040	8467013
Styrene	mg/kg	<0.030	<0.030	<0.030	<0.030	0.030	8467013
Xylenes (Total)	mg/kg	<0.040	<0.040	<0.040	<0.040	0.040	8467013
VH C6-C10	mg/kg	17	12	<10	<10	10	8467013
<b>Surrogate Recovery (%)</b>							
1,4-Difluorobenzene (sur.)	%	99	100	99	101		8467013
4-Bromofluorobenzene (sur.)	%	100	101	100	100		8467013
D10-ETHYLBENZENE (sur.)	%	96	99	97	97		8467013
D4-1,2-Dichloroethane (sur.)	%	103	102	104	101		8467013
RDL = Reportable Detection Limit							

Maxxam Job #: B699547  
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SNC LAVALIN ENVIRONMENT INC.  
Client Project #: 640752  
Site Location: Watson Lake Airport  
Your P.O. #: Pending  
Sampler Initials: MLC

**LEPH & HEPH WITH PAH FOR CSR IN SOIL (SOIL)**

Maxxam ID		PZ1427		PZ1428		PZ1429		
Sampling Date		2016/11/01 13:45		2016/11/01 13:50		2016/11/01 14:15		
COC Number		510054-12-01		510054-12-01		510054-12-01		
	UNITS	22C-BH16-26-1	QC Batch	22C-BH16-26-2	QC Batch	22C-BH16-27-1	RDL	QC Batch
<b>Polycyclic Aromatics</b>								
Naphthalene	mg/kg	<0.050	8468649	<0.050	8465362	<0.050	0.050	8468442
2-Methylnaphthalene	mg/kg	<0.050	8468649	<0.050	8465362	<0.050	0.050	8468442
Acenaphthylene	mg/kg	<0.050	8468649	<0.050	8465362	<0.050	0.050	8468442
Acenaphthene	mg/kg	<0.050	8468649	<0.050	8465362	<0.050	0.050	8468442
Fluorene	mg/kg	<0.050	8468649	<0.050	8465362	<0.050	0.050	8468442
Phenanthrene	mg/kg	<0.050	8468649	<0.050	8465362	<0.050	0.050	8468442
Anthracene	mg/kg	<0.050	8468649	<0.050	8465362	<0.050	0.050	8468442
Fluoranthene	mg/kg	<0.050	8468649	<0.050	8465362	<0.050	0.050	8468442
Pyrene	mg/kg	<0.050	8468649	<0.050	8465362	<0.050	0.050	8468442
Benzo(a)anthracene	mg/kg	<0.050	8468649	<0.050	8465362	<0.050	0.050	8468442
Chrysene	mg/kg	<0.050	8468649	<0.050	8465362	<0.050	0.050	8468442
Benzo(b&j)fluoranthene	mg/kg	<0.050	8468649	<0.050	8465362	<0.050	0.050	8468442
Benzo(b)fluoranthene	mg/kg	<0.050	8468649	<0.050	8465362	<0.050	0.050	8468442
Benzo(k)fluoranthene	mg/kg	<0.050	8468649	<0.050	8465362	<0.050	0.050	8468442
Benzo(a)pyrene	mg/kg	<0.050	8468649	<0.050	8465362	<0.050	0.050	8468442
Indeno(1,2,3-cd)pyrene	mg/kg	<0.050	8468649	<0.050	8465362	<0.050	0.050	8468442
Dibenz(a,h)anthracene	mg/kg	<0.050	8468649	<0.050	8465362	<0.050	0.050	8468442
Benzo(g,h,i)perylene	mg/kg	<0.050	8468649	<0.050	8465362	<0.050	0.050	8468442
Low Molecular Weight PAH's	mg/kg	<0.050	8463127	<0.050	8463127	<0.050	0.050	8463127
High Molecular Weight PAH's	mg/kg	<0.050	8463127	<0.050	8463127	<0.050	0.050	8463127
Total PAH	mg/kg	<0.050	8463127	<0.050	8463127	<0.050	0.050	8463127
<b>Calculated Parameters</b>								
LEPH (C10-C19 less PAH)	mg/kg	<100	8462148	<100	8462148	<100	100	8462148
HEPH (C19-C32 less PAH)	mg/kg	<100	8462148	<100	8462148	<100	100	8462148
<b>Hydrocarbons</b>								
EPH (C10-C19)	mg/kg	<100	8468654	<100	8465354	<100	100	8468443
EPH (C19-C32)	mg/kg	<100	8468654	<100	8465354	<100	100	8468443
<b>Surrogate Recovery (%)</b>								
D10-ANTHRACENE (sur.)	%	92	8468649	96	8465362	110		8468442
D8-ACENAPHTHYLENE (sur.)	%	87	8468649	90	8465362	108		8468442
RDL = Reportable Detection Limit								

Maxxam Job #: B699547  
Report Date: 2016/11/16

SNC LAVALIN ENVIRONMENT INC.  
Client Project #: 640752  
Site Location: Watson Lake Airport  
Your P.O. #: Pending  
Sampler Initials: MLC

**LEPH & HEPH WITH PAH FOR CSR IN SOIL (SOIL)**

Maxxam ID		PZ1427		PZ1428		PZ1429		
Sampling Date		2016/11/01 13:45		2016/11/01 13:50		2016/11/01 14:15		
COC Number		510054-12-01		510054-12-01		510054-12-01		
	<b>UNITS</b>	<b>22C-BH16-26-1</b>	<b>QC Batch</b>	<b>22C-BH16-26-2</b>	<b>QC Batch</b>	<b>22C-BH16-27-1</b>	<b>RDL</b>	<b>QC Batch</b>
D8-NAPHTHALENE (sur.)	%	86	8468649	90	8465362	108		8468442
TERPHENYL-D14 (sur.)	%	78	8468649	87	8465362	100		8468442
O-TERPHENYL (sur.)	%	86	8468654	96	8465354	93		8468443
RDL = Reportable Detection Limit								

Maxxam Job #: B699547  
Report Date: 2016/11/16

SNC LAVALIN ENVIRONMENT INC.  
Client Project #: 640752  
Site Location: Watson Lake Airport  
Your P.O. #: Pending  
Sampler Initials: MLC

**LEPH & HEPH WITH PAH FOR CSR IN SOIL (SOIL)**

Maxxam ID		PZ1430	PZ1431	PZ1432		PZ1433	PZ1434		
Sampling Date		2016/11/01 14:20	2016/11/01 14:30	2016/11/01 14:35		2016/11/01 14:40	2016/11/02 10:00		
COC Number		510054-12-01	510054-12-01	510054-12-01		510054-12-01	510054-12-01		
	UNITS	22C-BH16-27-2	22C-BH16-28-1	22C-BH16-28-2	QC Batch	22C-BH16-28-3	22C-BH16-29-1	RDL	QC Batch
<b>Polycyclic Aromatics</b>									
Naphthalene	mg/kg	<0.050	<0.050	<0.050	8468442	<0.050	<0.050	0.050	8465362
2-Methylnaphthalene	mg/kg	<0.050	<0.050	<0.050	8468442	<0.050	<0.050	0.050	8465362
Acenaphthylene	mg/kg	<0.050	<0.050	<0.050	8468442	<0.050	<0.050	0.050	8465362
Acenaphthene	mg/kg	<0.050	<0.050	<0.050	8468442	<0.050	<0.050	0.050	8465362
Fluorene	mg/kg	<0.050	<0.050	<0.050	8468442	<0.050	<0.050	0.050	8465362
Phenanthrene	mg/kg	<0.050	<0.050	<0.050	8468442	<0.050	<0.050	0.050	8465362
Anthracene	mg/kg	<0.050	<0.050	<0.050	8468442	<0.050	<0.050	0.050	8465362
Fluoranthene	mg/kg	<0.050	<0.050	<0.050	8468442	<0.050	<0.050	0.050	8465362
Pyrene	mg/kg	<0.050	<0.050	<0.050	8468442	<0.050	<0.050	0.050	8465362
Benzo(a)anthracene	mg/kg	<0.050	<0.050	<0.050	8468442	<0.050	<0.050	0.050	8465362
Chrysene	mg/kg	<0.050	<0.050	<0.050	8468442	<0.050	<0.050	0.050	8465362
Benzo(b&j)fluoranthene	mg/kg	<0.050	<0.050	<0.050	8468442	<0.050	<0.050	0.050	8465362
Benzo(b)fluoranthene	mg/kg	<0.050	<0.050	<0.050	8468442	<0.050	<0.050	0.050	8465362
Benzo(k)fluoranthene	mg/kg	<0.050	<0.050	<0.050	8468442	<0.050	<0.050	0.050	8465362
Benzo(a)pyrene	mg/kg	<0.050	<0.050	<0.050	8468442	<0.050	<0.050	0.050	8465362
Indeno(1,2,3-cd)pyrene	mg/kg	<0.050	<0.050	<0.050	8468442	<0.050	<0.050	0.050	8465362
Dibenz(a,h)anthracene	mg/kg	<0.050	<0.050	<0.050	8468442	<0.050	<0.050	0.050	8465362
Benzo(g,h,i)perylene	mg/kg	<0.050	<0.050	<0.050	8468442	<0.050	<0.050	0.050	8465362
Low Molecular Weight PAH's	mg/kg	<0.050	<0.050	<0.050	8463127	<0.050	<0.050	0.050	8463127
High Molecular Weight PAH's	mg/kg	<0.050	<0.050	<0.050	8463127	<0.050	<0.050	0.050	8463127
Total PAH	mg/kg	<0.050	<0.050	<0.050	8463127	<0.050	<0.050	0.050	8463127
<b>Calculated Parameters</b>									
LEPH (C10-C19 less PAH)	mg/kg	<100	600	670	8463128	1200	<100	100	8463128
HEPH (C19-C32 less PAH)	mg/kg	<100	110	150	8463128	110	<100	100	8463128
<b>Hydrocarbons</b>									
EPH (C10-C19)	mg/kg	<100	600	670	8468443	1200	<100	100	8465354
EPH (C19-C32)	mg/kg	<100	110	150	8468443	110	<100	100	8465354
<b>Surrogate Recovery (%)</b>									
D10-ANTHRACENE (sur.)	%	115	118	124	8468442	101	98		8465362
D8-ACENAPHTHYLENE (sur.)	%	113	113	118	8468442	92	89		8465362
RDL = Reportable Detection Limit									

Maxxam Job #: B699547  
Report Date: 2016/11/16

SNC LAVALIN ENVIRONMENT INC.  
Client Project #: 640752  
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Your P.O. #: Pending  
Sampler Initials: MLC

**LEPH & HEPH WITH PAH FOR CSR IN SOIL (SOIL)**

Maxxam ID		PZ1430	PZ1431	PZ1432		PZ1433	PZ1434		
Sampling Date		2016/11/01 14:20	2016/11/01 14:30	2016/11/01 14:35		2016/11/01 14:40	2016/11/02 10:00		
COC Number		510054-12-01	510054-12-01	510054-12-01		510054-12-01	510054-12-01		
	<b>UNITS</b>	<b>22C-BH16-27-2</b>	<b>22C-BH16-28-1</b>	<b>22C-BH16-28-2</b>	<b>QC Batch</b>	<b>22C-BH16-28-3</b>	<b>22C-BH16-29-1</b>	<b>RDL</b>	<b>QC Batch</b>
D8-NAPHTHALENE (sur.)	%	112	114	120	8468442	88	90		8465362
TERPHENYL-D14 (sur.)	%	103	109	112	8468442	90	87		8465362
O-TERPHENYL (sur.)	%	94	92	93	8468443	101	96		8465354
RDL = Reportable Detection Limit									

Maxxam Job #: B699547  
Report Date: 2016/11/16

SNC LAVALIN ENVIRONMENT INC.  
Client Project #: 640752  
Site Location: Watson Lake Airport  
Your P.O. #: Pending  
Sampler Initials: MLC

**LEPH & HEPH WITH PAH FOR CSR IN SOIL (SOIL)**

Maxxam ID		PZ1435	PZ1436		PZ1437		PZ1438		
Sampling Date		2016/11/02 10:05	2016/11/02 11:00		2016/11/02 11:05		2016/11/02 11:10		
COC Number		510054-12-01	510054-12-01		510054-11-01		510054-11-01		
	UNITS	22C-BH16-29-2	22C-BH16-30-1	RDL	22C-BH16-30-2	RDL	22C-BH16-30-3	RDL	QC Batch
<b>Polycyclic Aromatics</b>									
Naphthalene	mg/kg	<0.050	<0.050	0.050	0.093 (1)	0.050	0.070 (1)	0.050	8465362
2-Methylnaphthalene	mg/kg	<0.050	<0.050	0.050	1.4	0.050	1.2	0.050	8465362
Acenaphthylene	mg/kg	<0.050	<0.050	0.050	<0.050	0.050	<0.050	0.050	8465362
Acenaphthene	mg/kg	<0.050	<0.050	0.050	0.84	0.050	0.67	0.050	8465362
Fluorene	mg/kg	<0.050	<0.050	0.050	0.74	0.050	0.57	0.050	8465362
Phenanthrene	mg/kg	<0.050	<0.050	0.050	0.21	0.050	0.18	0.050	8465362
Anthracene	mg/kg	<0.050	<0.050	0.050	<0.050	0.050	<0.050	0.050	8465362
Fluoranthene	mg/kg	<0.050	<0.050	0.050	<0.050	0.050	<0.050	0.050	8465362
Pyrene	mg/kg	<0.050	<0.050	0.050	<0.050	0.050	<0.050	0.050	8465362
Benzo(a)anthracene	mg/kg	<0.050	<0.050	0.050	<0.050	0.050	<0.050	0.050	8465362
Chrysene	mg/kg	<0.050	<0.050	0.050	<0.050	0.050	<0.050	0.050	8465362
Benzo(b&j)fluoranthene	mg/kg	<0.050	<0.050	0.050	<0.050	0.050	<0.050	0.050	8465362
Benzo(b)fluoranthene	mg/kg	<0.050	<0.050	0.050	<0.050	0.050	<0.050	0.050	8465362
Benzo(k)fluoranthene	mg/kg	<0.050	<0.050	0.050	<0.050	0.050	<0.050	0.050	8465362
Benzo(a)pyrene	mg/kg	<0.050	<0.050	0.050	<0.050	0.050	<0.050	0.050	8465362
Indeno(1,2,3-cd)pyrene	mg/kg	<0.050	<0.050	0.050	<0.050	0.050	<0.050	0.050	8465362
Dibenz(a,h)anthracene	mg/kg	<0.050	<0.050	0.050	<0.050	0.050	<0.050	0.050	8465362
Benzo(g,h,i)perylene	mg/kg	<0.050	<0.050	0.050	<0.050	0.050	<0.050	0.050	8465362
Low Molecular Weight PAH's	mg/kg	<0.050	<0.050	0.050	3.3	0.050	2.7	0.050	8463127
High Molecular Weight PAH's	mg/kg	<0.050	<0.050	0.050	<0.050	0.050	<0.050	0.050	8463127
Total PAH	mg/kg	<0.050	<0.050	0.050	3.3	0.050	2.7	0.050	8463127
<b>Calculated Parameters</b>									
LEPH (C10-C19 less PAH)	mg/kg	<100	<100	100	5400	200	4400	100	8463128
HEPH (C19-C32 less PAH)	mg/kg	<100	<100	100	220	200	200	100	8463128
<b>Hydrocarbons</b>									
EPH (C10-C19)	mg/kg	<100	<100	100	5400 (2)	200	4400	100	8465354
EPH (C19-C32)	mg/kg	<100	<100	100	220 (2)	200	200	100	8465354
<b>Surrogate Recovery (%)</b>									
D10-ANTHRACENE (sur.)	%	104	94		102		105		8465362
RDL = Reportable Detection Limit									
(1) Qualifying ion outside of acceptance criteria. Results are tentatively identified and potentially biased high.									
(2) Detection limits raised due to dilution to bring analyte within the calibrated range.									

Maxxam Job #: B699547  
Report Date: 2016/11/16

SNC LAVALIN ENVIRONMENT INC.  
Client Project #: 640752  
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Sampler Initials: MLC

**LEPH & HEPH WITH PAH FOR CSR IN SOIL (SOIL)**

Maxxam ID		PZ1435	PZ1436		PZ1437		PZ1438		
Sampling Date		2016/11/02 10:05	2016/11/02 11:00		2016/11/02 11:05		2016/11/02 11:10		
COC Number		510054-12-01	510054-12-01		510054-11-01		510054-11-01		
	<b>UNITS</b>	<b>22C-BH16-29-2</b>	<b>22C-BH16-30-1</b>	<b>RDL</b>	<b>22C-BH16-30-2</b>	<b>RDL</b>	<b>22C-BH16-30-3</b>	<b>RDL</b>	<b>QC Batch</b>
D8-ACENAPHTHYLENE (sur.)	%	96	90		89		85		8465362
D8-NAPHTHALENE (sur.)	%	96	92		95		92		8465362
TERPHENYL-D14 (sur.)	%	92	85		97		96		8465362
O-TERPHENYL (sur.)	%	96	96		113		106		8465354
RDL = Reportable Detection Limit									

Maxxam Job #: B699547  
Report Date: 2016/11/16

SNC LAVALIN ENVIRONMENT INC.  
Client Project #: 640752  
Site Location: Watson Lake Airport  
Your P.O. #: Pending  
Sampler Initials: MLC

**LEPH & HEPH WITH PAH FOR CSR IN SOIL (SOIL)**

Maxxam ID		PZ1439	PZ1440	PZ1441		PZ1442		
Sampling Date		2016/11/02 12:30	2016/11/02 12:35	2016/11/02 14:00		2016/11/02 14:10		
COC Number		510054-11-01	510054-11-01	510054-11-01		510054-11-01		
	<b>UNITS</b>	<b>22C-BH16-31-1</b>	<b>22C-BH16-31-2</b>	<b>22C-BH16-32-1</b>	<b>QC Batch</b>	<b>22C-BH16-32-2</b>	<b>RDL</b>	<b>QC Batch</b>
<b>Polycyclic Aromatics</b>								
Naphthalene	mg/kg	<0.050	<0.050	<0.050	8465362	<0.050	0.050	8468442
2-Methylnaphthalene	mg/kg	<0.050	<0.050	<0.050	8465362	<0.050	0.050	8468442
Acenaphthylene	mg/kg	<0.050	<0.050	<0.050	8465362	<0.050	0.050	8468442
Acenaphthene	mg/kg	<0.050	<0.050	<0.050	8465362	<0.050	0.050	8468442
Fluorene	mg/kg	<0.050	<0.050	<0.050	8465362	<0.050	0.050	8468442
Phenanthrene	mg/kg	<0.050	<0.050	<0.050	8465362	<0.050	0.050	8468442
Anthracene	mg/kg	<0.050	<0.050	<0.050	8465362	<0.050	0.050	8468442
Fluoranthene	mg/kg	<0.050	<0.050	<0.050	8465362	<0.050	0.050	8468442
Pyrene	mg/kg	<0.050	<0.050	<0.050	8465362	<0.050	0.050	8468442
Benzo(a)anthracene	mg/kg	<0.050	<0.050	<0.050	8465362	<0.050	0.050	8468442
Chrysene	mg/kg	<0.050	<0.050	<0.050	8465362	<0.050	0.050	8468442
Benzo(b&j)fluoranthene	mg/kg	<0.050	<0.050	<0.050	8465362	<0.050	0.050	8468442
Benzo(b)fluoranthene	mg/kg	<0.050	<0.050	<0.050	8465362	<0.050	0.050	8468442
Benzo(k)fluoranthene	mg/kg	<0.050	<0.050	<0.050	8465362	<0.050	0.050	8468442
Benzo(a)pyrene	mg/kg	<0.050	<0.050	<0.050	8465362	<0.050	0.050	8468442
Indeno(1,2,3-cd)pyrene	mg/kg	<0.050	<0.050	<0.050	8465362	<0.050	0.050	8468442
Dibenz(a,h)anthracene	mg/kg	<0.050	<0.050	<0.050	8465362	<0.050	0.050	8468442
Benzo(g,h,i)perylene	mg/kg	0.059	<0.050	<0.050	8465362	<0.050	0.050	8468442
Low Molecular Weight PAH's	mg/kg	<0.050	<0.050	<0.050	8463127	<0.050	0.050	8463127
High Molecular Weight PAH's	mg/kg	0.059	<0.050	<0.050	8463127	<0.050	0.050	8463127
Total PAH	mg/kg	0.059	<0.050	<0.050	8463127	<0.050	0.050	8463127
<b>Calculated Parameters</b>								
LEPH (C10-C19 less PAH)	mg/kg	<100	<100	<100	8463128	<100	100	8463128
HEPH (C19-C32 less PAH)	mg/kg	870	<100	<100	8463128	<100	100	8463128
<b>Hydrocarbons</b>								
EPH (C10-C19)	mg/kg	<100	<100	<100	8465354	<100	100	8468443
EPH (C19-C32)	mg/kg	870	<100	<100	8465354	<100	100	8468443
<b>Surrogate Recovery (%)</b>								
D10-ANTHRACENE (sur.)	%	96	95	101	8465362	122		8468442
D8-ACENAPHTHYLENE (sur.)	%	90	89	93	8465362	116		8468442
RDL = Reportable Detection Limit								



Maxxam Job #: B699547  
Report Date: 2016/11/16

SNC LAVALIN ENVIRONMENT INC.  
Client Project #: 640752  
Site Location: Watson Lake Airport  
Your P.O. #: Pending  
Sampler Initials: MLC

**LEPH & HEPH WITH PAH FOR CSR IN SOIL (SOIL)**

Maxxam ID		PZ1439	PZ1440	PZ1441		PZ1442		
Sampling Date		2016/11/02 12:30	2016/11/02 12:35	2016/11/02 14:00		2016/11/02 14:10		
COC Number		510054-11-01	510054-11-01	510054-11-01		510054-11-01		
	<b>UNITS</b>	<b>22C-BH16-31-1</b>	<b>22C-BH16-31-2</b>	<b>22C-BH16-32-1</b>	<b>QC Batch</b>	<b>22C-BH16-32-2</b>	<b>RDL</b>	<b>QC Batch</b>
D8-NAPHTHALENE (sur.)	%	91	87	93	8465362	114		8468442
TERPHENYL-D14 (sur.)	%	86	85	90	8465362	107		8468442
O-TERPHENYL (sur.)	%	94	96	96	8465354	93		8468443
RDL = Reportable Detection Limit								

Maxxam Job #: B699547  
Report Date: 2016/11/16

SNC LAVALIN ENVIRONMENT INC.  
Client Project #: 640752  
Site Location: Watson Lake Airport  
Your P.O. #: Pending  
Sampler Initials: MLC

**LEPH & HEPH WITH PAH FOR CSR IN SOIL (SOIL)**

Maxxam ID		PZ1443		PZ1444		PZ1445		
Sampling Date		2016/11/02 14:45		2016/11/02 14:50		2016/11/02 15:15		
COC Number		510054-11-01		510054-11-01		510054-11-01		
	UNITS	22C-BH16-33-1	QC Batch	22C-BH16-33-2	QC Batch	22C-BH16-34-1	RDL	QC Batch
<b>Polycyclic Aromatics</b>								
Naphthalene	mg/kg	<0.050	8465362	<0.050	8468442	<0.050	0.050	8465362
2-Methylnaphthalene	mg/kg	<0.050	8465362	<0.050	8468442	<0.050	0.050	8465362
Acenaphthylene	mg/kg	<0.050	8465362	<0.050	8468442	<0.050	0.050	8465362
Acenaphthene	mg/kg	<0.050	8465362	<0.050	8468442	<0.050	0.050	8465362
Fluorene	mg/kg	<0.050	8465362	<0.050	8468442	<0.050	0.050	8465362
Phenanthrene	mg/kg	0.21	8465362	<0.050	8468442	<0.050	0.050	8465362
Anthracene	mg/kg	<0.050	8465362	<0.050	8468442	<0.050	0.050	8465362
Fluoranthene	mg/kg	0.31	8465362	<0.050	8468442	<0.050	0.050	8465362
Pyrene	mg/kg	0.31	8465362	<0.050	8468442	<0.050	0.050	8465362
Benzo(a)anthracene	mg/kg	0.13	8465362	<0.050	8468442	<0.050	0.050	8465362
Chrysene	mg/kg	0.15	8465362	<0.050	8468442	<0.050	0.050	8465362
Benzo(b&j)fluoranthene	mg/kg	0.17	8465362	<0.050	8468442	<0.050	0.050	8465362
Benzo(b)fluoranthene	mg/kg	0.095	8465362	<0.050	8468442	<0.050	0.050	8465362
Benzo(k)fluoranthene	mg/kg	0.055	8465362	<0.050	8468442	<0.050	0.050	8465362
Benzo(a)pyrene	mg/kg	0.14	8465362	<0.050	8468442	<0.050	0.050	8465362
Indeno(1,2,3-cd)pyrene	mg/kg	0.068	8465362	<0.050	8468442	<0.050	0.050	8465362
Dibenz(a,h)anthracene	mg/kg	<0.050	8465362	<0.050	8468442	<0.050	0.050	8465362
Benzo(g,h,i)perylene	mg/kg	0.087	8465362	<0.050	8468442	<0.050	0.050	8465362
Low Molecular Weight PAH's	mg/kg	0.21	8463127	<0.050	8463127	<0.050	0.050	8463127
High Molecular Weight PAH's	mg/kg	1.4	8463127	<0.050	8463127	<0.050	0.050	8463127
Total PAH	mg/kg	1.6	8463127	<0.050	8463127	<0.050	0.050	8463127
<b>Calculated Parameters</b>								
LEPH (C10-C19 less PAH)	mg/kg	<100	8463128	<100	8463128	<100	100	8463128
HEPH (C19-C32 less PAH)	mg/kg	260	8463128	<100	8463128	<100	100	8463128
<b>Hydrocarbons</b>								
EPH (C10-C19)	mg/kg	<100	8465354	<100	8468443	<100	100	8465354
EPH (C19-C32)	mg/kg	260	8465354	<100	8468443	<100	100	8465354
<b>Surrogate Recovery (%)</b>								
D10-ANTHRACENE (sur.)	%	95	8465362	118	8468442	95		8465362
D8-ACENAPHTHYLENE (sur.)	%	92	8465362	114	8468442	88		8465362
RDL = Reportable Detection Limit								

Maxxam Job #: B699547  
Report Date: 2016/11/16

SNC LAVALIN ENVIRONMENT INC.  
Client Project #: 640752  
Site Location: Watson Lake Airport  
Your P.O. #: Pending  
Sampler Initials: MLC

**LEPH & HEPH WITH PAH FOR CSR IN SOIL (SOIL)**

Maxxam ID		PZ1443		PZ1444		PZ1445		
Sampling Date		2016/11/02 14:45		2016/11/02 14:50		2016/11/02 15:15		
COC Number		510054-11-01		510054-11-01		510054-11-01		
	<b>UNITS</b>	<b>22C-BH16-33-1</b>	<b>QC Batch</b>	<b>22C-BH16-33-2</b>	<b>QC Batch</b>	<b>22C-BH16-34-1</b>	<b>RDL</b>	<b>QC Batch</b>
D8-NAPHTHALENE (sur.)	%	93	8465362	113	8468442	88		8465362
TERPHENYL-D14 (sur.)	%	84	8465362	102	8468442	85		8465362
O-TERPHENYL (sur.)	%	96	8465354	90	8468443	96		8465354
RDL = Reportable Detection Limit								

Maxxam Job #: B699547  
Report Date: 2016/11/16

SNC LAVALIN ENVIRONMENT INC.  
Client Project #: 640752  
Site Location: Watson Lake Airport  
Your P.O. #: Pending  
Sampler Initials: MLC

**LEPH & HEPH WITH PAH FOR CSR IN SOIL (SOIL)**

Maxxam ID		PZ1446	PZ1454	PZ1455		PZ1456		
Sampling Date		2016/11/02 15:20	2016/11/02 15:30	2016/11/02 15:35		2016/11/03 09:00		
COC Number		510054-11-01	510054-13-01	510054-13-01		510054-13-01		
	<b>UNITS</b>	<b>22C-BH16-34-2</b>	<b>22C-BH16-35-1</b>	<b>22C-BH16-35-2</b>	<b>QC Batch</b>	<b>22C-BH16-36-1</b>	<b>RDL</b>	<b>QC Batch</b>
<b>Polycyclic Aromatics</b>								
Naphthalene	mg/kg	<0.050	<0.050	<0.050	8468442	<0.050	0.050	8468649
2-Methylnaphthalene	mg/kg	<0.050	<0.050	<0.050	8468442	<0.050	0.050	8468649
Acenaphthylene	mg/kg	<0.050	<0.050	<0.050	8468442	<0.050	0.050	8468649
Acenaphthene	mg/kg	<0.050	<0.050	<0.050	8468442	<0.050	0.050	8468649
Fluorene	mg/kg	<0.050	<0.050	<0.050	8468442	<0.050	0.050	8468649
Phenanthrene	mg/kg	<0.050	<0.050	<0.050	8468442	<0.050	0.050	8468649
Anthracene	mg/kg	<0.050	<0.050	<0.050	8468442	<0.050	0.050	8468649
Fluoranthene	mg/kg	<0.050	<0.050	<0.050	8468442	<0.050	0.050	8468649
Pyrene	mg/kg	<0.050	<0.050	<0.050	8468442	<0.050	0.050	8468649
Benzo(a)anthracene	mg/kg	<0.050	<0.050	<0.050	8468442	<0.050	0.050	8468649
Chrysene	mg/kg	<0.050	<0.050	<0.050	8468442	<0.050	0.050	8468649
Benzo(b&j)fluoranthene	mg/kg	<0.050	<0.050	<0.050	8468442	<0.050	0.050	8468649
Benzo(b)fluoranthene	mg/kg	<0.050	<0.050	<0.050	8468442	<0.050	0.050	8468649
Benzo(k)fluoranthene	mg/kg	<0.050	<0.050	<0.050	8468442	<0.050	0.050	8468649
Benzo(a)pyrene	mg/kg	<0.050	<0.050	<0.050	8468442	<0.050	0.050	8468649
Indeno(1,2,3-cd)pyrene	mg/kg	<0.050	<0.050	<0.050	8468442	<0.050	0.050	8468649
Dibenz(a,h)anthracene	mg/kg	<0.050	<0.050	<0.050	8468442	<0.050	0.050	8468649
Benzo(g,h,i)perylene	mg/kg	<0.050	<0.050	<0.050	8468442	<0.050	0.050	8468649
Low Molecular Weight PAH's	mg/kg	<0.050	<0.050	<0.050	8463127	<0.050	0.050	8463127
High Molecular Weight PAH's	mg/kg	<0.050	<0.050	<0.050	8463127	<0.050	0.050	8463127
Total PAH	mg/kg	<0.050	<0.050	<0.050	8463127	<0.050	0.050	8463127
<b>Calculated Parameters</b>								
LEPH (C10-C19 less PAH)	mg/kg	<100	<100	<100	8463128	<100	100	8463128
HEPH (C19-C32 less PAH)	mg/kg	<100	<100	<100	8463128	<100	100	8463128
<b>Hydrocarbons</b>								
EPH (C10-C19)	mg/kg	<100	<100	<100	8468443	<100	100	8468654
EPH (C19-C32)	mg/kg	<100	<100	<100	8468443	<100	100	8468654
<b>Surrogate Recovery (%)</b>								
D10-ANTHRACENE (sur.)	%	120	126	116	8468442	88		8468649
D8-ACENAPHTHYLENE (sur.)	%	116	121	106	8468442	82		8468649
RDL = Reportable Detection Limit								

Maxxam Job #: B699547  
Report Date: 2016/11/16

SNC LAVALIN ENVIRONMENT INC.  
Client Project #: 640752  
Site Location: Watson Lake Airport  
Your P.O. #: Pending  
Sampler Initials: MLC

**LEPH & HEPH WITH PAH FOR CSR IN SOIL (SOIL)**

Maxxam ID		PZ1446	PZ1454	PZ1455		PZ1456		
Sampling Date		2016/11/02 15:20	2016/11/02 15:30	2016/11/02 15:35		2016/11/03 09:00		
COC Number		510054-11-01	510054-13-01	510054-13-01		510054-13-01		
	<b>UNITS</b>	<b>22C-BH16-34-2</b>	<b>22C-BH16-35-1</b>	<b>22C-BH16-35-2</b>	<b>QC Batch</b>	<b>22C-BH16-36-1</b>	<b>RDL</b>	<b>QC Batch</b>
D8-NAPHTHALENE (sur.)	%	117	121	105	8468442	83		8468649
TERPHENYL-D14 (sur.)	%	107	112	92	8468442	74		8468649
O-TERPHENYL (sur.)	%	91	92	89	8468443	92		8468654
RDL = Reportable Detection Limit								

Maxxam Job #: B699547  
Report Date: 2016/11/16

SNC LAVALIN ENVIRONMENT INC.  
Client Project #: 640752  
Site Location: Watson Lake Airport  
Your P.O. #: Pending  
Sampler Initials: MLC

**LEPH & HEPH WITH PAH FOR CSR IN SOIL (SOIL)**

Maxxam ID		PZ1457		PZ1458		PZ1459	PZ1460		
Sampling Date		2016/11/03 09:05		2016/11/03 09:40		2016/11/03 09:45	2016/11/03 10:15		
COC Number		510054-13-01		510054-13-01		510054-13-01	510054-13-01		
	<b>UNITS</b>	<b>22C-BH16-36-2</b>	<b>QC Batch</b>	<b>22C-BH16-37-1</b>	<b>QC Batch</b>	<b>22C-BH16-37-2</b>	<b>22C-BH16-38-1</b>	<b>RDL</b>	<b>QC Batch</b>

<b>Polycyclic Aromatics</b>									
Naphthalene	mg/kg	<0.050	8466200	<0.050	8468442	<0.050	<0.050	0.050	8468649
2-Methylnaphthalene	mg/kg	<0.050	8466200	<0.050	8468442	<0.050	<0.050	0.050	8468649
Acenaphthylene	mg/kg	<0.050	8466200	<0.050	8468442	<0.050	<0.050	0.050	8468649
Acenaphthene	mg/kg	<0.050	8466200	<0.050	8468442	<0.050	<0.050	0.050	8468649
Fluorene	mg/kg	<0.050	8466200	<0.050	8468442	<0.050	<0.050	0.050	8468649
Phenanthrene	mg/kg	<0.050	8466200	<0.050	8468442	<0.050	<0.050	0.050	8468649
Anthracene	mg/kg	<0.050	8466200	<0.050	8468442	<0.050	<0.050	0.050	8468649
Fluoranthene	mg/kg	<0.050	8466200	<0.050	8468442	<0.050	<0.050	0.050	8468649
Pyrene	mg/kg	<0.050	8466200	<0.050	8468442	<0.050	<0.050	0.050	8468649
Benzo(a)anthracene	mg/kg	<0.050	8466200	<0.050	8468442	<0.050	<0.050	0.050	8468649
Chrysene	mg/kg	<0.050	8466200	<0.050	8468442	<0.050	<0.050	0.050	8468649
Benzo(b&j)fluoranthene	mg/kg	<0.050	8466200	<0.050	8468442	<0.050	<0.050	0.050	8468649
Benzo(b)fluoranthene	mg/kg	<0.050	8466200	<0.050	8468442	<0.050	<0.050	0.050	8468649
Benzo(k)fluoranthene	mg/kg	<0.050	8466200	<0.050	8468442	<0.050	<0.050	0.050	8468649
Benzo(a)pyrene	mg/kg	<0.050	8466200	<0.050	8468442	<0.050	<0.050	0.050	8468649
Indeno(1,2,3-cd)pyrene	mg/kg	<0.050	8466200	<0.050	8468442	<0.050	<0.050	0.050	8468649
Dibenz(a,h)anthracene	mg/kg	<0.050	8466200	<0.050	8468442	<0.050	<0.050	0.050	8468649
Benzo(g,h,i)perylene	mg/kg	<0.050	8466200	<0.050	8468442	<0.050	<0.050	0.050	8468649
Low Molecular Weight PAH`s	mg/kg	<0.050	8463127	<0.050	8463127	<0.050	<0.050	0.050	8463127
High Molecular Weight PAH`s	mg/kg	<0.050	8463127	<0.050	8463127	<0.050	<0.050	0.050	8463127
Total PAH	mg/kg	<0.050	8463127	<0.050	8463127	<0.050	<0.050	0.050	8463127
<b>Calculated Parameters</b>									
LEPH (C10-C19 less PAH)	mg/kg	<100	8463128	<100	8463128	<100	<100	100	8463128
HEPH (C19-C32 less PAH)	mg/kg	<100	8463128	<100	8463128	<100	<100	100	8463128
<b>Hydrocarbons</b>									
EPH (C10-C19)	mg/kg	<100	8466201	<100	8468443	<100	<100	100	8468654
EPH (C19-C32)	mg/kg	<100	8466201	<100	8468443	<100	<100	100	8468654
<b>Surrogate Recovery (%)</b>									
D10-ANTHRACENE (sur.)	%	99	8466200	128	8468442	98	98		8468649
D8-ACENAPHTHYLENE (sur.)	%	94	8466200	127	8468442	89	89		8468649
RDL = Reportable Detection Limit									

Maxxam Job #: B699547  
Report Date: 2016/11/16

SNC LAVALIN ENVIRONMENT INC.  
Client Project #: 640752  
Site Location: Watson Lake Airport  
Your P.O. #: Pending  
Sampler Initials: MLC

**LEPH & HEPH WITH PAH FOR CSR IN SOIL (SOIL)**

Maxxam ID		PZ1457		PZ1458		PZ1459	PZ1460		
Sampling Date		2016/11/03 09:05		2016/11/03 09:40		2016/11/03 09:45	2016/11/03 10:15		
COC Number		510054-13-01		510054-13-01		510054-13-01	510054-13-01		
	<b>UNITS</b>	<b>22C-BH16-36-2</b>	<b>QC Batch</b>	<b>22C-BH16-37-1</b>	<b>QC Batch</b>	<b>22C-BH16-37-2</b>	<b>22C-BH16-38-1</b>	<b>RDL</b>	<b>QC Batch</b>
D8-NAPHTHALENE (sur.)	%	93	8466200	126	8468442	88	92		8468649
TERPHENYL-D14 (sur.)	%	81	8466200	116	8468442	81	81		8468649
O-TERPHENYL (sur.)	%	98	8466201	91	8468443	92	89		8468654
RDL = Reportable Detection Limit									

Maxxam Job #: B699547  
Report Date: 2016/11/16

SNC LAVALIN ENVIRONMENT INC.  
Client Project #: 640752  
Site Location: Watson Lake Airport  
Your P.O. #: Pending  
Sampler Initials: MLC

**LEPH & HEPH WITH PAH FOR CSR IN SOIL (SOIL)**

Maxxam ID		PZ1461	PZ1462	PZ1469	PZ1470		
Sampling Date		2016/11/03 10:20	2016/11/03 10:25	2016/11/03 11:15	2016/11/03 11:20		
COC Number		510054-13-01	510054-13-01	510054-09-01	510054-09-01		
	<b>UNITS</b>	<b>22C-BH16-38-2</b>	<b>22C-BH16-38-3</b>	<b>22C-BH16-39-1</b>	<b>22C-BH16-39-2</b>	<b>RDL</b>	<b>QC Batch</b>
<b>Polycyclic Aromatics</b>							
Naphthalene	mg/kg	<0.050	<0.050	<0.050	<0.050	0.050	8468649
2-Methylnaphthalene	mg/kg	<0.050	<0.050	<0.050	<0.050	0.050	8468649
Acenaphthylene	mg/kg	<0.050	<0.050	<0.050	<0.050	0.050	8468649
Acenaphthene	mg/kg	<0.050	<0.050	<0.050	<0.050	0.050	8468649
Fluorene	mg/kg	<0.050	<0.050	<0.050	<0.050	0.050	8468649
Phenanthrene	mg/kg	<0.050	<0.050	<0.050	<0.050	0.050	8468649
Anthracene	mg/kg	<0.050	<0.050	<0.050	<0.050	0.050	8468649
Fluoranthene	mg/kg	<0.050	<0.050	<0.050	<0.050	0.050	8468649
Pyrene	mg/kg	<0.050	<0.050	<0.050	<0.050	0.050	8468649
Benzo(a)anthracene	mg/kg	<0.050	<0.050	<0.050	<0.050	0.050	8468649
Chrysene	mg/kg	<0.050	<0.050	<0.050	<0.050	0.050	8468649
Benzo(b&j)fluoranthene	mg/kg	<0.050	<0.050	<0.050	<0.050	0.050	8468649
Benzo(b)fluoranthene	mg/kg	<0.050	<0.050	<0.050	<0.050	0.050	8468649
Benzo(k)fluoranthene	mg/kg	<0.050	<0.050	<0.050	<0.050	0.050	8468649
Benzo(a)pyrene	mg/kg	<0.050	<0.050	<0.050	<0.050	0.050	8468649
Indeno(1,2,3-cd)pyrene	mg/kg	<0.050	<0.050	<0.050	<0.050	0.050	8468649
Dibenz(a,h)anthracene	mg/kg	<0.050	<0.050	<0.050	<0.050	0.050	8468649
Benzo(g,h,i)perylene	mg/kg	<0.050	<0.050	<0.050	<0.050	0.050	8468649
Low Molecular Weight PAH's	mg/kg	<0.050	<0.050	<0.050	<0.050	0.050	8463127
High Molecular Weight PAH's	mg/kg	<0.050	<0.050	<0.050	<0.050	0.050	8463127
Total PAH	mg/kg	<0.050	<0.050	<0.050	<0.050	0.050	8463127
<b>Calculated Parameters</b>							
LEPH (C10-C19 less PAH)	mg/kg	<100	<100	<100	<100	100	8463128
HEPH (C19-C32 less PAH)	mg/kg	<100	<100	<100	<100	100	8463128
<b>Hydrocarbons</b>							
EPH (C10-C19)	mg/kg	<100	<100	<100	<100	100	8468654
EPH (C19-C32)	mg/kg	<100	<100	<100	<100	100	8468654
<b>Surrogate Recovery (%)</b>							
D10-ANTHRACENE (sur.)	%	99	100	101	95		8468649
D8-ACENAPHTHYLENE (sur.)	%	90	92	89	88		8468649
RDL = Reportable Detection Limit							



Maxxam Job #: B699547  
Report Date: 2016/11/16

SNC LAVALIN ENVIRONMENT INC.  
Client Project #: 640752  
Site Location: Watson Lake Airport  
Your P.O. #: Pending  
Sampler Initials: MLC

**LEPH & HEPH WITH PAH FOR CSR IN SOIL (SOIL)**

Maxxam ID		PZ1461	PZ1462	PZ1469	PZ1470		
Sampling Date		2016/11/03 10:20	2016/11/03 10:25	2016/11/03 11:15	2016/11/03 11:20		
COC Number		510054-13-01	510054-13-01	510054-09-01	510054-09-01		
	<b>UNITS</b>	<b>22C-BH16-38-2</b>	<b>22C-BH16-38-3</b>	<b>22C-BH16-39-1</b>	<b>22C-BH16-39-2</b>	<b>RDL</b>	<b>QC Batch</b>
D8-NAPHTHALENE (sur.)	%	93	98	97	90		8468649
TERPHENYL-D14 (sur.)	%	82	83	82	79		8468649
O-TERPHENYL (sur.)	%	92	92	91	92		8468654
RDL = Reportable Detection Limit							

Maxxam Job #: B699547  
Report Date: 2016/11/16

SNC LAVALIN ENVIRONMENT INC.  
Client Project #: 640752  
Site Location: Watson Lake Airport  
Your P.O. #: Pending  
Sampler Initials: MLC

**CSR/CCME METALS IN SOIL (SOIL)**

Maxxam ID		PZ1427	PZ1429	PZ1431	PZ1432	PZ1434		
Sampling Date		2016/11/01 13:45	2016/11/01 14:15	2016/11/01 14:30	2016/11/01 14:35	2016/11/02 10:00		
COC Number		510054-12-01	510054-12-01	510054-12-01	510054-12-01	510054-12-01		
	<b>UNITS</b>	<b>22C-BH16-26-1</b>	<b>22C-BH16-27-1</b>	<b>22C-BH16-28-1</b>	<b>22C-BH16-28-2</b>	<b>22C-BH16-29-1</b>	<b>RDL</b>	<b>QC Batch</b>

<b>Physical Properties</b>								
Soluble (2:1) pH	pH	7.05	6.62	6.69	6.65	7.16	N/A	8465002
<b>Total Metals by ICPMS</b>								
Total Aluminum (Al)	mg/kg	4660	8590	4070	3810	4330	100	8464998
Total Antimony (Sb)	mg/kg	0.42	0.40	0.43	0.47	0.52	0.10	8464998
Total Arsenic (As)	mg/kg	4.00	4.97	5.80	6.20	4.09	0.50	8464998
Total Barium (Ba)	mg/kg	94.0	113	49.2	46.6	74.2	0.10	8464998
Total Beryllium (Be)	mg/kg	<0.40	<0.40	<0.40	<0.40	<0.40	0.40	8464998
Total Bismuth (Bi)	mg/kg	<0.10	0.11	<0.10	<0.10	<0.10	0.10	8464998
Total Cadmium (Cd)	mg/kg	0.174	0.128	0.107	0.121	0.188	0.050	8464998
Total Calcium (Ca)	mg/kg	1240	1680	798	685	1240	100	8464998
Total Chromium (Cr)	mg/kg	13.4	23.5	17.0	14.2	12.5	1.0	8464998
Total Cobalt (Co)	mg/kg	6.07	6.26	4.99	4.22	4.51	0.30	8464998
Total Copper (Cu)	mg/kg	9.44	8.03	9.87	9.33	9.42	0.50	8464998
Total Iron (Fe)	mg/kg	10300	16400	10200	10300	9700	100	8464998
Total Lead (Pb)	mg/kg	5.96	6.04	5.57	5.12	11.3	0.10	8464998
Total Lithium (Li)	mg/kg	<5.0	6.9	<5.0	<5.0	<5.0	5.0	8464998
Total Magnesium (Mg)	mg/kg	2130	2830	2600	2070	1990	100	8464998
Total Manganese (Mn)	mg/kg	275	295	187	165	218	0.20	8464998
Total Mercury (Hg)	mg/kg	0.052	<0.050	<0.050	0.109	<0.050	0.050	8464998
Total Molybdenum (Mo)	mg/kg	0.38	0.58	0.41	0.44	0.34	0.10	8464998
Total Nickel (Ni)	mg/kg	14.1	16.4	17.2	14.8	13.9	0.80	8464998
Total Phosphorus (P)	mg/kg	403	653	224	199	302	10	8464998
Total Potassium (K)	mg/kg	346	401	351	335	356	100	8464998
Total Selenium (Se)	mg/kg	<0.50	<0.50	<0.50	<0.50	<0.50	0.50	8464998
Total Silver (Ag)	mg/kg	0.073	0.074	<0.050	<0.050	0.057	0.050	8464998
Total Sodium (Na)	mg/kg	<100	<100	<100	<100	<100	100	8464998
Total Strontium (Sr)	mg/kg	9.58	8.80	4.78	4.09	7.11	0.10	8464998
Total Thallium (Tl)	mg/kg	<0.050	0.052	<0.050	<0.050	<0.050	0.050	8464998
Total Tin (Sn)	mg/kg	0.52	0.32	0.16	0.14	0.34	0.10	8464998
Total Titanium (Ti)	mg/kg	156	258	116	113	131	1.0	8464998

RDL = Reportable Detection Limit

N/A = Not Applicable

Maxxam Job #: B699547  
Report Date: 2016/11/16

SNC LAVALIN ENVIRONMENT INC.  
Client Project #: 640752  
Site Location: Watson Lake Airport  
Your P.O. #: Pending  
Sampler Initials: MLC

**CSR/CCME METALS IN SOIL (SOIL)**

Maxxam ID		PZ1427	PZ1429	PZ1431	PZ1432	PZ1434		
Sampling Date		2016/11/01 13:45	2016/11/01 14:15	2016/11/01 14:30	2016/11/01 14:35	2016/11/02 10:00		
COC Number		510054-12-01	510054-12-01	510054-12-01	510054-12-01	510054-12-01		
	<b>UNITS</b>	<b>22C-BH16-26-1</b>	<b>22C-BH16-27-1</b>	<b>22C-BH16-28-1</b>	<b>22C-BH16-28-2</b>	<b>22C-BH16-29-1</b>	<b>RDL</b>	<b>QC Batch</b>
Total Uranium (U)	mg/kg	0.285	0.321	0.279	0.263	0.309	0.050	8464998
Total Vanadium (V)	mg/kg	14.9	24.6	12.9	12.7	14.3	2.0	8464998
Total Zinc (Zn)	mg/kg	30.5	39.5	23.1	21.3	33.1	1.0	8464998
Total Zirconium (Zr)	mg/kg	0.73	0.91	1.06	1.09	0.67	0.50	8464998
RDL = Reportable Detection Limit								

Maxxam Job #: B699547  
Report Date: 2016/11/16

SNC LAVALIN ENVIRONMENT INC.  
Client Project #: 640752  
Site Location: Watson Lake Airport  
Your P.O. #: Pending  
Sampler Initials: MLC

**CSR/CCME METALS IN SOIL (SOIL)**

Maxxam ID		PZ1436	PZ1439	PZ1441	PZ1443	PZ1445		
Sampling Date		2016/11/02 11:00	2016/11/02 12:30	2016/11/02 14:00	2016/11/02 14:45	2016/11/02 15:15		
COC Number		510054-12-01	510054-11-01	510054-11-01	510054-11-01	510054-11-01		
	<b>UNITS</b>	<b>22C-BH16-30-1</b>	<b>22C-BH16-31-1</b>	<b>22C-BH16-32-1</b>	<b>22C-BH16-33-1</b>	<b>22C-BH16-34-1</b>	<b>RDL</b>	<b>QC Batch</b>

<b>Physical Properties</b>								
Soluble (2:1) pH	pH	8.28	7.12	7.44	6.72	6.57	N/A	8465002
<b>Total Metals by ICPMS</b>								
Total Aluminum (Al)	mg/kg	4050	5370	3910	9880	6860	100	8464998
Total Antimony (Sb)	mg/kg	0.30	0.64	0.64	0.53	0.60	0.10	8464998
Total Arsenic (As)	mg/kg	3.91	4.31	4.11	6.23	5.26	0.50	8464998
Total Barium (Ba)	mg/kg	66.5	121	101	274	104	0.10	8464998
Total Beryllium (Be)	mg/kg	<0.40	<0.40	<0.40	0.46	<0.40	0.40	8464998
Total Bismuth (Bi)	mg/kg	<0.10	<0.10	<0.10	0.13	0.10	0.10	8464998
Total Cadmium (Cd)	mg/kg	0.077	0.344	0.488	0.545	0.210	0.050	8464998
Total Calcium (Ca)	mg/kg	2050	1870	1540	6150	1410	100	8464998
Total Chromium (Cr)	mg/kg	11.6	18.3	16.7	25.7	21.0	1.0	8464998
Total Cobalt (Co)	mg/kg	3.48	5.55	5.65	7.17	6.09	0.30	8464998
Total Copper (Cu)	mg/kg	5.66	11.8	19.1	20.3	10.7	0.50	8464998
Total Iron (Fe)	mg/kg	8310	12000	9420	19500	14300	100	8464998
Total Lead (Pb)	mg/kg	3.84	55.0	76.7	27.5	8.05	0.10	8464998
Total Lithium (Li)	mg/kg	<5.0	5.3	<5.0	9.6	5.6	5.0	8464998
Total Magnesium (Mg)	mg/kg	1740	2460	2000	2890	2760	100	8464998
Total Manganese (Mn)	mg/kg	140	252	358	564	408	0.20	8464998
Total Mercury (Hg)	mg/kg	<0.050	0.056	0.069	0.069	0.057	0.050	8464998
Total Molybdenum (Mo)	mg/kg	0.34	0.57	0.75	0.94	0.50	0.10	8464998
Total Nickel (Ni)	mg/kg	10.7	16.5	14.3	21.5	19.8	0.80	8464998
Total Phosphorus (P)	mg/kg	357	370	301	1170	443	10	8464998
Total Potassium (K)	mg/kg	300	430	360	625	405	100	8464998
Total Selenium (Se)	mg/kg	<0.50	<0.50	<0.50	<0.50	<0.50	0.50	8464998
Total Silver (Ag)	mg/kg	<0.050	0.070	0.079	0.180	0.063	0.050	8464998
Total Sodium (Na)	mg/kg	<100	<100	<100	<100	<100	100	8464998
Total Strontium (Sr)	mg/kg	9.57	10.3	8.17	29.0	8.18	0.10	8464998
Total Thallium (Tl)	mg/kg	<0.050	<0.050	<0.050	0.083	0.056	0.050	8464998
Total Tin (Sn)	mg/kg	0.14	0.60	1.76	0.55	0.33	0.10	8464998
Total Titanium (Ti)	mg/kg	130	160	148	199	211	1.0	8464998
RDL = Reportable Detection Limit								
N/A = Not Applicable								

Maxxam Job #: B699547  
Report Date: 2016/11/16

SNC LAVALIN ENVIRONMENT INC.  
Client Project #: 640752  
Site Location: Watson Lake Airport  
Your P.O. #: Pending  
Sampler Initials: MLC

**CSR/CCME METALS IN SOIL (SOIL)**

Maxxam ID		PZ1436	PZ1439	PZ1441	PZ1443	PZ1445		
Sampling Date		2016/11/02 11:00	2016/11/02 12:30	2016/11/02 14:00	2016/11/02 14:45	2016/11/02 15:15		
COC Number		510054-12-01	510054-11-01	510054-11-01	510054-11-01	510054-11-01		
	<b>UNITS</b>	<b>22C-BH16-30-1</b>	<b>22C-BH16-31-1</b>	<b>22C-BH16-32-1</b>	<b>22C-BH16-33-1</b>	<b>22C-BH16-34-1</b>	<b>RDL</b>	<b>QC Batch</b>
Total Uranium (U)	mg/kg	0.227	0.426	0.328	1.28	0.313	0.050	8464998
Total Vanadium (V)	mg/kg	11.9	16.6	12.2	28.2	20.3	2.0	8464998
Total Zinc (Zn)	mg/kg	19.4	105	60.0	97.4	36.9	1.0	8464998
Total Zirconium (Zr)	mg/kg	0.71	0.71	0.57	0.93	0.71	0.50	8464998
RDL = Reportable Detection Limit								

Maxxam Job #: B699547  
Report Date: 2016/11/16

SNC LAVALIN ENVIRONMENT INC.  
Client Project #: 640752  
Site Location: Watson Lake Airport  
Your P.O. #: Pending  
Sampler Initials: MLC

**CSR/CCME METALS IN SOIL (SOIL)**

Maxxam ID		PZ1454	PZ1456	PZ1458	PZ1460	PZ1469		
Sampling Date		2016/11/02 15:30	2016/11/03 09:00	2016/11/03 09:40	2016/11/03 10:15	2016/11/03 11:15		
COC Number		510054-13-01	510054-13-01	510054-13-01	510054-13-01	510054-09-01		
	<b>UNITS</b>	<b>22C-BH16-35-1</b>	<b>22C-BH16-36-1</b>	<b>22C-BH16-37-1</b>	<b>22C-BH16-38-1</b>	<b>22C-BH16-39-1</b>	<b>RDL</b>	<b>QC Batch</b>

<b>Physical Properties</b>								
Soluble (2:1) pH	pH	5.52	6.28	5.97	6.52	7.48	N/A	8465002
<b>Total Metals by ICPMS</b>								
Total Aluminum (Al)	mg/kg	6920	4440	5020	2650	4290	100	8464998
Total Antimony (Sb)	mg/kg	0.61	0.39	0.51	<0.10	0.55	0.10	8464998
Total Arsenic (As)	mg/kg	5.68	3.18	4.93	<0.50	6.17	0.50	8464998
Total Barium (Ba)	mg/kg	73.7	83.1	99.2	65.9	64.1	0.10	8464998
Total Beryllium (Be)	mg/kg	<0.40	<0.40	<0.40	<0.40	<0.40	0.40	8464998
Total Bismuth (Bi)	mg/kg	<0.10	<0.10	<0.10	<0.10	<0.10	0.10	8464998
Total Cadmium (Cd)	mg/kg	0.138	0.109	0.152	<0.050	0.130	0.050	8464998
Total Calcium (Ca)	mg/kg	1010	1200	1240	683	1210	100	8464998
Total Chromium (Cr)	mg/kg	23.2	17.0	17.7	6.7	25.0	1.0	8464998
Total Cobalt (Co)	mg/kg	6.64	6.16	5.46	1.15	5.64	0.30	8464998
Total Copper (Cu)	mg/kg	12.0	9.16	10.9	1.56	10.1	0.50	8464998
Total Iron (Fe)	mg/kg	15400	8960	11200	3340	12000	100	8464998
Total Lead (Pb)	mg/kg	5.91	7.05	14.5	1.71	5.06	0.10	8464998
Total Lithium (Li)	mg/kg	5.5	<5.0	<5.0	<5.0	<5.0	5.0	8464998
Total Magnesium (Mg)	mg/kg	3090	2000	2140	1290	2920	100	8464998
Total Manganese (Mn)	mg/kg	201	172	316	34.3	332	0.20	8464998
Total Mercury (Hg)	mg/kg	<0.050	3.11	0.050	<0.050	<0.050	0.050	8464998
Total Molybdenum (Mo)	mg/kg	0.52	0.49	0.68	0.11	0.72	0.10	8464998
Total Nickel (Ni)	mg/kg	17.8	16.8	15.0	4.60	22.6	0.80	8464998
Total Phosphorus (P)	mg/kg	378	326	351	215	423	10	8464998
Total Potassium (K)	mg/kg	426	375	383	296	438	100	8464998
Total Selenium (Se)	mg/kg	<0.50	<0.50	<0.50	<0.50	<0.50	0.50	8464998
Total Silver (Ag)	mg/kg	<0.050	0.068	0.067	0.051	<0.050	0.050	8464998
Total Sodium (Na)	mg/kg	<100	<100	<100	<100	<100	100	8464998
Total Strontium (Sr)	mg/kg	6.70	6.74	8.23	4.37	6.27	0.10	8464998
Total Thallium (Tl)	mg/kg	<0.050	<0.050	0.061	<0.050	<0.050	0.050	8464998
Total Tin (Sn)	mg/kg	0.19	0.24	0.39	<0.10	0.12	0.10	8464998
Total Titanium (Ti)	mg/kg	243	157	166	78.6	125	1.0	8464998

RDL = Reportable Detection Limit  
N/A = Not Applicable

Maxxam Job #: B699547  
Report Date: 2016/11/16

SNC LAVALIN ENVIRONMENT INC.  
Client Project #: 640752  
Site Location: Watson Lake Airport  
Your P.O. #: Pending  
Sampler Initials: MLC

**CSR/CCME METALS IN SOIL (SOIL)**

Maxxam ID		PZ1454	PZ1456	PZ1458	PZ1460	PZ1469		
Sampling Date		2016/11/02 15:30	2016/11/03 09:00	2016/11/03 09:40	2016/11/03 10:15	2016/11/03 11:15		
COC Number		510054-13-01	510054-13-01	510054-13-01	510054-13-01	510054-09-01		
	<b>UNITS</b>	<b>22C-BH16-35-1</b>	<b>22C-BH16-36-1</b>	<b>22C-BH16-37-1</b>	<b>22C-BH16-38-1</b>	<b>22C-BH16-39-1</b>	<b>RDL</b>	<b>QC Batch</b>
Total Uranium (U)	mg/kg	0.359	0.214	0.345	0.247	0.263	0.050	8464998
Total Vanadium (V)	mg/kg	20.1	15.6	14.9	5.7	13.8	2.0	8464998
Total Zinc (Zn)	mg/kg	28.1	25.3	33.7	8.2	22.7	1.0	8464998
Total Zirconium (Zr)	mg/kg	2.21	0.66	0.55	0.82	1.27	0.50	8464998
RDL = Reportable Detection Limit								

Maxxam Job #: B699547  
Report Date: 2016/11/16

SNC LAVALIN ENVIRONMENT INC.  
Client Project #: 640752  
Site Location: Watson Lake Airport  
Your P.O. #: Pending  
Sampler Initials: MLC

**CSR VOC + VPH IN SOIL (SOIL)**

Maxxam ID		PZ1427		
Sampling Date		2016/11/01 13:45		
COC Number		510054-12-01		
	<b>UNITS</b>	<b>22C-BH16-26-1</b>	<b>RDL</b>	<b>QC Batch</b>
<b>Volatiles</b>				
VPH (VH6 to 10 - BTEX)	mg/kg	<10	10	8462150
Vinyl chloride	mg/kg	<0.060	0.060	8470312
Bromomethane	mg/kg	<0.30	0.30	8470312
Chloroethane	mg/kg	<0.10	0.10	8470312
Trichlorofluoromethane	mg/kg	<0.20	0.20	8470312
1,1-dichloroethene	mg/kg	<0.025	0.025	8470312
Dichloromethane	mg/kg	<0.10	0.10	8470312
trans-1,2-dichloroethene	mg/kg	<0.025	0.025	8470312
1,1-dichloroethane	mg/kg	<0.025	0.025	8470312
cis-1,2-dichloroethene	mg/kg	<0.025	0.025	8470312
Chloroform	mg/kg	<0.050	0.050	8470312
1,1,1-trichloroethane	mg/kg	<0.025	0.025	8470312
1,2-dichloroethane	mg/kg	<0.025	0.025	8470312
Carbon tetrachloride	mg/kg	<0.025	0.025	8470312
Benzene	mg/kg	<0.0050	0.0050	8470312
Methyl-tert-butylether (MTBE)	mg/kg	<0.10	0.10	8470312
1,2-dichloropropane	mg/kg	<0.025	0.025	8470312
Trichloroethene	mg/kg	<0.0050	0.0050	8470312
Bromodichloromethane	mg/kg	<0.050	0.050	8470312
cis-1,3-dichloropropene	mg/kg	<0.050	0.050	8470312
trans-1,3-dichloropropene	mg/kg	<0.050	0.050	8470312
1,1,2-trichloroethane	mg/kg	<0.025	0.025	8470312
Toluene	mg/kg	<0.020	0.020	8470312
Chlorodibromomethane	mg/kg	<0.050	0.050	8470312
1,2-dibromoethane	mg/kg	<0.025	0.025	8470312
Tetrachloroethene	mg/kg	<0.025	0.025	8470312
Chlorobenzene	mg/kg	<0.025	0.025	8470312
1,1,1,2-tetrachloroethane	mg/kg	<0.025	0.025	8470312
Ethylbenzene	mg/kg	<0.010	0.010	8470312
m & p-Xylene	mg/kg	<0.040	0.040	8470312
RDL = Reportable Detection Limit				



Maxxam Job #: B699547  
Report Date: 2016/11/16

SNC LAVALIN ENVIRONMENT INC.  
Client Project #: 640752  
Site Location: Watson Lake Airport  
Your P.O. #: Pending  
Sampler Initials: MLC

**CSR VOC + VPH IN SOIL (SOIL)**

Maxxam ID		PZ1427		
Sampling Date		2016/11/01 13:45		
COC Number		510054-12-01		
	<b>UNITS</b>	<b>22C-BH16-26-1</b>	<b>RDL</b>	<b>QC Batch</b>
Bromoform	mg/kg	<0.050	0.050	8470312
Styrene	mg/kg	<0.030	0.030	8470312
o-Xylene	mg/kg	<0.040	0.040	8470312
Xylenes (Total)	mg/kg	<0.040	0.040	8470312
1,1,2,2-tetrachloroethane	mg/kg	<0.025	0.025	8470312
1,2-dichlorobenzene	mg/kg	<0.025	0.025	8470312
1,3-dichlorobenzene	mg/kg	<0.025	0.025	8470312
1,4-dichlorobenzene	mg/kg	<0.025	0.025	8470312
1,2,3-trichlorobenzene	mg/kg	<0.025	0.025	8470312
Hexachlorobutadiene	mg/kg	<0.20	0.20	8470312
1,2,4-trichlorobenzene	mg/kg	<0.025	0.025	8470312
VH C6-C10	mg/kg	<10	10	8470312
<b>Surrogate Recovery (%)</b>				
1,4-Difluorobenzene (sur.)	%	102		8470312
4-Bromofluorobenzene (sur.)	%	98		8470312
D10-ETHYLBENZENE (sur.)	%	107		8470312
D4-1,2-Dichloroethane (sur.)	%	98		8470312
RDL = Reportable Detection Limit				

Maxxam Job #: B699547  
Report Date: 2016/11/16

SNC LAVALIN ENVIRONMENT INC.  
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### GENERAL COMMENTS

Each temperature is the average of up to three cooler temperatures taken at receipt

Package 1	2.0°C
Package 2	2.0°C

Samples extracted past recommended hold time for VOC analysis.

**Results relate only to the items tested.**

Maxxam Job #: B699547  
Report Date: 2016/11/16

**QUALITY ASSURANCE REPORT**

SNC LAVALIN ENVIRONMENT INC.  
Client Project #: 640752  
Site Location: Watson Lake Airport  
Your P.O. #: Pending  
Sampler Initials: MLC

QC Batch	Parameter	Date	Matrix Spike		Spiked Blank		Method Blank		RPD		QC Standard	
			% Recovery	QC Limits	% Recovery	QC Limits	Value	UNITS	Value (%)	QC Limits	% Recovery	QC Limits
8465354	O-TERPHENYL (sur.)	2016/11/09	102	50 - 130	97	50 - 130	97	%				
8465362	D10-ANTHRACENE (sur.)	2016/11/09	94	60 - 130	90	60 - 130	97	%				
8465362	D8-ACENAPHTHYLENE (sur.)	2016/11/09	89	50 - 130	87	50 - 130	92	%				
8465362	D8-NAPHTHALENE (sur.)	2016/11/09	86	50 - 130	91	50 - 130	95	%				
8465362	TERPHENYL-D14 (sur.)	2016/11/09	80	60 - 130	79	60 - 130	87	%				
8466200	D10-ANTHRACENE (sur.)	2016/11/10	91	60 - 130	95	60 - 130	108	%				
8466200	D8-ACENAPHTHYLENE (sur.)	2016/11/10	94	50 - 130	94	50 - 130	104	%				
8466200	D8-NAPHTHALENE (sur.)	2016/11/10	90	50 - 130	92	50 - 130	100	%				
8466200	TERPHENYL-D14 (sur.)	2016/11/10	79	60 - 130	82	60 - 130	97	%				
8466201	O-TERPHENYL (sur.)	2016/11/10	101	50 - 130	102	50 - 130	97	%				
8467004	1,4-Difluorobenzene (sur.)	2016/11/10	99	60 - 140	96	60 - 140	98	%				
8467004	4-Bromofluorobenzene (sur.)	2016/11/10	107	70 - 140	107	70 - 140	107	%				
8467004	D10-ETHYLBENZENE (sur.)	2016/11/10	87	60 - 130	94	60 - 130	100	%				
8467004	D4-1,2-Dichloroethane (sur.)	2016/11/10	92	60 - 140	102	60 - 140	103	%				
8467013	1,4-Difluorobenzene (sur.)	2016/11/10	98	60 - 140	98	60 - 140	97	%				
8467013	4-Bromofluorobenzene (sur.)	2016/11/10	100	70 - 140	101	70 - 140	103	%				
8467013	D10-ETHYLBENZENE (sur.)	2016/11/10	96	60 - 130	92	60 - 130	101	%				
8467013	D4-1,2-Dichloroethane (sur.)	2016/11/10	97	60 - 140	97	60 - 140	101	%				
8468442	D10-ANTHRACENE (sur.)	2016/11/13	124	60 - 130	90	60 - 130	91	%				
8468442	D8-ACENAPHTHYLENE (sur.)	2016/11/13	121	50 - 130	85	50 - 130	91	%				
8468442	D8-NAPHTHALENE (sur.)	2016/11/13	120	50 - 130	84	50 - 130	91	%				
8468442	TERPHENYL-D14 (sur.)	2016/11/13	113	60 - 130	81	60 - 130	83	%				
8468443	O-TERPHENYL (sur.)	2016/11/13	98	50 - 130	99	50 - 130	98	%				
8468649	D10-ANTHRACENE (sur.)	2016/11/13	86	60 - 130	89	60 - 130	99	%				
8468649	D8-ACENAPHTHYLENE (sur.)	2016/11/13	86	50 - 130	87	50 - 130	93	%				
8468649	D8-NAPHTHALENE (sur.)	2016/11/13	91	50 - 130	88	50 - 130	94	%				
8468649	TERPHENYL-D14 (sur.)	2016/11/13	76	60 - 130	77	60 - 130	82	%				
8468654	O-TERPHENYL (sur.)	2016/11/13	97	50 - 130	97	50 - 130	95	%				
8470312	1,4-Difluorobenzene (sur.)	2016/11/15	96	70 - 130	96	70 - 130	102	%				
8470312	4-Bromofluorobenzene (sur.)	2016/11/15	111	70 - 130	112	70 - 130	97	%				

Maxxam Job #: B699547  
Report Date: 2016/11/16

**QUALITY ASSURANCE REPORT(CONT'D)**

SNC LAVALIN ENVIRONMENT INC.  
Client Project #: 640752  
Site Location: Watson Lake Airport  
Your P.O. #: Pending  
Sampler Initials: MLC

QC Batch	Parameter	Date	Matrix Spike		Spiked Blank		Method Blank		RPD		QC Standard	
			% Recovery	QC Limits	% Recovery	QC Limits	Value	UNITS	Value (%)	QC Limits	% Recovery	QC Limits
8470312	D10-ETHYLBENZENE (sur.)	2016/11/15	98	50 - 130	88	50 - 130	105	%				
8470312	D4-1,2-Dichloroethane (sur.)	2016/11/15	111	70 - 130	114	70 - 130	96	%				
8463705	Moisture	2016/11/09					<0.30	%	3.9	20		
8464202	Moisture	2016/11/09					<0.30	%	9.5	20		
8464841	Moisture	2016/11/10					<0.30	%	0.40	20		
8464998	Total Aluminum (Al)	2016/11/09					<100	mg/kg	5.4	35	90	70 - 130
8464998	Total Antimony (Sb)	2016/11/09	91	75 - 125	97	75 - 125	<0.10	mg/kg	33 (2)	30	114	70 - 130
8464998	Total Arsenic (As)	2016/11/09	90	75 - 125	94	75 - 125	<0.50	mg/kg	4.4	30	84	70 - 130
8464998	Total Barium (Ba)	2016/11/09	NC	75 - 125	94	75 - 125	0.39, RDL=0.10 (1)	mg/kg	4.2	35	92	70 - 130
8464998	Total Beryllium (Be)	2016/11/09	99	75 - 125	99	75 - 125	<0.40	mg/kg	NC	30	107	70 - 130
8464998	Total Bismuth (Bi)	2016/11/09					<0.10	mg/kg	NC	30		
8464998	Total Cadmium (Cd)	2016/11/09	107	75 - 125	106	75 - 125	<0.050	mg/kg	NC	30	117	70 - 130
8464998	Total Calcium (Ca)	2016/11/09					<100	mg/kg	14	30	100	70 - 130
8464998	Total Chromium (Cr)	2016/11/09	NC	75 - 125	98	75 - 125	<1.0	mg/kg	9.4	30	98	70 - 130
8464998	Total Cobalt (Co)	2016/11/09	101	75 - 125	100	75 - 125	<0.30	mg/kg	2.6	30	96	70 - 130
8464998	Total Copper (Cu)	2016/11/09	94	75 - 125	101	75 - 125	<0.50	mg/kg	1.1	30	93	70 - 130
8464998	Total Iron (Fe)	2016/11/09					<100	mg/kg	2.3	30	98	70 - 130
8464998	Total Lead (Pb)	2016/11/09	96	75 - 125	99	75 - 125	<0.10	mg/kg	2.0	35	102	70 - 130
8464998	Total Lithium (Li)	2016/11/09	100	75 - 125	96	75 - 125	<5.0	mg/kg	NC	30	93	70 - 130
8464998	Total Magnesium (Mg)	2016/11/09					<100	mg/kg	4.6	30	105	70 - 130
8464998	Total Manganese (Mn)	2016/11/09	NC	75 - 125	100	75 - 125	<0.20	mg/kg	6.8	30	98	70 - 130
8464998	Total Mercury (Hg)	2016/11/09	106	75 - 125	103	75 - 125	<0.050	mg/kg	NC	35	104	70 - 130
8464998	Total Molybdenum (Mo)	2016/11/09	93	75 - 125	93	75 - 125	<0.10	mg/kg	2.1	35	120	70 - 130
8464998	Total Nickel (Ni)	2016/11/09	97	75 - 125	94	75 - 125	<0.80	mg/kg	5.5	30	101	70 - 130
8464998	Total Phosphorus (P)	2016/11/09					<10	mg/kg	1.1	30	92	70 - 130
8464998	Total Potassium (K)	2016/11/09					<100	mg/kg	NC	35	86	70 - 130
8464998	Total Selenium (Se)	2016/11/09	99	75 - 125	100	75 - 125	<0.50	mg/kg	NC	30		
8464998	Total Silver (Ag)	2016/11/09	89	75 - 125	91	75 - 125	<0.050	mg/kg	NC	35	105	70 - 130
8464998	Total Sodium (Na)	2016/11/09					<100	mg/kg	NC	35	96	70 - 130

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**QUALITY ASSURANCE REPORT(CONT'D)**

SNC LAVALIN ENVIRONMENT INC.  
Client Project #: 640752  
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Your P.O. #: Pending  
Sampler Initials: MLC

QC Batch	Parameter	Date	Matrix Spike		Spiked Blank		Method Blank		RPD		QC Standard	
			% Recovery	QC Limits	% Recovery	QC Limits	Value	UNITS	Value (%)	QC Limits	% Recovery	QC Limits
8464998	Total Strontium (Sr)	2016/11/09	91	75 - 125	93	75 - 125	<0.10	mg/kg	3.2	35	95	70 - 130
8464998	Total Thallium (Tl)	2016/11/09	99	75 - 125	104	75 - 125	<0.050	mg/kg	NC	30	82	70 - 130
8464998	Total Tin (Sn)	2016/11/09	93	75 - 125	94	75 - 125	<0.10	mg/kg	NC	35	94	70 - 130
8464998	Total Titanium (Ti)	2016/11/09	NC	75 - 125	97	75 - 125	<1.0	mg/kg	3.0	35		
8464998	Total Uranium (U)	2016/11/09	95	75 - 125	96	75 - 125	<0.050	mg/kg	7.4	30	96	70 - 130
8464998	Total Vanadium (V)	2016/11/09	87	75 - 125	97	75 - 125	<2.0	mg/kg	5.0	30	99	70 - 130
8464998	Total Zinc (Zn)	2016/11/09	NC	75 - 125	105	75 - 125	<1.0	mg/kg	4.4	30	102	70 - 130
8464998	Total Zirconium (Zr)	2016/11/09					<0.50	mg/kg	NC	30		
8465002	Soluble (2:1) pH	2016/11/09			100	97 - 103			0.29	N/A		
8465354	EPH (C10-C19)	2016/11/09	NC	50 - 130	109	50 - 130	<100	mg/kg	6.3	40		
8465354	EPH (C19-C32)	2016/11/09	114	50 - 130	111	50 - 130	<100	mg/kg	NC	40		
8465362	2-Methylnaphthalene	2016/11/10	79	50 - 130	82	50 - 130	<0.050	mg/kg	NC	50		
8465362	Acenaphthene	2016/11/10	83	50 - 130	83	50 - 130	<0.050	mg/kg	NC	50		
8465362	Acenaphthylene	2016/11/10	79	50 - 130	80	50 - 130	<0.050	mg/kg	NC	50		
8465362	Anthracene	2016/11/10	80	60 - 130	80	60 - 130	<0.050	mg/kg	NC	50		
8465362	Benzo(a)anthracene	2016/11/10	74	60 - 130	74	60 - 130	<0.050	mg/kg	NC	50		
8465362	Benzo(a)pyrene	2016/11/10	78	60 - 130	79	60 - 130	<0.050	mg/kg	NC	50		
8465362	Benzo(b&j)fluoranthene	2016/11/10	81	60 - 130	83	60 - 130	<0.050	mg/kg	NC	50		
8465362	Benzo(b)fluoranthene	2016/11/10	76	60 - 130	79	60 - 130	<0.050	mg/kg	NC	50		
8465362	Benzo(g,h,i)perylene	2016/11/10	70	60 - 130	69	60 - 130	<0.050	mg/kg	NC	50		
8465362	Benzo(k)fluoranthene	2016/11/10	79	60 - 130	78	60 - 130	<0.050	mg/kg	NC	50		
8465362	Chrysene	2016/11/10	76	60 - 130	77	60 - 130	<0.050	mg/kg	NC	50		
8465362	Dibenz(a,h)anthracene	2016/11/10	71	60 - 130	71	60 - 130	<0.050	mg/kg	NC	50		
8465362	Fluoranthene	2016/11/10	79	60 - 130	82	60 - 130	<0.050	mg/kg	NC	50		
8465362	Fluorene	2016/11/10	77	50 - 130	79	50 - 130	<0.050	mg/kg	NC	50		
8465362	Indeno(1,2,3-cd)pyrene	2016/11/10	73	60 - 130	72	60 - 130	<0.050	mg/kg	NC	50		
8465362	Naphthalene	2016/11/10	80	50 - 130	82	50 - 130	<0.050	mg/kg	NC	50		
8465362	Phenanthrene	2016/11/10	76	60 - 130	80	60 - 130	<0.050	mg/kg	NC	50		
8465362	Pyrene	2016/11/10	78	60 - 130	80	60 - 130	<0.050	mg/kg	NC	50		
8466144	Moisture	2016/11/11					<0.30	%	4.7	20		

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Your P.O. #: Pending  
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QC Batch	Parameter	Date	Matrix Spike		Spiked Blank		Method Blank		RPD		QC Standard	
			% Recovery	QC Limits	% Recovery	QC Limits	Value	UNITS	Value (%)	QC Limits	% Recovery	QC Limits
8466148	Moisture	2016/11/10					<0.30	%	0.92	20		
8466200	2-Methylnaphthalene	2016/11/12	77	50 - 130	77	50 - 130	<0.050	mg/kg	NC	50		
8466200	Acenaphthene	2016/11/12	81	50 - 130	82	50 - 130	<0.050	mg/kg	NC	50		
8466200	Acenaphthylene	2016/11/12	79	50 - 130	78	50 - 130	<0.050	mg/kg	NC	50		
8466200	Anthracene	2016/11/12	76	60 - 130	79	60 - 130	<0.050	mg/kg	NC	50		
8466200	Benzo(a)anthracene	2016/11/12	72	60 - 130	71	60 - 130	<0.050	mg/kg	NC	50		
8466200	Benzo(a)pyrene	2016/11/12	79	60 - 130	78	60 - 130	<0.050	mg/kg	NC	50		
8466200	Benzo(b&j)fluoranthene	2016/11/12	78	60 - 130	79	60 - 130	<0.050	mg/kg	NC	50		
8466200	Benzo(b)fluoranthene	2016/11/12	73	60 - 130	76	60 - 130	<0.050	mg/kg	NC	50		
8466200	Benzo(g,h,i)perylene	2016/11/12	76	60 - 130	66	60 - 130	<0.050	mg/kg	NC	50		
8466200	Benzo(k)fluoranthene	2016/11/12	80	60 - 130	78	60 - 130	<0.050	mg/kg	NC	50		
8466200	Chrysene	2016/11/12	77	60 - 130	73	60 - 130	<0.050	mg/kg	NC	50		
8466200	Dibenz(a,h)anthracene	2016/11/12	82	60 - 130	71	60 - 130	<0.050	mg/kg	NC	50		
8466200	Fluoranthene	2016/11/12	74	60 - 130	81	60 - 130	<0.050	mg/kg	NC	50		
8466200	Fluorene	2016/11/12	72	50 - 130	78	50 - 130	<0.050	mg/kg	NC	50		
8466200	Indeno(1,2,3-cd)pyrene	2016/11/12	81	60 - 130	71	60 - 130	<0.050	mg/kg	NC	50		
8466200	Naphthalene	2016/11/12	77	50 - 130	73	50 - 130	<0.050	mg/kg	NC	50		
8466200	Phenanthrene	2016/11/12	76	60 - 130	77	60 - 130	<0.050	mg/kg	NC	50		
8466200	Pyrene	2016/11/12	77	60 - 130	79	60 - 130	<0.050	mg/kg	NC	50		
8466201	EPH (C10-C19)	2016/11/10	111	50 - 130	107	50 - 130	<100	mg/kg	NC	40		
8466201	EPH (C19-C32)	2016/11/10	111	50 - 130	108	50 - 130	<100	mg/kg	NC	40		
8467004	Benzene	2016/11/10	82	60 - 140	103	60 - 140	<0.0050	mg/kg	NC	40		
8467004	Ethylbenzene	2016/11/10	86	60 - 140	104	60 - 140	<0.010	mg/kg	NC	40		
8467004	m & p-Xylene	2016/11/10	84	60 - 140	101	60 - 140	<0.040	mg/kg	NC	40		
8467004	Methyl-tert-butylether (MTBE)	2016/11/10					<0.10	mg/kg	NC	40		
8467004	o-Xylene	2016/11/10	84	60 - 140	100	60 - 140	<0.040	mg/kg	NC	40		
8467004	Styrene	2016/11/10					<0.030	mg/kg	NC	40		
8467004	Toluene	2016/11/10	81	60 - 140	100	60 - 140	<0.020	mg/kg	NC	40		
8467004	VH C6-C10	2016/11/10			97	60 - 140	<10	mg/kg	NC	40		
8467004	Xylenes (Total)	2016/11/10					<0.040	mg/kg	NC	40		

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QC Batch	Parameter	Date	Matrix Spike		Spiked Blank		Method Blank		RPD		QC Standard	
			% Recovery	QC Limits	% Recovery	QC Limits	Value	UNITS	Value (%)	QC Limits	% Recovery	QC Limits
8467013	Benzene	2016/11/10	98	60 - 140	94	60 - 140	<0.0050	mg/kg	NC	40		
8467013	Ethylbenzene	2016/11/10	97	60 - 140	92	60 - 140	<0.010	mg/kg	NC	40		
8467013	m & p-Xylene	2016/11/10	96	60 - 140	92	60 - 140	<0.040	mg/kg	NC	40		
8467013	Methyl-tert-butylether (MTBE)	2016/11/10					<0.10	mg/kg	NC	40		
8467013	o-Xylene	2016/11/10	102	60 - 140	97	60 - 140	<0.040	mg/kg	NC	40		
8467013	Styrene	2016/11/10					<0.030	mg/kg	NC	40		
8467013	Toluene	2016/11/10	94	60 - 140	90	60 - 140	<0.020	mg/kg	NC	40		
8467013	VH C6-C10	2016/11/10			99	60 - 140	<10	mg/kg	NC	40		
8467013	Xylenes (Total)	2016/11/10					<0.040	mg/kg	NC	40		
8468442	2-Methylnaphthalene	2016/11/13	114	50 - 130	79	50 - 130	<0.050	mg/kg	NC	50		
8468442	Acenaphthene	2016/11/13	120	50 - 130	86	50 - 130	<0.050	mg/kg	NC	50		
8468442	Acenaphthylene	2016/11/13	114	50 - 130	81	50 - 130	<0.050	mg/kg	NC	50		
8468442	Anthracene	2016/11/13	113	60 - 130	85	60 - 130	<0.050	mg/kg	NC	50		
8468442	Benzo(a)anthracene	2016/11/13	107	60 - 130	78	60 - 130	<0.050	mg/kg	NC	50		
8468442	Benzo(a)pyrene	2016/11/13	109	60 - 130	81	60 - 130	<0.050	mg/kg	NC	50		
8468442	Benzo(b&j)fluoranthene	2016/11/13	115	60 - 130	84	60 - 130	<0.050	mg/kg	NC	50		
8468442	Benzo(b)fluoranthene	2016/11/13	112	60 - 130	83	60 - 130	<0.050	mg/kg	NC	50		
8468442	Benzo(g,h,i)perylene	2016/11/13	109	60 - 130	81	60 - 130	<0.050	mg/kg	NC	50		
8468442	Benzo(k)fluoranthene	2016/11/13	109	60 - 130	86	60 - 130	<0.050	mg/kg	NC	50		
8468442	Chrysene	2016/11/13	109	60 - 130	79	60 - 130	<0.050	mg/kg	NC	50		
8468442	Dibenz(a,h)anthracene	2016/11/13	109	60 - 130	82	60 - 130	<0.050	mg/kg	NC	50		
8468442	Fluoranthene	2016/11/13	124	60 - 130	87	60 - 130	<0.050	mg/kg	NC	50		
8468442	Fluorene	2016/11/13	113	50 - 130	81	50 - 130	<0.050	mg/kg	NC	50		
8468442	Indeno(1,2,3-cd)pyrene	2016/11/13	112	60 - 130	84	60 - 130	<0.050	mg/kg	NC	50		
8468442	Naphthalene	2016/11/13	117	50 - 130	77	50 - 130	<0.050	mg/kg	NC	50		
8468442	Phenanthrene	2016/11/13	114	60 - 130	82	60 - 130	<0.050	mg/kg	NC	50		
8468442	Pyrene	2016/11/13	123	60 - 130	88	60 - 130	<0.050	mg/kg	NC	50		
8468443	EPH (C10-C19)	2016/11/13	NC	50 - 130	99	50 - 130	<100	mg/kg	30	40		
8468443	EPH (C19-C32)	2016/11/13	107	50 - 130	100	50 - 130	<100	mg/kg	NC	40		
8468649	2-Methylnaphthalene	2016/11/14	82	50 - 130	87	50 - 130	<0.050	mg/kg	NC	50		

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QC Batch	Parameter	Date	Matrix Spike		Spiked Blank		Method Blank		RPD		QC Standard	
			% Recovery	QC Limits	% Recovery	QC Limits	Value	UNITS	Value (%)	QC Limits	% Recovery	QC Limits
8468649	Acenaphthene	2016/11/14	86	50 - 130	90	50 - 130	<0.050	mg/kg	NC	50		
8468649	Acenaphthylene	2016/11/14	84	50 - 130	88	50 - 130	<0.050	mg/kg	NC	50		
8468649	Anthracene	2016/11/14	82	60 - 130	87	60 - 130	<0.050	mg/kg	NC	50		
8468649	Benzo(a)anthracene	2016/11/14	76	60 - 130	82	60 - 130	<0.050	mg/kg	NC	50		
8468649	Benzo(a)pyrene	2016/11/14	83	60 - 130	84	60 - 130	<0.050	mg/kg	NC	50		
8468649	Benzo(b&j)fluoranthene	2016/11/14	83	60 - 130	89	60 - 130	<0.050	mg/kg	NC	50		
8468649	Benzo(b)fluoranthene	2016/11/14	85	60 - 130	86	60 - 130	<0.050	mg/kg	NC	50		
8468649	Benzo(g,h,i)perylene	2016/11/14	83	60 - 130	79	60 - 130	<0.050	mg/kg	NC	50		
8468649	Benzo(k)fluoranthene	2016/11/14	82	60 - 130	84	60 - 130	<0.050	mg/kg	NC	50		
8468649	Chrysene	2016/11/14	79	60 - 130	87	60 - 130	<0.050	mg/kg	NC	50		
8468649	Dibenz(a,h)anthracene	2016/11/14	86	60 - 130	82	60 - 130	<0.050	mg/kg	NC	50		
8468649	Fluoranthene	2016/11/14	80	60 - 130	87	60 - 130	<0.050	mg/kg	NC	50		
8468649	Fluorene	2016/11/14	77	50 - 130	82	50 - 130	<0.050	mg/kg	NC	50		
8468649	Indeno(1,2,3-cd)pyrene	2016/11/14	84	60 - 130	83	60 - 130	<0.050	mg/kg	NC	50		
8468649	Naphthalene	2016/11/14	81	50 - 130	84	50 - 130	<0.050	mg/kg	NC	50		
8468649	Phenanthrene	2016/11/14	79	60 - 130	84	60 - 130	<0.050	mg/kg	NC	50		
8468649	Pyrene	2016/11/14	82	60 - 130	87	60 - 130	<0.050	mg/kg	NC	50		
8468654	EPH (C10-C19)	2016/11/13	91	50 - 130	94	50 - 130	<100	mg/kg	NC	40		
8468654	EPH (C19-C32)	2016/11/13	93	50 - 130	95	50 - 130	<100	mg/kg	NC	40		
8470312	1,1,1,2-tetrachloroethane	2016/11/15	97	60 - 140	93	60 - 140	<0.025	mg/kg	NC	40		
8470312	1,1,1-trichloroethane	2016/11/15	96	60 - 140	92	60 - 140	<0.025	mg/kg	NC	40		
8470312	1,1,2,2-tetrachloroethane	2016/11/15	93	60 - 140	97	60 - 140	<0.025	mg/kg	NC	40		
8470312	1,1,2-trichloroethane	2016/11/15	94	60 - 140	94	60 - 140	<0.025	mg/kg	NC	40		
8470312	1,1-dichloroethane	2016/11/15	86	60 - 140	83	60 - 140	<0.025	mg/kg	NC	40		
8470312	1,1-dichloroethene	2016/11/15	86	60 - 140	83	60 - 140	<0.025	mg/kg	NC	40		
8470312	1,2,3-trichlorobenzene	2016/11/15	104	60 - 140	103	60 - 140	<0.025	mg/kg	NC	40		
8470312	1,2,4-trichlorobenzene	2016/11/15	97	60 - 140	90	60 - 140	<0.025	mg/kg	NC	40		
8470312	1,2-dibromoethane	2016/11/15	101	60 - 140	101	60 - 140	<0.025	mg/kg	NC	40		
8470312	1,2-dichlorobenzene	2016/11/15	108	60 - 140	107	60 - 140	<0.025	mg/kg	NC	40		
8470312	1,2-dichloroethane	2016/11/15	92	60 - 140	89	60 - 140	<0.025	mg/kg	NC	40		



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QC Batch	Parameter	Date	Matrix Spike		Spiked Blank		Method Blank		RPD		QC Standard	
			% Recovery	QC Limits	% Recovery	QC Limits	Value	UNITS	Value (%)	QC Limits	% Recovery	QC Limits
8470312	1,2-dichloropropane	2016/11/15	87	60 - 140	93	60 - 140	<0.025	mg/kg	NC	40		
8470312	1,3-dichlorobenzene	2016/11/15	108	60 - 140	107	60 - 140	<0.025	mg/kg	NC	40		
8470312	1,4-dichlorobenzene	2016/11/15	103	60 - 140	103	60 - 140	<0.025	mg/kg	NC	40		
8470312	Benzene	2016/11/15	98	60 - 140	95	60 - 140	<0.0050	mg/kg	NC	40		
8470312	Bromodichloromethane	2016/11/15	93	60 - 140	91	60 - 140	<0.050	mg/kg	NC	40		
8470312	Bromoform	2016/11/15	95	60 - 140	93	60 - 140	<0.050	mg/kg	NC	40		
8470312	Bromomethane	2016/11/15	76	50 - 150	72	50 - 150	<0.30	mg/kg	NC	40		
8470312	Carbon tetrachloride	2016/11/15	99	60 - 140	83	60 - 140	<0.025	mg/kg	NC	40		
8470312	Chlorobenzene	2016/11/15	98	60 - 140	97	60 - 140	<0.025	mg/kg	NC	40		
8470312	Chlorodibromomethane	2016/11/15	99	60 - 140	98	60 - 140	<0.050	mg/kg	NC	40		
8470312	Chloroethane	2016/11/15	97	50 - 150	82	50 - 150	<0.10	mg/kg	NC	40		
8470312	Chloroform	2016/11/15	93	60 - 140	90	60 - 140	<0.050	mg/kg	NC	40		
8470312	cis-1,2-dichloroethene	2016/11/15	90	60 - 140	88	60 - 140	<0.025	mg/kg	NC	40		
8470312	cis-1,3-dichloropropene	2016/11/15	87	60 - 140	79	60 - 140	<0.050	mg/kg	NC	40		
8470312	Dichloromethane	2016/11/15	104	60 - 140	102	60 - 140	<0.10	mg/kg	NC	40		
8470312	Ethylbenzene	2016/11/15	116	60 - 140	113	60 - 140	<0.010	mg/kg	NC	40		
8470312	Hexachlorobutadiene	2016/11/15	85	50 - 150	91	50 - 150	<0.20	mg/kg	NC	40		
8470312	m & p-Xylene	2016/11/15	120	60 - 140	118	60 - 140	<0.040	mg/kg	NC	40		
8470312	Methyl-tert-butylether (MTBE)	2016/11/15					<0.10	mg/kg	NC	40		
8470312	o-Xylene	2016/11/15	117	60 - 140	116	60 - 140	<0.040	mg/kg	NC	40		
8470312	Styrene	2016/11/15	92	60 - 140	90	60 - 140	<0.030	mg/kg	NC	40		
8470312	Tetrachloroethene	2016/11/15	98	60 - 140	96	60 - 140	<0.025	mg/kg	NC	40		
8470312	Toluene	2016/11/15	101	60 - 140	101	60 - 140	<0.020	mg/kg	NC	40		
8470312	trans-1,2-dichloroethene	2016/11/15	87	60 - 140	87	60 - 140	<0.025	mg/kg	NC	40		
8470312	trans-1,3-dichloropropene	2016/11/15	88	60 - 140	82	60 - 140	<0.050	mg/kg	NC	40		
8470312	Trichloroethene	2016/11/15	92	60 - 140	89	60 - 140	<0.0050	mg/kg	NC	40		
8470312	Trichlorofluoromethane	2016/11/15	88	50 - 150	83	50 - 150	<0.20	mg/kg	NC	40		
8470312	VH C6-C10	2016/11/15			93	60 - 140	<10	mg/kg	NC	40		
8470312	Vinyl chloride	2016/11/15	67	50 - 150	65	50 - 150	<0.060	mg/kg	NC	40		

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Sampler Initials: MLC

QC Batch	Parameter	Date	Matrix Spike		Spiked Blank		Method Blank		RPD		QC Standard	
			% Recovery	QC Limits	% Recovery	QC Limits	Value	UNITS	Value (%)	QC Limits	% Recovery	QC Limits
8470312	Xylenes (Total)	2016/11/15					<0.040	mg/kg	NC	40		

N/A = Not Applicable

Duplicate: Paired analysis of a separate portion of the same sample. Used to evaluate the variance in the measurement.

Matrix Spike: A sample to which a known amount of the analyte of interest has been added. Used to evaluate sample matrix interference.

QC Standard: A sample of known concentration prepared by an external agency under stringent conditions. Used as an independent check of method accuracy.

Spiked Blank: A blank matrix sample to which a known amount of the analyte, usually from a second source, has been added. Used to evaluate method accuracy.

Method Blank: A blank matrix containing all reagents used in the analytical procedure. Used to identify laboratory contamination.

Surrogate: A pure or isotopically labeled compound whose behavior mirrors the analytes of interest. Used to evaluate extraction efficiency.

NC (Matrix Spike): The recovery in the matrix spike was not calculated. The relative difference between the concentration in the parent sample and the spiked amount was too small to permit a reliable recovery calculation (matrix spike concentration was less than 2x that of the native sample concentration).

NC (Duplicate RPD): The duplicate RPD was not calculated. The concentration in the sample and/or duplicate was too low to permit a reliable RPD calculation (one or both samples < 5x RDL).

(1) Method Blank exceeds acceptance limits for Ba. Sample values for Ba are >20x the concentration of the method blank and the contamination is considered irrelevant.

(2) Recovery or RPD for this parameter is outside control limits. The overall quality control for this analysis meets acceptability criteria.

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### VALIDATION SIGNATURE PAGE

The analytical data and all QC contained in this report were reviewed and validated by the following individual(s).



Andy Lu, Ph.D., P.Chem., Scientific Specialist

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Maxxam has procedures in place to guard against improper use of the electronic signature and have the required "signatories", as per section 5.10.2 of ISO/IEC 17025:2005(E), signing the reports. For Service Group specific validation please refer to the Validation Signature Page.

INVOICE TO:		Report Information		Project Information	
Company Name	#1756 PUBLIC WORKS & GOVERNMENT SERVICE	Company Name	#26479 SNC LAVALIN ENVIRONMENT INC.	Quotation #	B61631
Contact Name	Robert Price	Contact Name	Michael Chao <i>Marta Rosa</i>	P.O. #	Pending
Address	641- 800 BURRARD STREET VANCOUVER BC V6Z 2V8	Address	8648 COMMERCE COURT BURNABY BC V5A 4N6	Project #	640752
Phone	(604) 775-6810	Phone	(604) 515-5151	Project Name	<i>AEC 22C</i>
Fac:	(604) 775-6650	Fac:		Site #	Watson Lake Airport
Email	robert.price@pwgsc-tpsgc.gc.ca	Email	Michael.Chao@sncvalin.com <i>marta.rosa@sncvalin.com</i>	Analysed By	<i>MIC</i>



B699547\_COC

Bottle Order #:



510354

Project Manager

Samantha Frogien

Regulatory Criteria	Special Instructions	Analysis Requested	Turnaround Time (TAT) Required																																																																													
<i>Yukon CSR Water Drink / Freshwater</i>		<table border="1"> <thead> <tr> <th>Regulated Drinking Water? (Y/N)</th> <th>Metals Field Filtered? (Y/N)</th> <th>CSR BTEX/VPH</th> <th>LEPH &amp; HEPH with CSR PAH</th> <th>CSR/CCME Diss. Metals in Water w/ CV Hg</th> <th>CSR VOC + VPH</th> <th>CSR/CCME Metals in Soil</th> </tr> </thead> <tbody> <tr><td></td><td></td><td>X</td><td>X</td><td></td><td></td><td>X</td></tr> <tr><td></td><td></td><td>X</td><td>X</td><td></td><td></td><td></td></tr> <tr><td></td><td></td><td>X</td><td>X</td><td></td><td></td><td>X</td></tr> <tr><td></td><td></td><td>X</td><td>X</td><td></td><td></td><td></td></tr> <tr><td></td><td></td><td>X</td><td>X</td><td></td><td></td><td>X</td></tr> <tr><td></td><td></td><td>X</td><td>X</td><td></td><td></td><td>X</td></tr> <tr><td></td><td></td><td>X</td><td>X</td><td></td><td></td><td></td></tr> <tr><td></td><td></td><td>X</td><td>X</td><td></td><td></td><td>X</td></tr> <tr><td></td><td></td><td>X</td><td>X</td><td></td><td></td><td></td></tr> <tr><td></td><td></td><td>X</td><td>X</td><td></td><td></td><td>X</td></tr> </tbody> </table>	Regulated Drinking Water? (Y/N)	Metals Field Filtered? (Y/N)	CSR BTEX/VPH	LEPH & HEPH with CSR PAH	CSR/CCME Diss. Metals in Water w/ CV Hg	CSR VOC + VPH	CSR/CCME Metals in Soil			X	X			X			X	X						X	X			X			X	X						X	X			X			X	X			X			X	X						X	X			X			X	X						X	X			X	<p>Please provide advance notice for rush projects</p> <p>Regular (Standard) TAT (will be applied if Rush TAT is not specified) Standard TAT = 5-7 Working days for most tests. Please note: Standard TAT for certain tests such as BOD and Dioxins/Furans are &gt; 5 days - contact your Project Manager for details.</p> <p>Job Specific Rush TAT (if applies to entire submission) Date Required: _____ Time Required: _____</p> <p>Rush Confirmation Number _____ (call lab for #)</p>
Regulated Drinking Water? (Y/N)	Metals Field Filtered? (Y/N)	CSR BTEX/VPH	LEPH & HEPH with CSR PAH	CSR/CCME Diss. Metals in Water w/ CV Hg	CSR VOC + VPH	CSR/CCME Metals in Soil																																																																										
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Note: For regulated drinking water samples - please use the Drinking Water Chain of Custody Form

Samples must be kept cool (< 10°C) from time of sampling until delivery to maxxam

Sample Barcode Label	Sample (Location) Identification	Date Sampled	Time Sampled	Matrix	Regulated Drinking Water? (Y/N)	Metals Field Filtered? (Y/N)	CSR BTEX/VPH	LEPH & HEPH with CSR PAH	CSR/CCME Diss. Metals in Water w/ CV Hg	CSR VOC + VPH	CSR/CCME Metals in Soil	# of Bottles	Comments
1	22C-BH16-26-1	16/11/01	13:45	Soil			X	X			X	2	RECEIVED IN WHITEHORSE
2	22C-BH16-26-2		13:50				X	X				2	BY: <i>dyano@1200</i>
3	22C-BH16-27-1		14:15				X	X			X	2	2016-11-04 cooler #
4	22C-BH16-27-2		14:20				X	X				2	TEMP: 2 / 2 / 2 > 1 2 / 2 / 2 > 2
5	22C-BH16-28-1		14:30				X	X			X	2	
6	22C-BH16-28-2		14:35				X	X			X	2	
7	22C-BH16-28-3		14:40				X	X				2	
8	22C-BH16-29-1	16/11/02	10:00				X	X			X	2	
9	22C-BH16-29-2		10:05				X	X				2	
10	22C-BH16-30-1		11:00				X	X			X	2	

RELINQUISHED BY: (Signature/Print)	Date: (YY/MM/DD)	Time	RECEIVED BY: (Signature/Print)	Date: (YY/MM/DD)	Time	# jars used and not submitted	Lab Use Only
<i>Mike Chao</i>	16/11/03	17:00	<i>Michael Chao</i>	2016/11/07	10:00		Time Sensitive: <input type="checkbox"/> Temperature (°C) on Receipt: <i>223/143</i> Custody Seal Intact on Cooler?: <input checked="" type="checkbox"/> Yes <input type="checkbox"/> No

\* IT IS THE RESPONSIBILITY OF THE RELINQUISHER TO ENSURE THE ACCURACY OF THE CHAIN OF CUSTODY RECORD. AN INCOMPLETE CHAIN OF CUSTODY MAY RESULT IN ANALYTICAL TAT DELAYS.

White: Maxxam Yellow: Client



<b>INVOICE TO:</b>		<b>Report Information</b>		<b>Project Information</b>	
Company Name	#1756 PUBLIC WORKS & GOVERNMENT SERVICE	Company Name	#26479 SNC LAVALIN ENVIRONMENT INC.	Quotation #	B61631
Contact Name	Robert Price	Contact Name	Michael Chao ; Marta Rosa	P.O. #	Pending
Address	641- 800 BURREARD STREET VANCOUVER BC V6Z 2V8	Address	8648 COMMERCE COURT BURNABY BC V5A 4N6	Project #	640752
Phone	(604) 775-6810	Phone	(604) 515-5151	Project Name	AEC 22C
Email	robert.price@pwgsc-tpsgc.gc.ca	Email	Michael.Chao@sncilavalin.com ; marta.rosa@sncilavalin.com	Site #	Watson Lake Airport
				Stamp By	MLC



Bottle Order #:  
510054  
Project Manager  
Samantha Frogien

Regulatory Criteria	Special Instructions	Analysis Requested					Turnaround Time (TAT) Required	
Yukon CSR Water Drink / Freshwater		Regulated Drinking Water? (Y/N)	Metals Field Filtered? (Y/N)	CSR BTEX/VPH	LEPH & HEPH with CSR PAH	CSR/CCME Diss. Metals in Water w/ CV Hg	CSR VOC + VPH	CSR/CCME Metals in Soil
Note: For regulated drinking water samples - please use the Drinking Water Chain of Custody Form								
Samples must be kept cool (< 10°C) from time of sampling until delivery to maxxam								

Sample Barcode Label	Sample (Location) Identification	Date Sampled	Time Sampled	Matrix	Regulated Drinking Water? (Y/N)	Metals Field Filtered? (Y/N)	CSR BTEX/VPH	LEPH & HEPH with CSR PAH	CSR/CCME Diss. Metals in Water w/ CV Hg	CSR VOC + VPH	CSR/CCME Metals in Soil	# of Bottles	Comments
1	22C-BH16-30-2	16/11/03 <sup>02</sup>	11:05	Soil			X	X				2	RECEIVED IN WHITEHORSE BY: <i>Syenna@1200</i>
2	22C-BH16-30-3	16/11/03 <sup>02</sup>	11:10				X	X				2	2016-11-04
3	22C-BH16-31-1		12:30				X	X			X	2	TEMP: 2 1 2 12 → 1 2 2 2 → 2
4	22C-BH16-31-2		12:35				X	X				2	
5	22C-BH16-32-1		14:00				X	X			X	2	
6	22C-BH16-32-2		14:10				X	X				2	
7	22C-BH16-33-1		14:45				X	X			X	2	
8	22C-BH16-33-2		14:50				X	X				2	
9	22C-BH16-34-1		15:15				X	X			X	2	
10	22C-BH16-34-2		15:20				X	X				2	

RELINQUISHED BY: (Signature/Print)	Date: (YY/MM/DD)	Time	RECEIVED BY: (Signature/Print)	Date: (YY/MM/DD)	Time	# jars used and not submitted	Lab Use Only	
<i>Mike Chao</i>	16/11/03	17:00	<i>Lauren Berthier</i>	2016/11/07	10:00		Time Sensitive	Temperature (°C) on Receipt
							<input type="checkbox"/>	223/143
* IT IS THE RESPONSIBILITY OF THE RELINQUISHER TO ENSURE THE ACCURACY OF THE CHAIN OF CUSTODY RECORD. AN INCOMPLETE CHAIN OF CUSTODY MAY RESULT IN ANALYTICAL TAT DELAYS.							Custody Seal Intact on Cooler? <input checked="" type="checkbox"/> Yes <input type="checkbox"/> No	

**INVOICE TO:**

Company Name: **#1756 PUBLIC WORKS & GOVERNMENT SERVICE**  
 Contact Name: **Robert Price**  
 Address: **641-800 BURNARD STREET  
VANCOUVER BC V6Z 2V8**  
 Phone: **(604) 775-6810** Fax: **(604) 775-6850**  
 Email: **robert.price@pwgsc-lpsgc.gc.ca**

**Report Information**

Company Name: **#26479 SNC LAVALIN ENVIRONMENT INC.**  
 Contact Name: **Michael Chao ; Marta Rosa**  
 Address: **8648 COMMERCE COURT  
BURNABY BC V5A 4N6**  
 Phone: **(604) 515-5151** Fax:   
 Email: **Michael.Chao@snc-lavalin.com ; marta.rosa@snc-lavalin.com**

**Project Information**

Quotation #: **B61631**  
 P.O. #: **Pending**  
 Project #: **640752**  
 Project Name: **AEC 22C**  
 Site #: **Watson Lake Airport**  
 Sampled By: **MLC**



B699547\_COC

**Bottle Order #:**  
510054  
**Project Manager:**  
Samantha Fregien

**Regulatory Criteria**

*Yukon CSR Water  
Drinking / Freshwater*

**Special Instructions**

**Analysis Requested**

Regulated Drinking Water? (Y/N)	Metals Field Filtered? (Y/N)	CSR BTEX/VPH	LEPH & HEPH with CSR PAH	CSR/CCME Diss. Metals in Water w/ CV Hg	CSR VOC + VPH	CSR/CCME Metals in Soil
		X	X			X

**Turnaround Time (TAT) Required**

Please provide advance notice for rush projects

Regular (Standard) TAT  
 (will be applied if Rush TAT is not specified)  
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 Please note: Standard TAT for certain tests such as BOD and Dioxins/Furans are > 8 days - contact your Project Manager for details.

Job Specific Rush TAT (if applies to entire submission)  
 Date Required: \_\_\_\_\_ Time Required: \_\_\_\_\_  
 Rush Confirmation Number: \_\_\_\_\_ (call lab for #)

Note: For regulated drinking water samples - please use the Drinking Water Chain of Custody Form

Samples must be kept cool (< 10°C) from time of sampling until delivery to maxxam

Sample Barcode Label	Sample (Location) Identification	Date Sampled	Time Sampled	Matrix	Regulated Drinking Water? (Y/N)	Metals Field Filtered? (Y/N)	CSR BTEX/VPH	LEPH & HEPH with CSR PAH	CSR/CCME Diss. Metals in Water w/ CV Hg	CSR VOC + VPH	CSR/CCME Metals in Soil	# of Bottles	Comments
1	22C-BH16-35-1	16/11/02	15:30	Soil			X	X			X	2	RECEIVED IN WHITEHORSE
2	22C-BH16-35-2	↓	15:35				X	X				2	BY: <i>[Signature]</i> 1200
3	22C-BH16-36-1	16/11/03	9:00				X	X			X	2	2016-11-04
4	22C-BH16-36-2		9:05				X	X				2	TEMP: 2 / 2 / 2 → 1 2 / 2 / 2 → 2
5	22C-BH16-37-1		9:40				X	X			X	2	
6	22C-BH16-37-2		9:45				X	X				2	
7	22C-BH16-38-1		10:15				X	X			X	2	
8	22C-BH16-38-2		10:20				X	X				2	
9	22C-BH16-38-3		10:25				X	X				2	
10	22C-BH16-38-4		10:30				X	X				2	

* * RELINQUISHED BY: (Signature/Print)		Date: (YY/MM/DD)	Time	RECEIVED BY: (Signature/Print)		Date: (YY/MM/DD)	Time	# jars used and not submitted	Lab Use Only		
<i>[Signature]</i> Mike Chao		16/11/03	17:00	<i>[Signature]</i> [Name]		16/11/07	10:00		Time Sensitive	Temperature (°C) on Receipt	Custody Seal Intact on Cooler?
									<input type="checkbox"/>	223/143	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No

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Phone	(604) 775-6810 Fax: (604) 775-6650	Phone	(604) 515-5151 Fax:	Project Name	AEC 22C
Email	robert.price@pwgsc-tpsgc.gc.ca	Email	Michael.Chao@snc-lavalin.com; marta-rosa@snc-lavalin.com	Site #	Watson Lake Airport
				Prepared By	MLC



Bottle Order #:  
510054  
Project Manager  
Samantha Fregien

Regulatory Criteria	Special Instructions	Analysis Requested	Turnaround Time (TAT) Required												
Yukon CSR Water Drinking/ Freshwater		<table border="1"> <tr> <td>Regulated Drinking Water ? (Y/N)</td> <td>LEPH &amp; HEPH with CSR PAH</td> <td>CSR/CCME Metals in Soil</td> </tr> <tr> <td>Metals Field Filtered ? (Y/N)</td> <td>CSR BTEX/VPH</td> <td>CSR/CCME Metals in Soil</td> </tr> <tr> <td></td> <td>CSR/CCME Diss. Metals in Water w/ CV /Hg</td> <td></td> </tr> <tr> <td></td> <td>CSR VOC + VPH</td> <td></td> </tr> </table>	Regulated Drinking Water ? (Y/N)	LEPH & HEPH with CSR PAH	CSR/CCME Metals in Soil	Metals Field Filtered ? (Y/N)	CSR BTEX/VPH	CSR/CCME Metals in Soil		CSR/CCME Diss. Metals in Water w/ CV /Hg			CSR VOC + VPH		Regular (Standard) TAT (will be applied if Rush TAT is not specified) Standard TAT = 5-7 Working days for most tests. Please note: Standard TAT for certain tests such as BOD and Dioxins/Furans are > 5 days - contact your Project Manager for details. <input checked="" type="checkbox"/>
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	CSR/CCME Diss. Metals in Water w/ CV /Hg														
	CSR VOC + VPH														

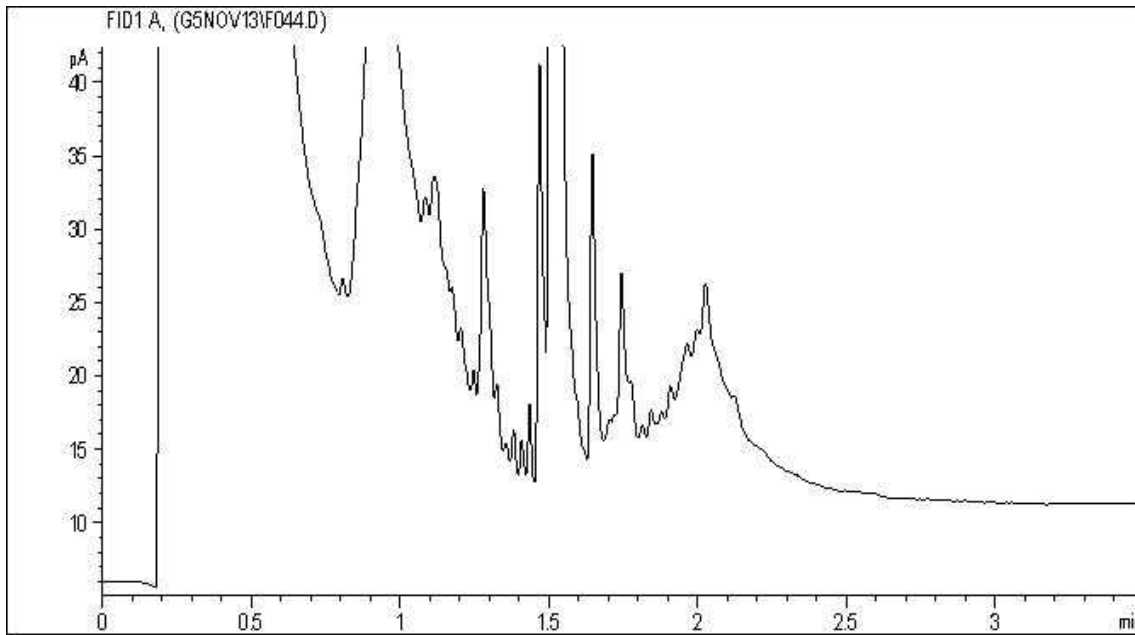
Note: For regulated drinking water samples - please use the Drinking Water Chain of Custody Form  
 Samples must be kept cool (< 10°C) from time of sampling until delivery to maxxam

Sample Barcode Label	Sample (Location) Identification	Date Sampled	Time Sampled	Matrix	Regulated Drinking Water ? (Y/N)	Metals Field Filtered ? (Y/N)	CSR BTEX/VPH	LEPH & HEPH with CSR PAH	CSR/CCME Diss. Metals in Water w/ CV /Hg	CSR VOC + VPH	CSR/CCME Metals in Soil	# of Bottles	Comments
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3													RECEIVED IN WHITEHORSE
4													BY: <i>Symon@1200</i>
5													2016-11-04
6													TEMP: 2   2   2 → 1 2   2   2 → 2
7													
8													
9													
10													

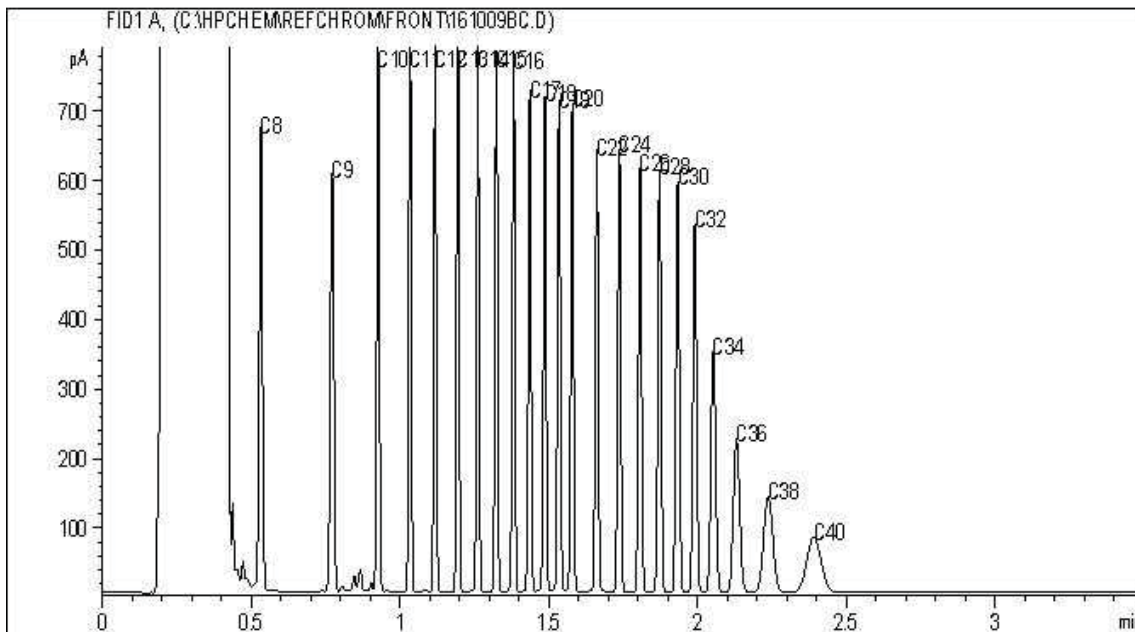
RELINQUISHED BY: (Signature/Print)	Date: (YY/MM/DD)	Time	RECEIVED BY: (Signature/Print)	Date: (YY/MM/DD)	Time	# jars used and not submitted	Time Sensitive	Temperature (°C) on Receipt	Custody Seal Intact on Cooler?
<i>Mike Chao</i>	16/11/03	17:00	<i>Laurel B. Pinner</i>	2016/11/07	16:00		<input type="checkbox"/>	223/143	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No

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EPH in Soil by GC/FID Chromatogram



Carbon Range Distribution - Reference Chromatogram

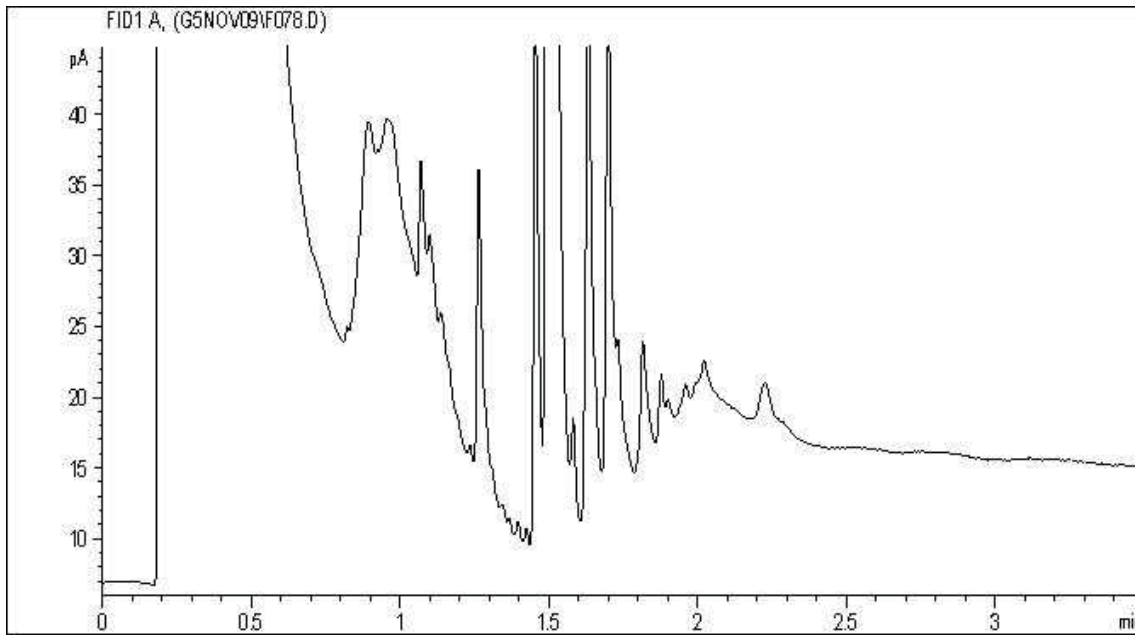


TYPICAL PRODUCT CARBON NUMBER RANGES

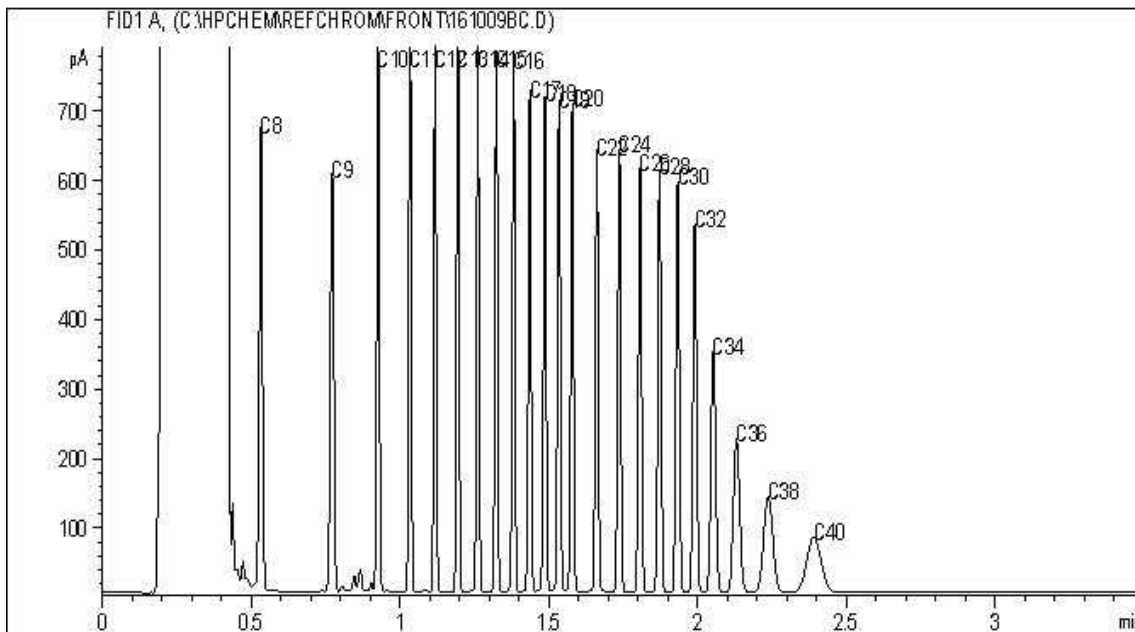
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EPH in Soil by GC/FID Chromatogram



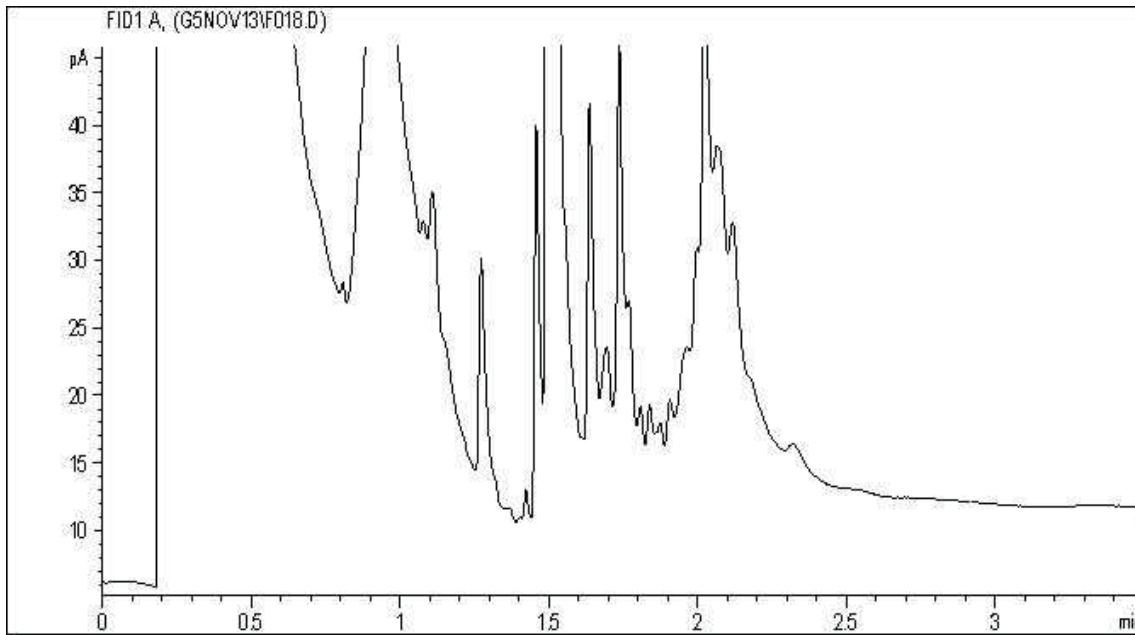
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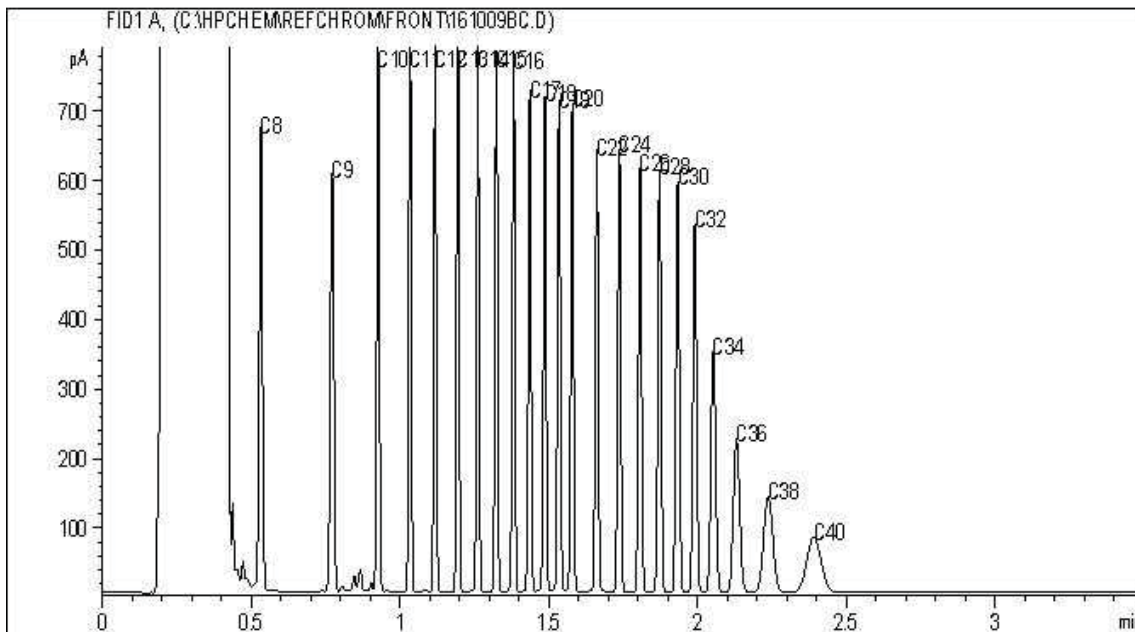
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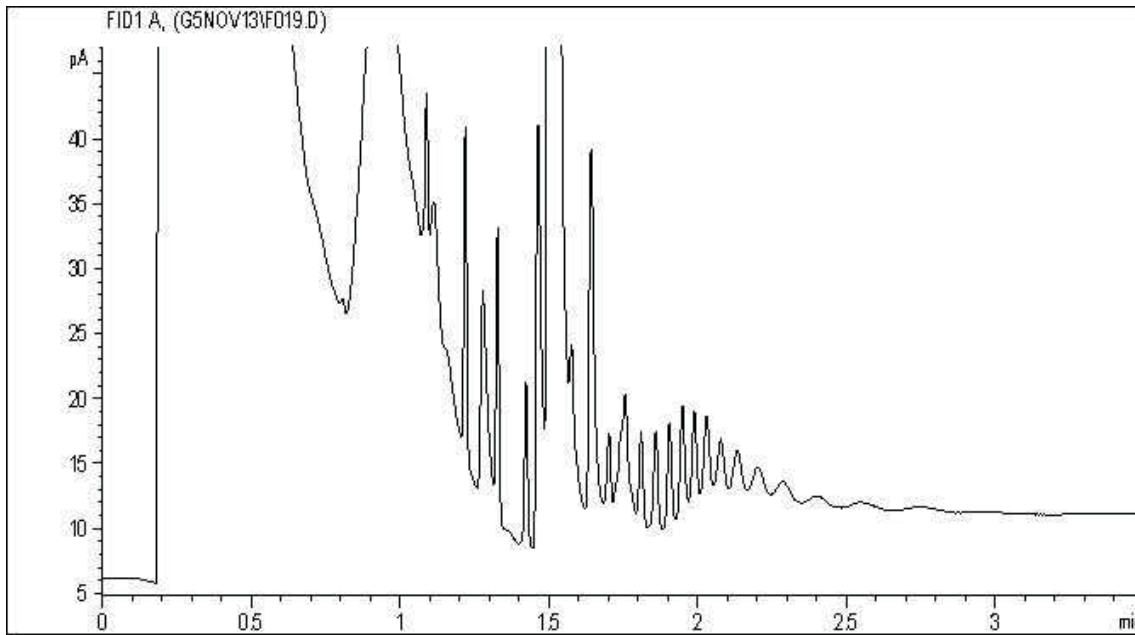
Carbon Range Distribution - Reference Chromatogram



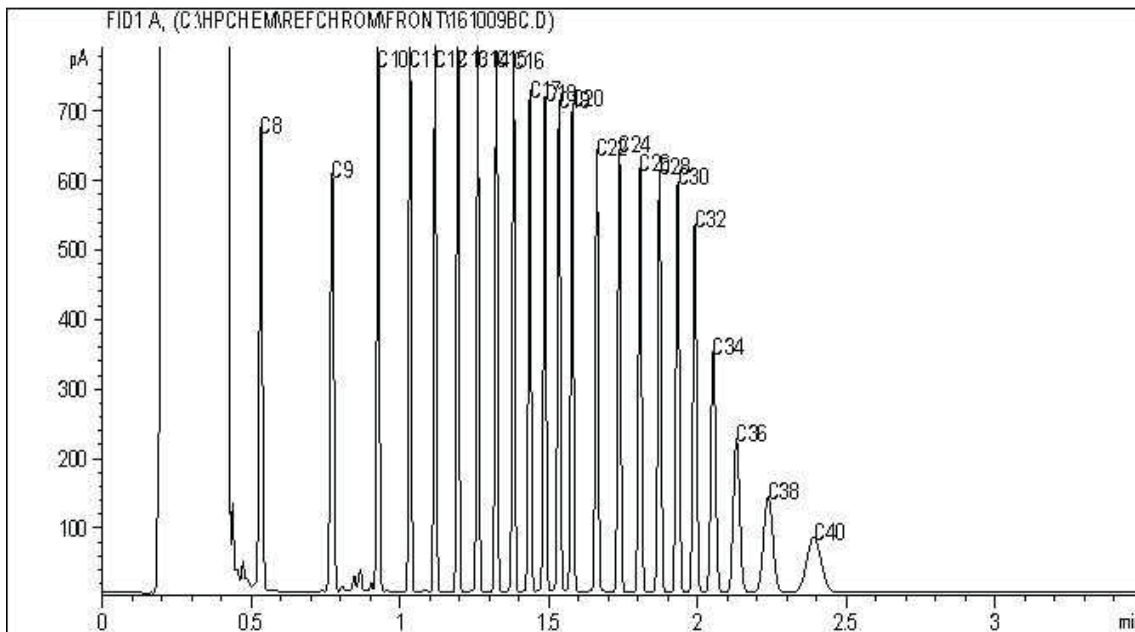
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EPH in Soil by GC/FID Chromatogram



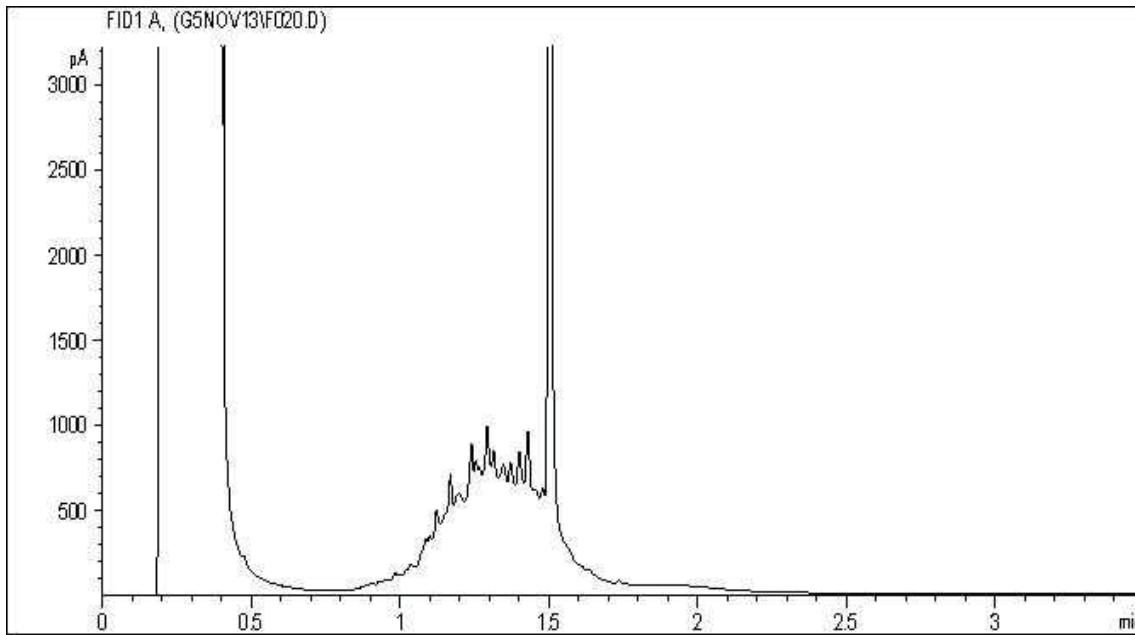
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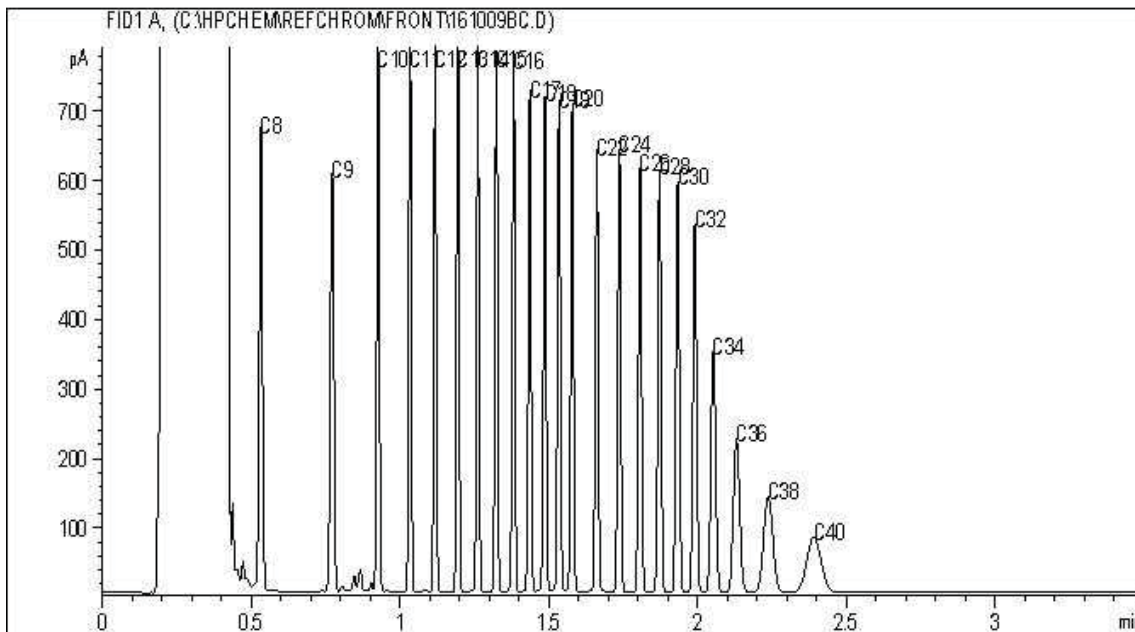
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EPH in Soil by GC/FID Chromatogram



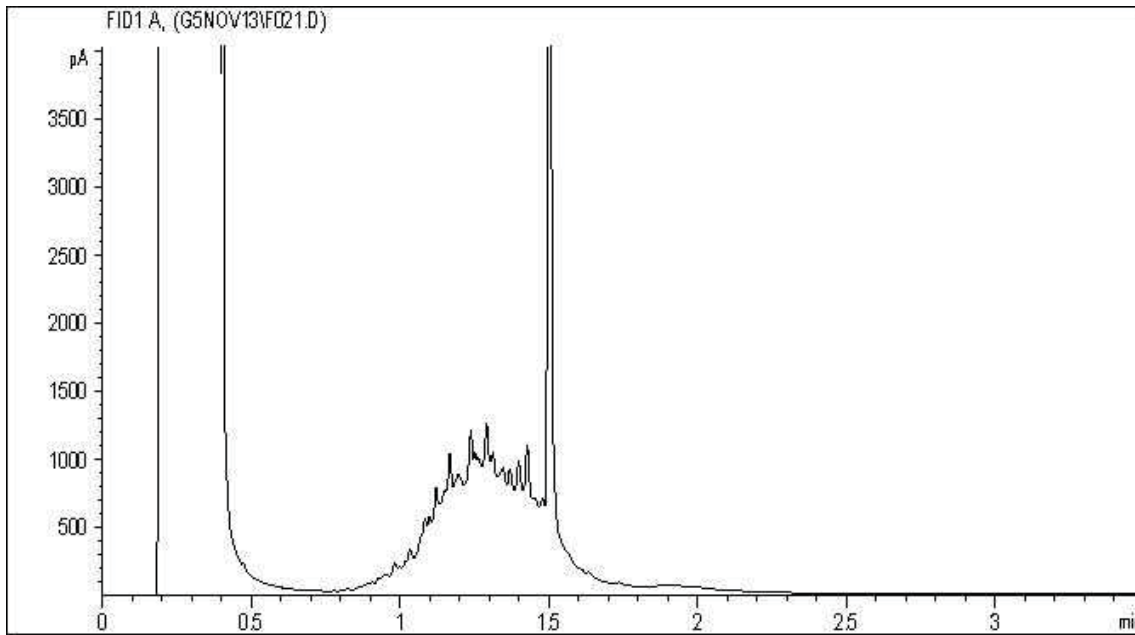
Carbon Range Distribution - Reference Chromatogram



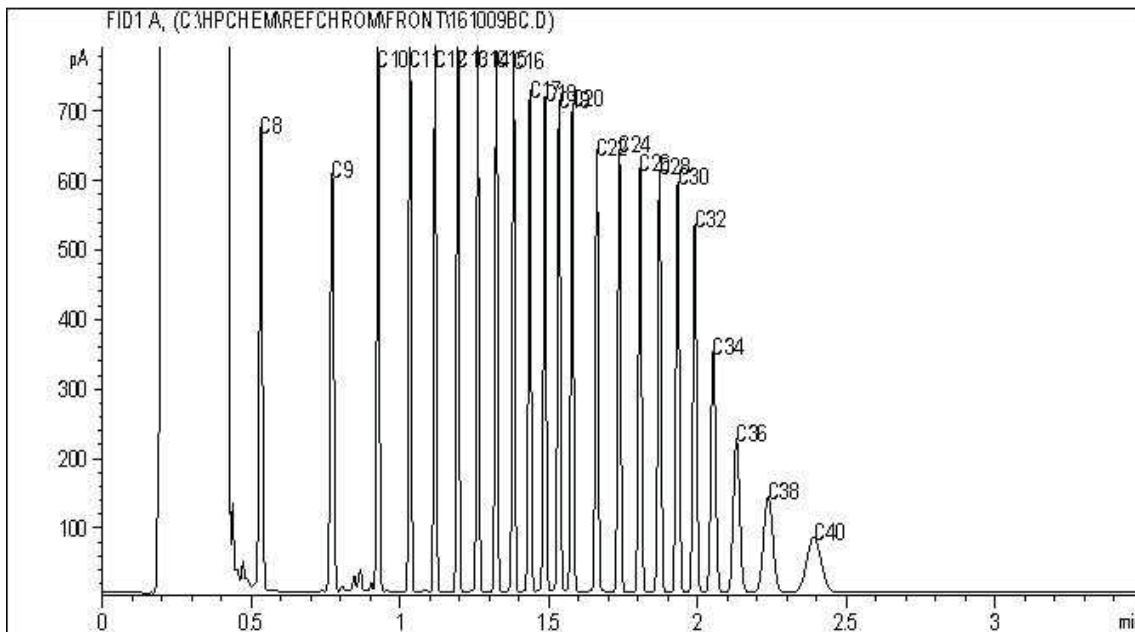
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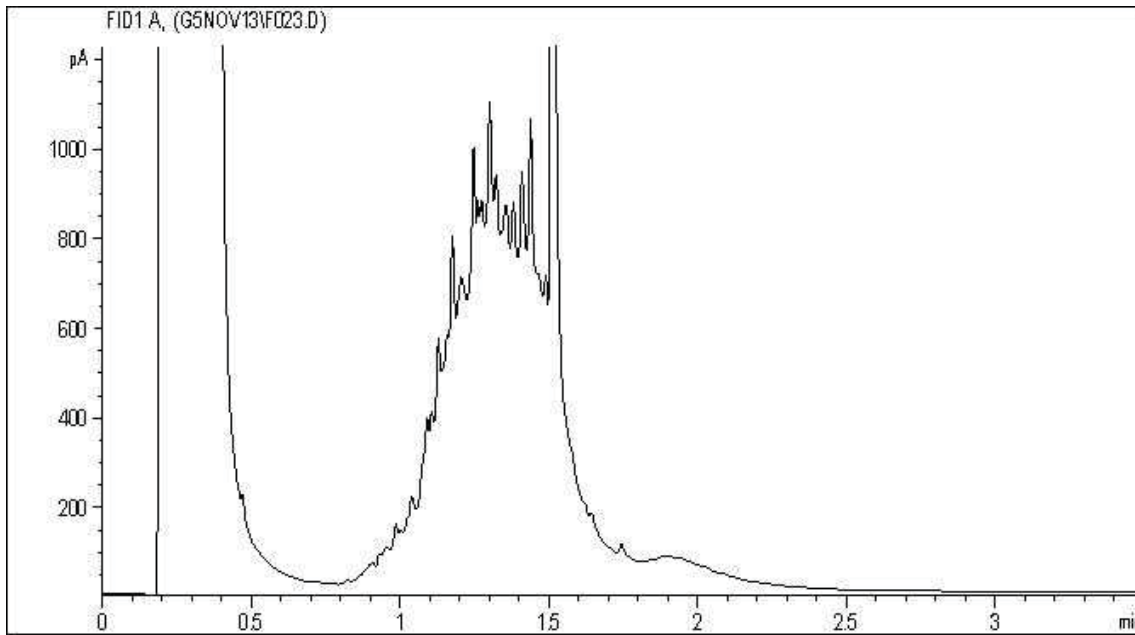
Carbon Range Distribution - Reference Chromatogram



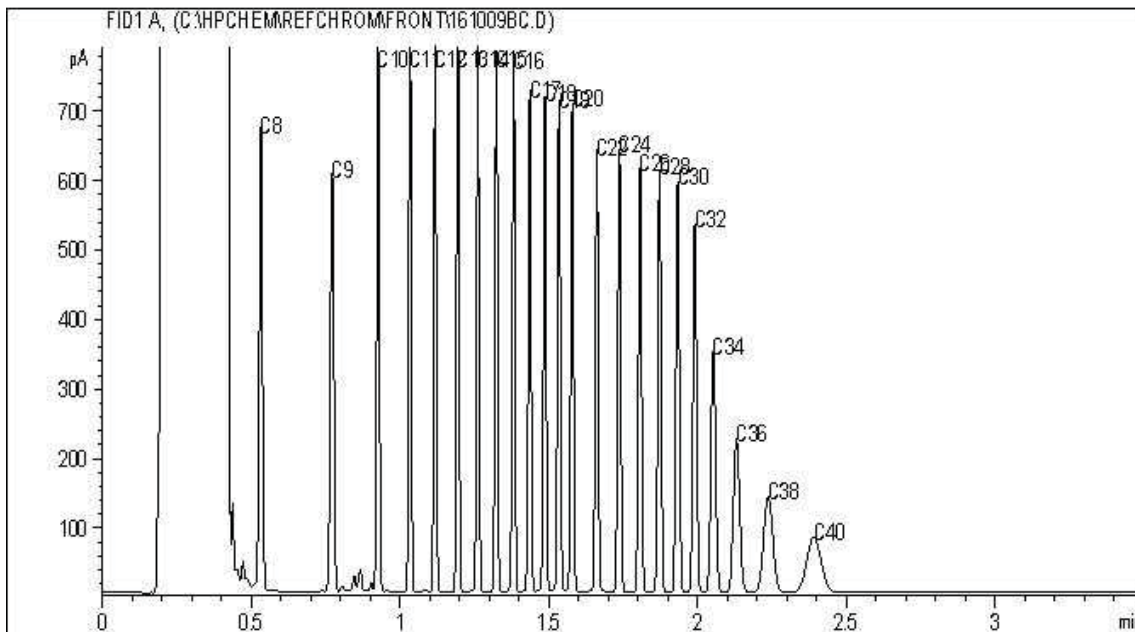
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EPH in Soil by GC/FID Chromatogram



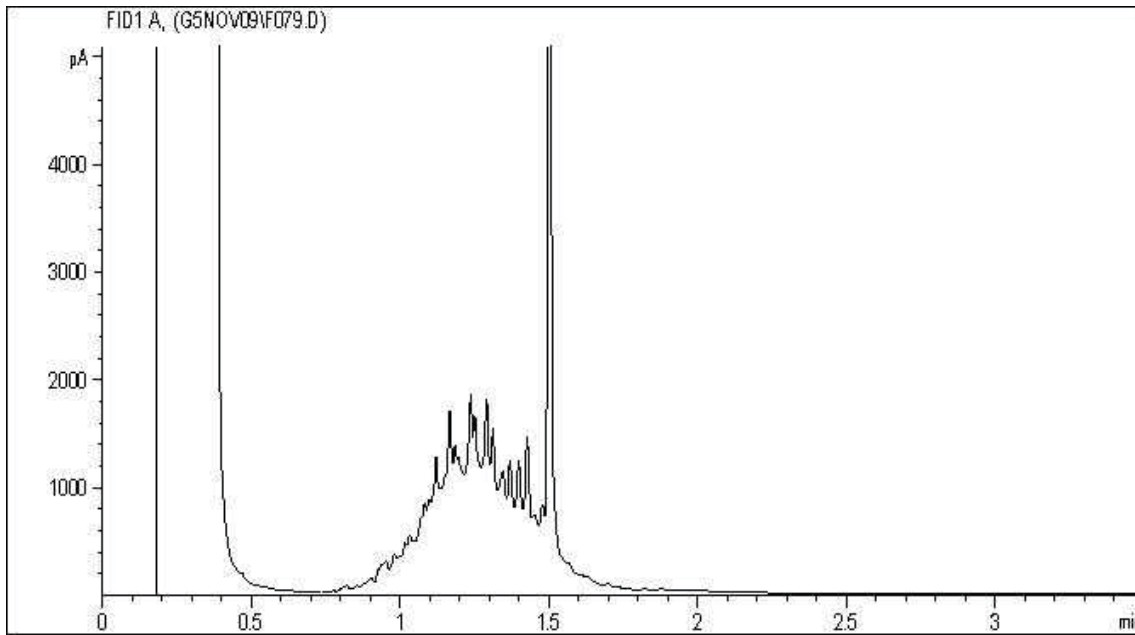
Carbon Range Distribution - Reference Chromatogram



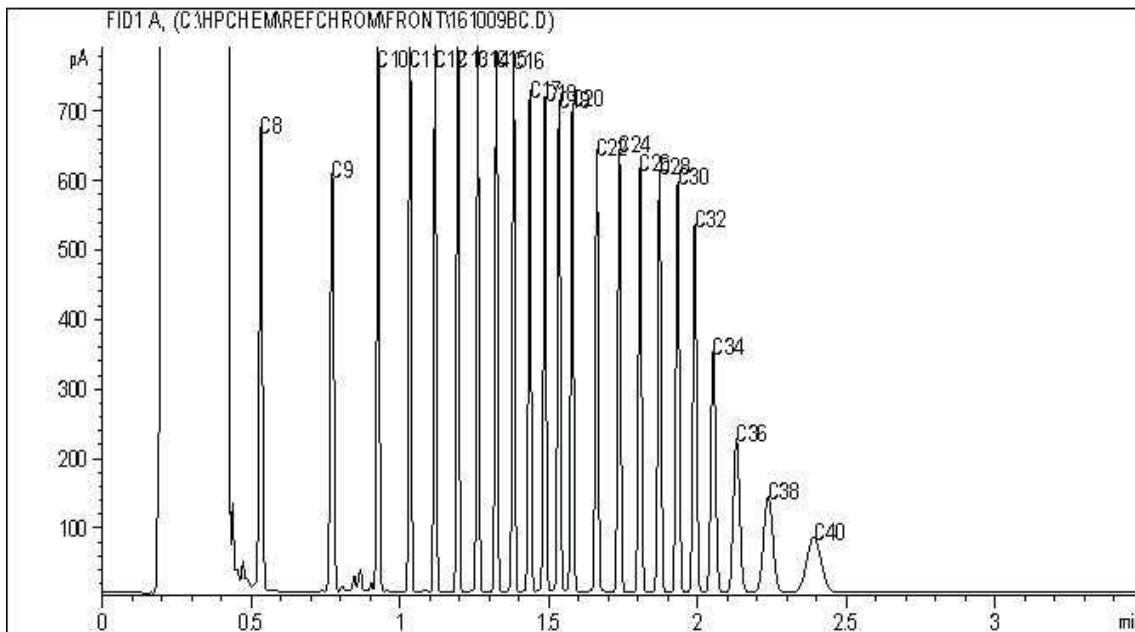
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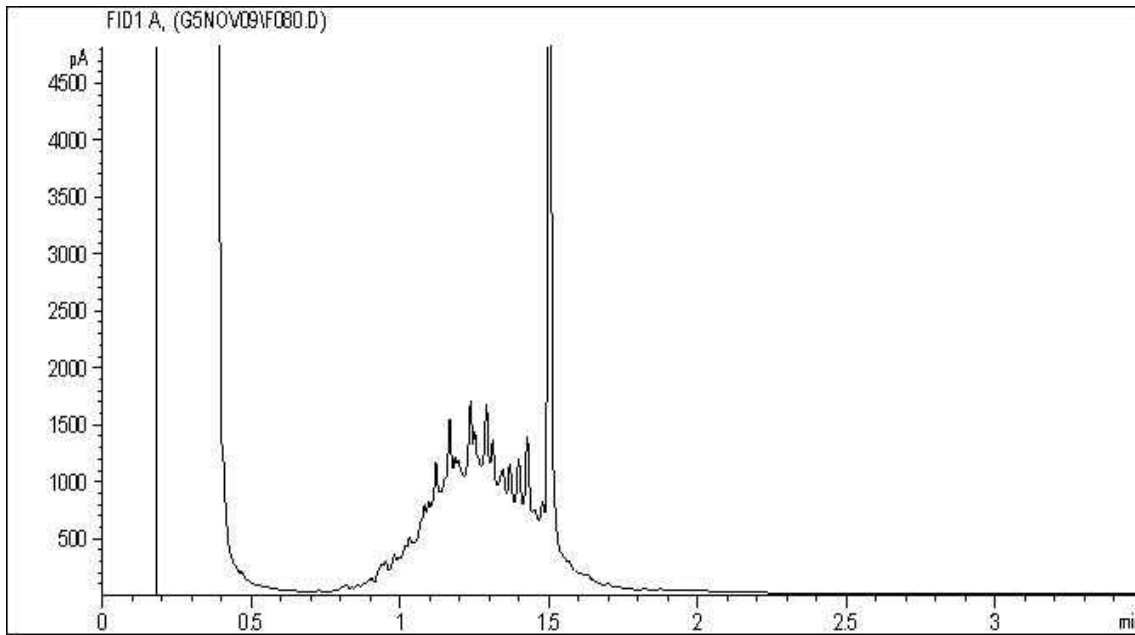
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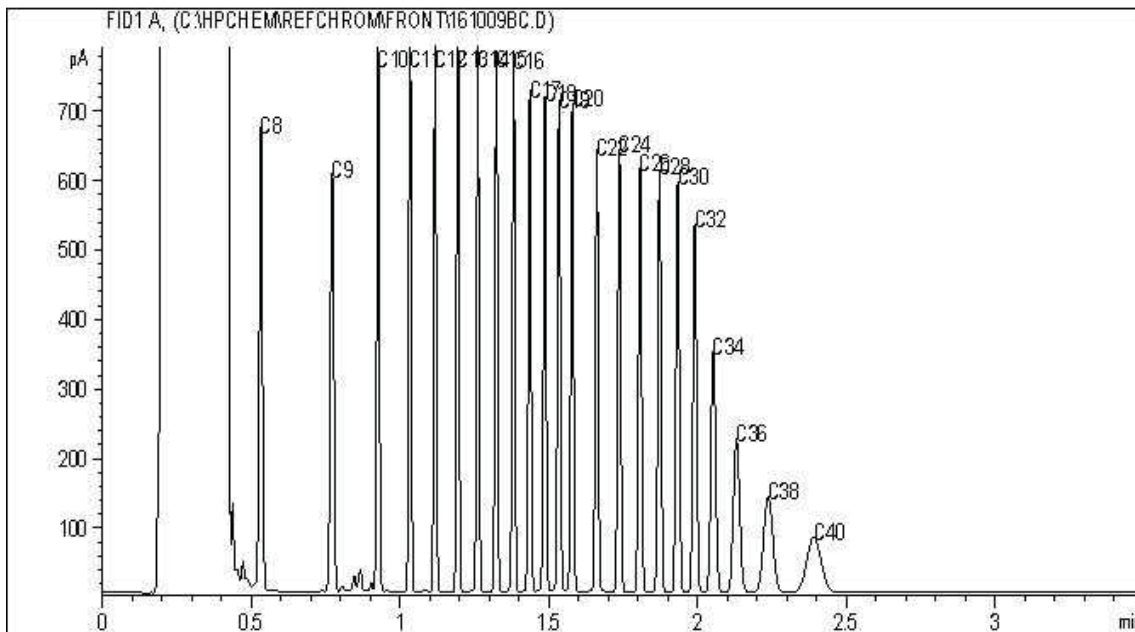
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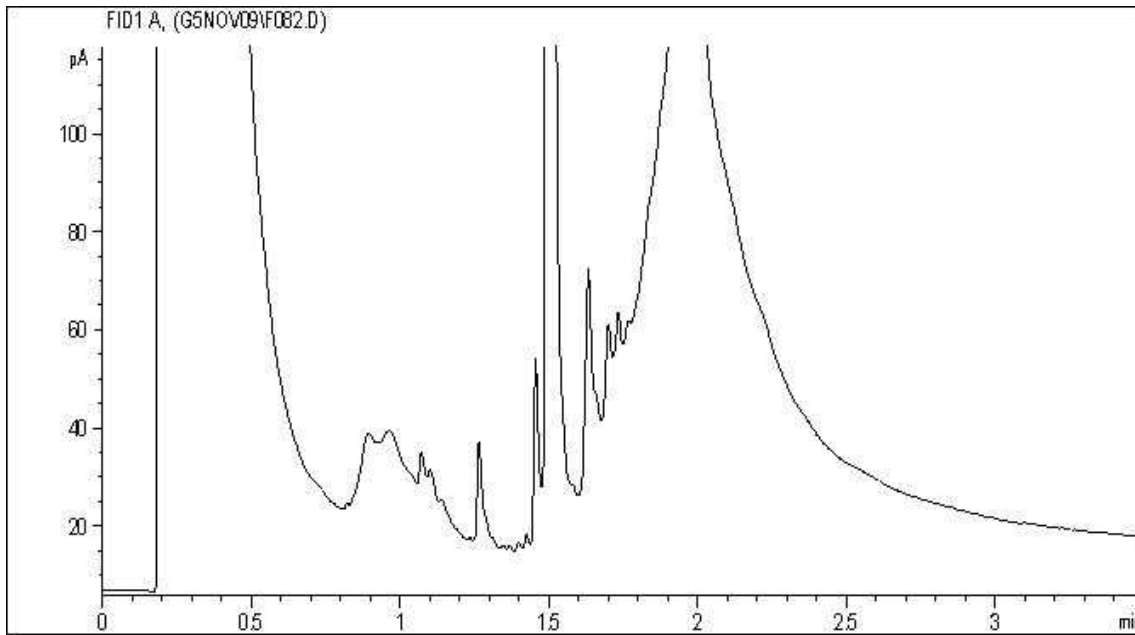


TYPICAL PRODUCT CARBON NUMBER RANGES

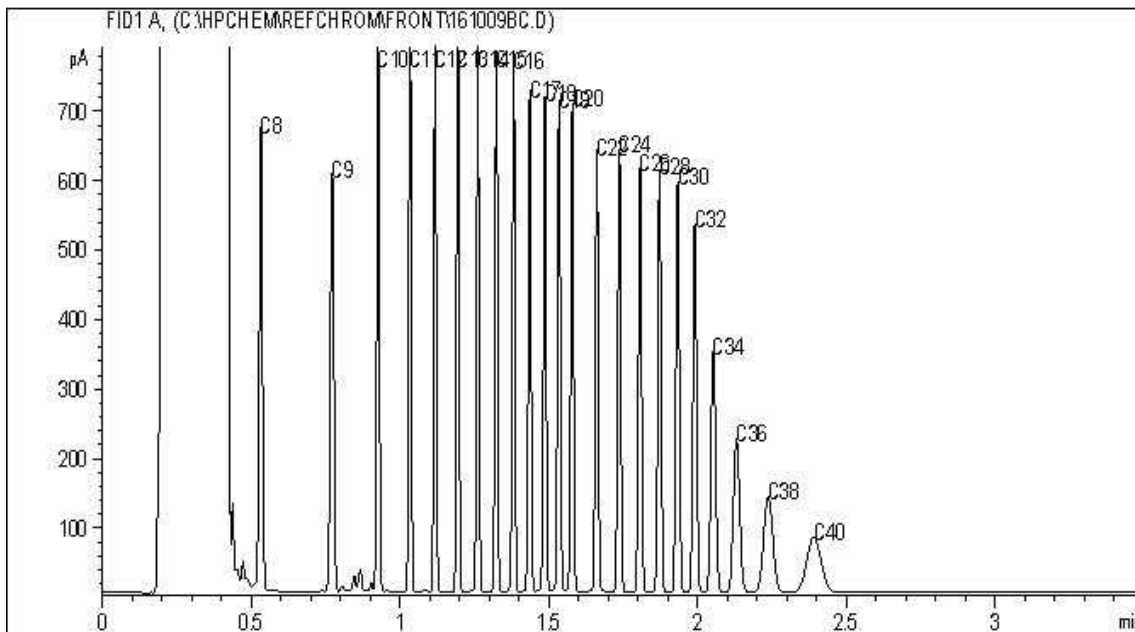
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EPH in Soil by GC/FID Chromatogram



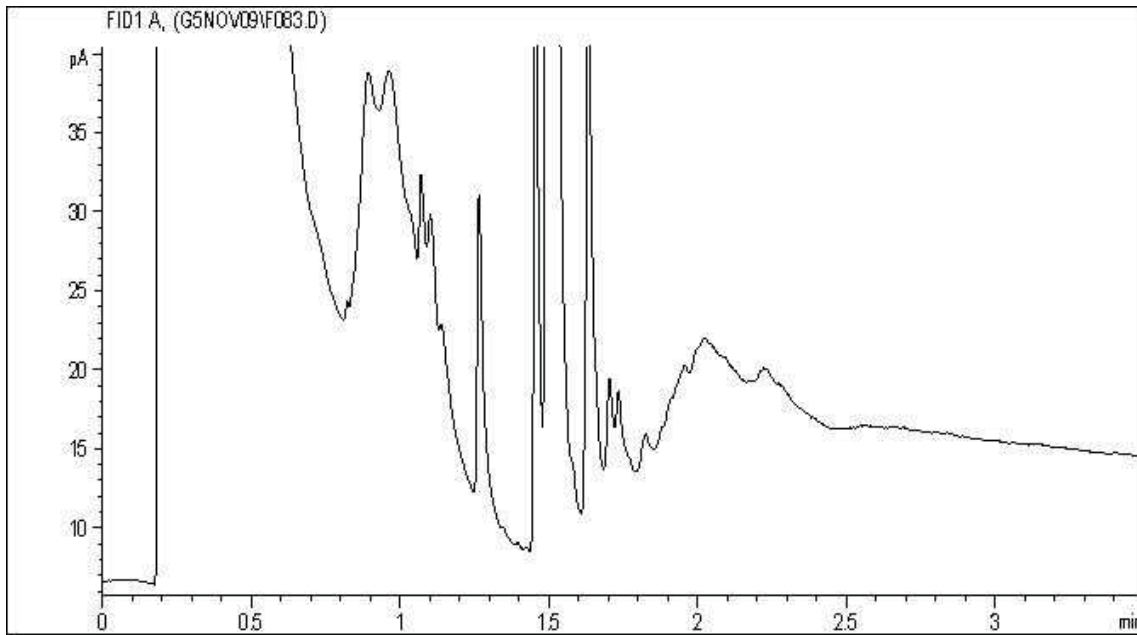
Carbon Range Distribution - Reference Chromatogram



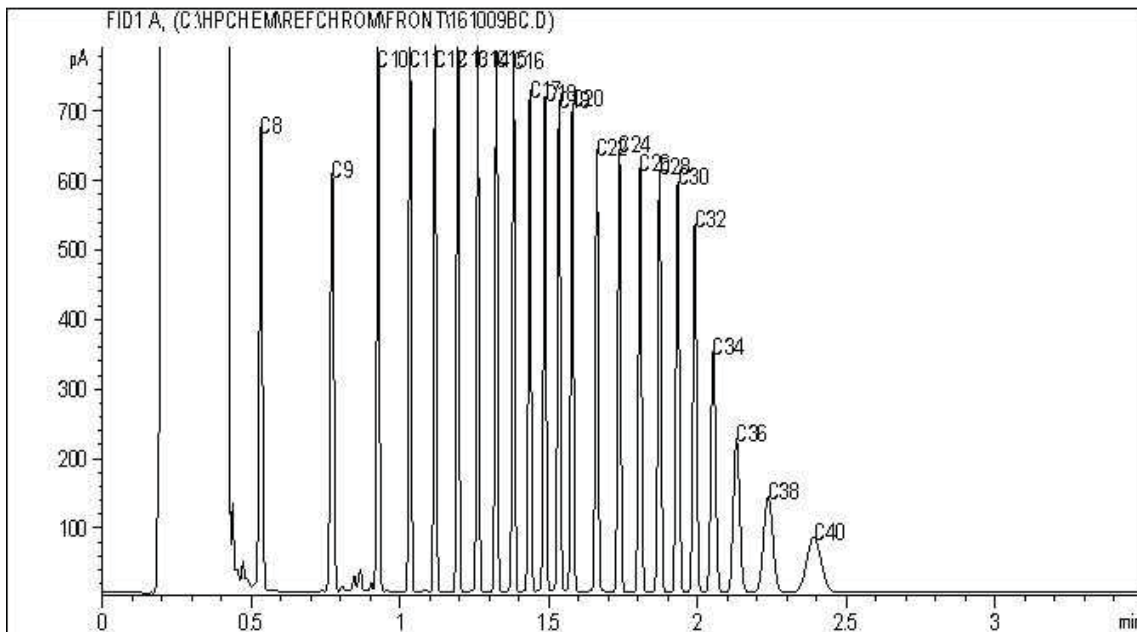
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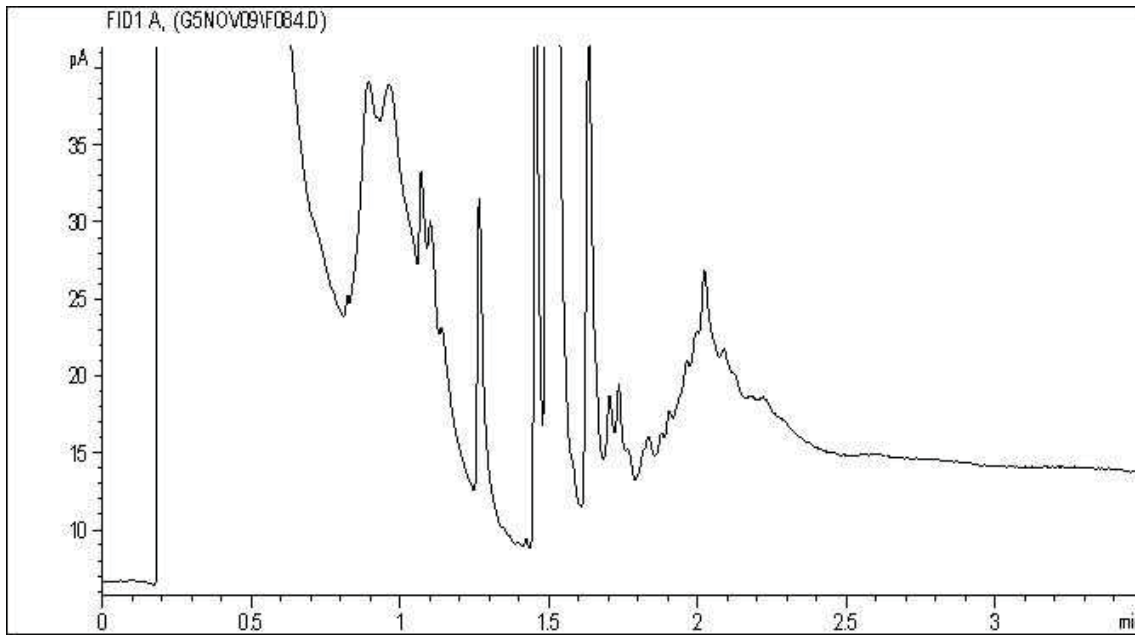
Carbon Range Distribution - Reference Chromatogram



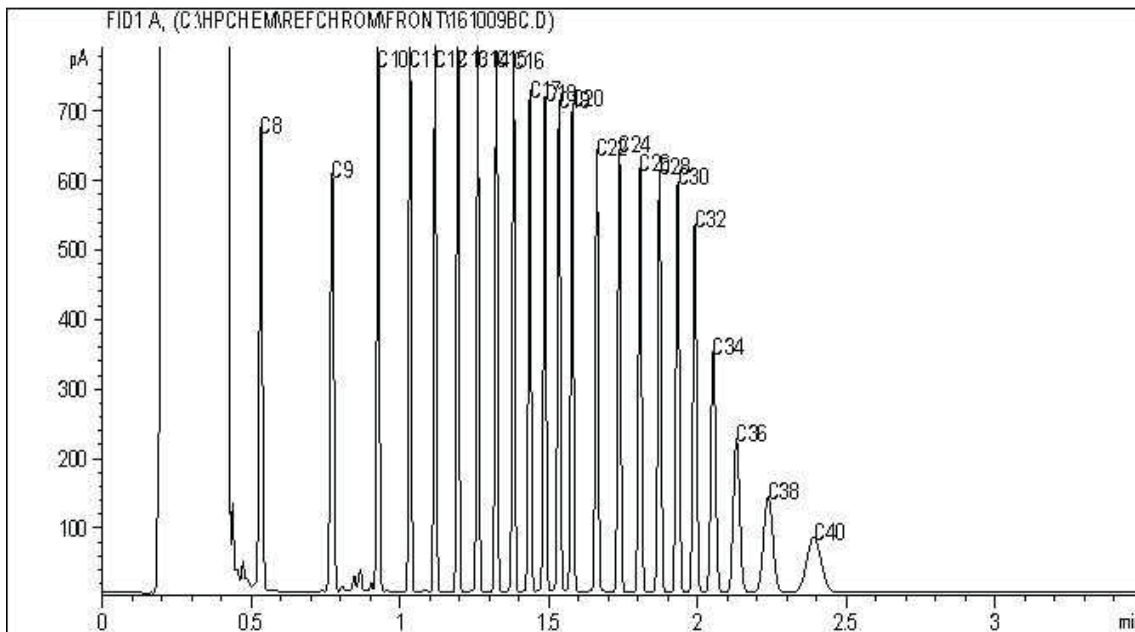
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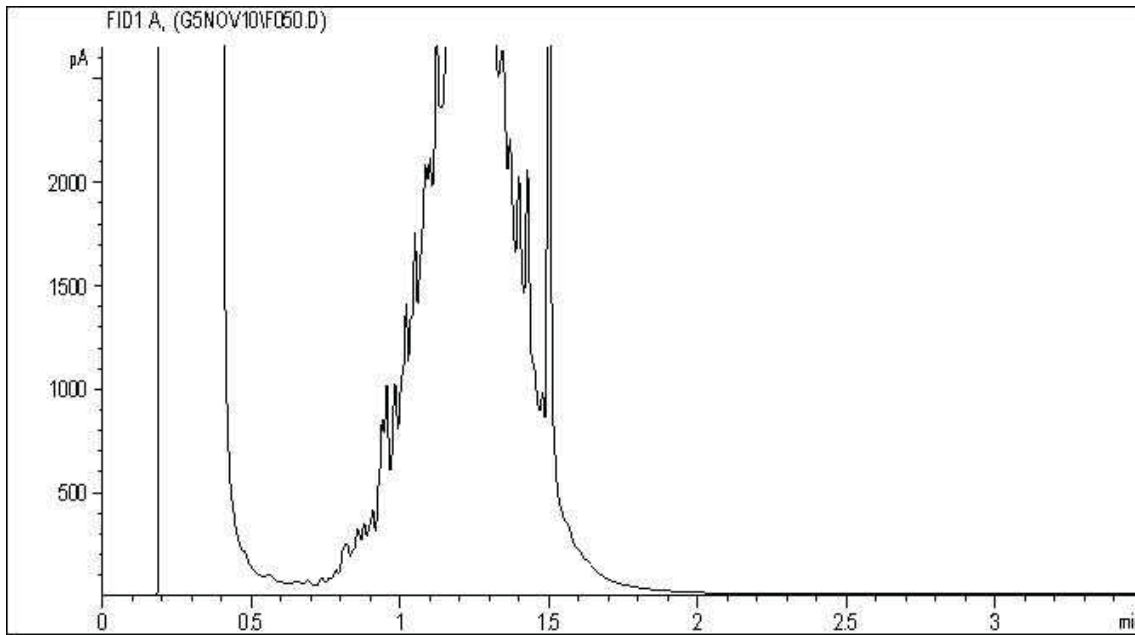
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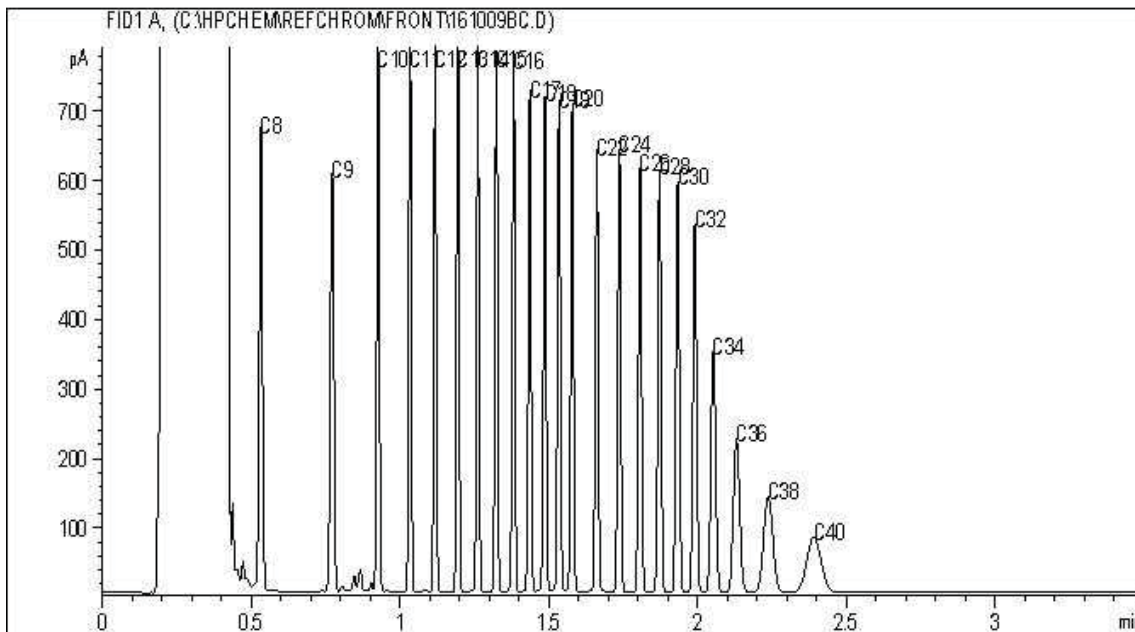
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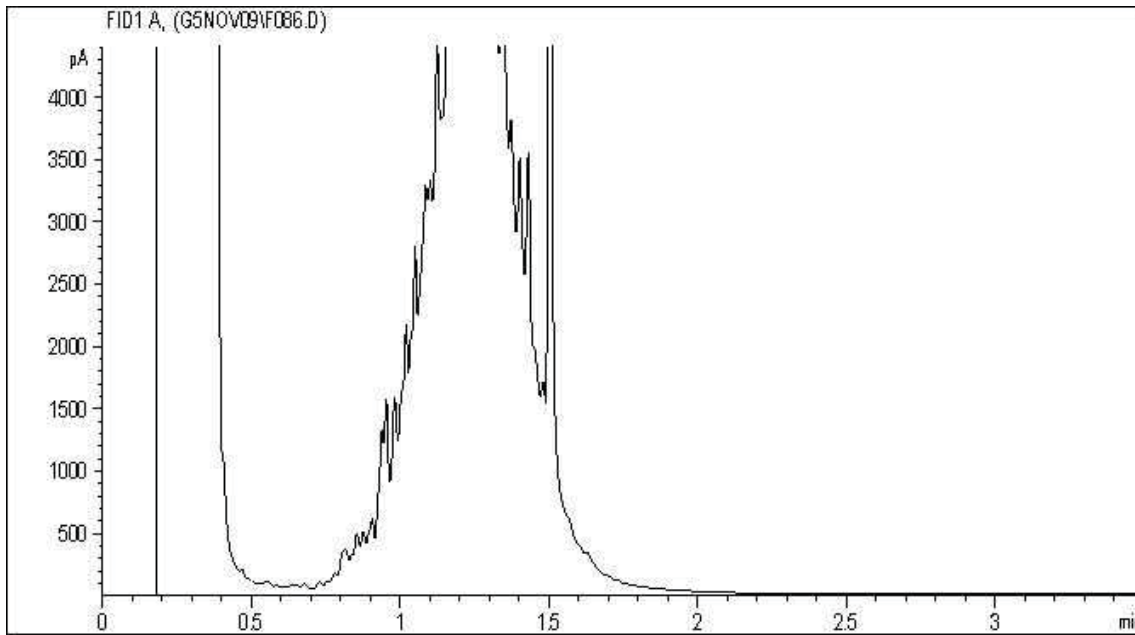
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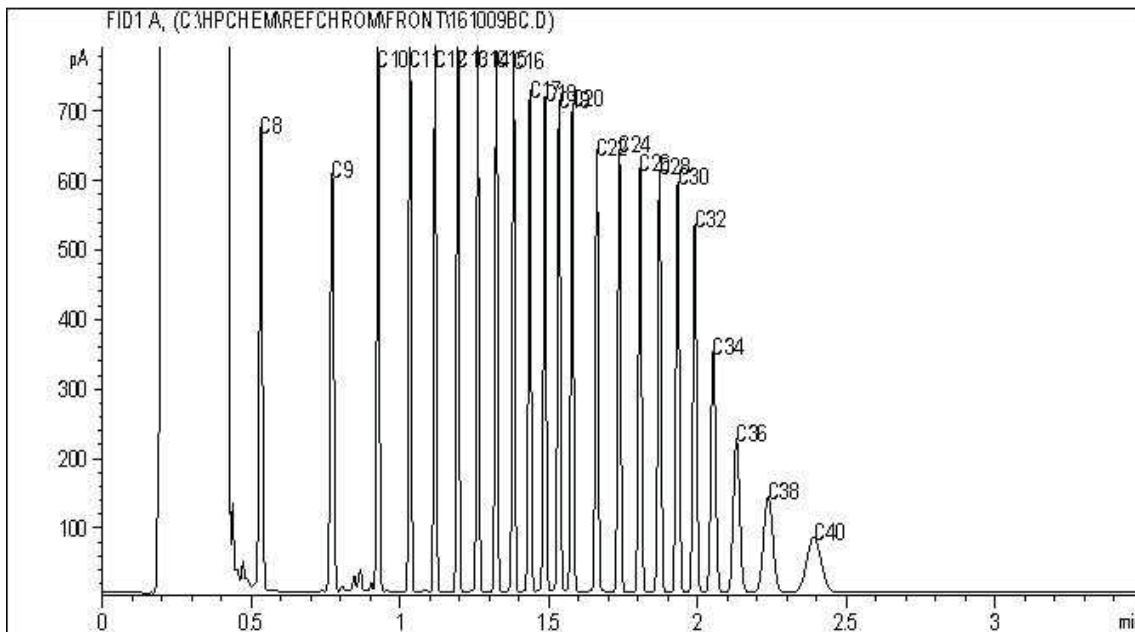
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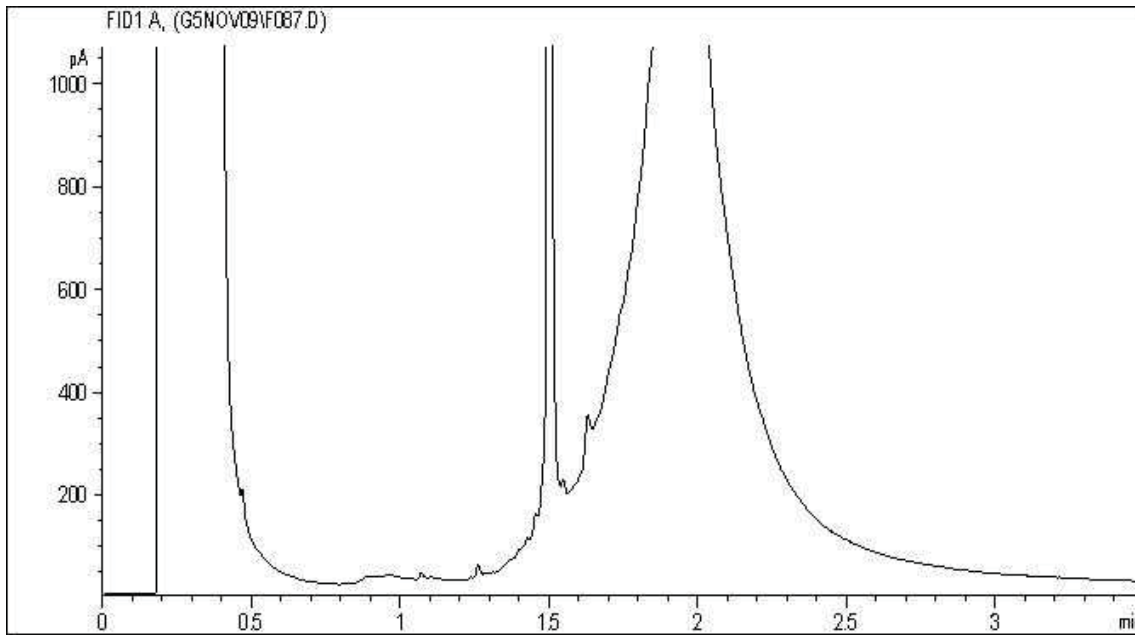
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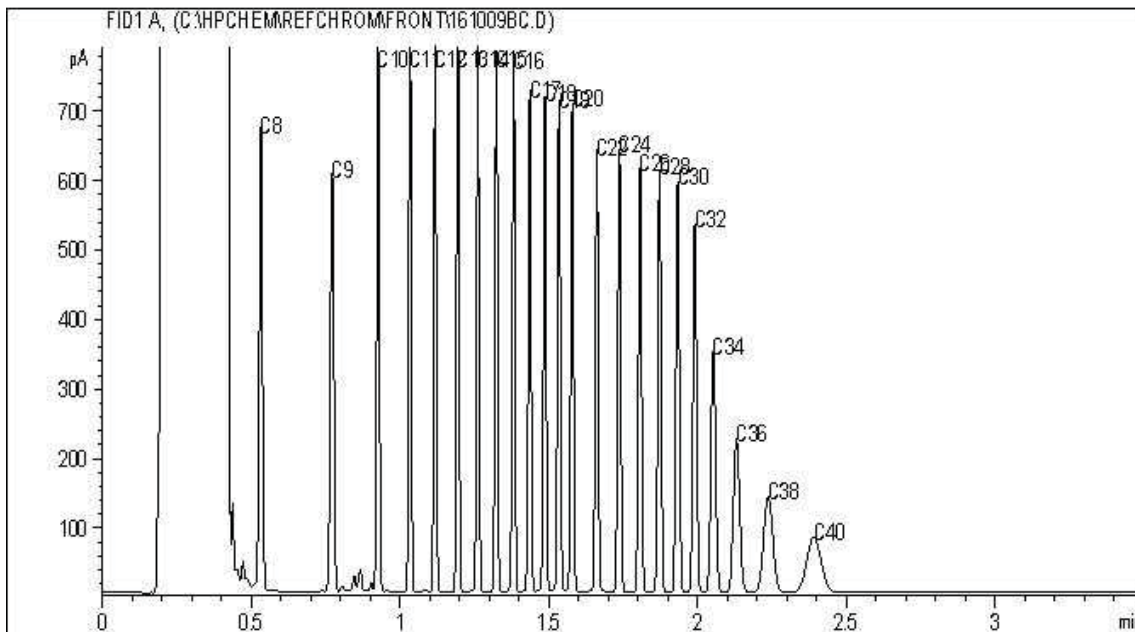
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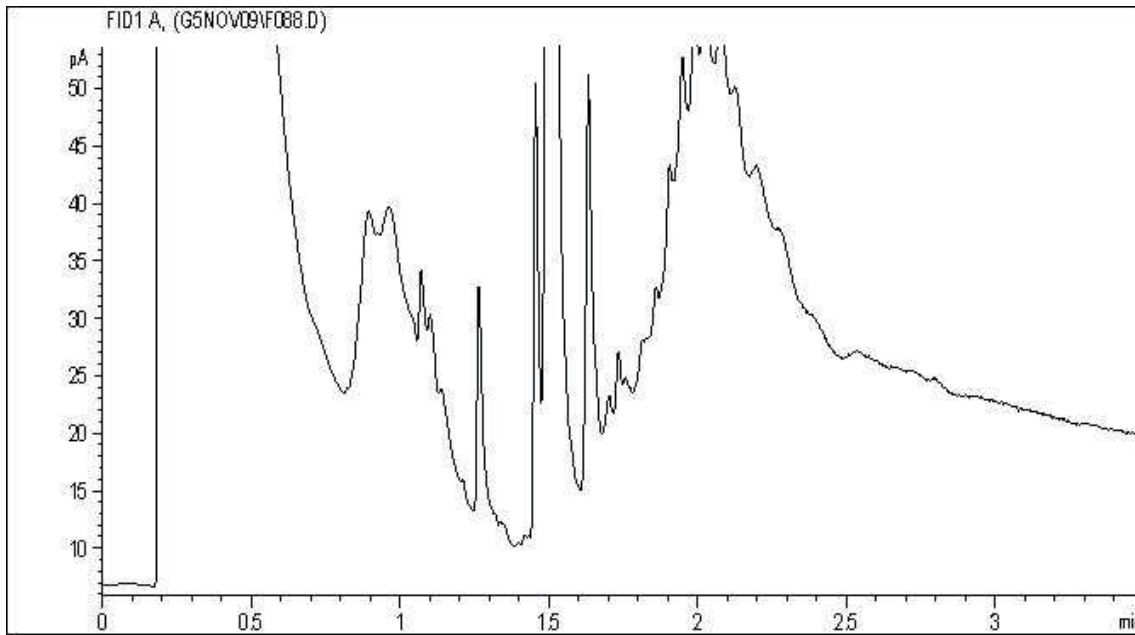
Carbon Range Distribution - Reference Chromatogram



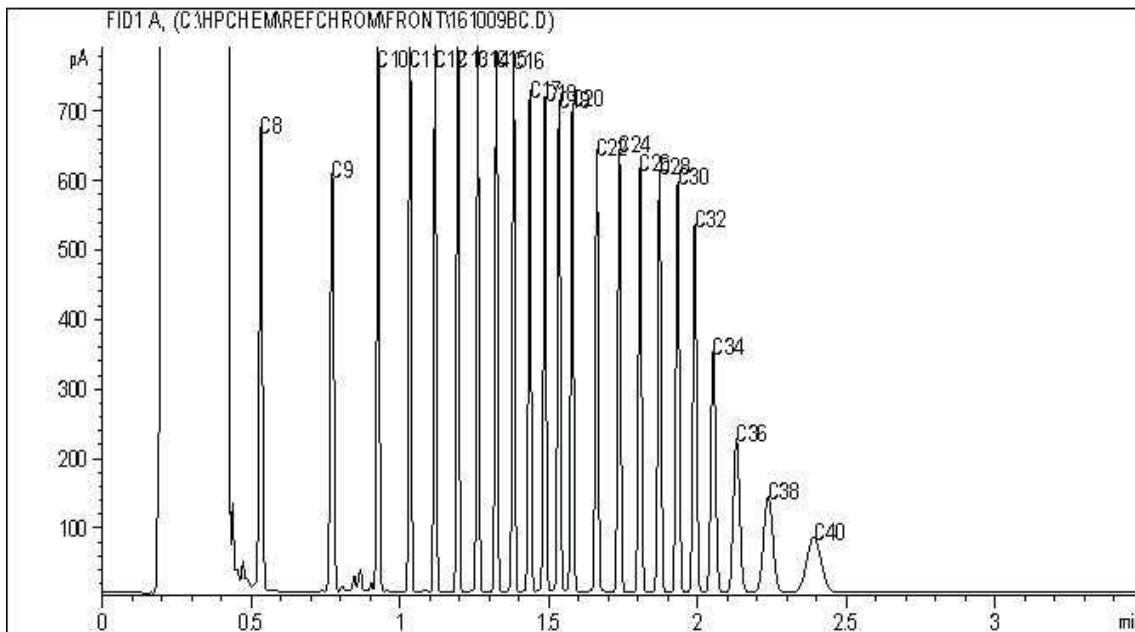
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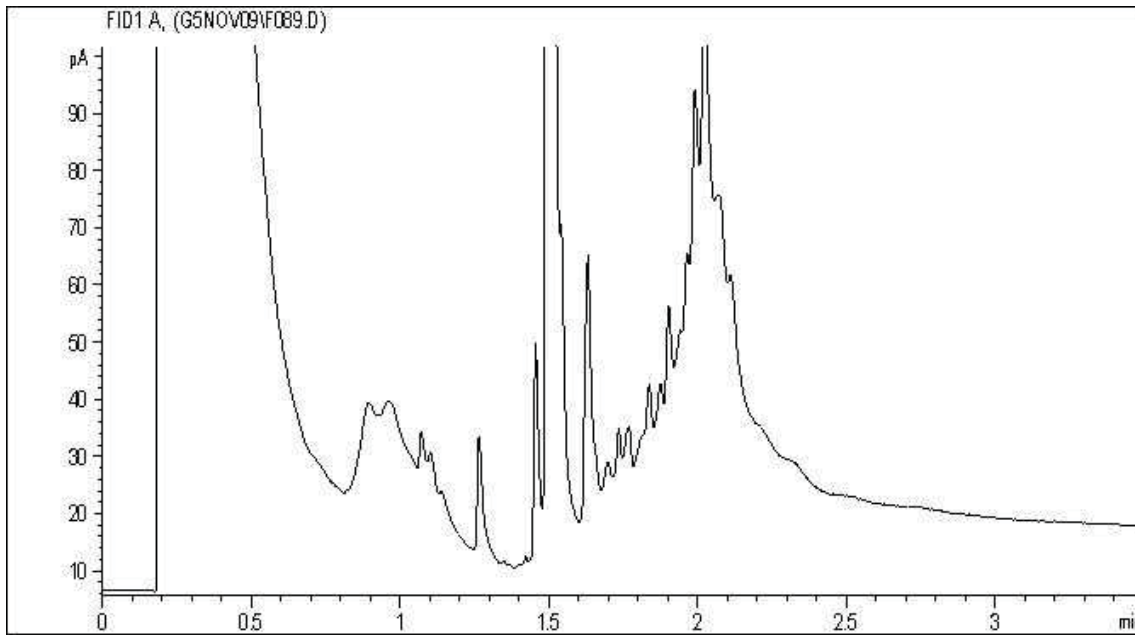
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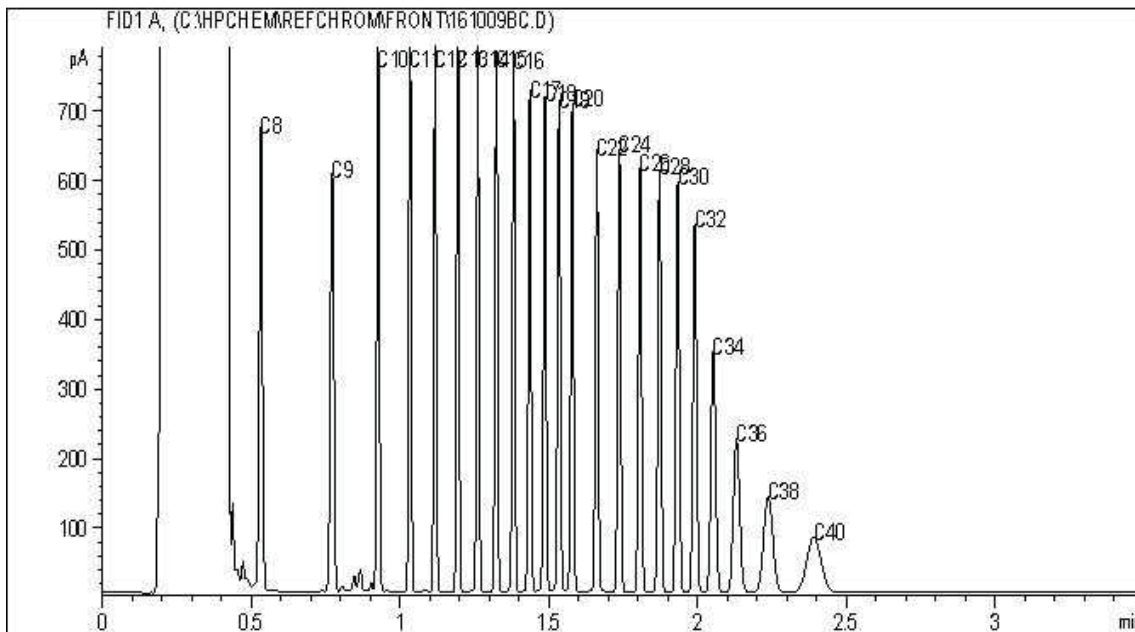
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Carbon Range Distribution - Reference Chromatogram

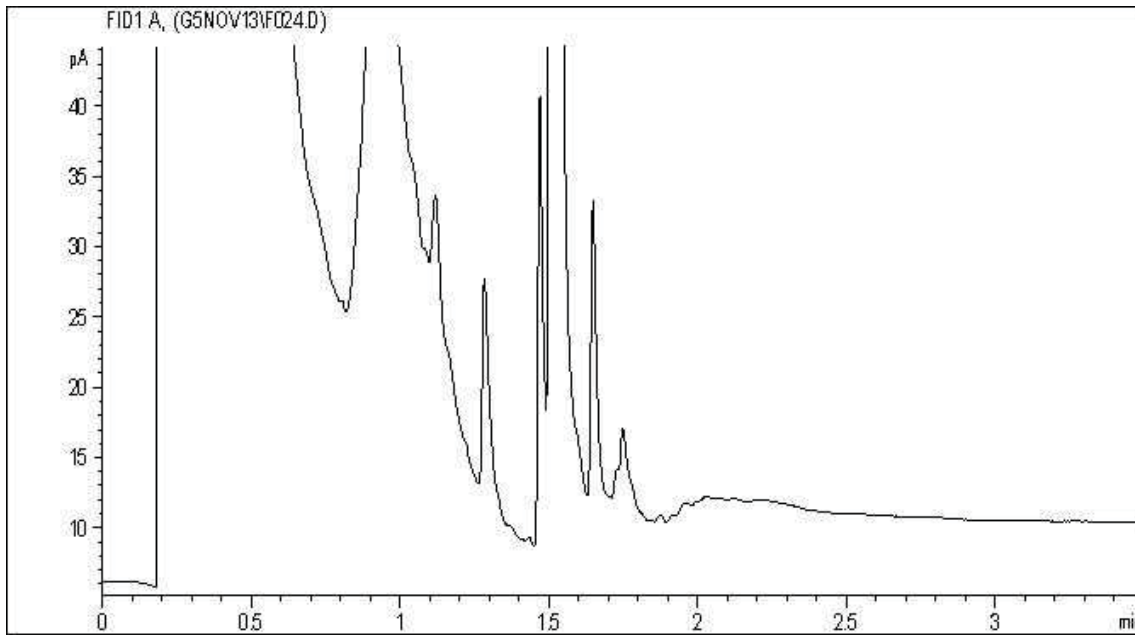


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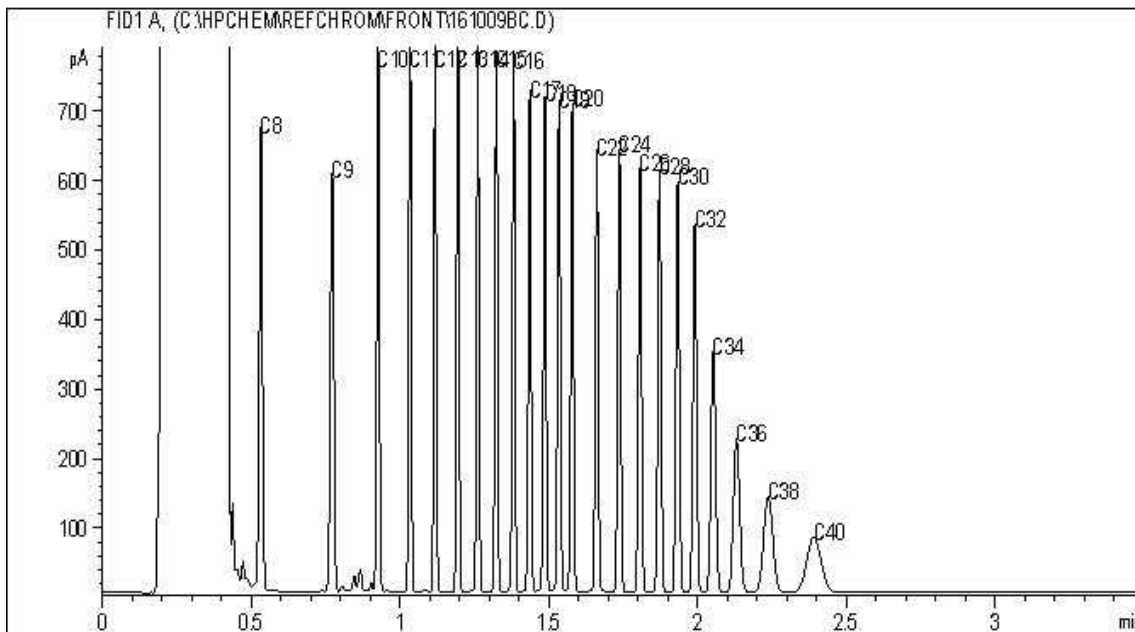
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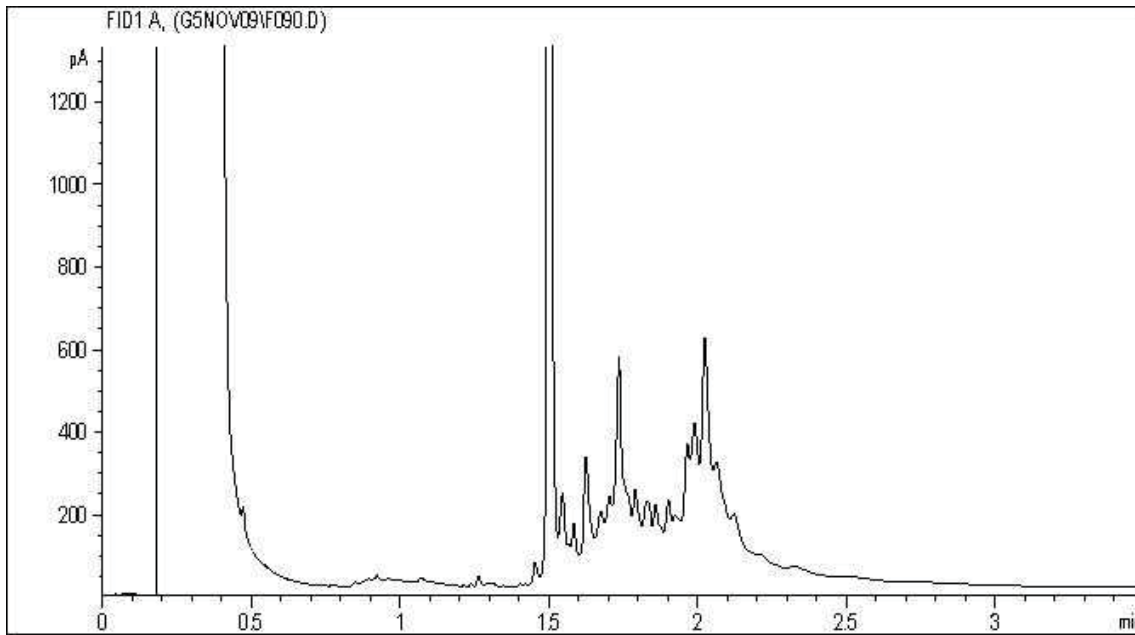
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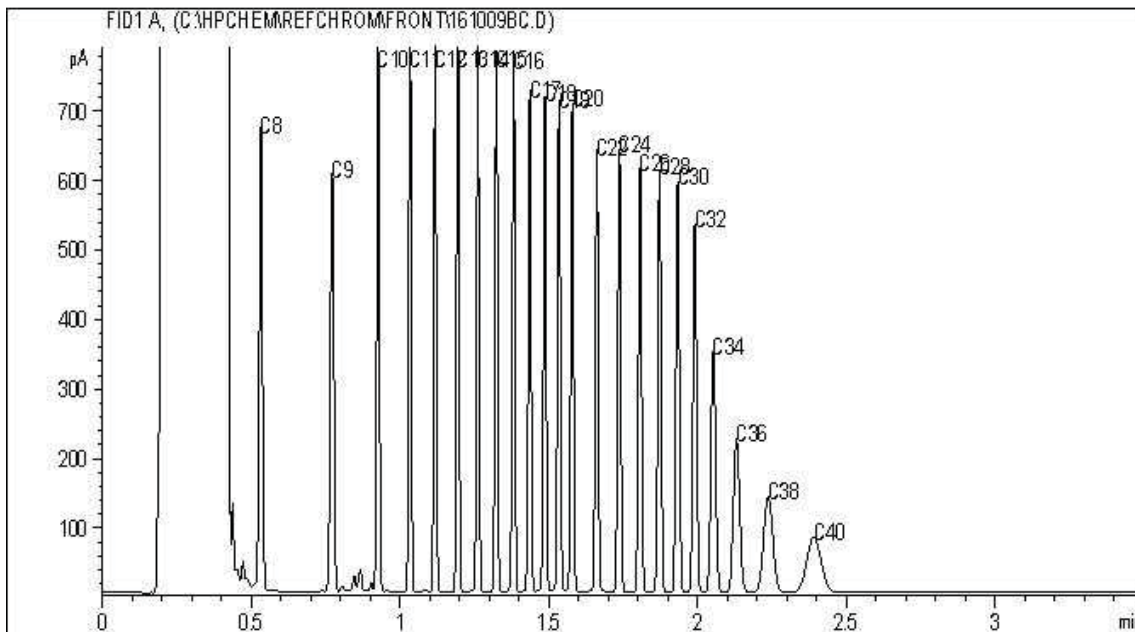
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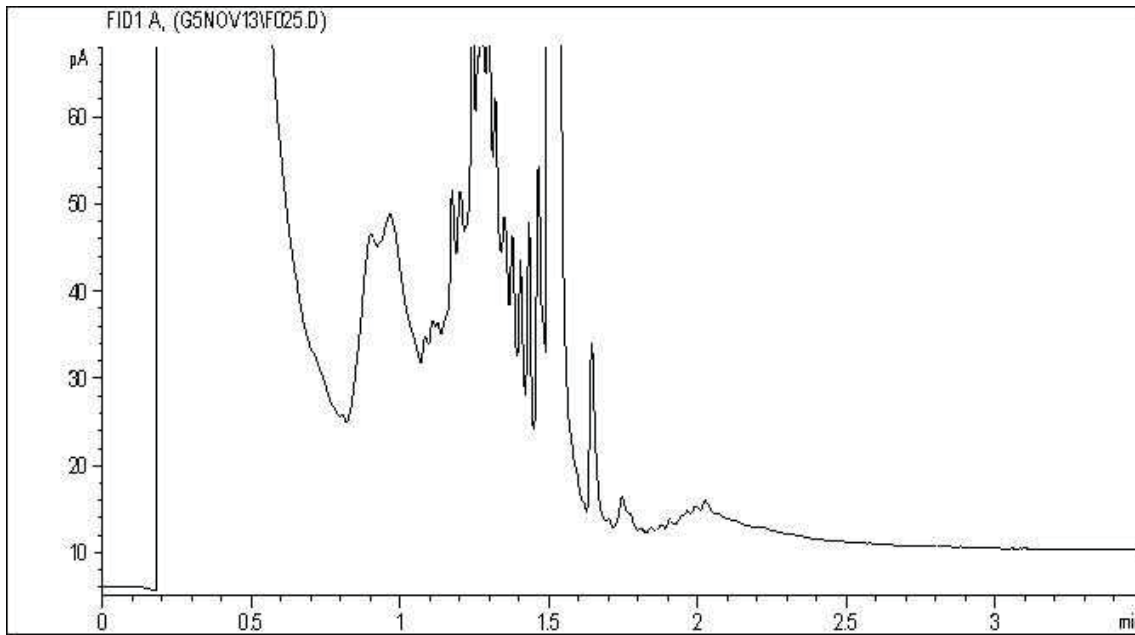
Carbon Range Distribution - Reference Chromatogram



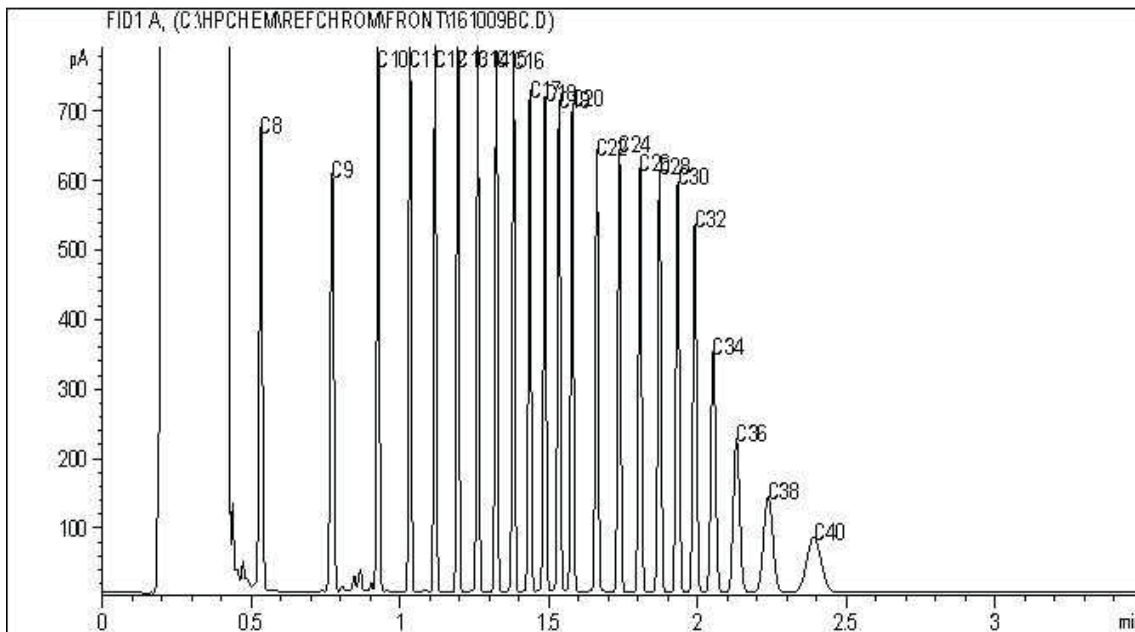
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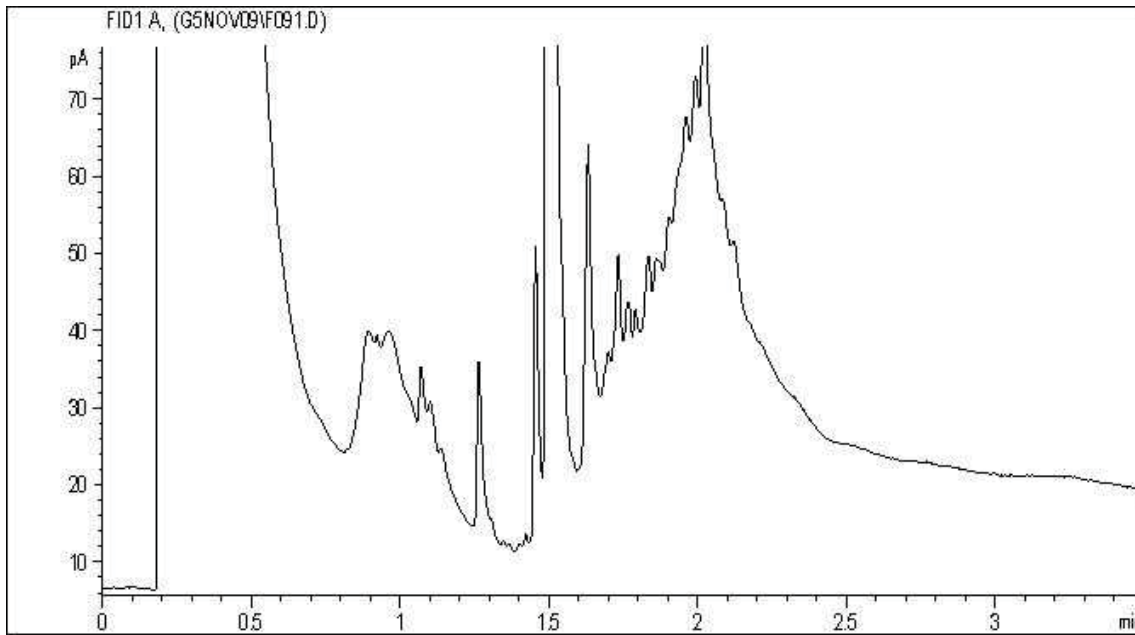
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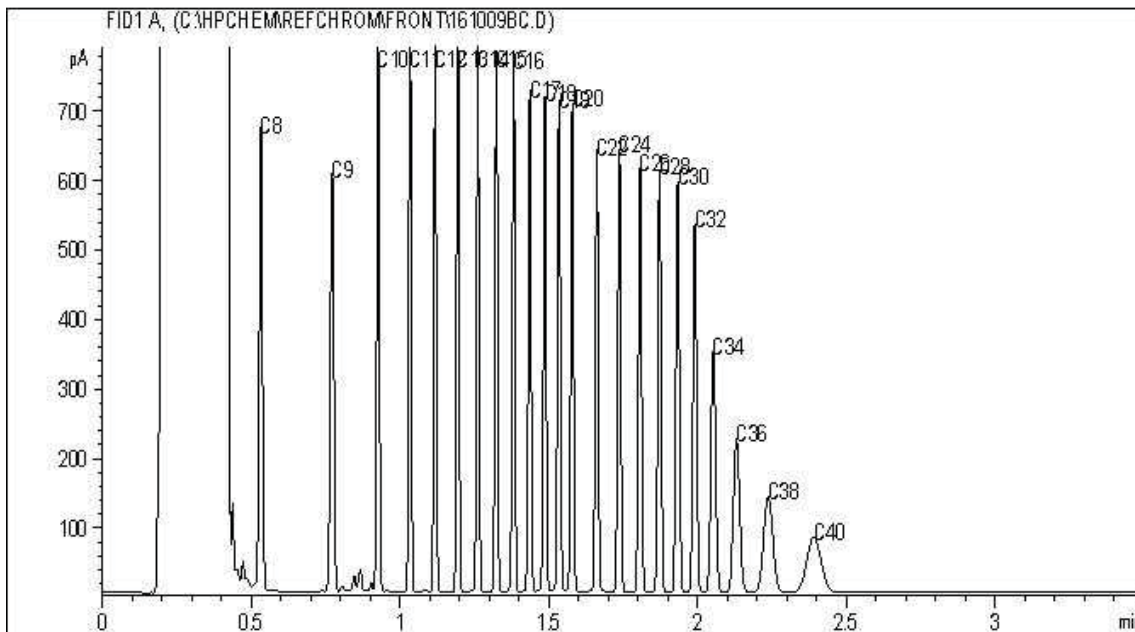
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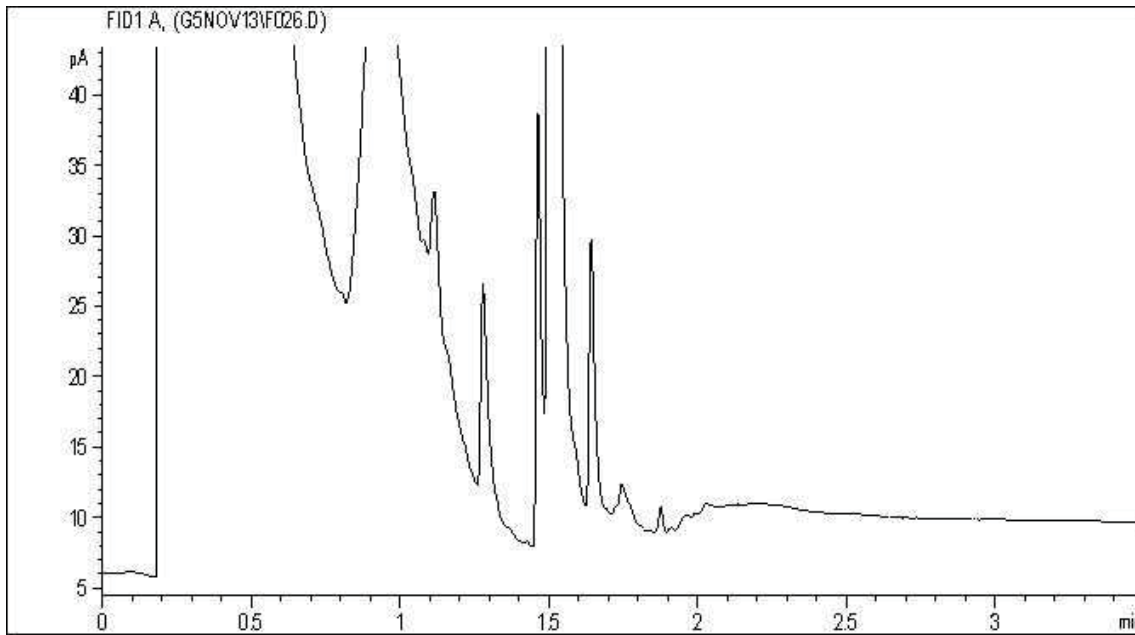
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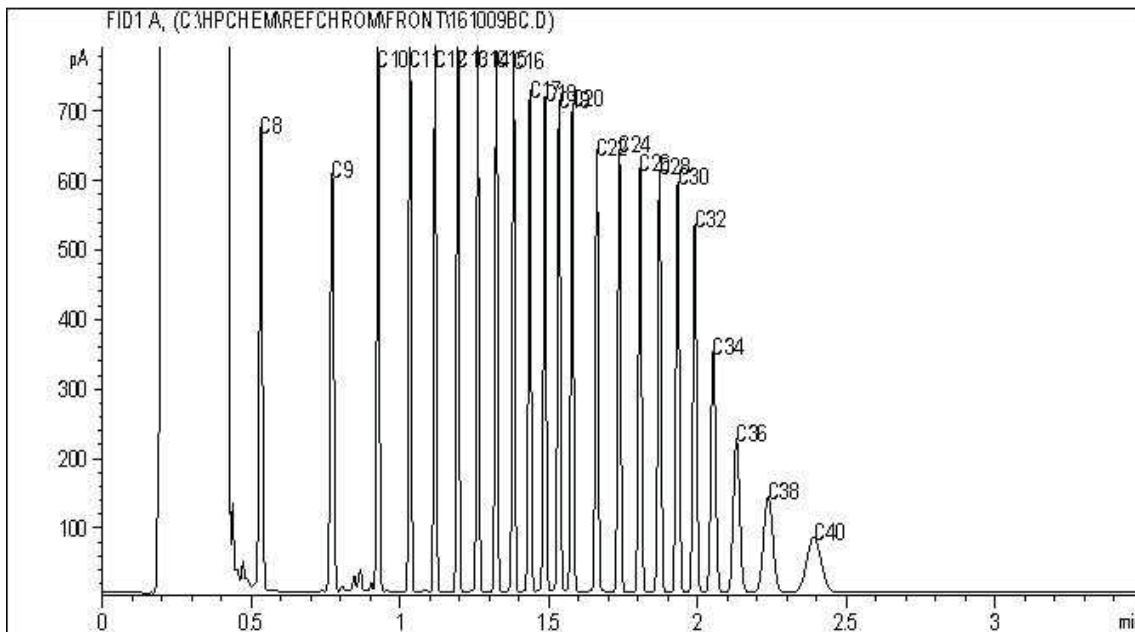
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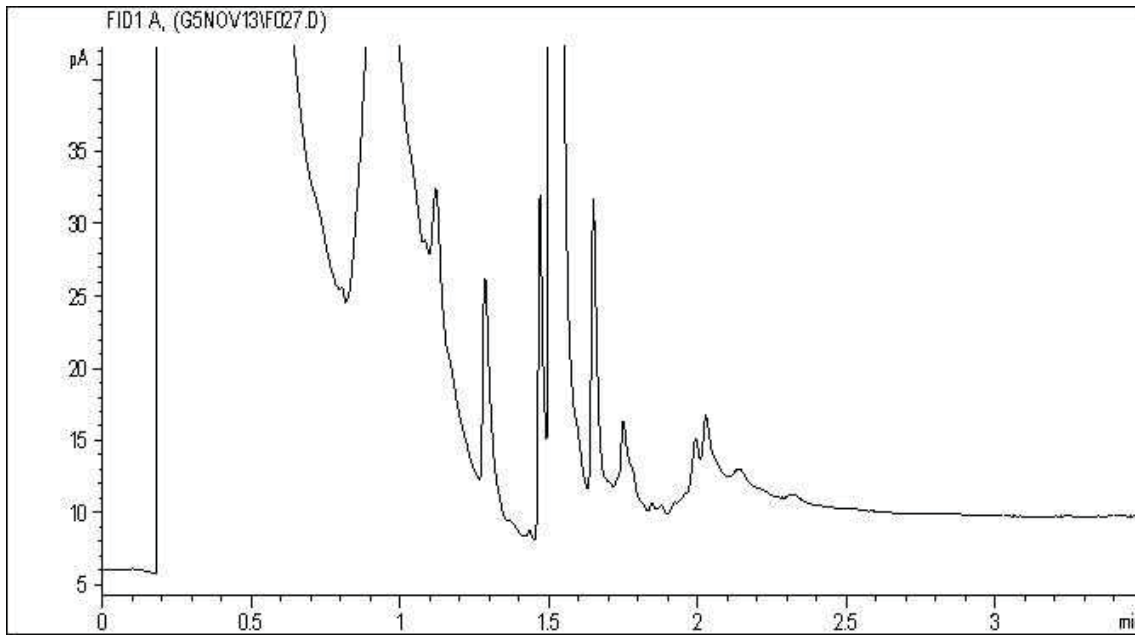
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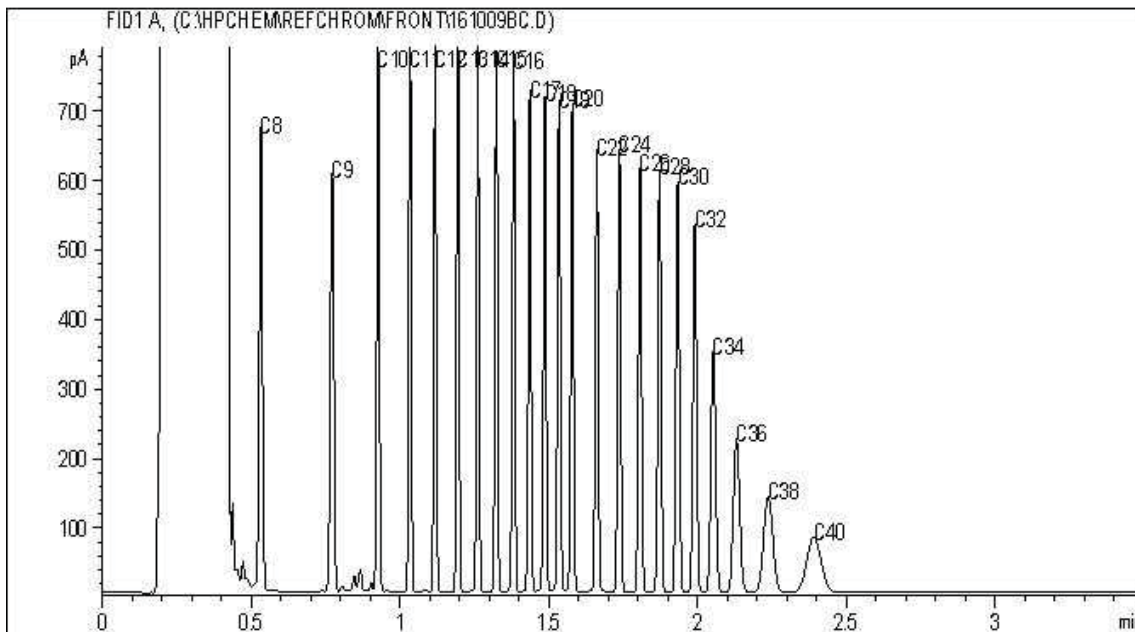
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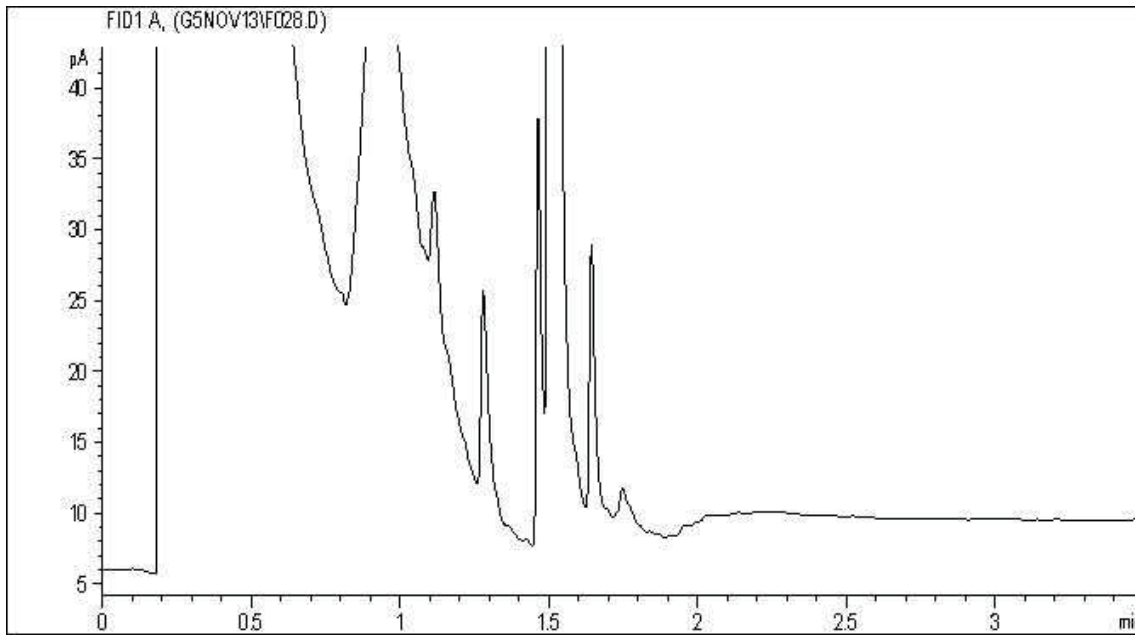
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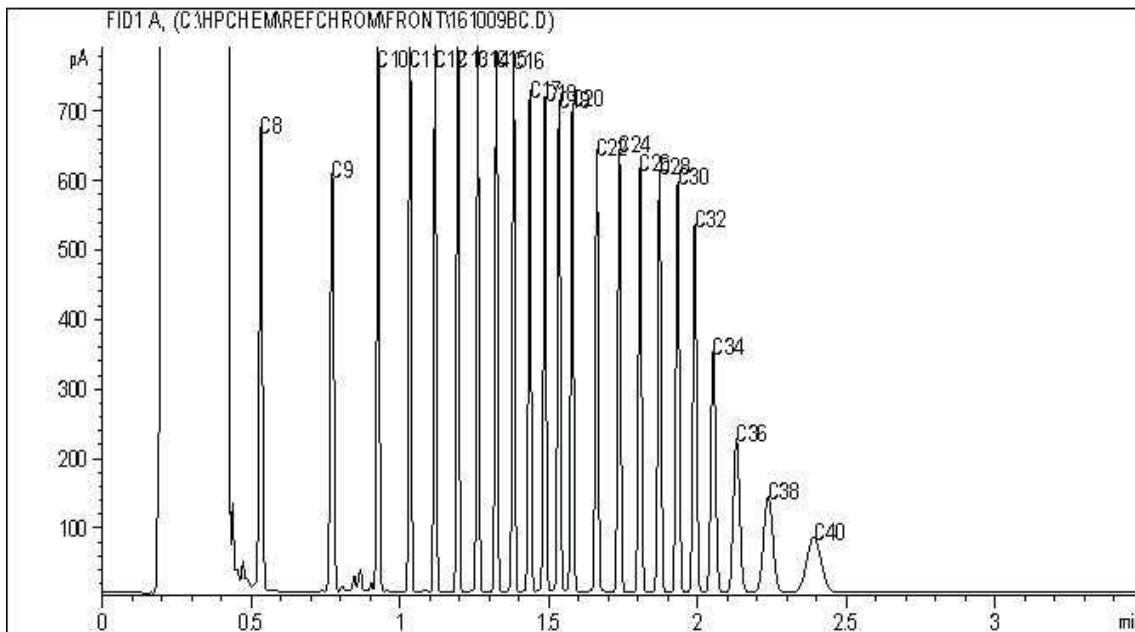
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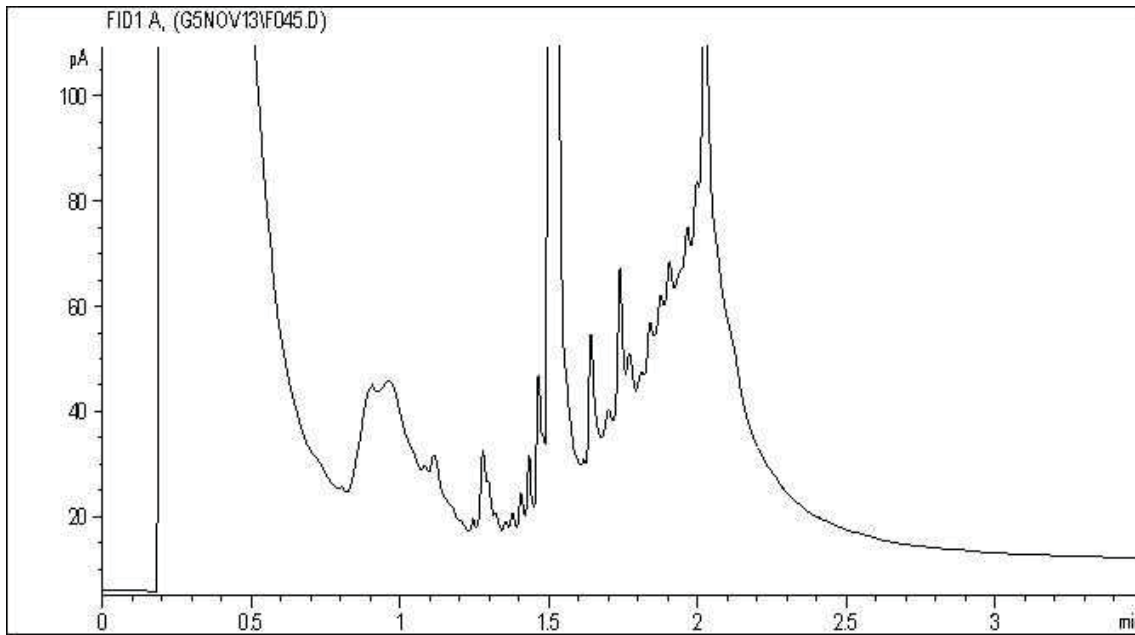
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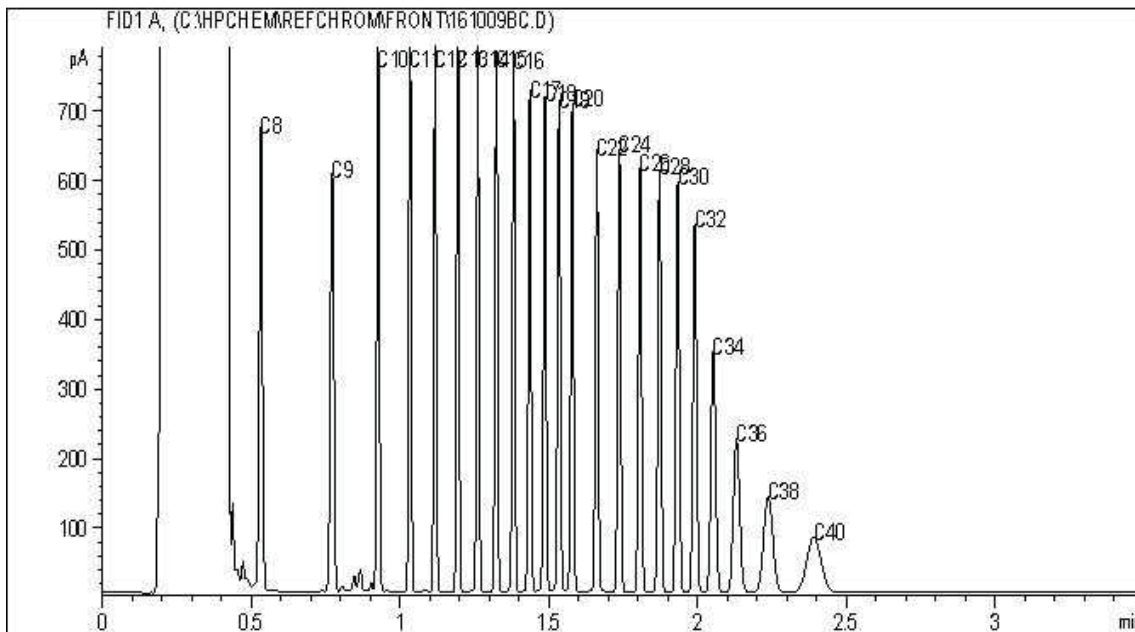
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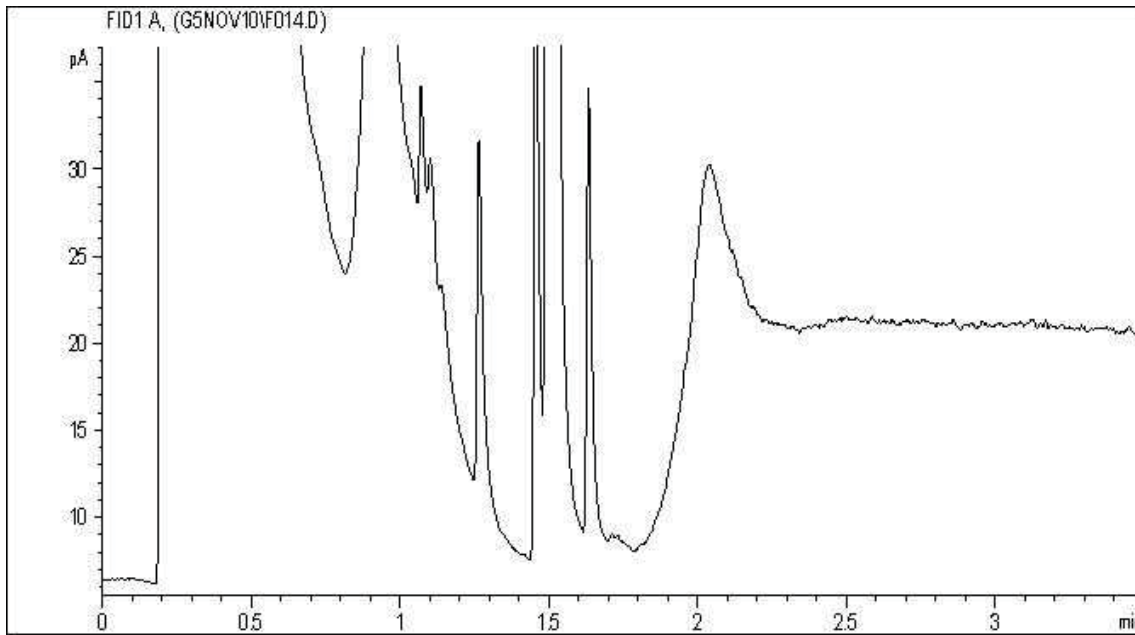


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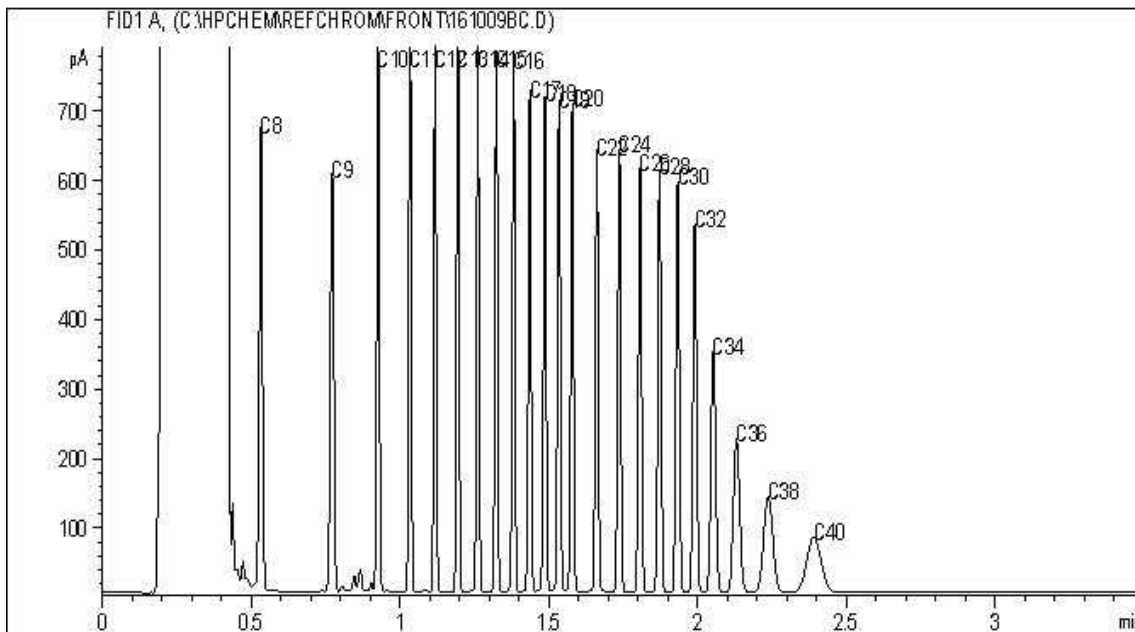
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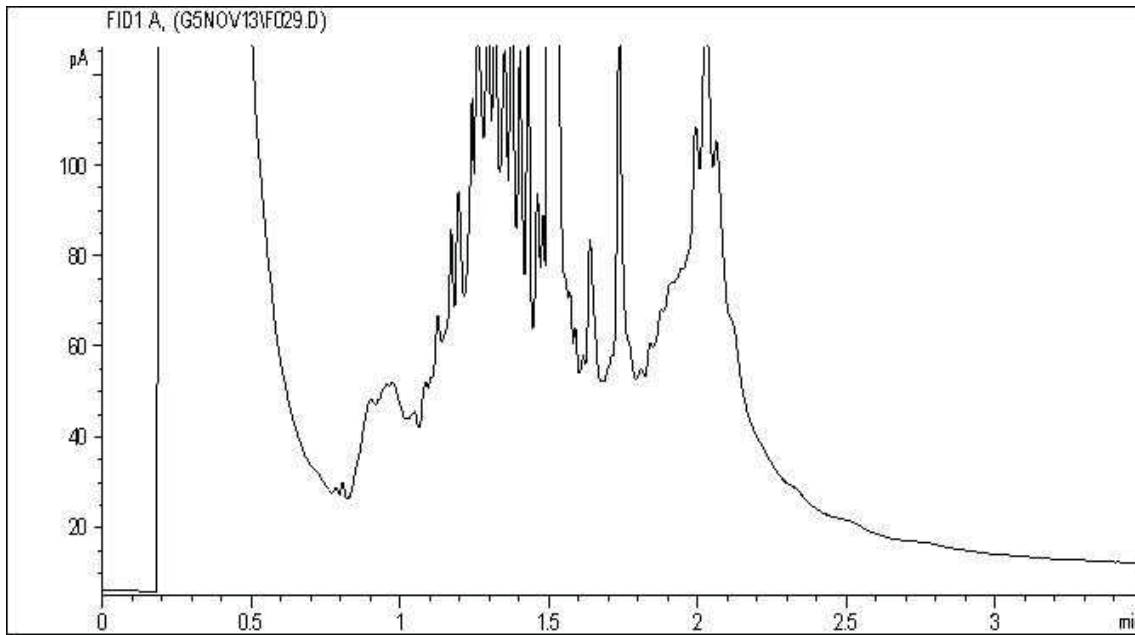
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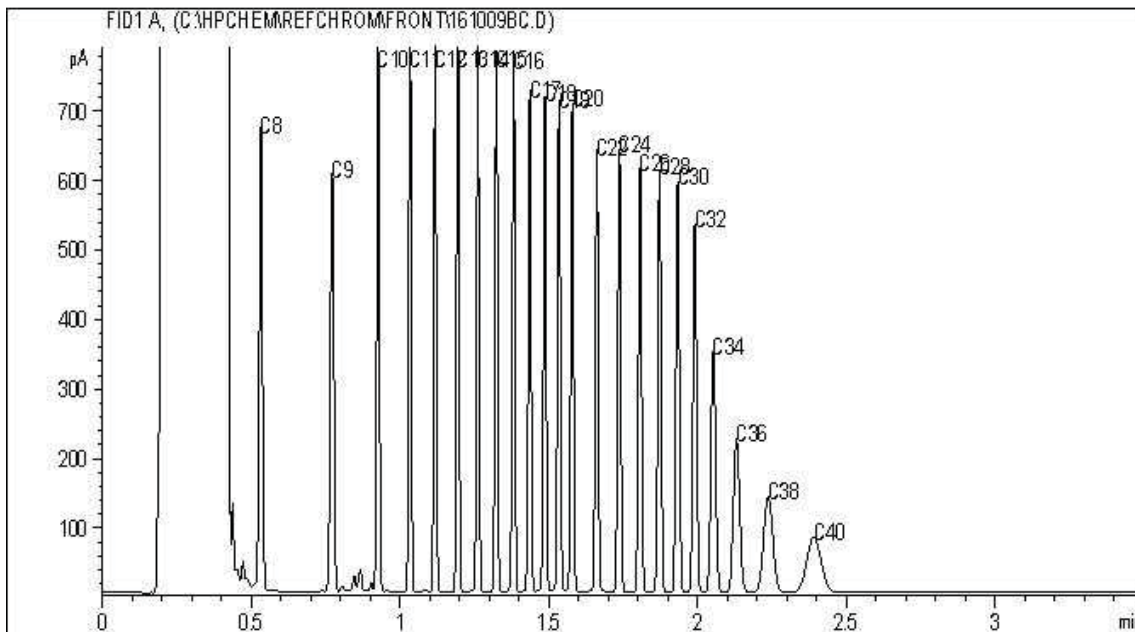
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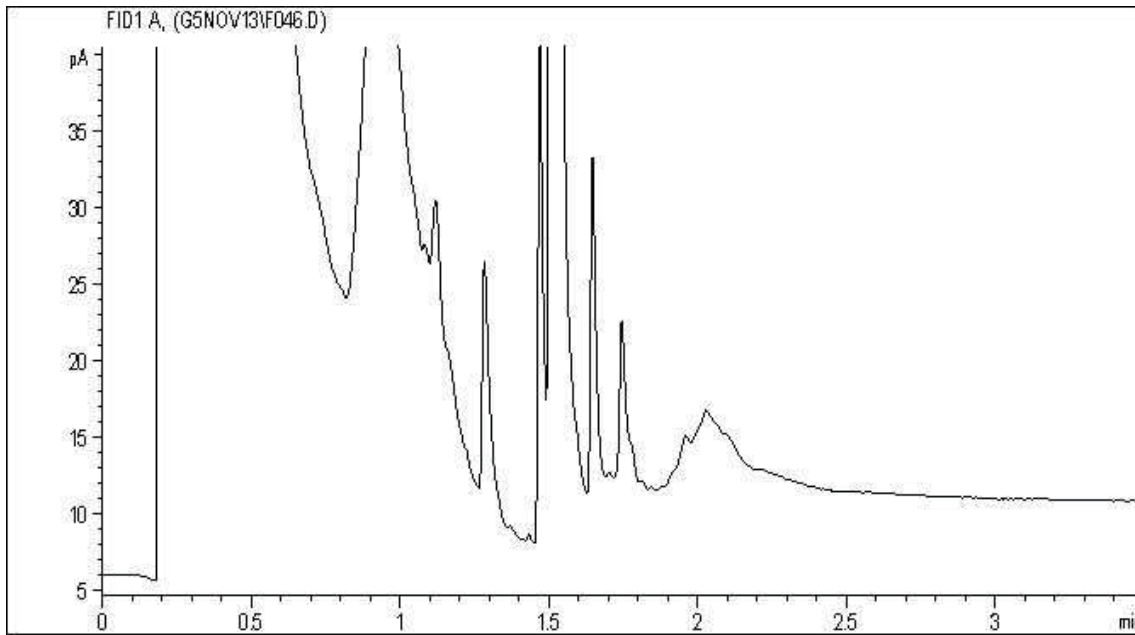
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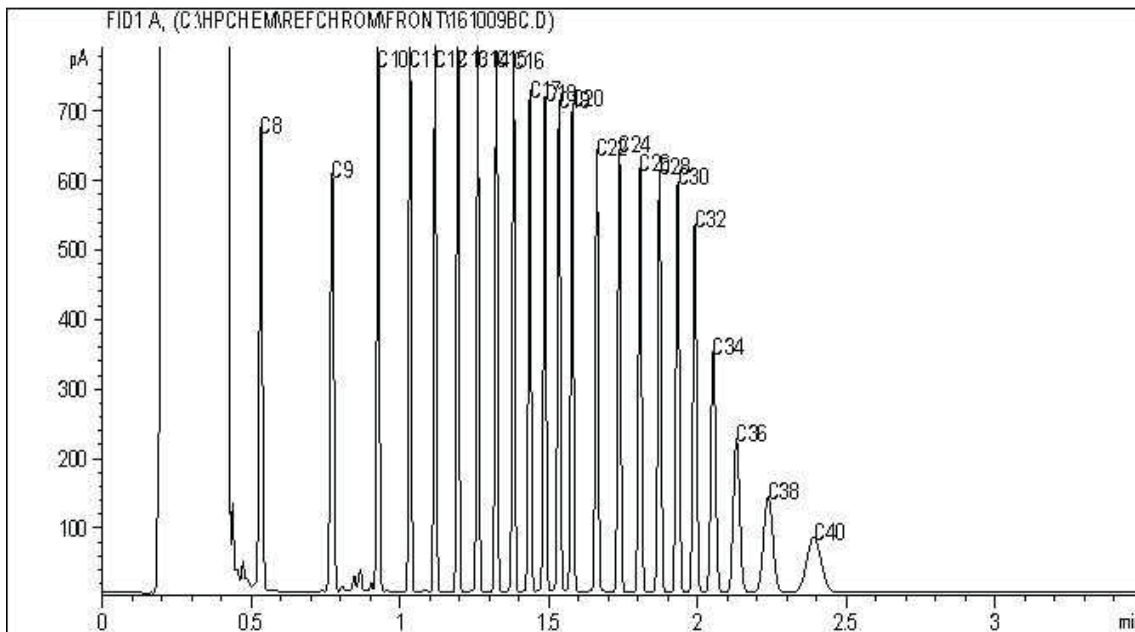
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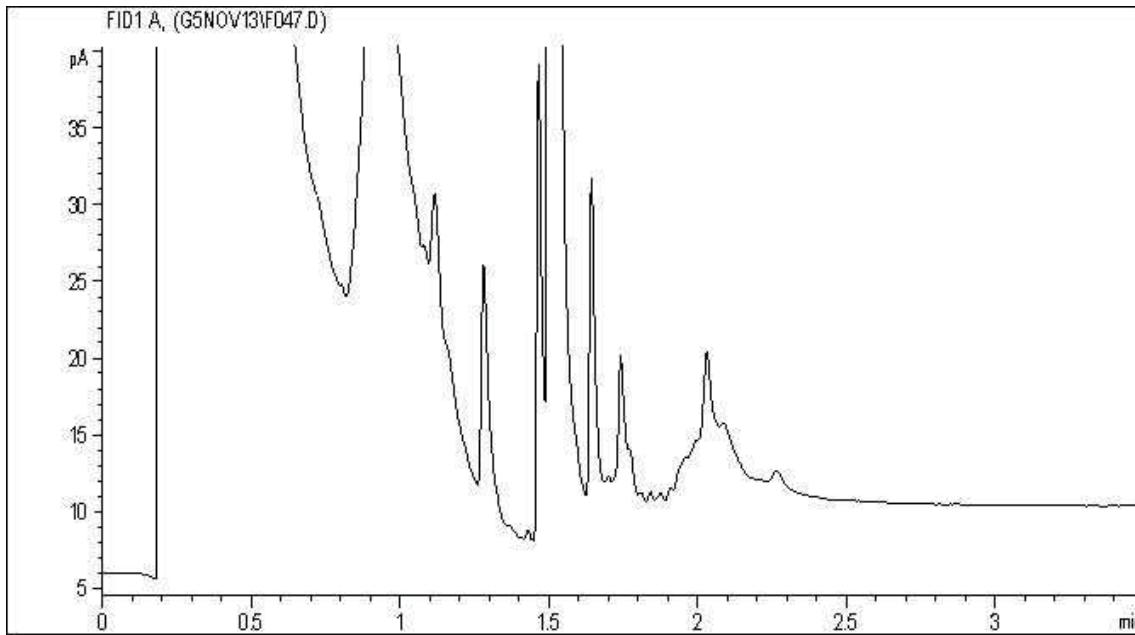
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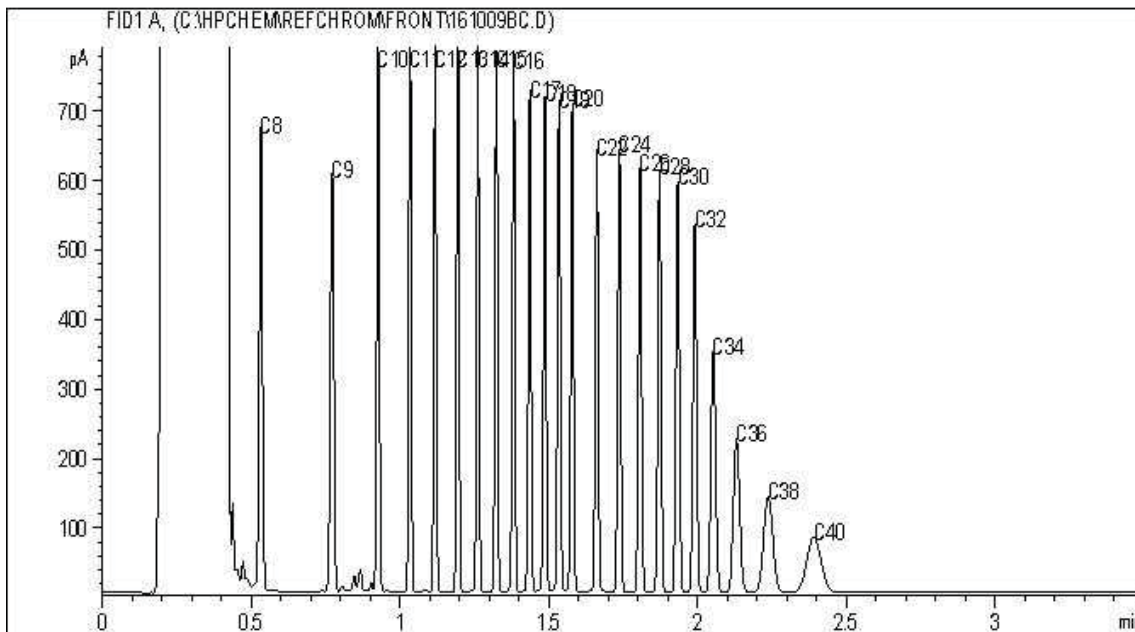
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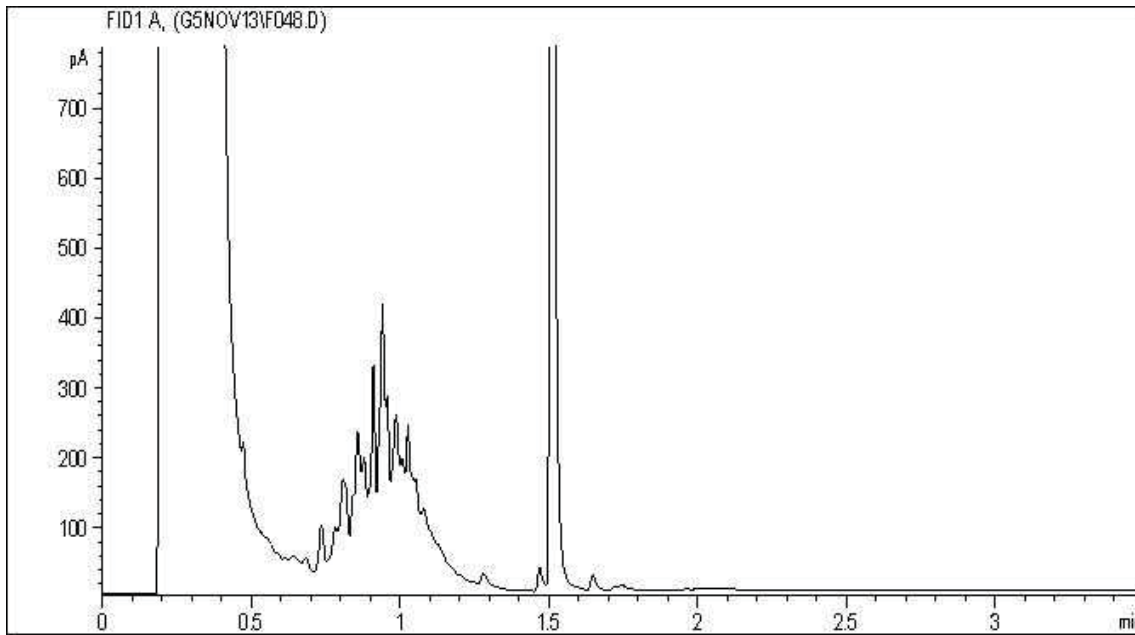
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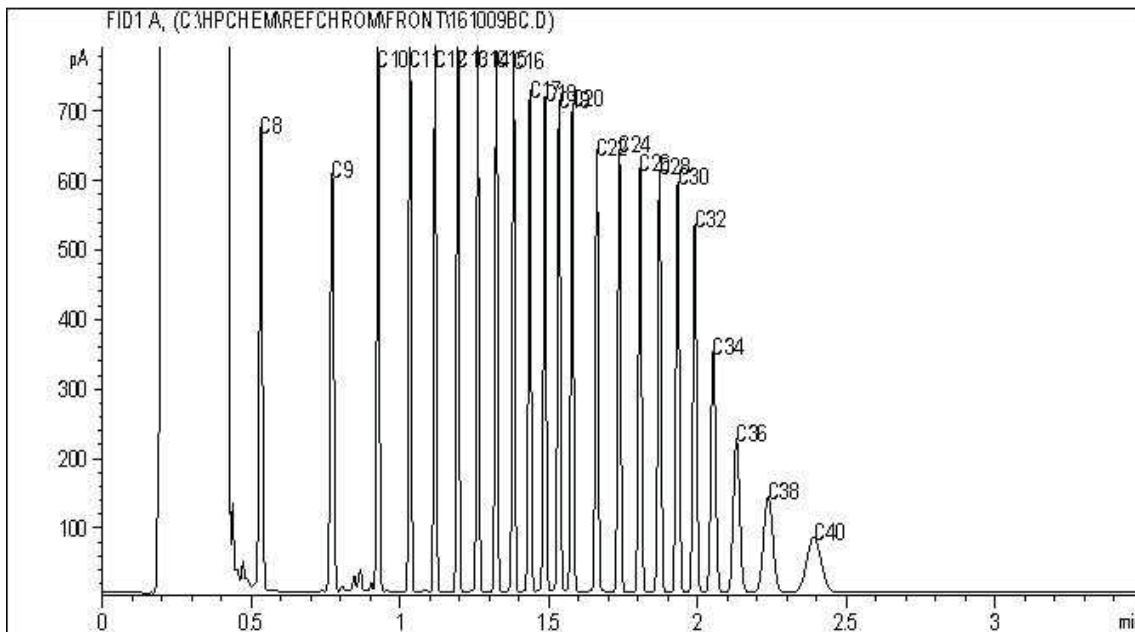
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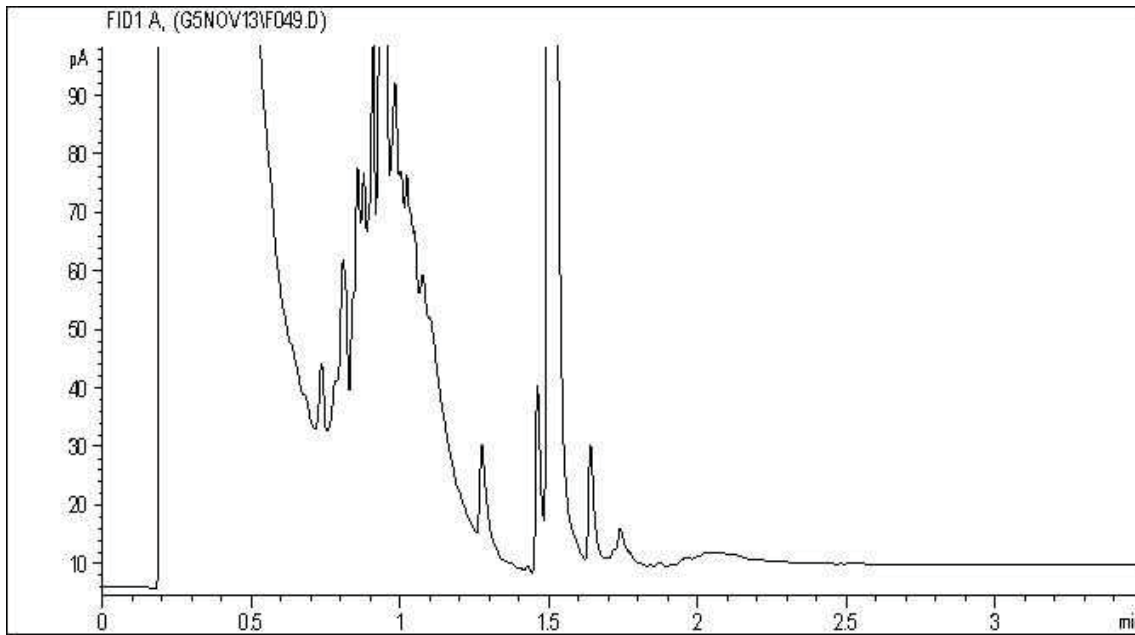
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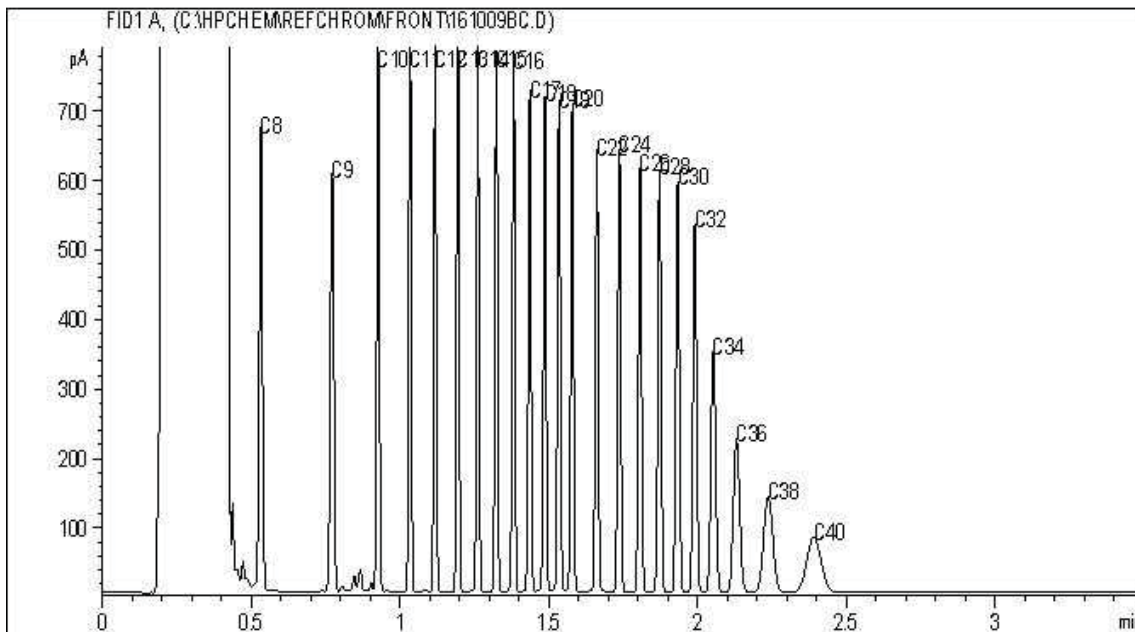
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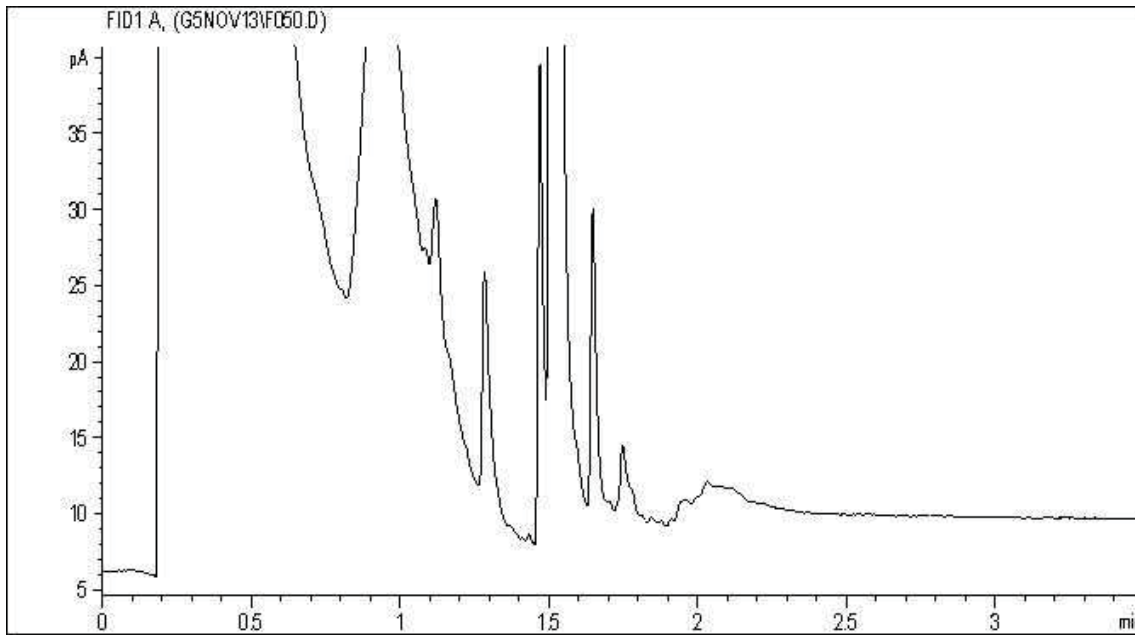
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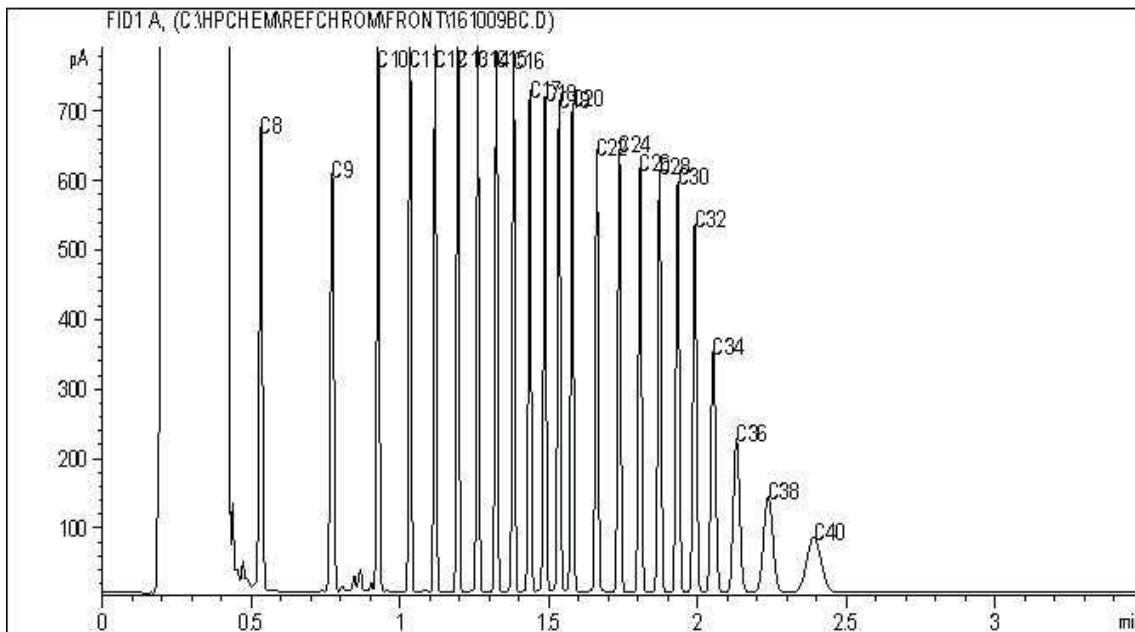
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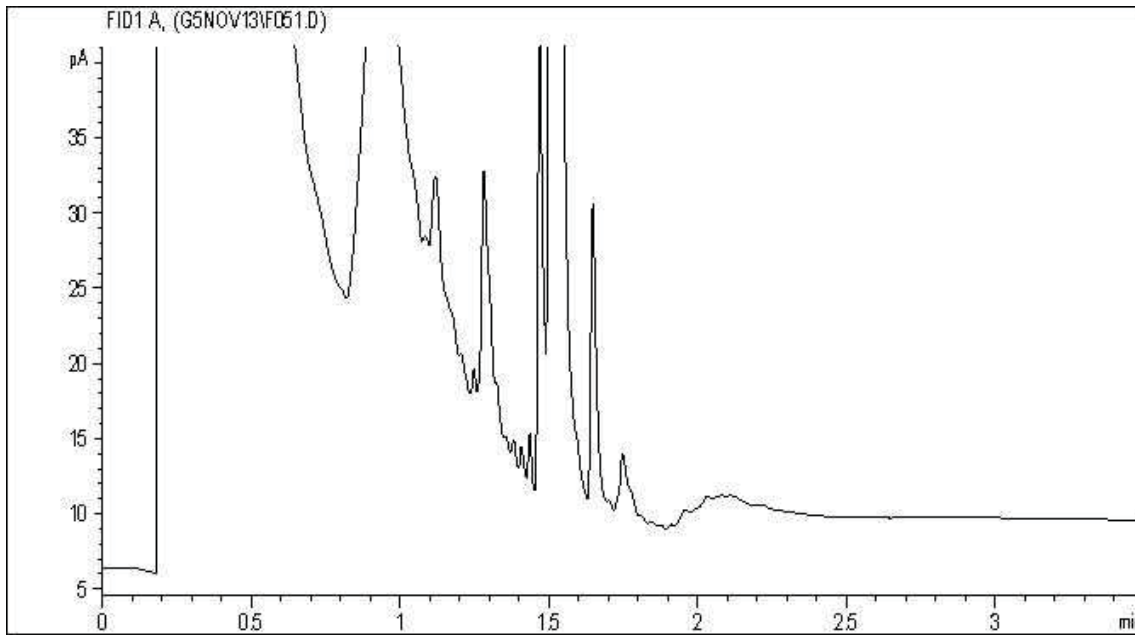
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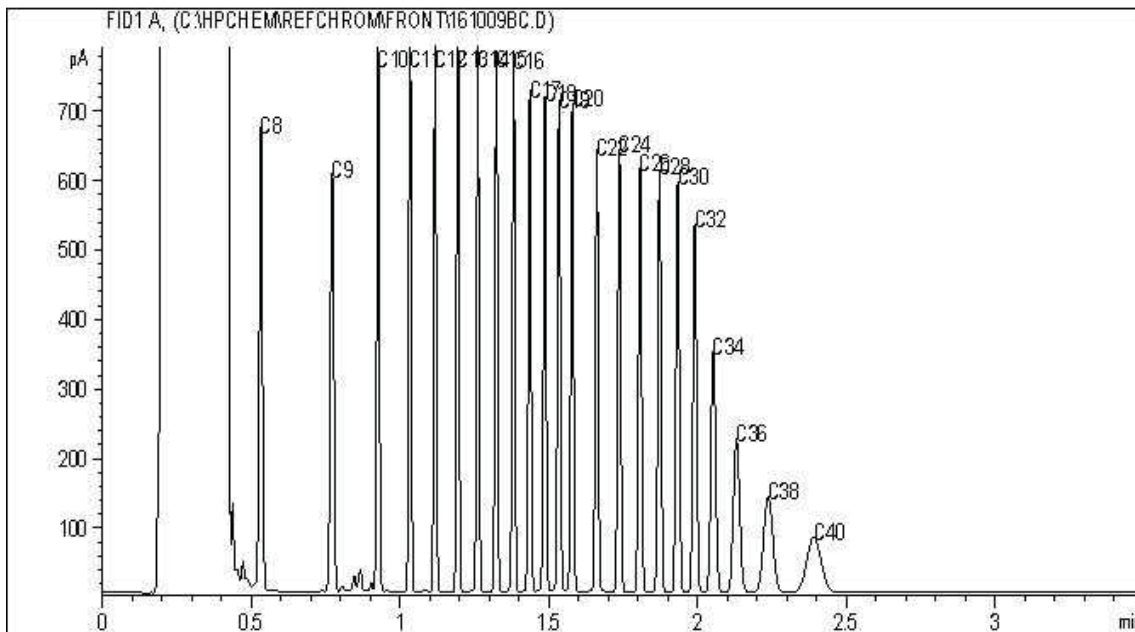
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# Appendix IV:

AEC 22 Liability Estimate (FY2017/2018 and FY2018/2019)

**TRANSPORT CANADA (PNR) WATSON LAKE AIRPORT COST ESTIMATES 2017/18 and 2018/19**

**Client Department:** Transport Canada - Prairie Northern Region  
**Client:** Anita Champagne Gudmundson and Holly Poklitar

Project Manager: Scott Tomlinson, PWGSC - Environmental Services

Note: Estimate is based on current data. Additional delineation is recommended for the exceedances encountered in the 2016 drilling program at AEC 22.

Class of Estimate: C

**Scope of Works:**

**Watson Lake Airport AEC 22:**

- a) Horizontal and vertical delineation of exceedances encountered in the 2016 drilling program, and RAP and background study refinement.
- b) AEC 22 has approximately 3,500 cu m of contaminated soils to be removed from localized areas throughout A to E.
- c) AEC 22 remediation is anticipated to be conducted in the summer of 2017/2018 FY
- d) Soil treatment is anticipated to be conducted in the summer/early fall of FY2017/2018.
- e) After remediation is completed, a post remedial monitoring program would be implemented. It is anticipated to be conducted in the fall of 2017/2018 FY
- f) Risk Assessment for residual COCs, as required, and additional post remedial monitoring are anticipated to be conducted in 2018/2019 FY

	CL+ Contaminated Soil Volume	3,500 m3	800 m3	2,700 m3		
		On-Site & Off-Site	On-Site Only	Off-Site Only	On-Site & Off-Site	
1. WATSON LAKE AIRPORT AEC 22 COST ESTIMATES:		2017/2018	2017/2018	2017/2018	2018/2019	NOTES
<b>Consultant/Contractor Costs:</b>						
a) Remedial Feasibility Study	\$	147,497.33	\$ 91,375.79	\$ 102,081.54		
b) Remediation Consultant monitoring, sampling, Departmental Representative duties; reporting	\$	259,366.20	\$ 113,594.89	\$ 210,980.81		
c) Remediation Contractor costs	\$	605,600.00	\$ 259,150.00	\$ 465,875.00		
d) Soil Treatment at LTF - Consultant monitoring and sampling	\$	135,084.10	\$ 80,487.37	\$ 109,979.58		
e) Soil Treatment at LTF - Contractor costs	\$	233,230.00	\$ 121,790.00	\$ 189,010.00		
f) Post Remedial Drilling and Monitoring	\$	93,169.29	\$ 93,169.29	\$ 93,169.29		
g) Risk Assessment for Residual COCs					\$ 135,315.54	
h) Additional Post Remedial Monitoring and Site Closure					\$ 118,252.67	
<b>WLA AEC 22 Remediation - Consultant/Contractor Subtotal:</b>	<b>\$</b>	<b>1,473,946.92</b>	<b>\$ 759,567.34</b>	<b>\$ 1,171,096.22</b>	<b>\$ 253,568.21</b>	
	PWGSC Fees (10%)	\$ 147,394.69	\$ 75,956.73	\$ 117,109.62	\$ 25,356.82	
	PWGSC Disbursements - 2 trips per year to site	\$ 4,000.00	\$ 4,000.00	\$ 4,000.00	\$ 2,000.00	1 trip assumed for FY 2018/2019
	Contingency (20%)	\$ 294,789.38	\$ 151,913.47	\$ 234,219.24	\$ 50,713.64	Contingency based on standard 20%
<b>Total Cost Estimate Per Fiscal Year</b>	<b>\$</b>	<b>1,920,131.00</b>	<b>\$ 991,437.54</b>	<b>\$ 1,526,425.09</b>	<b>\$ 331,638.67</b>	
<b>AEC 22 Total Cost Estimate (On-Site &amp; Off-Site Option) \$</b>					<b>2,251,769.66</b>	



ON BEHALF OF:

**CLIENT: TRANSPORT CANADA (PNR) WATSON LAKE AIRPORT COST ESTIMATE**  
 Transport Canada - Prairie Northern Region  
 Anita Champagne Gudmundson and Holly Poklitar

Project Manager: Scott Tomlinson, PWGSC - Environmental Services

Class of Estimate: C

Constant Dollars: 2017/18

**Scope of Work:**

**REMEDIAL FEASIBILITY STUDY (Spring)**

- 1.0 Project Management
- 2.0 Additional Drilling and Sampling
  - \* Additional Drilling and Installation of Monitoring Wells to refine excavation boundaries
  - \* Installation of Additional Background Wells to Refine Statistical Analysis
  - \* Conduct Soil and Groundwater Field Screening
  - \* Soil and Groundwater Sampling
- 3.0 Reporting

**AEC 22 EX-SITU REMEDIATION MONITORING (Summer) - ONSITE & OFFSITE (3,500 m3 CL+)**

- 1.0 Project Management
- 2.0 Tender Package Preparation
- 3.0 AEC 22 Ex-Situ Remediation Monitoring
  - \* AEC 22 Remediation. Monitor the excavation of overburden and contaminated soil
  - \* Conduct Soil and Groundwater Field Screening
  - \* Confirmatory sampling, sample processing and submission
- 4.0 Reporting

**SOIL TREATMENT (Summer /Early Fall)**

- 1.0 Project Management
- 2.0 Tender Package Preparation - Soil Treatment
- 3.0 Soil Treatment Monitoring
  - \* Soil Treatment Monitoring of 3,500 m3 of CL+ soil originated from AEC 22 Ex-Situ Remediation
  - \* Conduct Soil and Groundwater Field Screening
  - \* Confirmatory sampling, sample processing and submission
- 4.0 Reporting

**POST REMEDIAL DRILLING AND MONITORING (Fall)**

- 1.0 Project Management
- 2.0 Post Remedial Monitoring
  - \* Installation of Monitoring Wells
  - \* Conduct Groundwater Field Screening
  - \* Groundwater Sampling
- 3.0 Reporting

**CONSULTING DETAILED COST ESTIMATE**

Item	Task	Unit	Quantity	Rate	Total	Subtotal	Comments
<b>REMEDIAL FEASIBILITY STUDY</b>							
<b>1.0 Project Management</b>							
<b>1.1 Project Management</b>							
	Junior CADD/GIS	hr	0	\$ 80.00	\$ -		
	Junior Professional – Environmental	hr	0	\$ 80.00	\$ -		
	Intermediate Qualified Professional	hr	0	\$ 100.00	\$ -		
	Senior Qualified Professional	hr	24	\$ 145.00	\$ 3,480.00		
	<b>Task Total:</b>					<b>\$3,480.00</b>	
<b>2.0 Drilling and Sampling</b>							
<b>2.1 Internal Disbursements - Travel</b>							
	Airplane Ticket	each	2	\$ 1,000.00	\$ 2,000.00		
	Taxi	trip	4	\$ 100.00	\$ 400.00		
	Car Rental	week	4	\$ 1,000.00	\$ 4,000.00		2 wks(interim./junior)
	Gas	LS	2	\$ 500.00	\$ 1,000.00		
	Hotel	days	28	\$ 160.00	\$ 4,480.00		2 wks(interim./junior)
	Per Diem	days	28	\$ 100.61	\$ 2,817.08		
	<b>Task Total:</b>					<b>\$14,697.08</b>	
<b>2.2 Field Preparation and Field Work - Fees</b>							
	Junior Professional – Environmental	hr	140	\$ 80.00	\$ 11,200.00		2 wks, 10hr-day
	Intermediate Qualified Professional	hr	140	\$ 100.00	\$ 14,000.00		2 wks, 10hr-day
	Senior Qualified Professional	hr	56	\$ 145.00	\$ 8,120.00		
	Senior Hydrogeologist	hr	24	\$ 145.00	\$ 3,480.00		
	<b>Task Total:</b>					<b>\$36,800.00</b>	
<b>2.3 Subcontractors</b>							
<b>Drilling</b>							
	Mob/Demob	LS	1	\$ 15,000.00	\$ 15,000.00		
	Drill Rig	hours	84	\$ 450.00	\$ 37,800.00		
	Support Truck	days	7	\$ 525.00	\$ 3,675.00		
	Living Expenses	days	7	\$ 600.00	\$ 4,200.00		
	Well Installation Supplies	LS	1	\$ 2,500.00	\$ 2,500.00		



ON BEHALF OF:

**CLIENT: TRANSPORT CANADA (PNR) WATSON LAKE AIRPORT COST ESTIMATE**

Transport Canada - Prairie Northern Region  
 Anita Champagne Gudmundson and Holly Poklitar

Project Manager: Scott Tomlinson, PWGSC - Environmental Services

Class of Estimate: C

Constant Dollars: 2017/18

	Drums	each	5	\$ 126.00	\$ 630.00	
	<b>Utility Locates</b>	LS	1	\$ 4,700.00	\$ 4,700.00	
	<b>Task Total:</b>					<b>\$68,505.00</b>
<b>2.4</b>	<b>External Disbursement</b>					
	Shipping / Courier	week	2	\$ 250.00	\$ 500.00	
	<b>Task Total:</b>					<b>\$500.00</b>
<b>2.5</b>	<b>Laboratory Analysis</b>					
	Main Laboratory - Soil					
	LEPH/PAH	each	30	\$ 152.00	\$ 4,560.00	
	Metals	each	5	\$ 60.00	\$ 300.00	
	Disposal Sample Fee	each	35	\$ 1.75	\$ 61.25	
	Main Laboratory - Water					
	LEPH/PAH	each	5	\$ 152.00	\$ 760.00	
	Metals	each	3	\$ 60.00	\$ 180.00	
	Disposal Sample Fee	each	8	\$ 1.75	\$ 14.00	
	<b>Task Total:</b>					<b>\$5,875.25</b>
<b>3.0</b>	<b>Reporting</b>					
<b>3.1</b>	<b>Reporting – RAP and Background Statistical Analysis Refinement</b>					
	Junior CADD/GIS	hr	24	\$ 80.00	\$ 1,920.00	
	Junior Professional – Environmental	hr	16	\$ 80.00	\$ 1,280.00	
	Intermediate Qualified Professional	hr	40	\$ 100.00	\$ 4,000.00	
	Senior Qualified Professional	hr	40	\$ 145.00	\$ 5,800.00	
	Senior Hydrogeologist	hr	24	\$ 145.00	\$ 3,480.00	
	Review - Senior Qualified Professional	hr	8	\$ 145.00	\$ 1,160.00	
	<b>Task Total:</b>					<b>\$17,640.00</b>
	<b>Remediation Feasibility Study</b>					<b>\$ 147,497.33</b>
<b>AEC 22 EX-SITU REMEDIATION MONITORING</b>						
<b>1.0</b>	<b>Project Management</b>					
<b>1.1</b>	<b>Project Management</b>					
	Junior CADD/GIS	hr	0	\$ 80.00	\$ -	
	Junior Professional – Environmental	hr	0	\$ 80.00	\$ -	
	Intermediate Qualified Professional	hr	35	\$ 100.00	\$ 3,500.00	
	Senior Qualified Professional	hr	70	\$ 145.00	\$ 10,150.00	
	<b>Task Total:</b>					<b>\$13,650.00</b>
<b>2.0</b>	<b>Tender Package Preparation - Ex-Situ Remediation</b>					
<b>2.1</b>	<b>Prepare Tender Package</b>					
	Junior CADD/GIS	hr	16	\$ 80.00	\$ 1,280.00	
	Junior Professional – Environmental	hr	16	\$ 80.00	\$ 1,280.00	
	Intermediate Qualified Professional	hr	32	\$ 100.00	\$ 3,200.00	
	Senior Qualified Professional	hr	40	\$ 145.00	\$ 5,800.00	
	<b>Task Total:</b>					<b>\$11,560.00</b>
<b>3.0</b>	<b>AEC 22 Ex-Situ Remediation Monitoring</b>					
<b>3.1</b>	<b>Internal Disbursements - Travel</b>					
	Airplane Ticket	each	3	\$ 1,000.00	\$ 3,000.00	
	Taxi	trip	6	\$ 100.00	\$ 600.00	
	Car Rental	week	10	\$ 1,000.00	\$ 10,000.00	4.5 wks (2 field staff) + 1 wk (senior)
	Gas	LS	3	\$ 500.00	\$ 1,500.00	
	Hotel	days	70	\$ 160.00	\$ 11,200.00	4.5 wks (2 field staff) + 1 wk (senior)
	Per Diem	days	70	\$ 100.61	\$ 7,042.70	
	<b>Task Total:</b>					<b>\$33,342.70</b>
<b>3.2</b>	<b>Field Preparation and Field Work - Fees</b>					
	Junior Professional – Environmental	hr	378	\$ 80.00	\$ 30,240.00	4.5 wks, 12hr-day
	Intermediate Qualified Professional	hr	378	\$ 100.00	\$ 37,800.00	4.5 wks, 12hr-day
	Senior Qualified Professional	hr	182	\$ 145.00	\$ 26,390.00	
	<b>Task Total:</b>					<b>\$94,430.00</b>



PUBLIC WORKS AND GOVERNMENT SERVICES CANADA  
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Transport Canada - Prairie Northern Region  
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Project Manager: Scott Tomlinson, PWGSC - Environmental Services

Class of Estimate: C

Constant Dollars: 2017/18

<b>3.3</b>	<b>External Disbursement</b>						
	Shipping / Courier	week	4.5	\$ 250.00	\$ 1,125.00		
	Surveyor	LS	1	\$ 5,000.00	\$ 5,000.00		
	<b>Task Total:</b>					<b>\$6,125.00</b>	
<b>3.4</b>	<b>Laboratory Analysis</b>						
	Mobile Laboratory						
	Mob/Demob	km	4500	\$ 2.00	\$ 9,000.00		
	Operation (EPH)	days	10	\$ 5,250.00	\$ 52,500.00		
	Main Laboratory - Soil						
	VPH/BTEX	each	30	\$ 68.00	\$ 2,040.00		
	LEPH/HEPH/PAH	each	90	\$ 152.00	\$ 13,680.00		
	Metals	each	18	\$ 68.00	\$ 1,224.00		
	Main Laboratory - Water						
	VPH/BTEX	each	4	\$ 68.00	\$ 272.00		
	LEPH/PAH	each	4	\$ 152.00	\$ 608.00		
	Metals	each	4	\$ 68.00	\$ 272.00		
	Disposal Sample Fee	each	150	\$ 1.75	\$ 262.50		
	<b>Task Total:</b>					<b>\$79,858.50</b>	
<b>4.0</b>	<b>Reporting</b>						
<b>4.1</b>	<b>Reporting - Ex-Situ Remediation</b>						
	Junior CADD/GIS	hr	40	\$ 80.00	\$ 3,200.00		
	Junior Professional – Environmental	hr	24	\$ 80.00	\$ 1,920.00		
	Intermediate Qualified Professional	hr	60	\$ 100.00	\$ 6,000.00		
	Senior Qualified Professional	hr	48	\$ 145.00	\$ 6,960.00		
	Review - Senior Qualified Professional	hr	16	\$ 145.00	\$ 2,320.00		
	<b>Task Total:</b>					<b>\$20,400.00</b>	
	<b>Ex-Situ Remediation Cost</b>					<b>\$ 259,366.20</b>	
<b>SOIL TREATMENT MONITORING</b>							
<b>1.0</b>	<b>Project Management</b>						
<b>1.1</b>	<b>Project Management</b>						
	Junior CADD/GIS	hr	0	\$ 80.00	\$ -		
	Junior Professional – Environmental	hr	0	\$ 80.00	\$ -		
	Intermediate Qualified Professional	hr	35	\$ 100.00	\$ 3,500.00		
	Senior Qualified Professional	hr	70	\$ 145.00	\$ 10,150.00		
	<b>Task Total:</b>					<b>\$13,650.00</b>	
<b>2.0</b>	<b>Tender Package Preparation - Soil Treatment</b>						
<b>2.1</b>	<b>Prepare Tender Package</b>						
	Junior CADD/GIS	hr	16	\$ 80.00	\$ 1,280.00		
	Junior Professional – Environmental	hr	8	\$ 80.00	\$ 640.00		
	Intermediate Qualified Professional	hr	24	\$ 100.00	\$ 2,400.00		
	Senior Qualified Professional	hr	32	\$ 145.00	\$ 4,640.00		
	<b>Task Total:</b>					<b>\$8,960.00</b>	
<b>3.0</b>	<b>Soil Treatment Monitoring</b>						
<b>3.1</b>	<b>Internal Disbursements - Travel</b>						
	Airplane Ticket	each	2	\$ 1,000.00	\$ 2,000.00		
	Taxi	trip	4	\$ 100.00	\$ 400.00		
	Car Rental	week	5	\$ 1,000.00	\$ 5,000.00		4 wks(inter.)+1wk(senior)
	Gas	LS	2	\$ 500.00	\$ 1,000.00		
	Hotel	days	35	\$ 160.00	\$ 5,600.00		4 wks(inter.)+1wk(senior)
	Per Diem	days	35	\$ 100.61	\$ 3,521.35		
	<b>Task Total:</b>					<b>\$17,521.35</b>	
<b>3.2</b>	<b>Field Preparation and Field Work - Fees</b>						
	Junior Professional – Environmental	hr	40	\$ 80.00	\$ 3,200.00		
	Intermediate Qualified Professional	hr	336	\$ 100.00	\$ 33,600.00		4 wks, 12hr-day
	Senior Qualified Professional	hr	196	\$ 145.00	\$ 28,420.00		
	<b>Task Total:</b>					<b>\$65,220.00</b>	



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Transport Canada - Prairie Northern Region  
 Anita Champagne Gudmundson and Holly Poklitar

Project Manager: Scott Tomlinson, PWGSC - Environmental Services

Class of Estimate: C

Constant Dollars: 2017/18

<b>3.3</b>	<b>External Disbursement</b>						
	Shipping / Courier	week	4	\$ 250.00	\$ 1,000.00		
	<b>Task Total:</b>					<b>\$1,000.00</b>	
<b>3.4</b>	<b>Laboratory Analysis</b>						
	Main Laboratory - Soil - 24hr TAT						
	VPH/BTEX	each	35	\$ 68.00	\$ 2,380.00		
	LEPH/HEPH/PAH	each	58	\$ 152.00	\$ 8,816.00		
	Main Laboratory - Water						
	VPH/BTEX	each	4	\$ 68.00	\$ 272.00		
	LEPH/PAH	each	4	\$ 152.00	\$ 608.00		
	Disposal Sample Fee	each	101	\$ 1.75	\$ 176.75		
	<b>Task Total:</b>					<b>\$12,252.75</b>	
<b>4.0</b>	<b>Reporting</b>						
<b>4.1</b>	<b>Reporting - Soil Treatment</b>						
	Junior CADD/GIS	hr	24	\$ 80.00	\$ 1,920.00		
	Junior Professional – Environmental	hr	16	\$ 80.00	\$ 1,280.00		
	Intermediate Qualified Professional	hr	40	\$ 100.00	\$ 4,000.00		
	Senior Qualified Professional	hr	48	\$ 145.00	\$ 6,960.00		
	Review - Senior Qualified Professional	hr	16	\$ 145.00	\$ 2,320.00		
	<b>Task Total:</b>					<b>\$16,480.00</b>	
	<b>Soil Treatment Cost</b>					<b>\$ 135,084.10</b>	
<b>POST REMEDIAL DRILLING AND MONITORING</b>							
<b>1.0</b>	<b>Project Management</b>						
<b>1.1</b>	<b>Project Management</b>						
	Junior CADD/GIS	hr	0	\$ 80.00	\$ -		
	Junior Professional – Environmental	hr	0	\$ 80.00	\$ -		
	Intermediate Qualified Professional	hr	0	\$ 100.00	\$ -		
	Senior Qualified Professional	hr	24	\$ 145.00	\$ 3,480.00		
	<b>Task Total:</b>					<b>\$3,480.00</b>	
<b>2.0</b>	<b>Post Remedial Drilling and Monitoring</b>						
<b>2.1</b>	<b>Internal Disbursements - Travel</b>						
	Airplane Ticket	each	2	\$ 1,000.00	\$ 2,000.00		
	Taxi	trip	4	\$ 100.00	\$ 400.00		
	Car Rental	week	2	\$ 1,000.00	\$ 2,000.00		1 wk(intermed./junior)
	Gas	LS	2	\$ 500.00	\$ 1,000.00		
	Hotel	days	14	\$ 160.00	\$ 2,240.00		1 wk(intermed./junior)
	Per Diem	days	14	\$ 100.61	\$ 1,408.54		
	<b>Task Total:</b>					<b>\$9,048.54</b>	
<b>2.2</b>	<b>Field Preparation and Field Work - Fees</b>						
	Junior Professional – Environmental	hr	70	\$ 80.00	\$ 5,600.00		1 wk, 10hr-day
	Intermediate Qualified Professional	hr	70	\$ 100.00	\$ 7,000.00		1 wk, 10hr-day
	Senior Qualified Professional	hr	28	\$ 145.00	\$ 4,060.00		
	<b>Task Total:</b>					<b>\$16,660.00</b>	
<b>2.3</b>	<b>Subcontractors</b>						
	<b>Drilling</b>						
	Mob/Demob	LS	1	\$ 15,000.00	\$ 15,000.00		
	Drill Rig	hours	48	\$ 450.00	\$ 21,600.00		
	Support Truck	days	4	\$ 525.00	\$ 2,100.00		
	Living Expenses	days	4	\$ 600.00	\$ 2,400.00		
	Well Installation Supplies	LS	1	\$ 2,500.00	\$ 2,500.00		
	Drums	each	2	\$ 126.00	\$ 252.00		
	<b>Utility Locates</b>	LS	1	\$ 4,700.00	\$ 4,700.00		
	<b>Task Total:</b>					<b>\$48,552.00</b>	
<b>2.4</b>	<b>External Disbursement</b>						
	Shipping / Courier	week	1	\$ 500.00	\$ 500.00		
	<b>Task Total:</b>					<b>\$500.00</b>	



PUBLIC WORKS AND GOVERNMENT SERVICES CANADA  
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ON BEHALF OF:

**TRANSPORT CANADA (PNR) WATSON LAKE AIRPORT COST ESTIMATE**

**CLIENT:** Transport Canada - Prairie Northern Region  
 Anita Champagne Gudmundson and Holly Poklitar

Project Manager: Scott Tomlinson, PWGSC - Environmental Services

Class of Estimate: C

Constant Dollars: 2017/18

<b>2.5</b>	<b>Laboratory Analysis</b>						
	Main Laboratory - Water						
	LEPH/PAH	each	5	\$ 152.00	\$ 760.00		
	Disposal Sample Fee	each	5	\$ 1.75	\$ 8.75		
	<b>Task Total:</b>					<b>\$768.75</b>	
<b>3.0</b>	<b>Reporting</b>						
<b>3.1</b>	<b>Reporting - Post Remedial Drilling and Monitoring</b>						
	Junior CADD/GIS	hr	24	\$ 80.00	\$ 1,920.00		
	Junior Professional – Environmental	hr	16	\$ 80.00	\$ 1,280.00		
	Intermediate Qualified Professional	hr	40	\$ 100.00	\$ 4,000.00		
	Senior Qualified Professional	hr	40	\$ 145.00	\$ 5,800.00		
	Review - Senior Qualified Professional	hr	8	\$ 145.00	\$ 1,160.00		
	<b>Task Total:</b>					<b>\$14,160.00</b>	
	<b>Post Remedial Cost</b>					<b>\$ 93,169.29</b>	
	<b>Consulting Costs for 2017/2018</b>					<b>\$ 635,116.92</b>	



ON BEHALF OF:

**TRANSPORT CANADA (PNR) WATSON LAKE AIRPORT COST ESTIMATE**

**CLIENT:** Transport Canada - Prairie Northern Region  
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Project Manager: Scott Tomlinson, PWGSC - Environmental Services

Class of Estimate: C

Constant Dollars: 2017/18

**Scope of Work:**

**AEC 22 EX-SITU REMEDIATION - ONSITE & OFFSITE (3,500 m3 CL+)**

- 1.0 Mobilization - Demobilization, Site Preparation and Site Operations
- 2.0 Ex-Situ Remediation
- 3.0 Backfilling
- 4.0 Transport
- 5.0 Disposal Offsite

**SOIL TREATMENT - (3,500 m3 CL+)**

- 1.0 Mobilization - Demobilization, Site Preparation and Site Operations
- 2.0 Bioremediation
  - \* Soil Treatment of 3,500 m3 of CL+ soil originated from AEC22 Ex-Situ Remediation
  - \* Transport of compliant soil to a stockpile location within the airport

**CONTRACTOR DETAILED COST ESTIMATE**

Item	Class of Labour, Plant or Material	Unit of Measure-ment	Estimated Quantity (EQ)	Price per Unit applicable taxes extra (PU)	Extended amount (EQ x PU) applicable taxes extra
<b>AEC 22 EX-SITU REMEDIATION</b>					
1.	Pre-Mobilization Submittals	Lump Sum	1	\$ 6,000.00	\$ 6,000.00
2.	Mobilization	Lump Sum	1	\$ 14,000.00	\$ 14,000.00
3.	Site Preparation	Lump Sum	1	\$ 35,000.00	\$ 35,000.00
4.	Site Facilities - Provision	Lump Sum	1	\$ 10,000.00	\$ 10,000.00
5.	Site Facilities - Operation	Day	31	\$ 500.00	\$ 15,500.00
6.	Standby Time	Day	4	\$ 1,600.00	\$ 6,400.00
7.	Contaminated Water Treatment - Provision	Lump Sum	1	\$ 7,000.00	\$ 7,000.00
8.	Contaminated Water Treatment - Operation	Litres	10000	\$ 1.40	\$ 14,000.00
9.	Temporary Sloping and Shoring	Lump Sum	1	\$ 44,500.00	\$ 44,500.00
10.	Waste Oversize Debris Removal	Hours	40	\$ 500.00	\$ 20,000.00
11.	Excavation	Cubic Meters	12000	\$ 8.00	\$ 96,000.00
13.	Backfill – Imported	Cubic Meters	500	\$ 95.00	\$ 47,500.00
14.	Backfill – Overburden	Cubic Meters	8500	\$ 10.00	\$ 85,000.00
15.	Backfill – Owner Supplied	Cubic Meters	3000	\$ 20.00	\$ 60,000.00
16.	Transport - Contaminated Material: Special Waste	Tonnes	25	\$ 200.00	\$ 5,000.00
17.	Transport - Contaminated Material: Waste Quality	Tonnes	15	\$ 165.00	\$ 2,475.00
18.	Transport – Contaminated Material: Owner Land Treatment Facility	Cubic Meters	3500	\$ 20.00	\$ 70,000.00
19.	Transport - Non-Contaminated Material and Waste	Tonnes	200	\$ 95.00	\$ 19,000.00
20.	Disposal - Contaminated Material: Special Waste	Tonnes	25	\$ 60.00	\$ 1,500.00
21.	Disposal - Contaminated Material: Waste Quality	Tonnes	15	\$ 60.00	\$ 900.00
22.	Disposal - Non-Contaminated Material and Waste	Tonnes	200	\$ 35.00	\$ 7,000.00
23.	Site Restoration	Lump Sum	1	\$ 18,825.00	\$ 18,825.00
26.	Demobilization	Lump Sum	1	\$ 14,000.00	\$ 14,000.00
27.	Closeout Submittals	Lump Sum	1	\$ 6,000.00	\$ 6,000.00
<b>TOTAL PRICE PROPOSAL AMOUNT</b>					<b>\$ 605,600.00</b>
Excluding GST					
<b>SOIL TREATMENT</b>					
1.	Pre-Mobilization Submittals	Lump Sum	1	\$ 6,000.00	\$ 6,000.00
2.	Mobilization	Lump Sum	1	\$ 14,000.00	\$ 14,000.00
3.	Site Preparation	Lump Sum	1	\$ 4,500.00	\$ 4,500.00
4.	Site Facilities - Provision	Lump Sum	1	\$ 5,000.00	\$ 5,000.00
5.	Site Facilities - Operation	Day	28	\$ 250.00	\$ 7,000.00
6.	Standby Time	Day	4	\$ 1,600.00	\$ 6,400.00
7.	Fertilizer Supply and Application	Kg	500	\$ 3.50	\$ 1,750.00
8.	Water Supply and Application	m <sup>3</sup>	200	\$ 7.00	\$ 1,400.00
9.	Removal of Sump Water	LS	1	\$ 1,500.00	\$ 1,500.00
10.	Tractor Operation	Hour	336	\$ 280.00	\$ 94,080.00
11.	Waste Oversize Debris Removal	Hour	4	\$ 500.00	\$ 2,000.00
13.	Transport - Non-Contaminated Material and Waste	Tonnes	20	\$ 95.00	\$ 1,900.00
14.	Disposal - Non-Contaminated Material and Waste	Tonnes	20	\$ 35.00	\$ 700.00
15.	Bioremediated Soil Relocation to Storage Area	m <sup>3</sup>	3500	\$ 20.00	\$ 70,000.00
16.	Demobilization	Lump Sum	1	\$ 14,000.00	\$ 14,000.00
17.	Closeout Submittals	Lump Sum	1	\$ 3,000.00	\$ 3,000.00
<b>TOTAL PRICE PROPOSAL AMOUNT</b>					<b>\$ 233,230.00</b>
Excluding GST					
<b>Contractor Costs for 2017/2018</b>					<b>\$ 838,830.00</b>





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Project Manager: Scott Tomlinson, PWGSC - Environmental Services

Class of Estimate: C

Constant Dollars: 2017/18

**Scope of Work:**

**REMEDIAL FEASIBILITY STUDY (Spring)**

- 1.0 Project Management
- 2.0 Additional Drilling and Sampling
  - \* Additional Drilling and Installation of Monitoring Wells to refine excavation boundaries
  - \* Installation of Additional Background Wells to Refine Statistical Analysis
  - \* Conduct Soil and Groundwater Field Screening
  - \* Soil and Groundwater Sampling
- 3.0 Reporting

**AEC 22 EX-SITU REMEDIATION MONITORING (Summer) - ONSITE ONLY (800 m3 CL+)**

- 1.0 Project Management
- 2.0 Tender Package Preparation
- 3.0 AEC 22 Ex-Situ Remediation Monitoring
  - \* AEC 22 Remediation. Monitor the excavation of overburden and contaminated soil
  - \* Conduct Soil and Groundwater Field Screening
  - \* Confirmatory sampling, sample processing and submission
- 4.0 Reporting

**SOIL TREATMENT (Summer /Early Fall) - (800 m3 CL+)**

- 1.0 Project Management
- 2.0 Tender Package Preparation - Soil Treatment
- 3.0 Soil Treatment Monitoring
  - \* Soil Treatment Monitoring of 800 m3 of CL+ soil originated from AEC 22 Ex-Situ Remediation
  - \* Conduct Soil and Groundwater Field Screening
  - \* Confirmatory sampling, sample processing and submission
- 4.0 Reporting

**POST REMEDIAL DRILLING AND MONITORING (Fall)**

- 1.0 Project Management
- 2.0 Post Remedial Monitoring
  - \* Installation of Monitoring Wells
  - \* Conduct Groundwater Field Screening
  - \* Groundwater Sampling
- 3.0 Reporting

**CONSULTING DETAILED COST ESTIMATE**

Item	Task	Unit	Quantity	Rate	Total	Subtotal	Comments
<b>REMEDIAL FEASIBILITY STUDY</b>							
<b>1.0 Project Management</b>							
<b>1.1 Project Management</b>							
	Junior CADD/GIS	hr	0	\$ 80.00	\$ -		
	Junior Professional – Environmental	hr	0	\$ 80.00	\$ -		
	Intermediate Qualified Professional	hr	0	\$ 100.00	\$ -		
	Senior Qualified Professional	hr	24	\$ 145.00	\$ 3,480.00		
	<b>Task Total:</b>					<b>\$3,480.00</b>	
<b>2.0 Drilling and Sampling</b>							
<b>2.1 Internal Disbursements - Travel</b>							
	Airplane Ticket	each	2	\$ 1,000.00	\$ 2,000.00		
	Taxi	trip	4	\$ 100.00	\$ 400.00		
	Car Rental	week	2	\$ 1,000.00	\$ 2,000.00		1 wk(interm./junior)
	Gas	LS	2	\$ 500.00	\$ 1,000.00		
	Hotel	days	14	\$ 160.00	\$ 2,240.00		1 wk(interm./junior)
	Per Diem	days	14	\$ 100.61	\$ 1,408.54		
	<b>Task Total:</b>					<b>\$9,048.54</b>	
<b>2.2 Field Preparation and Field Work - Fees</b>							
	Junior Professional – Environmental	hr	70	\$ 80.00	\$ 5,600.00		1 wk, 10hr-day
	Intermediate Qualified Professional	hr	70	\$ 100.00	\$ 7,000.00		1 wk, 10hr-day
	Senior Qualified Professional	hr	28	\$ 145.00	\$ 4,060.00		
	Senior Hydrogeologist	hr	12	\$ 145.00	\$ 1,740.00		
	<b>Task Total:</b>					<b>\$18,400.00</b>	
<b>2.3 Subcontractors</b>							
<b>Drilling</b>							
	Mob/Demob	LS	1	\$ 15,000.00	\$ 15,000.00		
	Drill Rig	hours	36	\$ 450.00	\$ 16,200.00		
	Support Truck	days	3	\$ 525.00	\$ 1,575.00		
	Living Expenses	days	3	\$ 600.00	\$ 1,800.00		
	Well Installation Supplies	LS	1	\$ 1,000.00	\$ 1,000.00		



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Class of Estimate: C

Constant Dollars: 2017/18

	Drums	each	2	\$ 126.00	\$ 252.00	
	Utility Locates	LS	1	\$ 4,700.00	\$ 4,700.00	
	<b>Task Total:</b>					<b>\$40,527.00</b>
<b>2.4</b>	<b>External Disbursement</b>					
	Shipping / Courier	week	1	\$ 250.00	\$ 250.00	
	<b>Task Total:</b>					<b>\$250.00</b>
<b>2.5</b>	<b>Laboratory Analysis</b>					
	Main Laboratory - Soil					
	LEPH/PAH	each	10	\$ 152.00	\$ 1,520.00	
	Metals	each	2	\$ 60.00	\$ 120.00	
	Disposal Sample Fee	each	12	\$ 1.75	\$ 21.00	
	Main Laboratory - Water					
	LEPH/PAH	each	2	\$ 152.00	\$ 304.00	
	Metals	each	1	\$ 60.00	\$ 60.00	
	Disposal Sample Fee	each	3	\$ 1.75	\$ 5.25	
	<b>Task Total:</b>					<b>\$2,030.25</b>
<b>3.0</b>	<b>Reporting</b>					
<b>3.1</b>	<b>Reporting – RAP and Background Statistical Analysis Refinement</b>					
	Junior CADD/GIS	hr	24	\$ 80.00	\$ 1,920.00	
	Junior Professional – Environmental	hr	16	\$ 80.00	\$ 1,280.00	
	Intermediate Qualified Professional	hr	40	\$ 100.00	\$ 4,000.00	
	Senior Qualified Professional	hr	40	\$ 145.00	\$ 5,800.00	
	Senior Hydrogeologist	hr	24	\$ 145.00	\$ 3,480.00	
	Review - Senior Qualified Professional	hr	8	\$ 145.00	\$ 1,160.00	
	<b>Task Total:</b>					<b>\$17,640.00</b>
	<b>Remediation Feasibility Study</b>					<b>\$ 91,375.79</b>
<b>AEC 22 EX-SITU REMEDIATION MONITORING</b>						
<b>1.0</b>	<b>Project Management</b>					
<b>1.1</b>	<b>Project Management</b>					
	Junior CADD/GIS	hr	0	\$ 80.00	\$ -	
	Junior Professional – Environmental	hr	0	\$ 80.00	\$ -	
	Intermediate Qualified Professional	hr	14	\$ 100.00	\$ 1,400.00	
	Senior Qualified Professional	hr	28	\$ 145.00	\$ 4,060.00	
	<b>Task Total:</b>					<b>\$5,460.00</b>
<b>2.0</b>	<b>Tender Package Preparation - Ex-Situ Remediation</b>					
<b>2.1</b>	<b>Prepare Tender Package</b>					
	Junior CADD/GIS	hr	16	\$ 80.00	\$ 1,280.00	
	Junior Professional – Environmental	hr	16	\$ 80.00	\$ 1,280.00	
	Intermediate Qualified Professional	hr	32	\$ 100.00	\$ 3,200.00	
	Senior Qualified Professional	hr	40	\$ 145.00	\$ 5,800.00	
	<b>Task Total:</b>					<b>\$11,560.00</b>
<b>3.0</b>	<b>AEC 22 Ex-Situ Remediation Monitoring</b>					
<b>3.1</b>	<b>Internal Disbursements - Travel</b>					
	Airplane Ticket	each	3	\$ 1,000.00	\$ 3,000.00	
	Taxi	trip	8	\$ 100.00	\$ 800.00	
	Car Rental	week	4	\$ 1,000.00	\$ 4,000.00	1.5 wks (2 field staff) + 3 dys (senior)
	Gas	LS	3	\$ 500.00	\$ 1,500.00	
	Hotel	days	24	\$ 160.00	\$ 3,840.00	1.5 wks (2 field staff) + 3 dys (senior)
	Per Diem	days	24	\$ 100.61	\$ 2,414.64	
	<b>Task Total:</b>					<b>\$15,554.64</b>
<b>3.2</b>	<b>Field Preparation and Field Work - Fees</b>					
	Junior Professional – Environmental	hr	126	\$ 80.00	\$ 10,080.00	1.5 wks, 12hr-day
	Intermediate Qualified Professional	hr	126	\$ 100.00	\$ 12,600.00	1.5 wks, 12hr-day
	Senior Qualified Professional	hr	64	\$ 145.00	\$ 9,280.00	
	<b>Task Total:</b>					<b>\$31,960.00</b>



ON BEHALF OF:

**CLIENT: TRANSPORT CANADA (PNR) WATSON LAKE AIRPORT COST ESTIMATE**

Transport Canada - Prairie Northern Region  
 Anita Champagne Gudmundson and Holly Poklitar

Project Manager: Scott Tomlinson, PWGSC - Environmental Services

Class of Estimate: C

Constant Dollars: 2017/18

<b>3.3</b>	<b>External Disbursement</b>						
	Shipping / Courier	week	1.5	\$ 250.00	\$ 375.00		
	Surveyor	LS	1	\$ 5,000.00	\$ 5,000.00		
	<b>Task Total:</b>					<b>\$5,375.00</b>	
<b>3.4</b>	<b>Laboratory Analysis</b>						
	Mobile Laboratory						
	Mob/Demob	km	0	\$ 2.00	\$ -		
	Operation (EPH)	days	0	\$ 5,250.00	\$ -		
	Main Laboratory - Soil						
	VPH/BTEX	each	100	\$ 68.00	\$ 6,800.00		
	LEPH/HEPH/PAH	each	100	\$ 152.00	\$ 15,200.00		
	Metals	each	5	\$ 68.00	\$ 340.00		
	Main Laboratory - Water						
	VPH/BTEX	each	2	\$ 68.00	\$ 136.00		
	LEPH/PAH	each	2	\$ 152.00	\$ 304.00		
	Metals	each	2	\$ 68.00	\$ 136.00		
	Disposal Sample Fee	each	211	\$ 1.75	\$ 369.25		
	<b>Task Total:</b>					<b>\$23,285.25</b>	
<b>4.0</b>	<b>Reporting</b>						
<b>4.1</b>	<b>Reporting - Ex-Situ Remediation</b>						
	Junior CADD/GIS	hr	40	\$ 80.00	\$ 3,200.00		
	Junior Professional – Environmental	hr	24	\$ 80.00	\$ 1,920.00		
	Intermediate Qualified Professional	hr	60	\$ 100.00	\$ 6,000.00		
	Senior Qualified Professional	hr	48	\$ 145.00	\$ 6,960.00		
	Review - Senior Qualified Professional	hr	16	\$ 145.00	\$ 2,320.00		
	<b>Task Total:</b>					<b>\$20,400.00</b>	
	<b>Ex-Situ Remediation Cost</b>					<b>\$ 113,594.89</b>	
<b>SOIL TREATMENT MONITORING</b>							
<b>1.0</b>	<b>Project Management</b>						
<b>1.1</b>	<b>Project Management</b>						
	Junior CADD/GIS	hr	0	\$ 80.00	\$ -		
	Junior Professional – Environmental	hr	0	\$ 80.00	\$ -		
	Intermediate Qualified Professional	hr	14	\$ 100.00	\$ 1,400.00		
	Senior Qualified Professional	hr	28	\$ 145.00	\$ 4,060.00		
	<b>Task Total:</b>					<b>\$5,460.00</b>	
<b>2.0</b>	<b>Tender Package Preparation - Soil Treatment</b>						
<b>2.1</b>	<b>Prepare Tender Package</b>						
	Junior CADD/GIS	hr	16	\$ 80.00	\$ 1,280.00		
	Junior Professional – Environmental	hr	8	\$ 80.00	\$ 640.00		
	Intermediate Qualified Professional	hr	24	\$ 100.00	\$ 2,400.00		
	Senior Qualified Professional	hr	32	\$ 145.00	\$ 4,640.00		
	<b>Task Total:</b>					<b>\$8,960.00</b>	
<b>3.0</b>	<b>Soil Treatment Monitoring</b>						
<b>3.1</b>	<b>Internal Disbursements - Travel</b>						
	Airplane Ticket	each	2	\$ 1,000.00	\$ 2,000.00		
	Taxi	trip	4	\$ 100.00	\$ 400.00		
	Car Rental	week	3	\$ 1,000.00	\$ 3,000.00		2 wks(inter.)+ 3dys (senior)
	Gas	LS	2	\$ 500.00	\$ 1,000.00		
	Hotel	days	17	\$ 160.00	\$ 2,720.00		2 wks(inter.)+ 3dys (senior)
	Per Diem	days	17	\$ 100.61	\$ 1,710.37		
	<b>Task Total:</b>					<b>\$10,830.37</b>	
<b>3.2</b>	<b>Field Preparation and Field Work - Fees</b>						
	Junior Professional – Environmental	hr	40	\$ 80.00	\$ 3,200.00		
	Intermediate Qualified Professional	hr	168	\$ 100.00	\$ 16,800.00		2 wks, 12hr-day
	Senior Qualified Professional	hr	92	\$ 145.00	\$ 13,340.00		
	<b>Task Total:</b>					<b>\$33,340.00</b>	



PUBLIC WORKS AND GOVERNMENT SERVICES CANADA  
 ENVIRONMENTAL SERVICES  
 PACIFIC REGION

ON BEHALF OF:

**CLIENT: TRANSPORT CANADA (PNR) WATSON LAKE AIRPORT COST ESTIMATE**

Transport Canada - Prairie Northern Region  
 Anita Champagne Gudmundson and Holly Poklitar

Project Manager: Scott Tomlinson, PWGSC - Environmental Services

Class of Estimate: C

Constant Dollars: 2017/18

<b>3.3</b>	<b>External Disbursement</b>						
	Shipping / Courier	week	2	\$ 250.00	\$ 500.00		
	<b>Task Total:</b>					<b>\$500.00</b>	
<b>3.4</b>	<b>Laboratory Analysis</b>						
	Main Laboratory - Soil - 24hr TAT						
	VPH/BTEX	each	20	\$ 68.00	\$ 1,360.00		
	LEPH/HEPH/PAH	each	20	\$ 152.00	\$ 3,040.00		
	Main Laboratory - Water						
	VPH/BTEX	each	2	\$ 68.00	\$ 136.00		
	LEPH/PAH	each	2	\$ 152.00	\$ 304.00		
	Disposal Sample Fee	each	44	\$ 1.75	\$ 77.00		
	<b>Task Total:</b>					<b>\$4,917.00</b>	
<b>4.0</b>	<b>Reporting</b>						
<b>4.1</b>	<b>Reporting - Soil Treatment</b>						
	Junior CADD/GIS	hr	24	\$ 80.00	\$ 1,920.00		
	Junior Professional – Environmental	hr	16	\$ 80.00	\$ 1,280.00		
	Intermediate Qualified Professional	hr	40	\$ 100.00	\$ 4,000.00		
	Senior Qualified Professional	hr	48	\$ 145.00	\$ 6,960.00		
	Review - Senior Qualified Professional	hr	16	\$ 145.00	\$ 2,320.00		
	<b>Task Total:</b>					<b>\$16,480.00</b>	
	<b>Soil Treatment Cost</b>					<b>\$ 80,487.37</b>	
<b>POST REMEDIAL DRILLING AND MONITORING</b>							
<b>1.0</b>	<b>Project Management</b>						
<b>1.1</b>	<b>Project Management</b>						
	Junior CADD/GIS	hr	0	\$ 80.00	\$ -		
	Junior Professional – Environmental	hr	0	\$ 80.00	\$ -		
	Intermediate Qualified Professional	hr	0	\$ 100.00	\$ -		
	Senior Qualified Professional	hr	24	\$ 145.00	\$ 3,480.00		
	<b>Task Total:</b>					<b>\$3,480.00</b>	
<b>2.0</b>	<b>Post Remedial Drilling and Monitoring</b>						
<b>2.1</b>	<b>Internal Disbursements - Travel</b>						
	Airplane Ticket	each	2	\$ 1,000.00	\$ 2,000.00		
	Taxi	trip	4	\$ 100.00	\$ 400.00		
	Car Rental	week	2	\$ 1,000.00	\$ 2,000.00		1 wk(intermed./junior)
	Gas	LS	2	\$ 500.00	\$ 1,000.00		
	Hotel	days	14	\$ 160.00	\$ 2,240.00		1 wk(intermed./junior)
	Per Diem	days	14	\$ 100.61	\$ 1,408.54		
	<b>Task Total:</b>					<b>\$9,048.54</b>	
<b>2.2</b>	<b>Field Preparation and Field Work - Fees</b>						
	Junior Professional – Environmental	hr	70	\$ 80.00	\$ 5,600.00		1 wk, 10hr-day
	Intermediate Qualified Professional	hr	70	\$ 100.00	\$ 7,000.00		1 wk, 10hr-day
	Senior Qualified Professional	hr	28	\$ 145.00	\$ 4,060.00		
	<b>Task Total:</b>					<b>\$16,660.00</b>	
<b>2.3</b>	<b>Subcontractors</b>						
	<b>Drilling</b>						
	Mob/Demob	LS	1	\$ 15,000.00	\$ 15,000.00		
	Drill Rig	hours	48	\$ 450.00	\$ 21,600.00		
	Support Truck	days	4	\$ 525.00	\$ 2,100.00		
	Living Expenses	days	4	\$ 600.00	\$ 2,400.00		
	Well Installation Supplies	LS	1	\$ 2,500.00	\$ 2,500.00		
	Drums	each	2	\$ 126.00	\$ 252.00		
	<b>Utility Locates</b>	LS	1	\$ 4,700.00	\$ 4,700.00		
	<b>Task Total:</b>					<b>\$48,552.00</b>	
<b>2.4</b>	<b>External Disbursement</b>						
	Shipping / Courier	week	1	\$ 500.00	\$ 500.00		
	<b>Task Total:</b>					<b>\$500.00</b>	



PUBLIC WORKS AND GOVERNMENT SERVICES CANADA  
 ENVIRONMENTAL SERVICES  
 PACIFIC REGION

ON BEHALF OF:

**TRANSPORT CANADA (PNR) WATSON LAKE AIRPORT COST ESTIMATE**

**CLIENT:** Transport Canada - Prairie Northern Region  
 Anita Champagne Gudmundson and Holly Poklitar

Project Manager: Scott Tomlinson, PWGSC - Environmental Services

Class of Estimate: C

Constant Dollars: 2017/18

<b>2.5</b>	<b>Laboratory Analysis</b>						
	Main Laboratory - Water						
	LEPH/PAH	each	5	\$ 152.00	\$ 760.00		
	Disposal Sample Fee	each	5	\$ 1.75	\$ 8.75		
	<b>Task Total:</b>					<b>\$768.75</b>	
<b>3.0</b>	<b>Reporting</b>						
<b>3.1</b>	<b>Reporting - Post Remedial Drilling and Monitoring</b>						
	Junior CADD/GIS	hr	24	\$ 80.00	\$ 1,920.00		
	Junior Professional – Environmental	hr	16	\$ 80.00	\$ 1,280.00		
	Intermediate Qualified Professional	hr	40	\$ 100.00	\$ 4,000.00		
	Senior Qualified Professional	hr	40	\$ 145.00	\$ 5,800.00		
	Review - Senior Qualified Professional	hr	8	\$ 145.00	\$ 1,160.00		
	<b>Task Total:</b>					<b>\$14,160.00</b>	
	<b>Post Remedial Cost</b>					<b>\$ 93,169.29</b>	
	<b>Consulting Costs for 2017/2018</b>					<b>\$ 378,627.34</b>	



ON BEHALF OF:

**TRANSPORT CANADA (PNR) WATSON LAKE AIRPORT COST ESTIMATE**

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Project Manager: Scott Tomlinson, PWGSC - Environmental Services

Class of Estimate: C

Constant Dollars: 2017/18

**Scope of Work:**

**AEC 22 EX-SITU REMEDIATION - ONSITE ONLY (800 m3 CL+)**

- 1.0 Mobilization - Demobilization, Site Preparation and Site Operations
- 2.0 Ex-Situ Remediation
- 3.0 Backfilling
- 4.0 Transport
- 5.0 Disposal Offsite

**SOIL TREATMENT - (800 m3 CL+)**

- 1.0 Mobilization - Demobilization, Site Preparation and Site Operations
- 2.0 Bioremediation
  - \* Soil Treatment of 800 m3 of CL+ soil originated from AEC22 Ex-Situ Remediation
  - \* Transport of compliant soil to a stockpile location within the airport

**CONTRACTOR DETAILED COST ESTIMATE**

Item	Class of Labour, Plant or Material	Unit of Measure-ment	Estimated Quantity (EQ)	Price per Unit applicable taxes extra (PU)	Extended amount (EQ x PU) applicable taxes extra
<b>AEC 22 EX-SITU REMEDIATION</b>					
1.	Pre-Mobilization Submittals	Lump Sum	1	\$ 6,000.00	\$ 6,000.00
2.	Mobilization	Lump Sum	1	\$ 14,000.00	\$ 14,000.00
3.	Site Preparation	Lump Sum	1	\$ 35,000.00	\$ 35,000.00
4.	Site Facilities - Provision	Lump Sum	1	\$ 10,000.00	\$ 10,000.00
5.	Site Facilities - Operation	Day	10	\$ 500.00	\$ 5,000.00
6.	Standby Time	Day	2	\$ 1,600.00	\$ 3,200.00
7.	Contaminated Water Treatment - Provision	Lump Sum	1	\$ 7,000.00	\$ 7,000.00
8.	Contaminated Water Treatment - Operation	Litres	5000	\$ 1.40	\$ 7,000.00
9.	Temporary Sloping and Shoring	Lump Sum	1	\$ 15,500.00	\$ 15,500.00
10.	Waste Oversize Debris Removal	Hours	20	\$ 500.00	\$ 10,000.00
11.	Excavation	Cubic Meters	3300	\$ 8.00	\$ 26,400.00
13.	Backfill – Imported	Cubic Meters	100	\$ 95.00	\$ 9,500.00
14.	Backfill – Overburden	Cubic Meters	2500	\$ 10.00	\$ 25,000.00
15.	Backfill – Owner Supplied	Cubic Meters	700	\$ 20.00	\$ 14,000.00
16.	Transport - Contaminated Material: Special Waste	Tonnes	10	\$ 200.00	\$ 2,000.00
17.	Transport - Contaminated Material: Waste Quality	Tonnes	5	\$ 165.00	\$ 825.00
18.	Transport – Contaminated Material: Owner Land Treatment Facility	Cubic Meters	800	\$ 20.00	\$ 16,000.00
19.	Transport - Non-Contaminated Material and Waste	Tonnes	100	\$ 95.00	\$ 9,500.00
20.	Disposal - Contaminated Material: Special Waste	Tonnes	10	\$ 60.00	\$ 600.00
21.	Disposal - Contaminated Material: Waste Quality	Tonnes	5	\$ 60.00	\$ 300.00
22.	Disposal - Non-Contaminated Material and Waste	Tonnes	100	\$ 35.00	\$ 3,500.00
23.	Site Restoration	Lump Sum	1	\$ 18,825.00	\$ 18,825.00
26.	Demobilization	Lump Sum	1	\$ 14,000.00	\$ 14,000.00
27.	Closeout Submittals	Lump Sum	1	\$ 6,000.00	\$ 6,000.00
<b>TOTAL PRICE PROPOSAL AMOUNT</b>					<b>\$ 259,150.00</b>
Excluding GST					
<b>SOIL TREATMENT</b>					
1.	Pre-Mobilization Submittals	Lump Sum	1	\$ 6,000.00	\$ 6,000.00
2.	Mobilization	Lump Sum	1	\$ 14,000.00	\$ 14,000.00
3.	Site Preparation	Lump Sum	1	\$ 4,500.00	\$ 4,500.00
4.	Site Facilities - Provision	Lump Sum	1	\$ 5,000.00	\$ 5,000.00
5.	Site Facilities - Operation	Day	14	\$ 250.00	\$ 3,500.00
6.	Standby Time	Day	2	\$ 1,600.00	\$ 3,200.00
7.	Fertilizer Supply and Application	Kg	200	\$ 3.50	\$ 700.00
8.	Water Supply and Application	m <sup>3</sup>	100	\$ 7.00	\$ 700.00
9.	Removal of Sump Water	LS	1	\$ 1,500.00	\$ 1,500.00
10.	Tractor Operation	Hour	168	\$ 280.00	\$ 47,040.00
11.	Waste Oversize Debris Removal	Hour	4	\$ 500.00	\$ 2,000.00
13.	Transport - Non-Contaminated Material and Waste	Tonnes	5	\$ 95.00	\$ 475.00
14.	Disposal - Non-Contaminated Material and Waste	Tonnes	5	\$ 35.00	\$ 175.00
15.	Bioremediated Soil Relocation to Storage Area	m <sup>3</sup>	800	\$ 20.00	\$ 16,000.00
16.	Demobilization	Lump Sum	1	\$ 14,000.00	\$ 14,000.00
17.	Closeout Submittals	Lump Sum	1	\$ 3,000.00	\$ 3,000.00
<b>TOTAL PRICE PROPOSAL AMOUNT</b>					<b>\$ 121,790.00</b>
Excluding GST					
<b>Contractor Costs for 2017/2018</b>					<b>\$ 380,940.00</b>



ON BEHALF OF:

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Project Manager: Scott Tomlinson, PWGSC - Environmental Services

Class of Estimate: C

Constant Dollars: 2017/18

**Scope of Work:**

**REMEDIAL FEASIBILITY STUDY (Spring)**

- 1.0 Project Management
- 2.0 Additional Drilling and Sampling
  - \* Additional Drilling and Installation of Monitoring Wells to refine excavation boundaries
  - \* Installation of Additional Background Wells to Refine Statistical Analysis
  - \* Conduct Soil and Groundwater Field Screening
  - \* Soil and Groundwater Sampling
- 3.0 Reporting

**AEC 22 EX-SITU REMEDIATION MONITORING (Summer) - OFFSITE ONLY (2,700 m3 CL+)**

- 1.0 Project Management
- 2.0 Tender Package Preparation
- 3.0 AEC 22 Ex-Situ Remediation Monitoring
  - \* AEC 22 Remediation. Monitor the excavation of overburden and contaminated soil
  - \* Conduct Soil and Groundwater Field Screening
  - \* Confirmatory sampling, sample processing and submission
- 4.0 Reporting

**SOIL TREATMENT (Summer /Early Fall) - (2,700 m3 CL+)**

- 1.0 Project Management
- 2.0 Tender Package Preparation - Soil Treatment
- 3.0 Soil Treatment Monitoring
  - \* Soil Treatment Monitoring of 2,700 m3 of CL+ soil originated from AEC 22 Ex-Situ Remediation
  - \* Conduct Soil and Groundwater Field Screening
  - \* Confirmatory sampling, sample processing and submission
- 4.0 Reporting

**POST REMEDIAL DRILLING AND MONITORING (Fall)**

- 1.0 Project Management
- 2.0 Post Remedial Monitoring
  - \* Installation of Monitoring Wells
  - \* Conduct Groundwater Field Screening
  - \* Groundwater Sampling
- 3.0 Reporting

**CONSULTING DETAILED COST ESTIMATE**

Item	Task	Unit	Quantity	Rate	Total	Subtotal	Comments
<b>REMEDIAL FEASIBILITY STUDY</b>							
<b>1.0 Project Management</b>							
<b>1.1 Project Management</b>							
	Junior CADD/GIS	hr	0	\$ 80.00	\$ -		
	Junior Professional – Environmental	hr	0	\$ 80.00	\$ -		
	Intermediate Qualified Professional	hr	0	\$ 100.00	\$ -		
	Senior Qualified Professional	hr	24	\$ 145.00	\$ 3,480.00		
	<b>Task Total:</b>					<b>\$3,480.00</b>	
<b>2.0 Drilling and Sampling</b>							
<b>2.1 Internal Disbursements - Travel</b>							
	Airplane Ticket	each	2	\$ 1,000.00	\$ 2,000.00		
	Taxi	trip	4	\$ 100.00	\$ 400.00		
	Car Rental	week	2	\$ 1,000.00	\$ 2,000.00		1 wk(interm./junior)
	Gas	LS	2	\$ 500.00	\$ 1,000.00		
	Hotel	days	14	\$ 160.00	\$ 2,240.00		1 wk(interm./junior)
	Per Diem	days	14	\$ 100.61	\$ 1,408.54		
	<b>Task Total:</b>					<b>\$9,048.54</b>	
<b>2.2 Field Preparation and Field Work - Fees</b>							
	Junior Professional – Environmental	hr	70	\$ 80.00	\$ 5,600.00		1 wk, 10hr-day
	Intermediate Qualified Professional	hr	70	\$ 100.00	\$ 7,000.00		1 wk, 10hr-day
	Senior Qualified Professional	hr	28	\$ 145.00	\$ 4,060.00		
	Senior Hydrogeologist	hr	24	\$ 145.00	\$ 3,480.00		
	<b>Task Total:</b>					<b>\$20,140.00</b>	
<b>2.3 Subcontractors</b>							
<b>Drilling</b>							
	Mob/Demob	LS	1	\$ 15,000.00	\$ 15,000.00		
	Drill Rig	hours	48	\$ 450.00	\$ 21,600.00		
	Support Truck	days	4	\$ 525.00	\$ 2,100.00		
	Living Expenses	days	4	\$ 600.00	\$ 2,400.00		
	Well Installation Supplies	LS	1	\$ 1,500.00	\$ 1,500.00		



PUBLIC WORKS AND GOVERNMENT SERVICES CANADA  
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Constant Dollars: 2017/18

	Drums	each	3	\$ 126.00	\$ 378.00	
	Utility Locates	LS	1	\$ 4,700.00	\$ 4,700.00	
	<b>Task Total:</b>					<b>\$47,678.00</b>
<b>2.4</b>	<b>External Disbursement</b>					
	Shipping / Courier	week	1	\$ 250.00	\$ 250.00	
	<b>Task Total:</b>					<b>\$250.00</b>
<b>2.5</b>	<b>Laboratory Analysis</b>					
	Main Laboratory - Soil					
	LEPH/PAH	each	20	\$ 152.00	\$ 3,040.00	
	Metals	each	3	\$ 60.00	\$ 180.00	
	Disposal Sample Fee	each	23	\$ 1.75	\$ 40.25	
	Main Laboratory - Water					
	LEPH/PAH	each	3	\$ 152.00	\$ 456.00	
	Metals	each	2	\$ 60.00	\$ 120.00	
	Disposal Sample Fee	each	5	\$ 1.75	\$ 8.75	
	<b>Task Total:</b>					<b>\$3,845.00</b>
<b>3.0</b>	<b>Reporting</b>					
<b>3.1</b>	<b>Reporting – RAP and Background Statistical Analysis Refinement</b>					
	Junior CADD/GIS	hr	24	\$ 80.00	\$ 1,920.00	
	Junior Professional – Environmental	hr	16	\$ 80.00	\$ 1,280.00	
	Intermediate Qualified Professional	hr	40	\$ 100.00	\$ 4,000.00	
	Senior Qualified Professional	hr	40	\$ 145.00	\$ 5,800.00	
	Senior Hydrogeologist	hr	24	\$ 145.00	\$ 3,480.00	
	Review - Senior Qualified Professional	hr	8	\$ 145.00	\$ 1,160.00	
	<b>Task Total:</b>					<b>\$17,640.00</b>
	<b>Remediation Feasibility Study</b>					<b>\$ 102,081.54</b>
<b>AEC 22 EX-SITU REMEDIATION MONITORING</b>						
<b>1.0</b>	<b>Project Management</b>					
<b>1.1</b>	<b>Project Management</b>					
	Junior CADD/GIS	hr	0	\$ 80.00	\$ -	
	Junior Professional – Environmental	hr	0	\$ 80.00	\$ -	
	Intermediate Qualified Professional	hr	28	\$ 100.00	\$ 2,800.00	
	Senior Qualified Professional	hr	56	\$ 145.00	\$ 8,120.00	
	<b>Task Total:</b>					<b>\$10,920.00</b>
<b>2.0</b>	<b>Tender Package Preparation - Ex-Situ Remediation</b>					
<b>2.1</b>	<b>Prepare Tender Package</b>					
	Junior CADD/GIS	hr	16	\$ 80.00	\$ 1,280.00	
	Junior Professional – Environmental	hr	16	\$ 80.00	\$ 1,280.00	
	Intermediate Qualified Professional	hr	32	\$ 100.00	\$ 3,200.00	
	Senior Qualified Professional	hr	40	\$ 145.00	\$ 5,800.00	
	<b>Task Total:</b>					<b>\$11,560.00</b>
<b>3.0</b>	<b>AEC 22 Ex-Situ Remediation Monitoring</b>					
<b>3.1</b>	<b>Internal Disbursements - Travel</b>					
	Airplane Ticket	each	3	\$ 1,000.00	\$ 3,000.00	
	Taxi	trip	6	\$ 100.00	\$ 600.00	
	Car Rental	week	7	\$ 1,000.00	\$ 7,000.00	3 wks (2 field staff) + 4 dys (senior)
	Gas	LS	3	\$ 500.00	\$ 1,500.00	
	Hotel	days	46	\$ 160.00	\$ 7,360.00	3 wks (2 field staff) + 4 dys (senior)
	Per Diem	days	46	\$ 100.61	\$ 4,628.06	
	<b>Task Total:</b>					<b>\$24,088.06</b>
<b>3.2</b>	<b>Field Preparation and Field Work - Fees</b>					
	Junior Professional – Environmental	hr	252	\$ 80.00	\$ 20,160.00	3 wks, 12hr-day
	Intermediate Qualified Professional	hr	252	\$ 100.00	\$ 25,200.00	3 wks, 12hr-day
	Senior Qualified Professional	hr	118	\$ 145.00	\$ 17,110.00	
	<b>Task Total:</b>					<b>\$62,470.00</b>





PUBLIC WORKS AND GOVERNMENT SERVICES CANADA  
 ENVIRONMENTAL SERVICES  
 PACIFIC REGION

ON BEHALF OF:

**CLIENT: TRANSPORT CANADA (PNR) WATSON LAKE AIRPORT COST ESTIMATE**  
 Transport Canada - Prairie Northern Region  
 Anita Champagne Gudmundson and Holly Poklitar

Project Manager: Scott Tomlinson, PWGSC - Environmental Services

Class of Estimate: C

Constant Dollars: 2017/18

<b>3.3</b>	<b>External Disbursement</b>						
	Shipping / Courier	week	3	\$ 250.00	\$ 750.00		
	Surveyor	LS	1	\$ 5,000.00	\$ 5,000.00		
	<b>Task Total:</b>					<b>\$5,750.00</b>	
<b>3.4</b>	<b>Laboratory Analysis</b>						
	Mobile Laboratory						
	Mob/Demob	km	4500	\$ 2.00	\$ 9,000.00		
	Operation (EPH)	days	10	\$ 5,250.00	\$ 52,500.00		
	Main Laboratory - Soil						
	VPH/BTEX	each	24	\$ 68.00	\$ 1,632.00		
	LEPH/HEPH/PAH	each	70	\$ 152.00	\$ 10,640.00		
	Metals	each	14	\$ 68.00	\$ 952.00		
	Main Laboratory - Water						
	VPH/BTEX	each	3	\$ 68.00	\$ 204.00		
	LEPH/PAH	each	3	\$ 152.00	\$ 456.00		
	Metals	each	3	\$ 68.00	\$ 204.00		
	Disposal Sample Fee	each	117	\$ 1.75	\$ 204.75		
	<b>Task Total:</b>					<b>\$75,792.75</b>	
<b>4.0</b>	<b>Reporting</b>						
<b>4.1</b>	<b>Reporting - Ex-Situ Remediation</b>						
	Junior CADD/GIS	hr	40	\$ 80.00	\$ 3,200.00		
	Junior Professional – Environmental	hr	24	\$ 80.00	\$ 1,920.00		
	Intermediate Qualified Professional	hr	60	\$ 100.00	\$ 6,000.00		
	Senior Qualified Professional	hr	48	\$ 145.00	\$ 6,960.00		
	Review - Senior Qualified Professional	hr	16	\$ 145.00	\$ 2,320.00		
	<b>Task Total:</b>					<b>\$20,400.00</b>	
	<b>Ex-Situ Remediation Cost</b>					<b>\$ 210,980.81</b>	
<b>SOIL TREATMENT MONITORING</b>							
<b>1.0</b>	<b>Project Management</b>						
<b>1.1</b>	<b>Project Management</b>						
	Junior CADD/GIS	hr	0	\$ 80.00	\$ -		
	Junior Professional – Environmental	hr	0	\$ 80.00	\$ -		
	Intermediate Qualified Professional	hr	28	\$ 100.00	\$ 2,800.00		
	Senior Qualified Professional	hr	56	\$ 145.00	\$ 8,120.00		
	<b>Task Total:</b>					<b>\$10,920.00</b>	
<b>2.0</b>	<b>Tender Package Preparation - Soil Treatment</b>						
<b>2.1</b>	<b>Prepare Tender Package</b>						
	Junior CADD/GIS	hr	16	\$ 80.00	\$ 1,280.00		
	Junior Professional – Environmental	hr	8	\$ 80.00	\$ 640.00		
	Intermediate Qualified Professional	hr	24	\$ 100.00	\$ 2,400.00		
	Senior Qualified Professional	hr	32	\$ 145.00	\$ 4,640.00		
	<b>Task Total:</b>					<b>\$8,960.00</b>	
<b>3.0</b>	<b>Soil Treatment Monitoring</b>						
<b>3.1</b>	<b>Internal Disbursements - Travel</b>						
	Airplane Ticket	each	2	\$ 1,000.00	\$ 2,000.00		
	Taxi	trip	4	\$ 100.00	\$ 400.00		
	Car Rental	week	4	\$ 1,000.00	\$ 4,000.00		3 wks(interm.)+1wk(senior)
	Gas	LS	2	\$ 500.00	\$ 1,000.00		
	Hotel	days	28	\$ 160.00	\$ 4,480.00		3 wks(interm.)+1wk(senior)
	Per Diem	days	28	\$ 100.61	\$ 2,817.08		
	<b>Task Total:</b>					<b>\$14,697.08</b>	
<b>3.2</b>	<b>Field Preparation and Field Work - Fees</b>						
	Junior Professional – Environmental	hr	40	\$ 80.00	\$ 3,200.00		
	Intermediate Qualified Professional	hr	252	\$ 100.00	\$ 25,200.00		3 wks, 12hr-day
	Senior Qualified Professional	hr	140	\$ 145.00	\$ 20,300.00		
	<b>Task Total:</b>					<b>\$48,700.00</b>	



PUBLIC WORKS AND GOVERNMENT SERVICES CANADA  
 ENVIRONMENTAL SERVICES  
 PACIFIC REGION

ON BEHALF OF:

**CLIENT: TRANSPORT CANADA (PNR) WATSON LAKE AIRPORT COST ESTIMATE**

Transport Canada - Prairie Northern Region  
 Anita Champagne Gudmundson and Holly Poklitar

Project Manager: Scott Tomlinson, PWGSC - Environmental Services

Class of Estimate: C

Constant Dollars: 2017/18

<b>3.3</b>	<b>External Disbursement</b>						
	Shipping / Courier	week	3	\$ 250.00	\$ 750.00		
	<b>Task Total:</b>					<b>\$750.00</b>	
<b>3.4</b>	<b>Laboratory Analysis</b>						
	Main Laboratory - Soil - 24hr TAT						
	VPH/BTEX	each	27	\$ 68.00	\$ 1,836.00		
	LEPH/HEPH/PAH	each	45	\$ 152.00	\$ 6,840.00		
	Main Laboratory - Water						
	VPH/BTEX	each	3	\$ 68.00	\$ 204.00		
	LEPH/PAH	each	3	\$ 152.00	\$ 456.00		
	Disposal Sample Fee	each	78	\$ 1.75	\$ 136.50		
	<b>Task Total:</b>					<b>\$9,472.50</b>	
<b>4.0</b>	<b>Reporting</b>						
<b>4.1</b>	<b>Reporting - Soil Treatment</b>						
	Junior CADD/GIS	hr	24	\$ 80.00	\$ 1,920.00		
	Junior Professional – Environmental	hr	16	\$ 80.00	\$ 1,280.00		
	Intermediate Qualified Professional	hr	40	\$ 100.00	\$ 4,000.00		
	Senior Qualified Professional	hr	48	\$ 145.00	\$ 6,960.00		
	Review - Senior Qualified Professional	hr	16	\$ 145.00	\$ 2,320.00		
	<b>Task Total:</b>					<b>\$16,480.00</b>	
	<b>Soil Treatment Cost</b>					<b>\$ 109,979.58</b>	
<b>POST REMEDIAL DRILLING AND MONITORING</b>							
<b>1.0</b>	<b>Project Management</b>						
<b>1.1</b>	<b>Project Management</b>						
	Junior CADD/GIS	hr	0	\$ 80.00	\$ -		
	Junior Professional – Environmental	hr	0	\$ 80.00	\$ -		
	Intermediate Qualified Professional	hr	0	\$ 100.00	\$ -		
	Senior Qualified Professional	hr	24	\$ 145.00	\$ 3,480.00		
	<b>Task Total:</b>					<b>\$3,480.00</b>	
<b>2.0</b>	<b>Post Remedial Drilling and Monitoring</b>						
<b>2.1</b>	<b>Internal Disbursements - Travel</b>						
	Airplane Ticket	each	2	\$ 1,000.00	\$ 2,000.00		
	Taxi	trip	4	\$ 100.00	\$ 400.00		
	Car Rental	week	2	\$ 1,000.00	\$ 2,000.00		1 wk(intermed./junior)
	Gas	LS	2	\$ 500.00	\$ 1,000.00		
	Hotel	days	14	\$ 160.00	\$ 2,240.00		1 wk(intermed./junior)
	Per Diem	days	14	\$ 100.61	\$ 1,408.54		
	<b>Task Total:</b>					<b>\$9,048.54</b>	
<b>2.2</b>	<b>Field Preparation and Field Work - Fees</b>						
	Junior Professional – Environmental	hr	70	\$ 80.00	\$ 5,600.00		1 wk, 10hr-day
	Intermediate Qualified Professional	hr	70	\$ 100.00	\$ 7,000.00		1 wk, 10hr-day
	Senior Qualified Professional	hr	28	\$ 145.00	\$ 4,060.00		
	<b>Task Total:</b>					<b>\$16,660.00</b>	
<b>2.3</b>	<b>Subcontractors</b>						
	<b>Drilling</b>						
	Mob/Demob	LS	1	\$ 15,000.00	\$ 15,000.00		
	Drill Rig	hours	48	\$ 450.00	\$ 21,600.00		
	Support Truck	days	4	\$ 525.00	\$ 2,100.00		
	Living Expenses	days	4	\$ 600.00	\$ 2,400.00		
	Well Installation Supplies	LS	1	\$ 2,500.00	\$ 2,500.00		
	Drums	each	2	\$ 126.00	\$ 252.00		
	<b>Utility Locates</b>	LS	1	\$ 4,700.00	\$ 4,700.00		
	<b>Task Total:</b>					<b>\$48,552.00</b>	
<b>2.4</b>	<b>External Disbursement</b>						
	Shipping / Courier	week	1	\$ 500.00	\$ 500.00		
	<b>Task Total:</b>					<b>\$500.00</b>	



PUBLIC WORKS AND GOVERNMENT SERVICES CANADA  
 ENVIRONMENTAL SERVICES  
 PACIFIC REGION

ON BEHALF OF:

**TRANSPORT CANADA (PNR) WATSON LAKE AIRPORT COST ESTIMATE**

**CLIENT:** Transport Canada - Prairie Northern Region  
 Anita Champagne Gudmundson and Holly Poklitar

Project Manager: Scott Tomlinson, PWGSC - Environmental Services

Class of Estimate: C

Constant Dollars: 2017/18

<b>2.5</b>	<b>Laboratory Analysis</b>						
	Main Laboratory - Water						
	LEPH/PAH	each	5	\$ 152.00	\$ 760.00		
	Disposal Sample Fee	each	5	\$ 1.75	\$ 8.75		
	<b>Task Total:</b>					<b>\$768.75</b>	
<b>3.0</b>	<b>Reporting</b>						
<b>3.1</b>	<b>Reporting - Post Remedial Drilling and Monitoring</b>						
	Junior CADD/GIS	hr	24	\$ 80.00	\$ 1,920.00		
	Junior Professional – Environmental	hr	16	\$ 80.00	\$ 1,280.00		
	Intermediate Qualified Professional	hr	40	\$ 100.00	\$ 4,000.00		
	Senior Qualified Professional	hr	40	\$ 145.00	\$ 5,800.00		
	Review - Senior Qualified Professional	hr	8	\$ 145.00	\$ 1,160.00		
	<b>Task Total:</b>					<b>\$14,160.00</b>	
	<b>Post Remedial Cost</b>					<b>\$ 93,169.29</b>	
	<b>Consulting Costs for 2017/2018</b>					<b>\$ 516,211.22</b>	



ON BEHALF OF:

**TRANSPORT CANADA (PNR) WATSON LAKE AIRPORT COST ESTIMATE**

**CLIENT:** Transport Canada - Prairie Northern Region  
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Project Manager: Scott Tomlinson, PWGSC - Environmental Services

Class of Estimate: C

Constant Dollars: 2017/18

**Scope of Work:**

**AEC 22 EX-SITU REMEDIATION - OFFSITE ONLY (2,700 m3 CL+)**

- 1.0 Mobilization - Demobilization, Site Preparation and Site Operations
- 2.0 Ex-Situ Remediation
- 3.0 Backfilling
- 4.0 Transport
- 5.0 Disposal Offsite

**SOIL TREATMENT - (2,700 m3 CL+)**

- 1.0 Mobilization - Demobilization, Site Preparation and Site Operations
- 2.0 Bioremediation
  - \* Soil Treatment of 2,700 m3 of CL+ soil originated from AEC22 Ex-Situ Remediation
  - \* Transport of compliant soil to a stockpile location within the airport

**CONTRACTOR DETAILED COST ESTIMATE**

Item	Class of Labour, Plant or Material	Unit of Measure-ment	Estimated Quantity (EQ)	Price per Unit applicable taxes extra (PU)	Extended amount (EQ x PU) applicable taxes extra
<b>AEC 22 EX-SITU REMEDIATION</b>					
1.	Pre-Mobilization Submittals	Lump Sum	1	\$ 6,000.00	\$ 6,000.00
2.	Mobilization	Lump Sum	1	\$ 14,000.00	\$ 14,000.00
3.	Site Preparation	Lump Sum	1	\$ 35,000.00	\$ 35,000.00
4.	Site Facilities - Provision	Lump Sum	1	\$ 10,000.00	\$ 10,000.00
5.	Site Facilities - Operation	Day	21	\$ 500.00	\$ 10,500.00
6.	Standby Time	Day	3	\$ 1,600.00	\$ 4,800.00
7.	Contaminated Water Treatment - Provision	Lump Sum	1	\$ 7,000.00	\$ 7,000.00
8.	Contaminated Water Treatment - Operation	Litres	10000	\$ 1.40	\$ 14,000.00
9.	Temporary Sloping and Shoring	Lump Sum	1	\$ 29,000.00	\$ 29,000.00
10.	Waste Oversize Debris Removal	Hours	20	\$ 500.00	\$ 10,000.00
11.	Excavation	Cubic Meters	8700	\$ 8.00	\$ 69,600.00
13.	Backfill – Imported	Cubic Meters	400	\$ 95.00	\$ 38,000.00
14.	Backfill – Overburden	Cubic Meters	6000	\$ 10.00	\$ 60,000.00
15.	Backfill – Owner Supplied	Cubic Meters	2300	\$ 20.00	\$ 46,000.00
16.	Transport - Contaminated Material: Special Waste	Tonnes	15	\$ 200.00	\$ 3,000.00
17.	Transport - Contaminated Material: Waste Quality	Tonnes	10	\$ 165.00	\$ 1,650.00
18.	Transport – Contaminated Material: Owner Land Treatment Facility	Cubic Meters	2700	\$ 20.00	\$ 54,000.00
19.	Transport - Non-Contaminated Material and Waste	Tonnes	100	\$ 95.00	\$ 9,500.00
20.	Disposal - Contaminated Material: Special Waste	Tonnes	15	\$ 60.00	\$ 900.00
21.	Disposal - Contaminated Material: Waste Quality	Tonnes	10	\$ 60.00	\$ 600.00
22.	Disposal - Non-Contaminated Material and Waste	Tonnes	100	\$ 35.00	\$ 3,500.00
23.	Site Restoration	Lump Sum	1	\$ 18,825.00	\$ 18,825.00
26.	Demobilization	Lump Sum	1	\$ 14,000.00	\$ 14,000.00
27.	Closeout Submittals	Lump Sum	1	\$ 6,000.00	\$ 6,000.00
<b>TOTAL PRICE PROPOSAL AMOUNT</b>					<b>\$ 465,875.00</b>
Excluding GST					
<b>SOIL TREATMENT</b>					
1.	Pre-Mobilization Submittals	Lump Sum	1	\$ 6,000.00	\$ 6,000.00
2.	Mobilization	Lump Sum	1	\$ 14,000.00	\$ 14,000.00
3.	Site Preparation	Lump Sum	1	\$ 4,500.00	\$ 4,500.00
4.	Site Facilities - Provision	Lump Sum	1	\$ 5,000.00	\$ 5,000.00
5.	Site Facilities - Operation	Day	21	\$ 250.00	\$ 5,250.00
6.	Standby Time	Day	3	\$ 1,600.00	\$ 4,800.00
7.	Fertilizer Supply and Application	Kg	300	\$ 3.50	\$ 1,050.00
8.	Water Supply and Application	m <sup>3</sup>	200	\$ 7.00	\$ 1,400.00
9.	Removal of Sump Water	LS	1	\$ 1,500.00	\$ 1,500.00
10.	Tractor Operation	Hour	252	\$ 280.00	\$ 70,560.00
11.	Waste Oversize Debris Removal	Hour	4	\$ 500.00	\$ 2,000.00
13.	Transport - Non-Contaminated Material and Waste	Tonnes	15	\$ 95.00	\$ 1,425.00
14.	Disposal - Non-Contaminated Material and Waste	Tonnes	15	\$ 35.00	\$ 525.00
15.	Bioremediated Soil Relocation to Storage Area	m <sup>3</sup>	2700	\$ 20.00	\$ 54,000.00
16.	Demobilization	Lump Sum	1	\$ 14,000.00	\$ 14,000.00
17.	Closeout Submittals	Lump Sum	1	\$ 3,000.00	\$ 3,000.00
<b>TOTAL PRICE PROPOSAL AMOUNT</b>					<b>\$ 189,010.00</b>
Excluding GST					
<b>Contractor Costs for 2017/2018</b>					<b>\$ 654,885.00</b>



ON BEHALF OF:

**TRANSPORT CANADA (PNR) WATSON LAKE AIRPORT COST ESTIMATE**

**CLIENT:** Transport Canada - Prairie Northern Region  
 Anita Champagne Gudmundson and Holly Pokiitar

Project Manager: Scott Tomlinson, PWGSC - Environmental Services

Class of Estimate: C

Constant Dollars: 2018/19

**Scope of Work:**

**RISK ASSESSMENT FOR RESIDUAL COCs**

- 1.0 Project Management
- 2.0 Additional Drilling and Sampling
  - \* Conduct Soil and Groundwater Field Screening
  - \* Soil and Groundwater Sampling
- 3.0 Risk Assessment
- 4.0 Reporting

**ADDITIONAL POST REMEDIAL MONITORING AND SITE CLOSURE**

- 1.0 Project Management
- 2.0 Post Remedial Monitoring and Well Decommissioning
  - \* Conduct Groundwater Field Screening
  - \* Groundwater Sampling
  - \* Monitoring Well Decommissioning
- 3.0 Reporting - Site Closure

**CONSULTING DETAILED COST ESTIMATE**

Item	Task	Unit	Quantity	Rate	Total	Subtotal	Comments
<b>RISK ASSESSMENT FOR RESIDUAL COCS</b>							
<b>1.0 Project Management</b>							
<b>1.1</b>	<b>Project Management</b>						
	Junior CADD/GIS	hr	0	\$ 80.00	\$ -		
	Junior Professional – Environmental	hr	0	\$ 80.00	\$ -		
	Intermediate Qualified Professional	hr	0	\$ 100.00	\$ -		
	Senior Qualified Professional	hr	24	\$ 145.00	\$ 3,480.00		
	<b>Task Total:</b>					<b>\$3,480.00</b>	
<b>2.0 Additional Drilling and Sampling</b>							
<b>2.1</b>	<b>Internal Disbursements - Travel</b>						
	Airplane Ticket	each	2	\$ 1,000.00	\$ 2,000.00		
	Taxi	trip	4	\$ 100.00	\$ 400.00		
	Car Rental	week	2	\$ 1,000.00	\$ 2,000.00		1 wk(intermed./junior)
	Gas	LS	2	\$ 500.00	\$ 1,000.00		
	Hotel	days	14	\$ 160.00	\$ 2,240.00		1 wk(intermed./junior)
	Per Diem	days	14	\$ 100.61	\$ 1,408.54		
	<b>Task Total:</b>					<b>\$9,048.54</b>	
<b>2.2</b>	<b>Field Preparation and Field Work - Fees</b>						
	Junior Professional – Environmental	hr	70	\$ 80.00	\$ 5,600.00		1 wk, 10hr-day
	Intermediate Qualified Professional	hr	70	\$ 100.00	\$ 7,000.00		1 wk, 10hr-day
	Senior Qualified Professional	hr	28	\$ 145.00	\$ 4,060.00		
	<b>Task Total:</b>					<b>\$16,660.00</b>	
<b>2.3</b>	<b>Subcontractors</b>						
	<b>Drilling</b>						
	Mob/Demob	LS	1	\$ 15,000.00	\$ 15,000.00		
	Drill Rig	hours	48	\$ 450.00	\$ 21,600.00		
	Support Truck	days	4	\$ 525.00	\$ 2,100.00		
	Living Expenses	days	4	\$ 600.00	\$ 2,400.00		
	Well Installation Supplies	LS	1	\$ 2,500.00	\$ 2,500.00		
	Drums	each	2	\$ 126.00	\$ 252.00		
	<b>Utility Locates</b>	LS	1	\$ 4,700.00	\$ 4,700.00		
	<b>Task Total:</b>					<b>\$48,552.00</b>	
<b>2.4</b>	<b>External Disbursement</b>						
	Shipping / Courier	week	1	\$ 500.00	\$ 500.00		
	<b>Task Total:</b>					<b>\$500.00</b>	
<b>2.5</b>	<b>Laboratory Analysis</b>						
	<b>Main Laboratory - Soil</b>						
	VPH/BTEX	each	15	\$ 68.00	\$ 1,020.00		
	LEPH/HEPH/PAH	each	35	\$ 152.00	\$ 5,320.00		
	Metals	each	20	\$ 68.00	\$ 1,360.00		
	Disposal Sample Fee	each	70	\$ 1.75	\$ 122.50		
	<b>Main Laboratory - Water</b>						
	VPH/BTEX	each	5	\$ 68.00	\$ 340.00		
	LEPH/PAH	each	15	\$ 152.00	\$ 2,280.00		
	Metals	each	10	\$ 68.00	\$ 680.00		



ON BEHALF OF:

**CLIENT: TRANSPORT CANADA (PNR) WATSON LAKE AIRPORT COST ESTIMATE**  
 Transport Canada - Prairie Northern Region  
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Project Manager: Scott Tomlinson, PWGSC - Environmental Services  
 Class of Estimate: C  
 Constant Dollars: 2018/19

**Scope of Work:**

**RISK ASSESSMENT FOR RESIDUAL COCs**

- 1.0 Project Management
- 2.0 Additional Drilling and Sampling
  - \* Conduct Soil and Groundwater Field Screening
  - \* Soil and Groundwater Sampling
- 3.0 Risk Assessment
- 4.0 Reporting

**ADDITIONAL POST REMEDIAL MONITORING AND SITE CLOSURE**

- 1.0 Project Management
- 2.0 Post Remedial Monitoring and Well Decommissioning
  - \* Conduct Groundwater Field Screening
  - \* Groundwater Sampling
  - \* Monitoring Well Decommissioning
- 3.0 Reporting - Site Closure

**CONSULTING DETAILED COST ESTIMATE**

Item	Task	Unit	Quantity	Rate	Total	Subtotal	Comments
	Disposal Sample Fee	each	30	\$ 1.75	\$ 52.50		
	<b>Task Total:</b>					<b>\$11,175.00</b>	
<b>3.0</b>	<b>Risk Assessment</b>						
<b>3.1</b>	<b>Historical Report Review, Evaluate Compiled Data and Data Gap Analysis</b>						
	Intermediate Qualified Professional	hr	24	\$ 100.00	\$ 2,400		
	Senior Risk Assessor	hr	16	\$ 145.00	\$ 2,320		
	Review - Senior Qualified Professional	hr	2	\$ 145.00	\$ 290		
	<b>Task Total:</b>					<b>\$5,010</b>	
<b>3.2</b>	<b>Human Health Risk Assessment - Problem Formulation/Data Screening, Exposure Modelling, Toxicity Assessment, Risk Characterization</b>						
	Intermediate Qualified Professional	hr	120	\$ 100.00	\$ 12,000		
	Senior Risk Assessor	hr	40	\$ 145.00	\$ 5,800		
	Review - Senior Qualified Professional	hr	8	\$ 145.00	\$ 1,160		
	<b>Task Total:</b>					<b>\$18,960</b>	
<b>3.3</b>	<b>Ecological Risk Assessment - Problem Formulation/Data Screening, Exposure Modelling, Toxicity Assessment, Risk Characterization</b>						
	Intermediate Qualified Professional	hr	40	\$ 100.00	\$ 4,000		
	Senior Risk Assessor	hr	24	\$ 145.00	\$ 3,480		
	Review - Senior Qualified Professional	hr	2	\$ 145.00	\$ 290		
	<b>Task Total:</b>					<b>\$7,770</b>	
<b>4.0</b>	<b>Reporting</b>						
<b>4.1</b>	<b>Reporting - Risk Assessment</b>						
	Junior CADD/GIS	hr	24	\$ 80.00	\$ 1,920.00		
	Junior Professional – Environmental	hr	16	\$ 80.00	\$ 1,280.00		
	Intermediate Qualified Professional	hr	40	\$ 100.00	\$ 4,000.00		
	Senior Qualified Professional	hr	40	\$ 145.00	\$ 5,800.00		
	Review - Senior Qualified Professional	hr	8	\$ 145.00	\$ 1,160.00		
	<b>Task Total:</b>					<b>\$14,160.00</b>	
	<b>Residual COCs Risk Assessment Cost</b>					<b>\$ 135,315.54</b>	

**ADDITIONAL POST REMEDIAL MONITORING AND SITE CLOSURE**

<b>1.0</b>	<b>Project Management</b>						
<b>1.1</b>	<b>Project Management</b>						
	Junior CADD/GIS	hr	0	\$ 80.00	\$ -		
	Junior Professional – Environmental	hr	0	\$ 80.00	\$ -		
	Intermediate Qualified Professional	hr	24	\$ 100.00	\$ 2,400.00		
	Senior Qualified Professional	hr	40	\$ 145.00	\$ 5,800.00		
	<b>Task Total:</b>					<b>\$8,200.00</b>	
<b>2.0</b>	<b>Post Remedial Monitoring and Well Decommissioning</b>						
<b>2.1</b>	<b>Internal Disbursements - Travel</b>						
	Airplane Ticket	each	2	\$ 1,000.00	\$ 2,000.00		
	Taxi	trip	4	\$ 100.00	\$ 400.00		
	Car Rental	week	4	\$ 1,000.00	\$ 4,000.00		3 wks(interm./junior)
	Gas	LS	2	\$ 500.00	\$ 1,000.00		
	Hotel	days	28	\$ 160.00	\$ 4,480.00		3 wks(interm./junior)
	Per Diem	days	28	\$ 100.61	\$ 2,817.08		
	<b>Task Total:</b>					<b>\$14,697.08</b>	



ON BEHALF OF:

**TRANSPORT CANADA (PNR) WATSON LAKE AIRPORT COST ESTIMATE**

**CLIENT:** Transport Canada - Prairie Northern Region  
 Anita Champagne Gudmundson and Holly Pokiitar

Project Manager: Scott Tomlinson, PWGSC - Environmental Services  
 Class of Estimate: C  
 Constant Dollars: 2018/19

**Scope of Work:**

**RISK ASSESSMENT FOR RESIDUAL COCs**

- 1.0 Project Management
- 2.0 Additional Drilling and Sampling
  - \* Conduct Soil and Groundwater Field Screening
  - \* Soil and Groundwater Sampling
- 3.0 Risk Assessment
- 4.0 Reporting

**ADDITIONAL POST REMEDIAL MONITORING AND SITE CLOSURE**

- 1.0 Project Management
- 2.0 Post Remedial Monitoring and Well Decommissioning
  - \* Conduct Groundwater Field Screening
  - \* Groundwater Sampling
  - \* Monitoring Well Decommissioning
- 3.0 Reporting - Site Closure

**CONSULTING DETAILED COST ESTIMATE**

Item	Task	Unit	Quantity	Rate	Total	Subtotal	Comments
<b>2.2</b>	<b>Field Preparation and Field Work - Fees</b>						
	Junior Professional – Environmental	hr	168	\$ 80.00	\$ 13,440.00		3 wks, 12hr-day
	Intermediate Qualified Professional	hr	168	\$ 100.00	\$ 16,800.00		3 wks, 12hr-day
	Senior Qualified Professional	hr	112	\$ 145.00	\$ 16,240.00		
	<b>Task Total:</b>					<b>\$46,480.00</b>	
<b>2.3</b>	<b>Subcontractors</b>						
	<b>Well Decommissioning</b>						
	Mob/Demob	LS	1	\$ 13,500.00	\$ 13,500.00		
	Drill Rig (Auger)	hours	24	\$ 405.00	\$ 9,720.00		
	Support Truck	days	3	\$ 525.00	\$ 1,575.00		
	Living Expenses	days	3	\$ 450.00	\$ 1,350.00		
	Well Decommissioning Supplies	LS	1	\$ 5,000.00	\$ 5,000.00		
	Drums	each	1	\$ 126.00	\$ 126.00		
	<b>Task Total:</b>					<b>\$31,271.00</b>	
<b>2.4</b>	<b>External Disbursement</b>						
	Shipping / Courier	week	2	\$ 493.54	\$ 987.09		
	Storage Room Rental	week	2	\$ 120.00	\$ 240.00		
	<b>Task Total:</b>					<b>\$1,227.09</b>	
<b>2.5</b>	<b>Laboratory Analysis</b>						
	Main Laboratory - Water						
	VPH/BTEX	each	10	\$ 68.00	\$ 680.00		
	LEPH/PAH	each	10	\$ 152.00	\$ 1,520.00		
	Disposal Sample Fee	each	10	\$ 1.75	\$ 17.50		
	<b>Task Total:</b>					<b>\$2,217.50</b>	
<b>3.0</b>	<b>Reporting</b>						
<b>3.1</b>	<b>Reporting - Post Remedial Monitoring and Site Closure</b>						
	Junior CADD/GIS	hr	24	\$ 80.00	\$ 1,920.00		
	Junior Professional – Environmental	hr	16	\$ 80.00	\$ 1,280.00		
	Intermediate Qualified Professional	hr	40	\$ 100.00	\$ 4,000.00		
	Senior Qualified Professional	hr	40	\$ 145.00	\$ 5,800.00		
	Review - Senior Qualified Professional	hr	8	\$ 145.00	\$ 1,160.00		
	<b>Task Total:</b>					<b>\$14,160.00</b>	
	<b>Post Remedial Monitoring and Site Closure</b>					<b>\$ 118,252.67</b>	
	<b>Consulting Costs for 2018/2019</b>					<b>\$ 253,568.21</b>	



# Appendix V:

Photography Log





Photograph 1: Drilling performed by Omega using a Geoprobe 8140LS Sonic Track Drill Rig.



Photograph 2: Detail view of the sand and gravel units at APEC 22



Photograph 3: Sonic drilling at APEC 22 E.



Photograph 4: View of a newly installed stick up monitoring well at APEC 22 A.



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