

**REPORT
TO
NATIONAL CAPITAL COMMISSION
REMOVAL OF PHC-CONTAMINATED SOIL
16 TAUVELLE STREET
(NCC PROPERTY ASSET #6976)
OTTAWA, ONTARIO**

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28 August 2014

National Capital Commission
Environment, Capital Lands and Parks Branch
202-40 Elgin Street
Ottawa, ON K1P 1C7

Attention: Ms. Leslie Scott MacLennan, B.Sc.
Environmental Officer

Re: Final Report- **Removal of PHC- Contaminated Soil**
16 Tauvette Street, Ottawa
NCC Property Asset #6976

Dear Ms. MacLennan:

As requested, we are pleased to provide our final report for the removal of contaminated soil at the NCC property located at 16 Tauvette Street, in Ottawa, Ontario (NCC Property Asset #6976).

In 2013, Decommissioning Consulting Services (DCS), a member of the ARCADIS Group, was retained to conduct an updated Phase II ESA for the subject property and made several recommendations, including the removal of petroleum hydrocarbon (PHC) impacted soil along a former buried pipeline. In June 2014, DCS was retained by the NCC to remove PHC-contaminated soil from along this former diesel pipeline linking an exterior 2200 L AST to a backup interior generator. Details on the activities associated with the removal of all known PHC-contaminated soil in the vicinity of the 2,200 L aboveground storage tank (AST) are found in the body of the report.

Yours very truly,

DECOMMISSIONING CONSULTING SERVICES

Troy Austrins, P.Eng., PMP
Project Manager

EXECUTIVE SUMMARY

In 2013, Decommissioning Consulting Services (DCS), a member of the ARCADIS Group, was retained by the National Capital Commission (NCC) to conduct an Updated Phase II ESA for the subject property at 16 Tauvette Street, Ottawa, and made several recommendations, including the removal of petroleum hydrocarbon (PHC) and benzene, toluene, ethylbenzene, and xylene (BTEX) impacted soil along a former buried diesel pipe linking an exterior 2,200 L aboveground storage tank (AST) to an interior generator. In June 2014, DCS was retained by the NCC to remove the petroleum hydrocarbon (PHC)-contaminated soil along this former buried conduit pipe.

DCS staff attended the site on 24 June and 28 July 2014 to remove PHC-contaminated soil from the area where a diesel pipe was formerly buried. Seven test pits were first advanced to locate the exact area of the PHC/BTEX contamination. The contamination was identified using a combination of visual and olfactory evidence as well as soil vapour screening. Soil was then excavated until soil vapour readings at the horizontal and vertical extents of the excavation were less than 150 ppm, as specified in our proposal. In total, 13.4 tonnes of soil was removed on 24 June with an additional 12.3 tonnes removed on 28 July 2014. All soil was disposed of at the BFI Navan Landfill as a non-hazardous solid waste.

Verification sampling at the walls and floor of the final extents of the excavation confirmed that concentrations of PHC/BTEX in the soil remaining at the site met applicable federal CCME guidelines. Clean sand was imported to the site and used as backfill. Imported sand was compacted into the excavated areas.

All known PHC/BTEX contaminated soil associated with the former buried pipe in the vicinity of the 2,200 L AST has been excavated and disposed of off-site.

Additionally, DCS located existing monitoring wells on the subject property and recorded their GPS coordinates and condition to facilitate the planning for and implementation of any potential future natural attenuation monitoring program at the underground storage tank (UST) Area #1. No remediation work was conducted by DCS at either the UST #1 or UST #2 locations as part of the current work scope.

TABLE OF CONTENTS

PAGE

EXECUTIVE SUMMARY

1.0	BACKGROUND INFORMATION	1-1
2.0	SCOPE OF WORK.....	2-1
2.1	PROPOSED METHODOLOGY	2-1
2.2	ENVIRONMENTAL CRITERIA.....	2-2
3.0	FIELD ACTIVITIES	3-1
3.1	EXISTING MONITORING WELLS	3-3
3.2	QUALITY ASSURANCE AND QUALITY CONTROL	3-4
4.0	DISCUSSION AND CONCLUSIONS	4-1
5.0	CLOSURE	5-1

LIST OF TABLES

ON/FOLLOWS PAGE

Table 3.1 – GPS Coordinates of Test Pit Locations	3-2
Table 3.2 – GPS Coordinates of Existing Monitoring Wells.....	3-3
Table 3.3 – Results of Analysis for PHCs in Soil.....	3-4

LIST OF FIGURES

APPENDIX A

Figure 1 – Site Plan
Figure 2 – Test Pit Location Plan
Figure 3 – Extent of Excavation Plan

LIST OF APPENDICES

AT REAR OF REPORT

- A Figures/ Site Plans
- B Site Photos
- C Laboratory Certificates of Analysis
- D Landfill Disposal Receipts

1.0 BACKGROUND INFORMATION

The NCC 16 Tauvette property asset formerly consisted of eight NCC-operated greenhouses and an office structure. The site was operated by the NCC from the early 1970s to the mid-1990s, after which the NCC leased the property to various businesses. The use of the property as a nursery was reported to have been discontinued in the late 1990s or early 2000s. The site buildings and greenhouses were demolished in March 2013.

DCS reviewed the contents of the following reports concerning the subject property:

1. *Phase II ESA*, 16 Tauvette Street and 2389 Pepin Court, September 2005, by Intera Engineering Ltd.;
2. *Supplemental Phase II ESA –Former UST Area -16 Tauvette Street*, November 2006, by Intera Engineering Ltd.;
3. *Screening Level Risk Assessment and Remedial Options Feasibility Study; 16 Tauvette*, July 2008, by Intera Engineering Ltd.;
4. *Year 4 Natural Attenuation Monitoring –NCC Property Asset 6976, 16 Tauvette, Ottawa*, July 2012- Stantec Consulting Ltd.;
5. *Phase II Environmental Site Assessment Update; 16 Tauvette Street (NCC Property Asset #6976) Ottawa, ON*, May 2013, by Decommissioning Consulting Services.

DCS understood that a Phase I ESA was conducted on the subject property by Environmental Ecological Enterprises (E3) in November 1998. The Phase I ESA identified an area of the site where two fuel-containing underground storage tanks (USTs) had been located. The review of property management files by E3 determined that the USTs had been removed; however there were no reports available that assessed the soil and groundwater quality following removal of the tanks.

A Phase II ESA was conducted on the subject property by Intera Engineering Ltd (Intera) in 2005 which focussed on the two former UST areas. The intrusive investigation included seven boreholes advanced within the former UST Area #1, four boreholes advanced within former UST Area #2, and three monitoring well installations at the UST Area #1. Soils and groundwater significantly contaminated with hydrocarbons were identified in UST Area #1. Hydrocarbon-contaminated soils extended north, east and south of the limits of this former UST excavation. Concentrations of hydrocarbons in soils and groundwater within former UST Area #2 were reported to be below the then applicable commercial land use guidelines and standards, and are

also below the now applicable agricultural land use guidelines and standards. The Intera Phase II ESA recommended additional Phase II ESA work to delineate the extent of contaminated soil and groundwater in former UST Area #1. The reported values from former UST Area #1 were above the now applicable agricultural land use guidelines and standards.

A supplemental Phase II ESA was conducted by Intera in 2006 which focussed on delineating the hydrocarbon contamination within former UST Area #1. The supplemental assessment included the advancement of ten boreholes with three additional monitoring well installations. The areal extent of soil and groundwater contamination using commercial land use criteria was estimated at approximately 750 m².

A Screening Level Risk Assessment (SLRA) and Remedial Option Feasibility Study were completed by Intera in 2008 for the UST Areas #1 and #2. The SLRA comprised a human health risk assessment (HHRA) and an ecological risk assessment (ERA) for the identified contaminants which included benzene, and petroleum hydrocarbons (PHC) F1 and PHC F2 for soil. The contaminants of concern for groundwater were identified as PHC F1 to F4. Additional field work conducted in 2008 included advancing 13 boreholes and four monitoring well installations. The additional data obtained from the supplementary sampling and testing further delineated the extent of soil and groundwater contamination, augmented the database of soil and groundwater quality of the site for use in the SLRA and determined that the inferred direction of groundwater flow was north-northeasterly. The SLRA report concluded that the PHC and BTEX contamination related to the former UST did not pose any adverse health effects to human or ecological receptors for the then current commercial land use. Monitored natural attenuation was recommended as a possibility for the site.

A Natural Attenuation Monitoring Program was conducted by Stantec Consulting Limited (Stantec) in 2012. The program evaluated the electron donor and metabolic by-product concentrations inside and outside the plume and concluded that natural attenuation had occurred at the site. The report suggested that the areal extent of the UST Area #1 plume had decreased as compared to 2011. As part of the program groundwater samples were collected from 10 existing wells and water samples were collected from the surrounding catchbasins. Stantec recommended that the Natural Attenuation Monitoring Program be continued in 2013 to evaluate the continued effectiveness of this selected remediation approach for UST Area #1.

In March 2013, the former Office/warehouse building and Greenhouses were demolished. During pre-demolition inspections conducted by DCS staff, a former 900 L fuel storage tank (empty) was observed inside the Generator Room. In addition, one exterior 2,200 L AST was observed on the middle north side of the main building and was determined to contain 0.96 m

depth of diesel product, based on an observation of the gauge. It was inferred that the large AST and interior day tank were used to fuel the on-site generator set. During demolition, remnants of a buried diesel copper pipe were found beneath the floor slab linking the AST location to the former Generator room location. The granular bedding beneath the pipe line was found to have a strong petroleum odour and PHC concentrations in soil which exceeded Federal criteria based on testing conducted by DCS.

In April 2013, DCS conducted a Phase II ESA Update program that included 18 test pits to a maximum depth of 3.9 m below ground surface (bgs). Evidence of petroleum hydrocarbons (PHCs) was observed within two areas of the site. The two areas included a location beneath the former buried pipeline at the middle north end of the main building at a depth of 0.8 m bgs; and, within the former UST Area #1 below a depth of 1.0 m bgs.

PHC and benzene, toluene, ethylbenzene, and xylenes (BTEX) exceeded the applicable Tier I Levels for Surface Soil – Canada-Wide Standards for Petroleum Hydrocarbons in Soil (January 2008) and Table 1 -Canadian Soil Quality Guidelines Exceeds Soil Quality Guidelines for Agricultural Land Uses. No evidence of hydrocarbons was observed within the remaining test pits which included locations beneath former greenhouse and building footprints, beneath former ASTs, and on either side of the former buried diesel pipe. No evidence of hydrocarbons was observed within the surface samples collected from the area of concern identified by the NCC northwest of the former greenhouse complex.

Following from the 2013 Phase II ESA, DCS recommended excavating an estimated 25 m³ of soils along the former buried pipeline which were heavily contaminated with PHCs. TCLP results were completed that allowed disposal of PHC soils as a non-hazardous solid waste. It was also recommended that an additional work program be directed to removing the surface debris left over from demolition activities. Following these activities, DCS recommended conducting a Preliminary Quantitative Risk Assessment (PQRA) due to the proposed land use change from commercial to agricultural, and continuing the Natural Attenuation Monitoring Program through sampling the groundwater from existing wells at UST Area #1. It was also recommended to reinstate any damaged monitoring well installations.

DCS further noted that it may be beneficial to conduct a more comprehensive, integrated sampling program for the soils within the fill area zone in order to obtain a detailed view of the soil nutrient status in advance of planned agricultural uses. However, this would be dependent on the method of site preparation or soil amendments chosen in advance of crop production as well as the extent and timing of site areas to be converted to agricultural purposes.

2.0 SCOPE OF WORK

The objective of the current proposed work was to excavate and dispose of the worst-case contamination found beneath the former buried copper pipe line adjacent to the former 2,200 L AST. Any residual soil with elevated BTEX/PHC concentrations beyond the limits of the excavation would be left to naturally attenuate. The area was to be backfilled with imported clean sand. Soil segregation in the field was to be completed using an RKI Eagle soil vapour monitor.

The NCC did not request that DCS carry out any of the other recommendations provided in the 2013 Updated Phase II ESA report. It was, however, proposed by DCS that staff would attempt to locate all pre-existing monitoring wells on the property while on site to facilitate the planning for and implementation of any potential future natural attenuation monitoring program. It was expected that some monitoring wells may have been damaged during the March 2013 demolition program.

2.1 PROPOSED METHODOLOGY

A rubber-tired backhoe was to be used to excavate the contaminated soil. Excavated soil was to be evaluated using an RKI Eagle I gas detector to determine the level of contamination within the excavated soil. The gas detector was also to be used to evaluate the quality of the soil on the excavation walls and floor. Soil was to be excavated until readings at the excavation walls and floor were less than 150 ppm, as specified in the DCS proposal to NCC. The location and dimensions of the excavated trench were to be measured by DCS staff using a Garmin GPS unit and a tape scale. It was assumed that 25 m³ of the contaminated soil would be disposed of to landfill, with priority being given to the soil containing the highest levels of contamination. Soil samples were to be collected from the excavation floor and sidewalls, and from stockpiles of excavated soil for laboratory testing and verification.

The number of soil samples to be taken for verification purposes were derived from Table 3 of Schedule E of O.Reg. 153/04.

Clean sand fill was to be imported to the site and used to backfill the excavation.

2.2 ENVIRONMENTAL CRITERIA

The site is currently owned by the NCC and consists currently of vacant fallow land with associated agricultural fields nearby and residential land uses to the north.

As identified in the DCS Phase II ESA report, dated May 2013, a native clay was encountered at depths generally below 1 m below ground surface. As such, a medium to fine textured soil characteristic was applied. The overburden thickness was found to be greater than 2 m.

Based on the current ownership, land use, and the fact that potable water was supplied to former site office and greenhouse via city water supply, the following environmental soil standards were selected:

- Canadian Council of Ministers of the Environment (CCME), *Canadian Soil Quality Guidelines for the Protection of Environmental and Human Health*, 1999 (as updated), Commercial property CCME Guidelines as well as the CCME Canada-Wide Standards for Petroleum Hydrocarbons (PHCs) in Soil, endorsed 2001 (Table 1 updated Jan. 2008);
- Ministry of the Environment (MOE) *Soil, Ground Water and Sediment Standards for Use Under Part XV.1 of the Environmental Protection Act*, revised 15 April 2011- Table 3 Generic Full Depth Site Condition Standards in a Non-Potable Groundwater Condition under an Agricultural land use.

As the site is owned by the NCC, the federal guidelines were primarily referenced in the text, while laboratory results summary tables include the provincial standards/guidelines for additional reference. All chemical analyses were completed by ALS Laboratory, a Canadian Association for Laboratory Accreditation Inc. (CALA) certified laboratory.

3.0 FIELD ACTIVITIES

Preliminary Undertakings

Underground utility clearances were obtained from local public utilities. As all site infrastructure had been removed, there was no need to retain the services of a private contractor to complete the utility locates on private lands. A generic Health and Safety Plan (HASP) was carried by DCS staff at all times while on-site. The HASP listed appropriate personal protective equipment (PPE) applicable for field work at the subject site as well as appropriate safe work protocols. A copy of photographs taken during site activities may be found in Appendix B.

Contaminated Soil Removal Program

On 24 June 2014, a small rubber tracked Kubota excavator, operated by H. Ken Brown Excavating, under the supervision of DCS staff was used to excavate the contaminated soil. Seven test pits were advanced in order to determine the exact location of the area with evidence of PHC contamination at the locations shown on Figure 2. Soil was screened using an RKI Eagle II gas detector to assess the level of vapours, indicative of contamination, within the excavated soil and on the open excavation walls and floor. Soil was excavated until readings at the excavation walls and floor were less than 150 ppm.

No evidence of PHC contamination, staining or odours was found in testpit locations TP-1 to TP-6. The TP-7 location was found to contain the highest PHC soil vapour readings and was the primary work area from which PHC contaminated soils were excavated. The TP-7 location was expanded in size in order to remove discovered PHC-contaminated soil. Clean surficial soil (upper 0.6 m) from the excavation was set aside for replacement into the open excavation as backfill. Clean sand fill was imported to the site and used to backfill the excavation and subjected to compaction from the tracked excavator. Heavy rainfall occurring throughout the day created difficulties in securing dry samples from the open excavation side walls and bottom.

DCS staff measured the dimensions of the excavated trench using a Garmin GPS unit and a tape scale. The dimensions of the excavated areas are shown in Figure 3. The size of the TP-7 location excavation was approximately 6 m x 3.25 m with a depth of 1 m. The remaining test pits measured roughly 1 m width x 2 m length and were advanced to expose native underlying brown-grey clay soils at a depth of approximately 1 m below grade. GPS coordinates of the test pits are provided in the table below:

TABLE 3.1
GPS COORDINATES OF TEST PITS

Test Pit ID	Northing	Easting
TP1	45.42953	-75.57482
TP2	45.42956	-75.57479
TP3	45.42957	-75.57478
TP4	45.42956	-75.57478
TP5	45.42957	-75.57468
TP6	45.42957	-75.57466
TP7	45.42953	-75.57484

A total of 13.4 tonnes of contaminated soil removed on 24 June 2014 were disposed of at the BFI Navan Landfill. Soil samples were collected from the excavation floor/sidewalls and from stockpiles of excavated soil for laboratory testing and verification. The excavation had a bottom area of approximately 3 m x 6 m to 1 m depth. Representative soil samples were submitted to ALS Laboratory of Ottawa for analysis of BTEX/PHCs.

Chemical analyses showed that a one verification floor sample (sample B-1) contained concentrations of benzene, toluene, ethylbenzene, zylenes, and PHC fractions F1 and F2 above the applicable CCME guideline as shown on the laboratory results summary Table 3.3. Site plans showing study areas and sampling locations are provided in Appendix A. Laboratory certificates of analysis are provided in Appendix C.

On 28 July 2014, DCS returned to the site and supervised H. Ken Brown Excavating during a second round of excavating and backfilling. On this date, a rubber-tired backhoe was mobilized. In the area of excavation bottom sample B-1, the surficial clean sand fill that had been backfilled on 24 June 2014 was removed and set aside. The excavation was deepened to remove additional contaminated soils. At a 2.1 m depth, no visual or olfactory evidence of PHC contamination was observed, and soil vapour readings were below 150 ppm. A Gastech 1238 ME was used for soil vapour testing purposes. An excavation bottom area of 3 x 3.5m was opened to a 2.1 m final depth. A total of 12.3 tonnes of soil were removed from the site and disposed of at the BFI Navan Landfill on 28 July 2014.

The excavation was backfilled with the previously imported clean sand fill (set aside in an on-site soil stockpile), surficial on-site soil, as well as an additional 15 tonnes of imported clean sand fill. Prior to replacement, the two stockpiles of backfill soil were screened using the

Gastech soil vapour meter. Of the eight soil samples secured from the two small stockpiles, one soil sample was submitted for laboratory verification testing which had the highest soil vapour reading.

Verification samples collected from the excavation floor and sidewalls showed that the BTEX/PHC parameters were below the applicable federal criteria, as shown on Table 3.3- *Results of Analysis for BTEX and Petroleum Hydrocarbons in Soil*. The laboratory certificates of analysis are provided in Appendix C.

On both occasions, the clean sand fill was imported from Greely Sand and Gravel: 1971 Old Prescott Rd, Ottawa, ON K4P 1N6 – telephone (613) 821-3003. No PHCs or BTEX concentrations were observed to be above the laboratory detection limit. The results of laboratory testing on the sand fill are provided on Table 3.3.

On 24 June 2014, an RKI Eagle-2 was used for purposes of soil vapour screening. The Eagle unit was calibrated to hexane on 19 June 2014 and verified to be accurate. On 28 July 2014, a Gastechtor 1238 ME unit was used, as calibrated to hexane in a methane elimination mode. Elevated vapour concentrations (ie. greater than 100 ppmv) are generally indicative of the presence of volatile petroleum products in soil (ie. gasoline, as well as diesel and fuel oil to a lesser extent). There are no regulatory criteria for combustible soil vapours. Note that the soil vapour concentrations will vary based on hydrocarbon age and type, and that the readings are intended only as a field screening method to provide a qualitative measure of hydrocarbon concentrations in the subsurface while follow-on analytical soil results are used for quantitative evaluation of soil PHC contamination.

3.1 EXISTING MONITORING WELLS

In order to facilitate the planning for and implementation of any potential future natural attenuation monitoring program, DCS staff recorded GPS coordinates of the 10 pre-existing monitoring wells on the site in the vicinity of the UST Area#1, as shown in the table below:

TABLE 3.2
GPS COORDINATES OF MONITORING WELLS

Monitoring Well ID	Northing	Easting	Well Condition
MW1	45.42936	-75.57532	Good
MW6	45.42946	-75.57531	Good
MW18	45.42932	-75.57545	Fair condition- minor damage to well cover
MW19	45.42940	-75.57517	Good

MW20	45.42963	-75.57522	Fair condition- minor damage to well cover
MW21	45.42969	-75.57534	Poor- top of casing and riser damaged
MW24	45.42953	-75.57516	Good
MW28	45.42966	-75.57547	Good
MW31	Could not be located		
MW34	45.42947	-75.57552	Good

The locations of the two pre-existing monitoring wells located at the UST#2 area (MW-2 and MW-7) were not checked as the 2005 Phase II ESA found that concentrations of hydrocarbons in soils and groundwater within former UST Area #2 were reported to be below applicable agricultural land use guidelines and standards.

3.2 QUALITY ASSURANCE AND QUALITY CONTROL

Samples were handled according to standard CCME protocols and directed to the laboratory the same day as samples were acquired for immediate processing. The contaminated soil removal program quality assurance/quality control (QA/QC) program consisted of the following:

Field Sampling Management- continuous care was given to sample collection to ensure samples were properly stored, labelled, and recorded. Field handling was consistent with standard environmental industry protocols with coolers used for sample storage. Thorough laboratory co-ordination ensured that appropriate sampling bottles/jars were used and that protocols were consistent with QA/QC integrity. Appropriate sample labelling and packaging were used. Chain-of-custody protocols were followed for all samples transferred from the field to the laboratory. DCS staff ensured that no 'holding time' conflicts occurred.

Soil Field QA/QC Sampling- for the soil sampling program, it was anticipated that 10% of all soil samples would be taken as a field duplicate sampling. As only two side wall and two excavation bottom samples were submitted for lab verification testing from each excavation program, no field duplicates were generated.

Laboratory QA/QC- the laboratory was requested to provide results of lab duplicates, method blanks, spiked blanks and matrix spikes used during the analysis. Such results were reviewed by DCS staff to ensure that the lab test methods were in statistical control when the analysis was performed and within acceptance criteria. No laboratory QA/QC issues were identified.

The laboratory minimum reporting limit (MRLs) were observed not to meet the CCME Table 1 criteria for benzene or ethylbenzene but were reported at concentrations which met the corresponding provincial Table 2 standards for both parameters.

TABLE 3.3

RESULTS OF ANALYSES FOR BTEX AND PETROLEUM HYDROCARBONS (PHCs) IN SOIL

PARAMETERS	CCME Table 1	MOE Table 3	MRL	B-1 24-Jun-14 bottom	B-2 24-Jun-14 bottom	A 24-Jun-14 wall	C 24-Jun-14 wall	E 24-Jun-14 wall	BB-1 28-Jul-14 bottom	BB-2 28-Jul-14 bottom	XS 28-Jul-14 wall	XW 28-Jul-14 wall	CLEAN SAND FILL 28-Jul-14	STOCKPILE -EN 28-Jul-14
	Fine		Depth	1 m	1 m	0.9 m	0.9 m	0.9 m	2.1 m	2.1 m	1.6 m	1.6 m	-	-
	(*)	(+)	Texture	fine	fine	fine	fine	fine	fine	fine	fine	fine	-	-
Volatile Organic Compounds														
Benzene	0.0068	0.17	0.02	3.38 ⁺⁺	<0.020	<0.020	<0.020	<0.020	<0.020	<0.020	<0.020	<0.020	<0.020	<0.020
Toluene	0.08	6	0.05	4.12 ⁺⁺	<0.050	<0.050	<0.050	<0.050	<0.050	<0.050	<0.050	<0.050	<0.050	0.058
Ethylbenzene	0.018	15	0.05	3.65 ⁺⁺	<0.050	<0.050	<0.050	<0.050	<0.050	<0.050	<0.050	<0.050	<0.050	<0.050
o-Xylene	-	-	0.05	3.69	<0.050	<0.050	<0.050	<0.050	<0.050	<0.050	<0.050	<0.050	<0.050	<0.050
m+p Xylenes	-	-	0.1	7.74	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10
Xylenes, total	11	25	0.11	11.4 ⁺⁺	<0.11	<0.11	<0.11	<0.11	<0.11	<0.11	<0.11	<0.11	<0.11	<0.11
Petroleum Hydrocarbons														
F1 (C6-C10)	210	65	5	95.6 ⁺⁺	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0
F1-BTEX	-	-	5	73.1	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0
F2 (C10-C16)	150	150	10	534 ⁺⁺	<10	13	<10	<10	10	12	<10	<10	<10	19
F3 (C16-C34)	1300	1300	50	379	<50	<50	<50	<50	<50	<50	<50	<50	<50	152
F4 (C34-C50)	5600	5600	50	<50	<50	<50	<50	<50	98	59	<50	<50	<50	149
RKI Eagle/Gastech Soil Vapour reading (ppm)				10	0	0	0	0	15	15	15	20	0	10
				removed on 28 July										

NOTES:

All parameter values in µg/g (ppm) unless otherwise indicated.

Canadian Soil Quality Guidelines for the Protection of Environmental and Human Health,
CCME (CCME, 1999 with updates to 2013)

* Exceeds Soil Quality Guidelines for Agricultural Land Uses for the Protection of Environmental and Human Health.

For Table 1 -Canadian Soil Quality Guidelines Exceeds Soil Quality Guidelines for Agricultural Land Uses

For Table 1 - Summary of Tier I Levels for Surface Soil; Canada-Wide Standards for Petroleum Hydrocarbons (PHC) in Soil (January 2008)

MOE Soil, Ground Water and Sediment Standards for Use Under Part XV.1 of the EPA (15 April 2011)

+ Exceeds Agricultural or Other Property Use Standards, For Table 3 - Full Depth Generic Site Condition
Standards in a Non Potable Ground Water Condition

MRL Method Reporting Limit

- Standard not available.

< Not detected.

na Not analyzed.

4.0 DISCUSSION AND CONCLUSIONS

A total of 25.7 tonnes of PHC-contaminated soil was removed from the site and 30 tonnes of clean sand fill was imported and backfilled into the excavated areas at the west end of the former buried diesel pipe in the vicinity of the 2,200 L AST. PHC/BTEX contaminated soil associated with the former buried diesel pipe (connected to the former 2,200 L AST) has been removed from the site and disposed of at the BFI Navan Landfill.

Clean surficial soil and clean sand following from the June 2014 excavation activities were set aside for replacement into the open excavation as backfill. Of the eight discrete samples secured from the two small stockpiles screened for soil vapour readings, one sample was submitted for laboratory testing and was found to meet CCME/ Canada Wide Standards for PHCs/BTEX. All soil stockpiles were utilized as an excavation backfill.

No BTEX or PHC concentrations exceeded laboratory detection limits for the clean sand backfill. The excavation bottom and side wall verification samples were found to meet Federal BTEX and PHC criteria or have concentrations less than laboratory detection limits. No additional groundwater monitoring or subsurface evaluations are considered to be required in the vicinity of the former 2,200 L AST.

DCS located several existing monitoring wells on the subject property and recorded their GPS coordinates and condition in order to facilitate the planning for and implementation of any potential future natural attenuation monitoring program at the UST Area #1.

5.0 CLOSURE

Mr. Troy Austrins, P.Eng. conducted the field work for this remediation program, with the assistance of Ms. Megan Fulleringer, B.Eng. and Mr. Lennart de Groot, B.Sc. Mr. Austrins completed the reporting with assistance from Ms. Fulleringer, with senior review provided by Mr. Barry Cooke, P.Eng.

We trust this report meets with your approval. Please do not hesitate to call should you require further information.

Yours very truly,

DECOMMISSIONING CONSULTING SERVICES

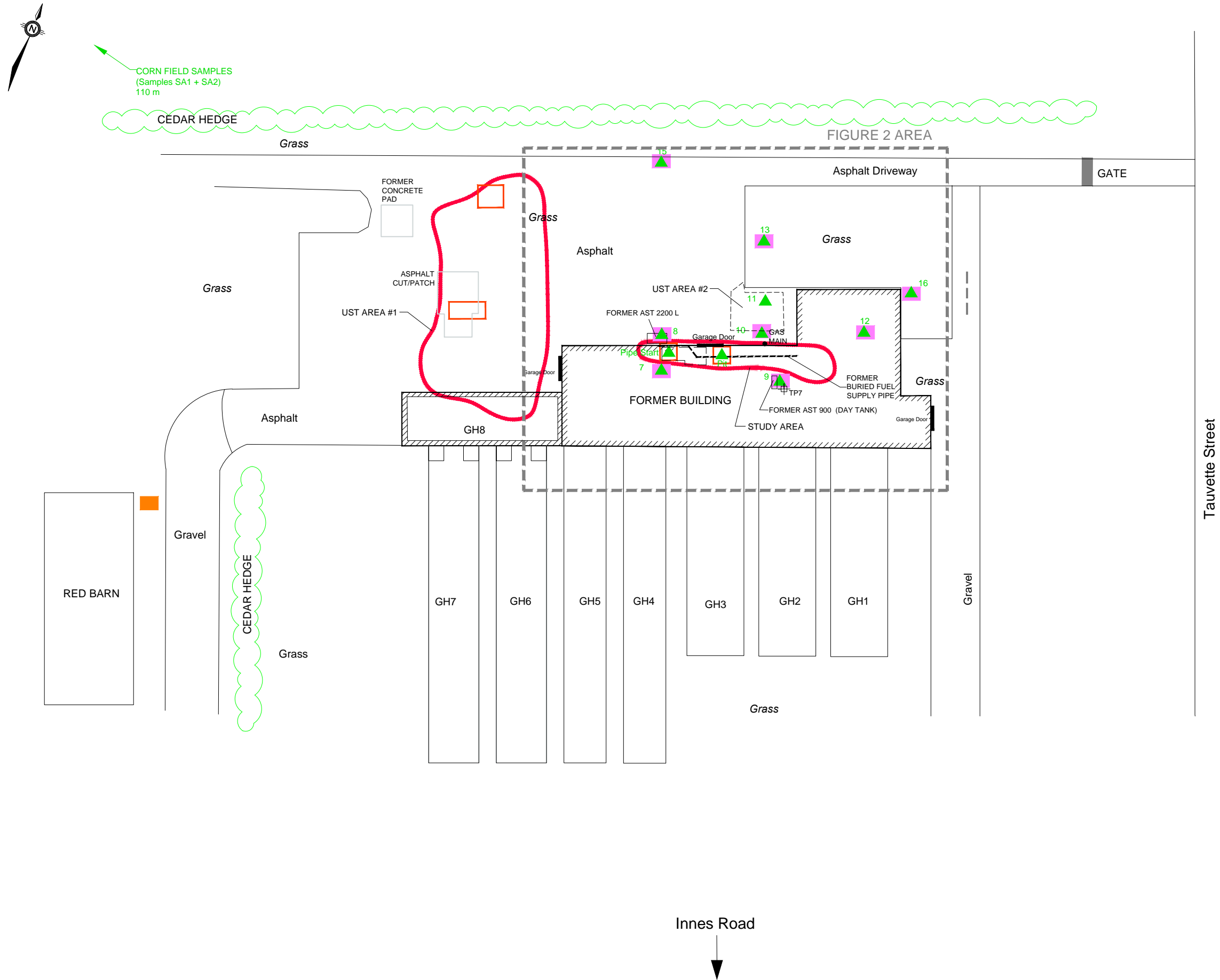


Troy Austrins, P.Eng., PMP
Project Manager

APPENDIX A

SITE PLAN/ FIGURES

Aug 27, 2014 - 11:45am - USER: plandry
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LEGEND:

- FORMER BUILDING OUTLINE
- GH6 FORMER GREENHOUSE
- DCS 2013 TEST PIT
- STUDY AREA
- SOIL ANALYTICAL RESULT GREATER THAN CRITERIA (2005, 2006)
- SOIL ANALYTICAL RESULT LESS THAN CRITERIA (2006)
- SOIL ANALYTICAL RESULT LESS THAN CRITERIA (2007)
- SOIL ANALYTICAL RESULT LESS THAN CRITERIA (2013)
- SOIL ANALYTICAL RESULT GREATER THAN CRITERIA (2013)

NOTES:

REVISIONS:

No.	Date:	By:	Revisions

REFERENCE:

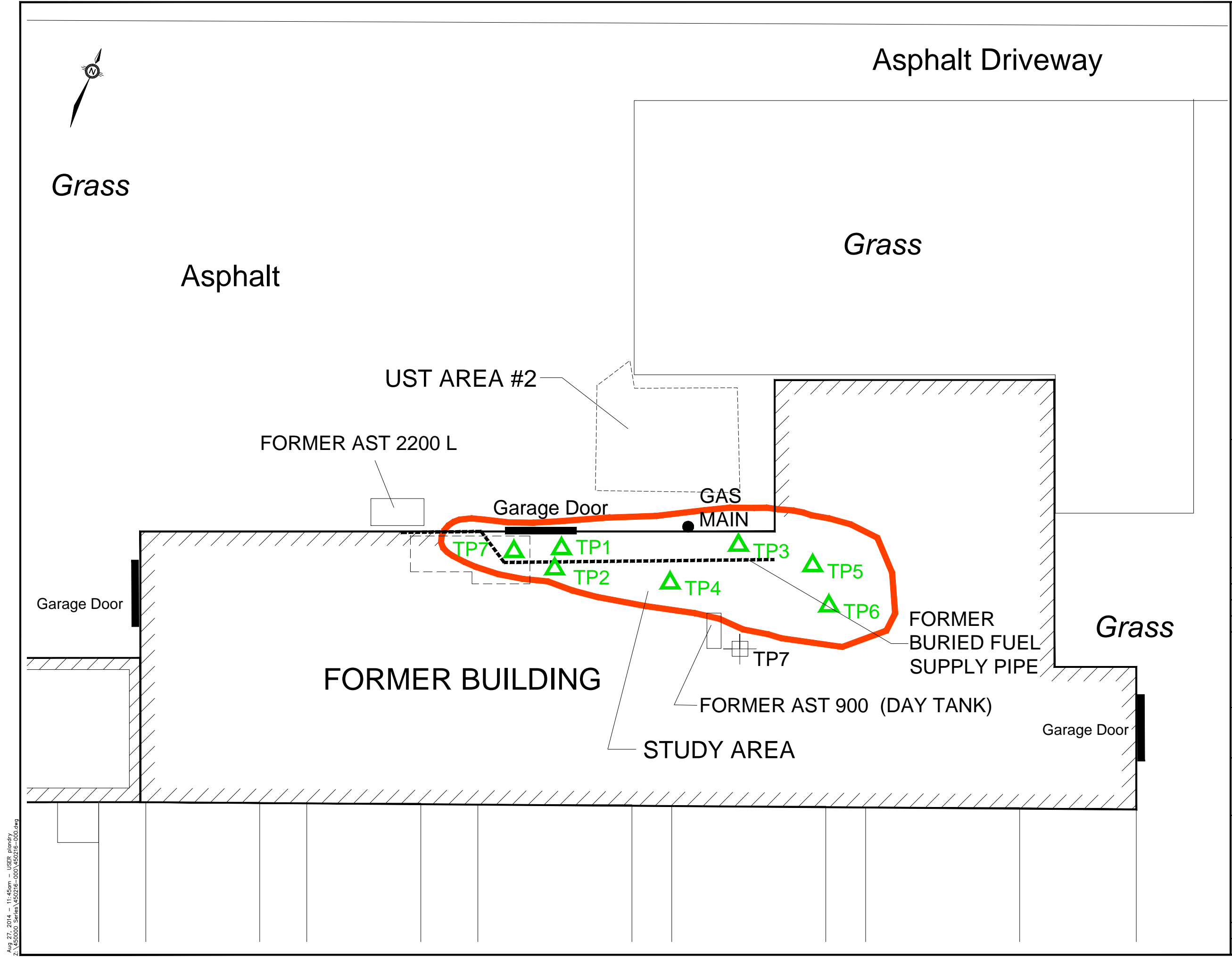
- INTERA PHASE II ESA (2005)
- INTERA SUPPLEMENTAL PHASE II ESA (2006)
- INTERA SLRA (2008)
- STANTEC YEAR FOUR NATIONAL ATTENUATION MONITORING (2012)



DCS AN ARCADIS COMPANY
DECOMMISSIONING CONSULTING SERVICES

NATIONAL CAPITAL COMMISSION
CONTAMINATED SOIL REMOVAL
16 TAUVETTE STREET, OTTAWA, ONTARIO
SITE PLAN

Drawn By: J.B.S.	Approved By: M.F.	Project No: 450216
Date: AUGUST 2014	Scale: AS SHOWN	Drawing No: FIGURE 1



LEGEND:

- FORMER BUILDING OUTLINE
- GH6 FORMER GREENHOUSE
- DCS 2014 TEST PIT
- APPROXIMATE EXTENT OF PHC SOIL CONTAMINATION
- TP 7 LOCATION (EXCAVATION AREA)
- TP 9 FROM DCS 2013 PHASE II ESA

NOTES:

REVISIONS:

No.	Date:	By:	Revisions

REFERENCE:

0 5 10 metres
SCALE 1:250

DCS AN ARCADIS COMPANY
DECOMMISSIONING CONSULTING SERVICES

NATIONAL CAPITAL COMMISSION
CONTAMINATED SOIL REMOVAL
16 TAUVELLE STREET, OTTAWA, ONTARIO
TEST PIT LOCATION PLAN

Drawn By: J.B.S.	Approved By: M.F.	Project No: 450216
Date: AUGUST 2014	Scale: AS SHOWN	Drawing No: FIGURE 2

Aug 27, 2014 - 11:45am - USER: plandry
Z:\450000 Series\450216-000\450216-000.dwg

APPENDIX B

SITE PHOTOS



Photograph No. 1: Site of former buried pipeline/excavation area, looking east.



Photograph No. 2: Excavating contaminated soil in the vicinity of the former buried pipeline.



Photograph No. 3: View of the excavation bottom.



Photograph No. 4: View of stockpiles of soil to be re-used as backfill.



Photograph No. 5: View of clean fill sand being backfilled into the excavation, looking east.



Photograph No. 6: View of existing groundwater monitoring well MW-24.

APPENDIX C

LABORATORY CERTIFICATES OF ANALYSIS



DECOMMISSIONING CONSULTING
SERVICES LTD.

ATTN: Troy Austrins
260 Hearst Way Suite 512
Ottawa ON K2L3H1

Date Received: 24-JUN-14
Report Date: 03-JUL-14 14:57 (MT)
Version: FINAL

Client Phone: 613-230-2405

Certificate of Analysis

Lab Work Order #: L1476178
Project P.O. #: NOT SUBMITTED
Job Reference: 450216
C of C Numbers: 125834
Legal Site Desc:

Wayne Smith, C.Chem., C.E.T.
Account Manager

[This report shall not be reproduced except in full without the written authority of the Laboratory.]

ADDRESS: 60 Northland Road, Unit 1, Waterloo, ON N2V 2B8 Canada | Phone: +1 519 886 6910 | Fax: +1 519 886 9047
ALS CANADA LTD Part of the ALS Group A Campbell Brothers Limited Company

ALS ENVIRONMENTAL ANALYTICAL REPORT

Sample Details/Parameters	Result	Qualifier*	D.L.	Units	Extracted	Analyzed	Batch
L1476178-1 B-1 Sampled By: T. AUSTRINS on 24-JUN-14 @ 13:30 Matrix: SOIL							
Physical Tests							
% Moisture	31.5		0.10	%	25-JUN-14	26-JUN-14	R2873209
Volatile Organic Compounds							
Benzene	3.38		0.020	ug/g	26-JUN-14	30-JUN-14	R2874234
Ethyl Benzene	3.65		0.050	ug/g	26-JUN-14	30-JUN-14	R2874234
Toluene	4.12		0.050	ug/g	26-JUN-14	30-JUN-14	R2874234
o-Xylene	3.69		0.050	ug/g	26-JUN-14	30-JUN-14	R2874234
m+p-Xylenes	7.74		0.10	ug/g	26-JUN-14	30-JUN-14	R2874234
Xylenes (Total)	11.4		0.11	ug/g		30-JUN-14	
Surrogate: 4-Bromofluorobenzene	104.9		70-130	%	26-JUN-14	30-JUN-14	R2874234
Surrogate: 1,4-Difluorobenzene	92.7		70-130	%	26-JUN-14	30-JUN-14	R2874234
Hydrocarbons							
F1 (C6-C10)	95.6		5.0	ug/g	26-JUN-14	30-JUN-14	R2874234
F1-BTEX	73.1		5.0	ug/g		03-JUL-14	
F2 (C10-C16)	534		10	ug/g	03-JUL-14	03-JUL-14	R2877712
F3 (C16-C34)	379		50	ug/g	03-JUL-14	03-JUL-14	R2877712
F4 (C34-C50)	<50		50	ug/g	03-JUL-14	03-JUL-14	R2877712
Total Hydrocarbons (C6-C50)	1010		72	ug/g		03-JUL-14	
Chrom. to baseline at nC50	YES				03-JUL-14	03-JUL-14	R2877712
Surrogate: 2-Bromobenzotrifluoride	92.6		70-130	%	03-JUL-14	03-JUL-14	R2877712
Surrogate: 3,4-Dichlorotoluene	131.4		60-140	%	26-JUN-14	30-JUN-14	R2874234
L1476178-2 B-2 Sampled By: T. AUSTRINS on 24-JUN-14 @ 13:30 Matrix: SOIL							
Physical Tests							
% Moisture	29.6		0.10	%	25-JUN-14	26-JUN-14	R2873250
Volatile Organic Compounds							
Benzene	<0.020		0.020	ug/g	26-JUN-14	30-JUN-14	R2874234
Ethyl Benzene	<0.050		0.050	ug/g	26-JUN-14	30-JUN-14	R2874234
Toluene	<0.050		0.050	ug/g	26-JUN-14	30-JUN-14	R2874234
o-Xylene	<0.050		0.050	ug/g	26-JUN-14	30-JUN-14	R2874234
m+p-Xylenes	<0.10		0.10	ug/g	26-JUN-14	30-JUN-14	R2874234
Xylenes (Total)	<0.11		0.11	ug/g		30-JUN-14	
Surrogate: 4-Bromofluorobenzene	103.5		70-130	%	26-JUN-14	30-JUN-14	R2874234
Surrogate: 1,4-Difluorobenzene	99.2		70-130	%	26-JUN-14	30-JUN-14	R2874234
Hydrocarbons							
F1 (C6-C10)	<5.0		5.0	ug/g	26-JUN-14	27-JUN-14	R2874234
F1-BTEX	<5.0		5.0	ug/g		03-JUL-14	
F2 (C10-C16)	<10		10	ug/g	03-JUL-14	03-JUL-14	R2877712
F3 (C16-C34)	<50		50	ug/g	03-JUL-14	03-JUL-14	R2877712
F4 (C34-C50)	<50		50	ug/g	03-JUL-14	03-JUL-14	R2877712
Total Hydrocarbons (C6-C50)	<72		72	ug/g		03-JUL-14	
Chrom. to baseline at nC50	YES				03-JUL-14	03-JUL-14	R2877712

* Refer to Referenced Information for Qualifiers (if any) and Methodology.

ALS ENVIRONMENTAL ANALYTICAL REPORT

Sample Details/Parameters		Result	Qualifier*	D.L.	Units	Extracted	Analyzed	Batch
L1476178-2 B-2 Sampled By: T. AUSTRINS on 24-JUN-14 @ 13:30 Matrix: SOIL								
	Hydrocarbons							
	Surrogate: 2-Bromobenzotrifluoride	86.0		70-130	%	03-JUL-14	03-JUL-14	R2877712
	Surrogate: 3,4-Dichlorotoluene	132.4		60-140	%	26-JUN-14	27-JUN-14	R2874234
L1476178-3 A Sampled By: T. AUSTRINS on 24-JUN-14 @ 13:30 Matrix: SOIL	Physical Tests							
	% Moisture	20.9		0.10	%	25-JUN-14	26-JUN-14	R2873250
	Volatile Organic Compounds							
	Benzene	<0.020		0.020	ug/g	26-JUN-14	30-JUN-14	R2874234
	Ethyl Benzene	<0.050		0.050	ug/g	26-JUN-14	30-JUN-14	R2874234
	Toluene	<0.050		0.050	ug/g	26-JUN-14	30-JUN-14	R2874234
	o-Xylene	<0.050		0.050	ug/g	26-JUN-14	30-JUN-14	R2874234
	m+p-Xylenes	<0.10		0.10	ug/g	26-JUN-14	30-JUN-14	R2874234
	Xylenes (Total)	<0.11		0.11	ug/g		30-JUN-14	
	Surrogate: 4-Bromofluorobenzene	106.1		70-130	%	26-JUN-14	30-JUN-14	R2874234
	Surrogate: 1,4-Difluorobenzene	92.8		70-130	%	26-JUN-14	30-JUN-14	R2874234
	Hydrocarbons							
	F1 (C6-C10)	<5.0		5.0	ug/g	26-JUN-14	27-JUN-14	R2874234
	F1-BTEX	<5.0		5.0	ug/g		03-JUL-14	
	F2 (C10-C16)	13		10	ug/g	03-JUL-14	03-JUL-14	R2877712
	F3 (C16-C34)	<50		50	ug/g	03-JUL-14	03-JUL-14	R2877712
	F4 (C34-C50)	<50		50	ug/g	03-JUL-14	03-JUL-14	R2877712
	Total Hydrocarbons (C6-C50)	<72		72	ug/g		03-JUL-14	
	Chrom. to baseline at nC50	YES				03-JUL-14	03-JUL-14	R2877712
	Surrogate: 2-Bromobenzotrifluoride	89.6		70-130	%	03-JUL-14	03-JUL-14	R2877712
	Surrogate: 3,4-Dichlorotoluene	135.5		60-140	%	26-JUN-14	27-JUN-14	R2874234
L1476178-4 C Sampled By: T. AUSTRINS on 24-JUN-14 @ 13:30 Matrix: SOIL	Physical Tests							
	% Moisture	14.5		0.10	%	25-JUN-14	26-JUN-14	R2873250
	Volatile Organic Compounds							
	Benzene	<0.020		0.020	ug/g	26-JUN-14	30-JUN-14	R2874234
	Ethyl Benzene	<0.050		0.050	ug/g	26-JUN-14	30-JUN-14	R2874234
	Toluene	<0.050		0.050	ug/g	26-JUN-14	30-JUN-14	R2874234
	o-Xylene	<0.050		0.050	ug/g	26-JUN-14	30-JUN-14	R2874234
	m+p-Xylenes	<0.10		0.10	ug/g	26-JUN-14	30-JUN-14	R2874234
	Xylenes (Total)	<0.11		0.11	ug/g		30-JUN-14	
	Surrogate: 4-Bromofluorobenzene	102.6		70-130	%	26-JUN-14	30-JUN-14	R2874234
	Surrogate: 1,4-Difluorobenzene	97.3		70-130	%	26-JUN-14	30-JUN-14	R2874234
	Hydrocarbons							
	F1 (C6-C10)	<5.0		5.0	ug/g	26-JUN-14	27-JUN-14	R2874234
	F1-BTEX	<5.0		5.0	ug/g		03-JUL-14	

* Refer to Referenced Information for Qualifiers (if any) and Methodology.

Reference Information

Test Method References:

ALS Test Code	Matrix	Test Description	Method Reference**
BTX-HS-WT	Soil	BTEX by Headspace	SW846 8260 (HEADSPACE)
BTX is determined by extracting a soil or sediment sample as received with methanol, then analyzing by headspace-GC/MS.			
F1-F4-CALC-WT	Soil	CCME Total Hydrocarbons	CCME CWS-PHC DEC-2000 - PUB# 1310-S
Analytical methods used for analysis of CCME Petroleum Hydrocarbons have been validated and comply with the Reference Method for the CWS PHC.			
Hydrocarbon results are expressed on a dry weight basis.			
In cases where results for both F4 and F4G are reported, the greater of the two results must be used in any application of the CWS PHC guidelines and the gravimetric heavy hydrocarbons cannot be added to the C6 to C50 hydrocarbons.			
In samples where BTEX and F1 were analyzed , F1-BTEX represents a value where the sum of Benzene, Toluene, Ethylbenzene and total Xylenes has been subtracted from F1.			
In samples where PAHs, F2 and F3 were analyzed, F2-Naphth represents the result where Naphthalene has been subtracted from F2. F3-PAH represents a result where the sum of Benzo(a)anthracene, Benzo(a)pyrene, Benzo(b)fluoranthene, Benzo(k)fluoranthene, Dibenzo(a,h)anthracene, Fluoranthene, Indeno(1,2,3-cd)pyrene, Phenanthrene, and Pyrene has been subtracted from F3.			
Unless otherwise qualified, the following quality control criteria have been met for the F1 hydrocarbon range:			
1. All extraction and analysis holding times were met.			
2. Instrument performance showing response factors for C6 and C10 within 30% of the response factor for toluene.			
3. Linearity of gasoline response within 15% throughout the calibration range.			
Unless otherwise qualified, the following quality control criteria have been met for the F2-F4 hydrocarbon ranges:			
1. All extraction and analysis holding times were met.			
2. Instrument performance showing C10, C16 and C34 response factors within 10% of their average.			
3. Instrument performance showing the C50 response factor within 30% of the average of the C10, C16 and C34 response factors.			
4. Linearity of diesel or motor oil response within 15% throughout the calibration range.			
F1-HS-WT	Soil	F1 (O.Reg.153/04)	E3398/CCME TIER 1-HS
Fraction F1 is determined by extracting a soil or sediment sample as received with methanol, then analyzing by headspace-GC/FID.			
F2-F4-WT	Soil	F2-F4 (O.Reg.153/04)	MOE DECPH-E3398/CCME TIER 1
A sub-sample of the solid sample is extracted with a solvent mixture. Following extraction, the sample extract is treated in situ with Silica Gel analyzed by GC/FID.			
The F2 fraction is determined by integrating the area in the chromatogram from the apex of nC10 to the apex nC16 and quantitating using external calibration using a standard mix containing nC10, nC16 and nC34. Similarly, the F3 fraction extends from the apex of nC16 to the apex nC34 and the F4 fraction covers the area from the apex nC34 to the apex nC50. If the chromatogram does not return to the baseline by the time nC50 elutes, a gravimetric determination of the F4 is performed.			
MOISTURE-WT	Soil	% Moisture	Gravimetric: Oven Dried
XYLENES-SUM-CALC-WT	Soil	Sum of Xylene Isomer Concentrations	CALCULATION
Total xylenes represents the sum of o-xylene and m&p-xylene.			

** ALS test methods may incorporate modifications from specified reference methods to improve performance.

The last two letters of the above test code(s) indicate the laboratory that performed analytical analysis for that test. Refer to the list below:

Laboratory Definition Code	Laboratory Location
WT	ALS ENVIRONMENTAL - WATERLOO, ONTARIO, CANADA

Chain of Custody Numbers:

125834

Reference Information

GLOSSARY OF REPORT TERMS

Surrogates are compounds that are similar in behaviour to target analyte(s), but that do not normally occur in environmental samples. For applicable tests, surrogates are added to samples prior to analysis as a check on recovery. In reports that display the D.L. column, laboratory objectives for surrogates are listed there.

- mg/kg - milligrams per kilogram based on dry weight of sample*
- mg/kg ww_t - milligrams per kilogram based on wet weight of sample*
- mg/kg lwt - milligrams per kilogram based on lipid weight of sample*
- mg/L - unit of concentration based on volume, parts per million.*
- < - Less than.*
- D.L. - The reporting limit.*
- N/A - Result not available. Refer to qualifier code and definition for explanation.*

Test results reported relate only to the samples as received by the laboratory.
UNLESS OTHERWISE STATED, ALL SAMPLES WERE RECEIVED IN ACCEPTABLE CONDITION.
Analytical results in unsigned test reports with the DRAFT watermark are subject to change, pending final QC review.

Quality Control Report

Workorder: L1476178

Report Date: 03-JUL-14

Page 1 of 4

Client: DECOMMISSIONING CONSULTING SERVICES LTD.
260 Hearst Way Suite 512
Ottawa ON K2L3H1

Contact: Troy Austrins

Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
BTX-HS-WT		Soil						
Batch	R2874234							
WG1900072-1	CVS							
Benzene			111		%		80-120	30-JUN-14
Ethyl Benzene			98		%		75-125	30-JUN-14
m+p-Xylenes			106		%		75-125	30-JUN-14
o-Xylene			107		%		75-125	30-JUN-14
Toluene			108		%		75-125	30-JUN-14
WG1899508-3	DUP	L1476178-1						
Benzene		3.38	3.45		ug/g	2.1	40	30-JUN-14
Ethyl Benzene		3.65	3.97		ug/g	8.6	40	30-JUN-14
m+p-Xylenes		7.74	8.04		ug/g	3.8	40	30-JUN-14
o-Xylene		3.69	4.25		ug/g	14	40	30-JUN-14
Toluene		4.12	3.67		ug/g	12	40	30-JUN-14
WG1899508-2	LCS							
Benzene			98.2		%		75-125	30-JUN-14
Ethyl Benzene			93.0		%		75-125	30-JUN-14
m+p-Xylenes			101.9		%		75-125	30-JUN-14
o-Xylene			96.3		%		75-125	30-JUN-14
Toluene			98.6		%		75-125	30-JUN-14
WG1899508-1	MB							
Benzene			<0.020		ug/g		0.02	30-JUN-14
Ethyl Benzene			<0.050		ug/g		0.05	30-JUN-14
m+p-Xylenes			<0.10		ug/g		0.1	30-JUN-14
o-Xylene			<0.050		ug/g		0.05	30-JUN-14
Toluene			<0.050		ug/g		0.05	30-JUN-14
Surrogate: 1,4-Difluorobenzene			105.4		%		70-130	30-JUN-14
Surrogate: 4-Bromofluorobenzene			114.0		%		70-130	30-JUN-14
F1-HS-WT		Soil						
Batch	R2874234							
WG1900072-1	CVS							
F1 (C6-C10)			82.5		%		80-120	26-JUN-14
WG1899508-3	DUP	L1476178-1						
F1 (C6-C10)		95.6	109		ug/g	13	50	30-JUN-14
WG1899508-2	LCS							
F1 (C6-C10)			96.8		%		80-120	30-JUN-14
WG1899508-1	MB							
F1 (C6-C10)			<5.0		ug/g		5	26-JUN-14



Environmental

Quality Control Report

Workorder: L1476178

Report Date: 03-JUL-14

Page 2 of 4

Client: DECOMMISSIONING CONSULTING SERVICES LTD.

260 Hearst Way Suite 512

Ottawa ON K2L3H1

Contact: Troy Austrins

Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
F1-HS-WT	Soil							
Batch	R2874234							
WG1899508-1	MB							
Surrogate: 3,4-Dichlorotoluene			137.5		%		60-140	26-JUN-14
F2-F4-WT	Soil							
Batch	R2877712							
WG1899962-4	CRM	ALS PHC2 IRM						
F2 (C10-C16)			110.4		%		70-130	03-JUL-14
F3 (C16-C34)			118.7		%		70-130	03-JUL-14
F4 (C34-C50)			124.7		%		70-130	03-JUL-14
WG1901727-1	CVS							
F2 (C10-C16)			100.2		%		80-120	03-JUL-14
F3 (C16-C34)			101.6		%		80-120	03-JUL-14
F4 (C34-C50)			101.5		%		80-120	03-JUL-14
WG1899962-6	DUP	WG1899962-5						
F2 (C10-C16)		<10	<10	RPD-NA	ug/g	N/A	40	03-JUL-14
F3 (C16-C34)		<50	<50	RPD-NA	ug/g	N/A	40	03-JUL-14
F4 (C34-C50)		<50	<50	RPD-NA	ug/g	N/A	40	03-JUL-14
WG1899962-2	LCS							
F2 (C10-C16)			99.1		%		80-120	03-JUL-14
F3 (C16-C34)			101.3		%		80-120	03-JUL-14
F4 (C34-C50)			106.0		%		80-120	03-JUL-14
WG1899962-3	LCSD	WG1899962-2						
F2 (C10-C16)		99.1	99.5		%	0.4	50	03-JUL-14
F3 (C16-C34)		101.3	104.0		%	2.7	50	03-JUL-14
F4 (C34-C50)		106.0	106.6		%	0.6	50	03-JUL-14
WG1899962-1	MB							
F2 (C10-C16)			<10		ug/g		10	03-JUL-14
F3 (C16-C34)			<50		ug/g		50	03-JUL-14
F4 (C34-C50)			<50		ug/g		50	03-JUL-14
Surrogate: 2-Bromobenzotrifluoride			92.1		%		70-130	03-JUL-14
MOISTURE-WT	Soil							
Batch	R2873209							
WG1898820-3	DUP	L1476173-1						
% Moisture		21.7	22.3		%	2.8	30	26-JUN-14
WG1898820-2	LCS							
% Moisture			83.3		%		70-130	26-JUN-14



Environmental

Quality Control Report

Workorder: L1476178

Report Date: 03-JUL-14

Page 3 of 4

Client: DECOMMISSIONING CONSULTING SERVICES LTD.
260 Hearst WaySuite 512
Ottawa ON K2L3H1

Contact: Troy Austrins

Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
MOISTURE-WT	Soil							
Batch	R2873209							
WG1898820-1	MB							
% Moisture			<0.10		%		0.1	26-JUN-14
Batch	R2873250							
WG1898822-3	DUP	L1475229-4						
% Moisture		5.94	5.73		%	3.7	30	26-JUN-14
WG1898822-2	LCS							
% Moisture			94.9		%		70-130	26-JUN-14
WG1898822-1	MB							
% Moisture			<0.10		%		0.1	26-JUN-14

Quality Control Report

Workorder: L1476178

Report Date: 03-JUL-14

Client: DECOMMISSIONING CONSULTING SERVICES LTD.
260 Hearst Way Suite 512
Ottawa ON K2L3H1

Page 4 of 4

Contact: Troy Austrins

Legend:

Limit	ALS Control Limit (Data Quality Objectives)
DUP	Duplicate
RPD	Relative Percent Difference
N/A	Not Available
LCS	Laboratory Control Sample
SRM	Standard Reference Material
MS	Matrix Spike
MSD	Matrix Spike Duplicate
ADE	Average Desorption Efficiency
MB	Method Blank
IRM	Internal Reference Material
CRM	Certified Reference Material
CCV	Continuing Calibration Verification
CVS	Calibration Verification Standard
LCSD	Laboratory Control Sample Duplicate

Sample Parameter Qualifier Definitions:

Qualifier	Description
RPD-NA	Relative Percent Difference Not Available due to result(s) being less than detection limit.

Hold Time Exceedances:

All test results reported with this submission were conducted within ALS recommended hold times.

ALS recommended hold times may vary by province. They are assigned to meet known provincial and/or federal government requirements. In the absence of regulatory hold times, ALS establishes recommendations based on guidelines published by the US EPA, APHA Standard Methods, or Environment Canada (where available). For more information, please contact ALS.

The ALS Quality Control Report is provided to ALS clients upon request. ALS includes comprehensive QC checks with every analysis to ensure our high standards of quality are met. Each QC result has a known or expected target value, which is compared against pre-determined data quality objectives to provide confidence in the accuracy of associated test results.

Please note that this report may contain QC results from anonymous Sample Duplicates and Matrix Spikes that do not originate from this Work Order.

C of C # 00000



DECOMMISSIONING CONSULTING
SERVICES LTD.

ATTN: T. Austrins
260 Hearst Way
Suite 512
Ottawa ON K2L 3H1

Date Received: 30-JUL-14
Report Date: 12-AUG-14 07:12 (MT)
Version: FINAL REV. 2

Client Phone: 613-230-2405

Certificate of Analysis

Lab Work Order #: L1494415

Project P.O. #: 450216

Job Reference: 450216

C of C Numbers: 126033

Legal Site Desc:

Comments: WS/WT Report remarks removed. Testing is for CCME guidelines. Methodology does not follow the Ontario Analytical Protocol for BTEX,F1.

Wayne Smith, C.Chem., C.E.T.
Account Manager

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ADDRESS: 190 Colonnade Road, Unit 7, Ottawa, ON K2E 7J5 Canada | Phone: +1 613 225 8279 | Fax: +1 613 225 2801
ALS CANADA LTD Part of the ALS Group A Campbell Brothers Limited Company

ALS ENVIRONMENTAL ANALYTICAL REPORT

Sample Details/Parameters	Result	Qualifier*	D.L.	Units	Extracted	Analyzed	Batch
L1494415-1 BB1 Sampled By: T AUSTRINS on 28-JUL-14 @ 14:00 Matrix: SOIL							
Physical Tests							
% Moisture	33.8		0.10	%	30-JUL-14	31-JUL-14	R2903488
Volatile Organic Compounds							
Benzene	<0.020		0.020	ug/g	30-JUL-14	31-JUL-14	R2903697
Ethyl Benzene	<0.050		0.050	ug/g	30-JUL-14	31-JUL-14	R2903697
Toluene	<0.050		0.050	ug/g	30-JUL-14	31-JUL-14	R2903697
o-Xylene	<0.050		0.050	ug/g	30-JUL-14	31-JUL-14	R2903697
m+p-Xylenes	<0.10		0.10	ug/g	30-JUL-14	31-JUL-14	R2903697
Xylenes (Total)	<0.11		0.11	ug/g		31-JUL-14	
Surrogate: 4-Bromofluorobenzene	88.2		70-130	%	30-JUL-14	31-JUL-14	R2903697
Surrogate: 1,4-Difluorobenzene	89.8		70-130	%	30-JUL-14	31-JUL-14	R2903697
Hydrocarbons							
F1 (C6-C10)	<5.0		5.0	ug/g	30-JUL-14	31-JUL-14	R2903697
F1-BTEX	<5.0		5.0	ug/g		11-AUG-14	
F2 (C10-C16)	10		10	ug/g	05-AUG-14	11-AUG-14	R2908474
F3 (C16-C34)	<50		50	ug/g	05-AUG-14	11-AUG-14	R2908474
F4 (C34-C50)	98		50	ug/g	05-AUG-14	11-AUG-14	R2908474
Total Hydrocarbons (C6-C50)	108		72	ug/g		11-AUG-14	
Chrom. to baseline at nC50	YES				05-AUG-14	11-AUG-14	R2908474
Surrogate: 2-Bromobenzotrifluoride	76.3		70-130	%	05-AUG-14	11-AUG-14	R2908474
Surrogate: 3,4-Dichlorotoluene	77.3		60-140	%	30-JUL-14	31-JUL-14	R2903697
L1494415-2 BB2 Sampled By: T AUSTRINS on 28-JUL-14 @ 14:00 Matrix: SOIL							
Physical Tests							
% Moisture	33.9		0.10	%	30-JUL-14	31-JUL-14	R2903488
Volatile Organic Compounds							
Benzene	<0.020		0.020	ug/g	30-JUL-14	31-JUL-14	R2903697
Ethyl Benzene	<0.050		0.050	ug/g	30-JUL-14	31-JUL-14	R2903697
Toluene	<0.050		0.050	ug/g	30-JUL-14	31-JUL-14	R2903697
o-Xylene	<0.050		0.050	ug/g	30-JUL-14	31-JUL-14	R2903697
m+p-Xylenes	<0.10		0.10	ug/g	30-JUL-14	31-JUL-14	R2903697
Xylenes (Total)	<0.11		0.11	ug/g		31-JUL-14	
Surrogate: 4-Bromofluorobenzene	84.2		70-130	%	30-JUL-14	31-JUL-14	R2903697
Surrogate: 1,4-Difluorobenzene	93.5		70-130	%	30-JUL-14	31-JUL-14	R2903697
Hydrocarbons							
F1 (C6-C10)	<5.0		5.0	ug/g	30-JUL-14	31-JUL-14	R2903697
F1-BTEX	<5.0		5.0	ug/g		11-AUG-14	
F2 (C10-C16)	12		10	ug/g	05-AUG-14	11-AUG-14	R2908474
F3 (C16-C34)	<50		50	ug/g	05-AUG-14	11-AUG-14	R2908474
F4 (C34-C50)	59		50	ug/g	05-AUG-14	11-AUG-14	R2908474
Total Hydrocarbons (C6-C50)	<72		72	ug/g		11-AUG-14	
Chrom. to baseline at nC50	YES				05-AUG-14	11-AUG-14	R2908474

* Refer to Referenced Information for Qualifiers (if any) and Methodology.

ALS ENVIRONMENTAL ANALYTICAL REPORT

Sample Details/Parameters		Result	Qualifier*	D.L.	Units	Extracted	Analyzed	Batch
L1494415-2 BB2 Sampled By: T AUSTRINS on 28-JUL-14 @ 14:00 Matrix: SOIL	Hydrocarbons							
	Surrogate: 2-Bromobenzotrifluoride	74.1		70-130	%	05-AUG-14	11-AUG-14	R2908474
	Surrogate: 3,4-Dichlorotoluene	65.4		60-140	%	30-JUL-14	31-JUL-14	R2903697
L1494415-3 XS Sampled By: T AUSTRINS on 28-JUL-14 @ 14:00 Matrix: SOIL	Physical Tests							
	% Moisture	33.9		0.10	%	30-JUL-14	31-JUL-14	R2903488
	Volatile Organic Compounds							
	Benzene	<0.020		0.020	ug/g	30-JUL-14	31-JUL-14	R2903697
	Ethyl Benzene	<0.050		0.050	ug/g	30-JUL-14	31-JUL-14	R2903697
	Toluene	<0.050		0.050	ug/g	30-JUL-14	31-JUL-14	R2903697
	o-Xylene	<0.050		0.050	ug/g	30-JUL-14	31-JUL-14	R2903697
	m+p-Xylenes	<0.10		0.10	ug/g	30-JUL-14	31-JUL-14	R2903697
	Xylenes (Total)	<0.11		0.11	ug/g		31-JUL-14	
	Surrogate: 4-Bromofluorobenzene	80.6		70-130	%	30-JUL-14	31-JUL-14	R2903697
	Surrogate: 1,4-Difluorobenzene	91.4		70-130	%	30-JUL-14	31-JUL-14	R2903697
	Hydrocarbons							
	F1 (C6-C10)	<5.0		5.0	ug/g	30-JUL-14	31-JUL-14	R2903697
	F1-BTEX	<5.0		5.0	ug/g		11-AUG-14	
	F2 (C10-C16)	<10		10	ug/g	05-AUG-14	11-AUG-14	R2908474
	F3 (C16-C34)	<50		50	ug/g	05-AUG-14	11-AUG-14	R2908474
	F4 (C34-C50)	<50		50	ug/g	05-AUG-14	11-AUG-14	R2908474
	Total Hydrocarbons (C6-C50)	<72		72	ug/g		11-AUG-14	
	Chrom. to baseline at nC50	YES				05-AUG-14	11-AUG-14	R2908474
	Surrogate: 2-Bromobenzotrifluoride	82.0		70-130	%	05-AUG-14	11-AUG-14	R2908474
	Surrogate: 3,4-Dichlorotoluene	76.3		60-140	%	30-JUL-14	31-JUL-14	R2903697
L1494415-4 XW Sampled By: T AUSTRINS on 28-JUL-14 @ 14:00 Matrix: SOIL	Physical Tests							
	% Moisture	33.3		0.10	%	30-JUL-14	31-JUL-14	R2903488
	Volatile Organic Compounds							
	Benzene	<0.020		0.020	ug/g	30-JUL-14	31-JUL-14	R2903697
	Ethyl Benzene	<0.050		0.050	ug/g	30-JUL-14	31-JUL-14	R2903697
	Toluene	<0.050		0.050	ug/g	30-JUL-14	31-JUL-14	R2903697
	o-Xylene	<0.050		0.050	ug/g	30-JUL-14	31-JUL-14	R2903697
	m+p-Xylenes	<0.10		0.10	ug/g	30-JUL-14	31-JUL-14	R2903697
	Xylenes (Total)	<0.11		0.11	ug/g		31-JUL-14	
	Surrogate: 4-Bromofluorobenzene	82.7		70-130	%	30-JUL-14	31-JUL-14	R2903697
	Surrogate: 1,4-Difluorobenzene	91.0		70-130	%	30-JUL-14	31-JUL-14	R2903697
	Hydrocarbons							
	F1 (C6-C10)	<5.0		5.0	ug/g	30-JUL-14	31-JUL-14	R2903697
	F1-BTEX	<5.0		5.0	ug/g		11-AUG-14	

* Refer to Referenced Information for Qualifiers (if any) and Methodology.

ALS ENVIRONMENTAL ANALYTICAL REPORT

Sample Details/Parameters		Result	Qualifier*	D.L.	Units	Extracted	Analyzed	Batch
L1494415-4 XW Sampled By: T AUSTRINS on 28-JUL-14 @ 14:00 Matrix: SOIL								
Hydrocarbons								
F2 (C10-C16)		<10		10	ug/g	05-AUG-14	11-AUG-14	R2908474
F3 (C16-C34)		<50		50	ug/g	05-AUG-14	11-AUG-14	R2908474
F4 (C34-C50)		<50		50	ug/g	05-AUG-14	11-AUG-14	R2908474
Total Hydrocarbons (C6-C50)		<72		72	ug/g		11-AUG-14	
Chrom. to baseline at nC50		YES				05-AUG-14	11-AUG-14	R2908474
Surrogate: 2-Bromobenzotrifluoride		82.7		70-130	%	05-AUG-14	11-AUG-14	R2908474
Surrogate: 3,4-Dichlorotoluene		72.2		60-140	%	30-JUL-14	31-JUL-14	R2903697
L1494415-5 CLEAN SAND FILL Sampled By: T AUSTRINS on 28-JUL-14 @ 15:00 Matrix: SOIL								
Physical Tests								
% Moisture		6.73		0.10	%	30-JUL-14	31-JUL-14	R2903488
Volatile Organic Compounds								
Benzene		<0.020		0.020	ug/g	30-JUL-14	31-JUL-14	R2903697
Ethyl Benzene		<0.050		0.050	ug/g	30-JUL-14	31-JUL-14	R2903697
Toluene		<0.050		0.050	ug/g	30-JUL-14	31-JUL-14	R2903697
o-Xylene		<0.050		0.050	ug/g	30-JUL-14	31-JUL-14	R2903697
m+p-Xylenes		<0.10		0.10	ug/g	30-JUL-14	31-JUL-14	R2903697
Xylenes (Total)		<0.11		0.11	ug/g		31-JUL-14	
Surrogate: 4-Bromofluorobenzene		89.8		70-130	%	30-JUL-14	31-JUL-14	R2903697
Surrogate: 1,4-Difluorobenzene		98.4		70-130	%	30-JUL-14	31-JUL-14	R2903697
Hydrocarbons								
F1 (C6-C10)		<5.0		5.0	ug/g	30-JUL-14	31-JUL-14	R2903697
F1-BTEX		<5.0		5.0	ug/g		05-AUG-14	
F2 (C10-C16)		<10		10	ug/g	05-AUG-14	05-AUG-14	R2908474
F3 (C16-C34)		<50		50	ug/g	05-AUG-14	05-AUG-14	R2908474
F4 (C34-C50)		<50		50	ug/g	05-AUG-14	05-AUG-14	R2908474
Total Hydrocarbons (C6-C50)		<72		72	ug/g		05-AUG-14	
Chrom. to baseline at nC50		YES				05-AUG-14	05-AUG-14	R2908474
Surrogate: 2-Bromobenzotrifluoride		84.1		70-130	%	05-AUG-14	05-AUG-14	R2908474
Surrogate: 3,4-Dichlorotoluene		70.9		60-140	%	30-JUL-14	31-JUL-14	R2903697
L1494415-6 STOCKPILE EN Sampled By: T AUSTRINS on 28-JUL-14 @ 15:00 Matrix: SOIL								
Physical Tests								
% Moisture		10.8		0.10	%	30-JUL-14	31-JUL-14	R2903488
Volatile Organic Compounds								
Benzene		<0.020		0.020	ug/g	30-JUL-14	31-JUL-14	R2903697
Ethyl Benzene		<0.050		0.050	ug/g	30-JUL-14	31-JUL-14	R2903697
Toluene		0.058		0.050	ug/g	30-JUL-14	31-JUL-14	R2903697
o-Xylene		<0.050		0.050	ug/g	30-JUL-14	31-JUL-14	R2903697
m+p-Xylenes		<0.10		0.10	ug/g	30-JUL-14	31-JUL-14	R2903697

* Refer to Referenced Information for Qualifiers (if any) and Methodology.

ALS ENVIRONMENTAL ANALYTICAL REPORT

Sample Details/Parameters		Result	Qualifier*	D.L.	Units	Extracted	Analyzed	Batch
L1494415-6 STOCKPILE EN Sampled By: T AUSTRINS on 28-JUL-14 @ 15:00 Matrix: SOIL								
Volatile Organic Compounds								
Xylenes (Total)		<0.11		0.11	ug/g		31-JUL-14	
Surrogate: 4-Bromofluorobenzene		84.4		70-130	%	30-JUL-14	31-JUL-14	R2903697
Surrogate: 1,4-Difluorobenzene		96.6		70-130	%	30-JUL-14	31-JUL-14	R2903697
Hydrocarbons								
F1 (C6-C10)		<5.0		5.0	ug/g	30-JUL-14	31-JUL-14	R2903697
F1-BTEX		<5.0		5.0	ug/g		11-AUG-14	
F2 (C10-C16)		19		10	ug/g	05-AUG-14	11-AUG-14	R2908474
F3 (C16-C34)		152		50	ug/g	05-AUG-14	11-AUG-14	R2908474
F4 (C34-C50)		149		50	ug/g	05-AUG-14	11-AUG-14	R2908474
Total Hydrocarbons (C6-C50)		320		72	ug/g		11-AUG-14	
Chrom. to baseline at nC50		YES				05-AUG-14	11-AUG-14	R2908474
Surrogate: 2-Bromobenzotrifluoride		81.3		70-130	%	05-AUG-14	11-AUG-14	R2908474
Surrogate: 3,4-Dichlorotoluene		86.0		60-140	%	30-JUL-14	31-JUL-14	R2903697

* Refer to Referenced Information for Qualifiers (if any) and Methodology.

Reference Information

Test Method References:

ALS Test Code	Matrix	Test Description	Method Reference**
BTX-HS-WT	Soil	BTEX by Headspace	SW846 8260 (HEADSPACE)
BTX is determined by extracting a soil or sediment sample as received with methanol, then analyzing by headspace-GC/MS.			
F1-F4-CALC-WT	Soil	CCME Total Hydrocarbons	CCME CWS-PHC DEC-2000 - PUB# 1310-S
Analytical methods used for analysis of CCME Petroleum Hydrocarbons have been validated and comply with the Reference Method for the CWS PHC.			
Hydrocarbon results are expressed on a dry weight basis.			
In cases where results for both F4 and F4G are reported, the greater of the two results must be used in any application of the CWS PHC guidelines and the gravimetric heavy hydrocarbons cannot be added to the C6 to C50 hydrocarbons.			
In samples where BTEX and F1 were analyzed , F1-BTEX represents a value where the sum of Benzene, Toluene, Ethylbenzene and total Xylenes has been subtracted from F1.			
In samples where PAHs, F2 and F3 were analyzed, F2-Naphth represents the result where Naphthalene has been subtracted from F2. F3-PAH represents a result where the sum of Benzo(a)anthracene, Benzo(a)pyrene, Benzo(b)fluoranthene, Benzo(k)fluoranthene, Dibenzo(a,h)anthracene, Fluoranthene, Indeno(1,2,3-cd)pyrene, Phenanthrene, and Pyrene has been subtracted from F3.			
Unless otherwise qualified, the following quality control criteria have been met for the F1 hydrocarbon range:			
1. All extraction and analysis holding times were met.			
2. Instrument performance showing response factors for C6 and C10 within 30% of the response factor for toluene.			
3. Linearity of gasoline response within 15% throughout the calibration range.			
Unless otherwise qualified, the following quality control criteria have been met for the F2-F4 hydrocarbon ranges:			
1. All extraction and analysis holding times were met.			
2. Instrument performance showing C10, C16 and C34 response factors within 10% of their average.			
3. Instrument performance showing the C50 response factor within 30% of the average of the C10, C16 and C34 response factors.			
4. Linearity of diesel or motor oil response within 15% throughout the calibration range.			
F1-HS-WT	Soil	F1 (O.Reg.153/04)	E3398/CCME TIER 1-HS
Fraction F1 is determined by extracting a soil or sediment sample as received with methanol, then analyzing by headspace-GC/FID.			
F2-F4-WT	Soil	F2-F4 (O.Reg.153/04)	MOE DECPH-E3398/CCME TIER 1
A sub-sample of the solid sample is extracted with a solvent mixture. Following extraction, the sample extract is treated in situ with Silica Gel analyzed by GC/FID.			
The F2 fraction is determined by integrating the area in the chromatogram from the apex of nC10 to the apex nC16 and quantitating using external calibration using a standard mix containing nC10, nC16 and nC34. Similarly, the F3 fraction extends from the apex of nC16 to the apex nC34 and the F4 fraction covers the area from the apex nC34 to the apex nC50. If the chromatogram does not return to the baseline by the time nC50 elutes, a gravimetric determination of the F4 is performed.			
MOISTURE-WT	Soil	% Moisture	Gravimetric: Oven Dried
XYLENES-SUM-CALC-WT	Soil	Sum of Xylene Isomer Concentrations	CALCULATION
Total xylenes represents the sum of o-xylene and m&p-xylene.			
** ALS test methods may incorporate modifications from specified reference methods to improve performance.			

The last two letters of the above test code(s) indicate the laboratory that performed analytical analysis for that test. Refer to the list below:

Laboratory Definition Code	Laboratory Location
WT	ALS ENVIRONMENTAL - WATERLOO, ONTARIO, CANADA

Chain of Custody Numbers:

126033

Reference Information

GLOSSARY OF REPORT TERMS

Surrogates are compounds that are similar in behaviour to target analyte(s), but that do not normally occur in environmental samples. For applicable tests, surrogates are added to samples prior to analysis as a check on recovery. In reports that display the D.L. column, laboratory objectives for surrogates are listed there.

- mg/kg - milligrams per kilogram based on dry weight of sample*
- mg/kg ww_t - milligrams per kilogram based on wet weight of sample*
- mg/kg l_wt - milligrams per kilogram based on lipid weight of sample*
- mg/L - unit of concentration based on volume, parts per million.*
- < - Less than.*
- D.L. - The reporting limit.*
- N/A - Result not available. Refer to qualifier code and definition for explanation.*

Test results reported relate only to the samples as received by the laboratory.
UNLESS OTHERWISE STATED, ALL SAMPLES WERE RECEIVED IN ACCEPTABLE CONDITION.
Analytical results in unsigned test reports with the DRAFT watermark are subject to change, pending final QC review.

Quality Control Report

Workorder: L1494415

Report Date: 12-AUG-14

Page 1 of 4

Client: DECOMMISSIONING CONSULTING SERVICES LTD.
260 Hearst Way Suite 512
Ottawa ON K2L 3H1

Contact: T. Austrins

Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
BTX-HS-WT		Soil						
Batch	R2903697							
WG1920140-1	CVS							
Benzene			119.4		%		80-120	31-JUL-14
Ethyl Benzene			96.4		%		75-125	31-JUL-14
m+p-Xylenes			106.1		%		75-125	31-JUL-14
o-Xylene			98.0		%		75-125	31-JUL-14
Toluene			107.6		%		75-125	31-JUL-14
WG1921189-3	DUP	WG1921189-5						
Benzene		<0.020	<0.020	RPD-NA	ug/g	N/A	40	31-JUL-14
Ethyl Benzene		<0.050	<0.050	RPD-NA	ug/g	N/A	40	31-JUL-14
m+p-Xylenes		<0.10	<0.10	RPD-NA	ug/g	N/A	40	31-JUL-14
o-Xylene		<0.050	<0.050	RPD-NA	ug/g	N/A	40	31-JUL-14
Toluene		<0.050	<0.050	RPD-NA	ug/g	N/A	40	31-JUL-14
WG1921189-2	LCS							
Benzene			110.6		%		75-125	31-JUL-14
Ethyl Benzene			98.4		%		75-125	31-JUL-14
m+p-Xylenes			105.2		%		75-125	31-JUL-14
o-Xylene			94.7		%		75-125	31-JUL-14
Toluene			97.8		%		75-125	31-JUL-14
WG1921189-1	MB							
Benzene			<0.020		ug/g		0.02	31-JUL-14
Ethyl Benzene			<0.050		ug/g		0.05	31-JUL-14
m+p-Xylenes			<0.10		ug/g		0.1	31-JUL-14
o-Xylene			<0.050		ug/g		0.05	31-JUL-14
Toluene			<0.050		ug/g		0.05	31-JUL-14
Surrogate: 1,4-Difluorobenzene			100.0		%		70-130	31-JUL-14
Surrogate: 4-Bromofluorobenzene			92.5		%		70-130	31-JUL-14
WG1921189-4	MS	WG1921189-5						
Benzene			118.4		%		75-125	31-JUL-14
Ethyl Benzene			110.0		%		75-125	31-JUL-14
m+p-Xylenes			113.1		%		75-125	31-JUL-14
o-Xylene			105.7		%		75-125	31-JUL-14
Toluene			105.3		%		75-125	31-JUL-14

F1-HS-WT **Soil**



Environmental

Quality Control Report

Workorder: L1494415

Report Date: 12-AUG-14

Page 2 of 4

Client: DECOMMISSIONING CONSULTING SERVICES LTD.

260 Hearst Way Suite 512

Ottawa ON K2L 3H1

Contact: T. Austrins

Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
F1-HS-WT		Soil						
Batch	R2903697							
WG1920140-1	CVS							
F1 (C6-C10)			82.6		%		80-120	31-JUL-14
WG1921189-3	DUP	WG1921189-5						
F1 (C6-C10)		<5.0	<5.0	RPD-NA	ug/g	N/A	50	31-JUL-14
WG1921189-2	LCS							
F1 (C6-C10)			92.6		%		80-120	31-JUL-14
WG1921189-1	MB							
F1 (C6-C10)			<5.0		ug/g		5	31-JUL-14
Surrogate: 3,4-Dichlorotoluene			71.4		%		60-140	31-JUL-14
F2-F4-WT		Soil						
Batch	R2908474							
WG1921829-4	CRM	ALS PHC2 IRM						
F2 (C10-C16)			99.9		%		70-130	05-AUG-14
F3 (C16-C34)			104.6		%		70-130	05-AUG-14
F4 (C34-C50)			110.9		%		70-130	05-AUG-14
WG1924590-1	CVS							
F2 (C10-C16)			101.9		%		80-120	05-AUG-14
F3 (C16-C34)			102.1		%		80-120	05-AUG-14
F4 (C34-C50)			104.7		%		80-120	05-AUG-14
WG1921829-6	DUP	L1494415-5						
F2 (C10-C16)		<10	<10	RPD-NA	ug/g	N/A	40	05-AUG-14
F3 (C16-C34)		<50	<50	RPD-NA	ug/g	N/A	40	05-AUG-14
F4 (C34-C50)		<50	<50	RPD-NA	ug/g	N/A	40	05-AUG-14
WG1921829-2	LCS							
F2 (C10-C16)			91.3		%		80-120	05-AUG-14
F3 (C16-C34)			97.0		%		80-120	05-AUG-14
F4 (C34-C50)			104.2		%		80-120	05-AUG-14
WG1921829-3	LCSD	WG1921829-2						
F2 (C10-C16)		91.3	96.0		%	5.0	50	05-AUG-14
F3 (C16-C34)		97.0	103.6		%	6.6	50	05-AUG-14
F4 (C34-C50)		104.2	110.1		%	5.5	50	05-AUG-14
WG1921829-1	MB							
F2 (C10-C16)			<10		ug/g		10	05-AUG-14
F3 (C16-C34)			<50		ug/g		50	05-AUG-14
F4 (C34-C50)			<50		ug/g		50	05-AUG-14
Surrogate: 2-Bromobenzotrifluoride			90.1		%		70-130	05-AUG-14



Quality Control Report

Workorder: L1494415

Report Date: 12-AUG-14

Page 3 of 4

Client: DECOMMISSIONING CONSULTING SERVICES LTD.
260 Hearst Way Suite 512
Ottawa ON K2L 3H1

Contact: T. Austrins

Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
F2-F4-WT	Soil							
Batch	R2908474							
WG1921829-7 MS		L1494415-5						
F2 (C10-C16)			88.7		%		50-150	05-AUG-14
F3 (C16-C34)			97.4		%		50-150	05-AUG-14
F4 (C34-C50)			104.4		%		50-150	05-AUG-14
MOISTURE-WT	Soil							
Batch	R2903488							
WG1921777-3 DUP		L1494415-1						
% Moisture		33.8	33.7		%	0.3	30	31-JUL-14
WG1921777-2 LCS								
% Moisture			87.8		%		70-130	31-JUL-14
WG1921777-1 MB								
% Moisture			<0.10		%		0.1	31-JUL-14

Quality Control Report

Workorder: L1494415

Report Date: 12-AUG-14

Client: DECOMMISSIONING CONSULTING SERVICES LTD.
260 Hearst Way Suite 512
Ottawa ON K2L 3H1

Page 4 of 4

Contact: T. Austrins

Legend:

Limit	ALS Control Limit (Data Quality Objectives)
DUP	Duplicate
RPD	Relative Percent Difference
N/A	Not Available
LCS	Laboratory Control Sample
SRM	Standard Reference Material
MS	Matrix Spike
MSD	Matrix Spike Duplicate
ADE	Average Desorption Efficiency
MB	Method Blank
IRM	Internal Reference Material
CRM	Certified Reference Material
CCV	Continuing Calibration Verification
CVS	Calibration Verification Standard
LCSD	Laboratory Control Sample Duplicate

Sample Parameter Qualifier Definitions:

Qualifier	Description
RPD-NA	Relative Percent Difference Not Available due to result(s) being less than detection limit.

Hold Time Exceedances:

All test results reported with this submission were conducted within ALS recommended hold times.

ALS recommended hold times may vary by province. They are assigned to meet known provincial and/or federal government requirements. In the absence of regulatory hold times, ALS establishes recommendations based on guidelines published by the US EPA, APHA Standard Methods, or Environment Canada (where available). For more information, please contact ALS.

The ALS Quality Control Report is provided to ALS clients upon request. ALS includes comprehensive QC checks with every analysis to ensure our high standards of quality are met. Each QC result has a known or expected target value, which is compared against pre-determined data quality objectives to provide confidence in the accuracy of associated test results.

Please note that this report may contain QC results from anonymous Sample Duplicates and Matrix Spikes that do not originate from this Work Order.

APPENDIX D

LANDFILL DISPOSAL RECEIPTS



OTTAWA LANDFILL
3354 NAVAN ROAD
GLOUSTER, ON K4B 1H9
PH: 613-824-7289 FX: 613-824-6730

010302
DCS
260 HEARST WAY - UNIT#512

Cash Trans.
Inbound

CONTRACT: SWP400777-16 TAUVERTE ST-C

SITE		TICKET #		OPERATOR	
05		748041		jcheckowy	
IN	OUT	TRUCK		CONT.	LICENCE
6/24/14 2:22 pm	6/24/14 2:22 pm	SWP400777			
REFERENCE				ORIGIN	
KEN BROWN - TROY				WEST END	

GROSS		26,800	kg	Man. Wt. In	ZONE J/K-4/5-95	
TARE		13,410	kg	Man. Wt. Out	BOL: REPLACWS 748039	
NET		13,390	kg			
QTY	UNIT	DESCRIPTION	TRACKING QTY	RATE	TAX	TOTAL
13.39	MT	Contaminated Soil	0	\$35.00	60.92	\$ 529.57
13.39	EA	Environental Surcharge	13	\$2.48	4.32	\$ 37.53
GST# 866808298RT0004						

Total: \$567.10

Amount Paid: \$567.10

Payment Type: MASTERCARD

I hereby certify that this load does not contain any
unauthorized hazardous waste.

SIGNATURE: _____

Change: \$0.00



OTTAWA LANDFILL
3354 NAVAN ROAD
GLOUSTER, ON K4B 1H9
PH: 613-824-7289 FX: 613-824-6730

010302
DCS
260 HEARST WAY - UNIT#512

Cash Trans.
Inbound

CONTRACT: SWP400777-16 TAUVERTE ST-C

SITE		TICKET #		OPERATOR	
05		754328		lhuneault	
IN	OUT	TRUCK		CONT.	LICENCE
7/28/14 12:42 pm	7/28/14 1:02 pm	SWP400777			
REFERENCE				ORIGIN	
0207 TROY				EAST END	

GROSS		26,340 kg	Scale In	ZONE I/J-4/5-95		
TARE		14,020 kg	Scale Out	BOL:		
NET		12,320 kg				
QTY	UNIT	DESCRIPTION	TRACKING QTY	RATE	TAX	TOTAL
12.32	mt	Contaminated Soil	0	\$35.00	56.06	\$ 487.26
12.32	EA	Environental Surcharge	12	\$2.48	3.97	\$ 34.52
GST# 866808298RT0004						

Total: \$521.78

Amount Paid: \$521.78

Payment Type: MASTERCARD

I hereby certify that this load does not contain any
unauthorized hazardous waste.

SIGNATURE: _____

Change: \$0.00