



2650 Queensview Drive  
Ottawa, Ontario, K2B 8H6, CANADA  
T: 1.613.688.1899 • www.exp.com

March 13, 2018

Mr. Joey Theberge  
Theberge Homes Ltd.  
904 Lady Ellen Place  
Ottawa, Ontario K1Z 5L5

Via Email:  
joeytheberge@thebergehomes.com

Project Name: Proposed Development, 1158 Second Line Road, Ottawa, ON  
Project Number: OTT-00245054-A0  
**Subject: Soil Sampling Program, 1158 Second Line Road, Ottawa, Ontario**

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Dear Mr. Theberge:

EXP Services Inc. (EXP) was retained by Theberge Homes Ltd. to conduct soil sampling below the fill and vent pipes of an un-used interior heating oil above ground storage tank (AST) at the property located at 1158 Second Line Road in Ottawa, Ontario hereinafter referred to as the 'Site'. The objective of the soil sampling program was to address the area of potential environmental concern (APEC) identified in a Phase One Environmental Site Assessment (ESA) conducted at the Site by EXP. It is understood that this report is required as part of the permitting process with the City of Ottawa. We understand that a Record of Site Condition (RSC) is not required.

## Background

The site is located on the east side of Second Line Road approximately 240 m southwest from the Old Carp Road and Second Line Road intersection, as shown on Figure 1 in Appendix A. The site has an area of approximately 0.8 hectares and is currently occupied by a residence.

EXP completed a Phase One ESA at the site on March 2, 2018. The Phase One ESA identified an interior un-used furnace oil AST in the basement of the residence. The AST was observed to be in good condition with no staining or odours and no records of spills. The exterior vent and fill pipes however represent the worst-case scenario as they would be the location where any spills or overfilling issues of the AST would occur. Therefore, it was recommended that a sample of soil at the ground surface, beneath the vent and fill pipes be obtained and analyzed for the potential contaminants of concern. Groundwater contamination was not considered to be a concern at this time.

## Objective

The objective of this assessment was to determine if the area around the exterior fill pipe and/or vent pipe for the AST was impacted by petroleum hydrocarbons.

## Soil Sampling

On February 22, 2018, EXP was at the site to collect a shallow soil sample beneath the vent and fill pipes. The vent and fill pipes are located on the north exterior of the residence. A hand shovel was used to dig to an approximate depth of 0.1 m. The sample location is shown on Figure 2 in Appendix A. The soil sample (SA-1) was submitted to a certified laboratory for analysis of petroleum hydrocarbons (PHCs), benzene,

toluene, ethylbenzene and xylene (BTEX). There were no visual and olfactory indications of petroleum impact in the soil sample. Photographs of the sample location are presented in Appendix A.

The soil was placed into laboratory supplied sample jars and vials containing methanol as a preservative. The jars and vials were sealed with Teflon-lined lids to minimize head-space and reduce the potential for induced volatilization during storage/transport prior to analysis. The soil samples were placed in a clean cooler containing ice prior to and during transportation to the subcontract laboratory, The samples were transported / submitted to the laboratory following chain of custody protocols for chemical analysis.

The contracted laboratory selected to perform chemical analysis is an accredited laboratory under the Standards Council of Canada/Canadian Association for Laboratory Accreditation in accordance with ISO/IEC 17025:1999- *General Requirements for the Competence of Testing and Calibration Laboratories*.

### Applicable Site Conditions Standards

Analytical results obtained for the soil samples were assessed against site condition standards (SCS) as established under subsection 169.4 (1) of the Environmental Protection Act, and presented in the document MOE "Soil, Ground Water and Sediment Standards for Use Under Part XV.1 of the *Environmental Protection Act*", ("SGWS" Standards), (MOE, 2011a). Tabulated background SCS (Table 1) applicable to environmentally sensitive Sites and effects based generic SCS (Tables 2 to 9) applicable to non-environmentally sensitive Sites are provided in MOE (2011a). The effects based SCS (Tables 2 to 9) are protective of human health and the environment for different groundwater conditions (potable and non-potable), land use scenarios (residential, parkland, institutional, commercial, industrial, community and agricultural/other), soil texture (coarse or medium/fine) and restoration depth (full or stratified).

Although it is expected that the development will have a municipally served water supply, for assessment purposes, EXP selected the MOECC (2011) Table 2: Full depth SCS in a potable ground water condition for residential property use and coarse textured soil. The selection of this category was based on the following factors:

- The predominant soil type on the Site was coarse textured based on a grain size analysis in Appendix C.
- A water well was identified at the Site, suggesting that groundwater is currently being used for potable water.
- Less than two-thirds of the Site has an overburden thickness greater than 2 m.
- The Site is not located within 30 m of a surface water body or an area of natural significance.

### Soil Analytical Results

The soil analytical results for PHC, and BTEX are presented in Table 1 in Appendix B. The laboratory certificates of analysis are presented in Appendix C.

The concentrations of PHCs and BTEX measured in the analysed soil sample were less than the laboratory detection limits and/or less than the MOECC 2011 Table 2 SCS.

### Conclusion/ Recommendations

Based on the soil sampling program, all measured parameters (i.e., PHCs and BTEX) were either less than the laboratory detection limit and/or less than the 2011 MOECC Table 2 SCS.

Based on the findings, no further environmental investigation is recommended at this time.

## General Closure

This report ("Report") is based on site conditions known or inferred by the investigation undertaken as of the date of the Report. Should changes occur which potentially impact the condition of the site the recommendations of EXP may require re-evaluation. Where special concerns exist, or Theberge Homes of Companies ("the Client") has special considerations or requirements, these should be disclosed to EXP to allow for additional or special investigations to be undertaken not otherwise within the scope of investigation conducted for the purpose of the Report.

The evaluation and conclusions contained in the Report are based on conditions in evidence at the time of site inspections and information provided to EXP by the Client and others. The Report has been prepared for the specific site, development, building, design or building assessment objectives and purpose as communicated by the Client. EXP has relied in good faith upon such representations, information and instructions and accepts no responsibility for any deficiency, misstatement or inaccuracy contained in the Report as a result of any misstatements, omissions, misrepresentation or fraudulent acts of persons providing information. Unless specifically stated otherwise, the applicability and reliability of the findings, recommendations, suggestions or opinions expressed in the Report are only valid to the extent that there has been no material alteration to or variation from any of the information provided to EXP. If new information about the environmental conditions at the Site is found, the information should be provided to EXP so that it can be reviewed and revisions to the conclusions and/or recommendations can be made, if warranted.

The information and opinions expressed in the Report, or any document forming part of the Report, are for the sole benefit of the Client. No other party may use or rely upon the Report in whole or in part without the written consent of EXP. Any use of the Report, or any portion of the Report, by a third party are the sole responsibility of such third party. EXP is not responsible for damages suffered by any third party resulting from unauthorised use of the Report.

We trust that the information contained in this letter will be satisfactory for your purposes. Should you have any questions, please contact this office.

Sincerely,

EXP Services Inc.



Mark McCalla, P.Geb.  
Senior Geoscientist  
Earth and Environmental



Dan McNicoll, M.Sc, P.Geo.  
Manager - Environmental Services  
Earth and Environmental

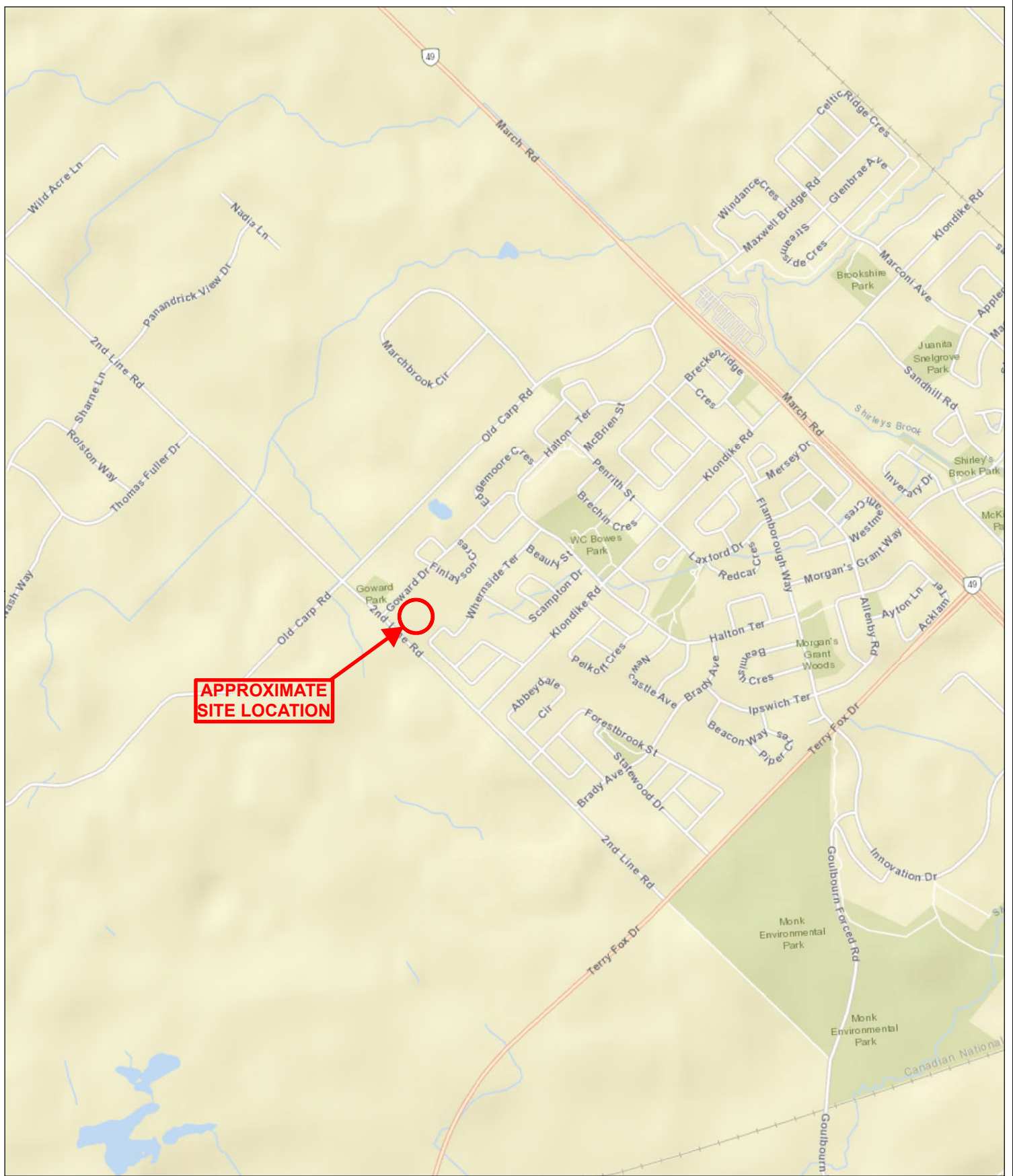
*Attachments:*    *Appendix A: Figures*  
                          *Appendix B: Summary of Analytical Results*  
                          *Appendix C: Laboratory Certificates of Analysis*

*EXP Services Inc.*

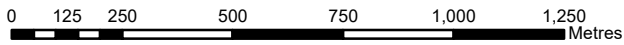
*Theberge Homes  
Soil Sampling Program  
1158 Second Line Road, Ottawa, Ontario  
EXP Project Number: OTT-00245054-A0  
March 13, 2018*

## **APPENDIX A: FIGURES and PHOTOGRAPHS**





**APPROXIMATE  
SITE LOCATION**



**exp.** EXP Services Inc.  
 100-2650 Queensview Drive  
 Ottawa, Ontario  
 K2B 8H6  
 T - (613) - 688-1899  
 F - (613) - 225-7337

PROJECT TITLE:  
**PHASE ONE ENVIRONMENTAL  
 SITE ASSESSMENT**  
 1158 Second Line Road  
 Ottawa, Ontario



DRAWING TITLE:  
**SITE LOCATION PLAN**

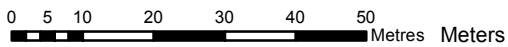
PROJECT No.:	DWN:
OTT-00245054-A0	ML
SCALE:	CHKD:
AS SHOWN	MM
DATE:	FIG. No.:
MARCH 2018	1





Legend

-  Soil Sample Location
-  - Current on-Site Building



**EXP Services Inc.**  
100-2650 Queensview Drive  
Ottawa, Ontario  
K2B 8H6  
T - (613) - 688-1899  
F - (613) - 225-7337

PROJECT TITLE:  
**SOIL SAMPLING PROGRAM**  
1158 Second Line Road  
Ottawa, Ontario

DRAWING TITLE:  
**SITE PLAN**

PROJECT No.:	OTT-00245054-A0	DWN:	ML
SCALE:	AS SHOWN	CHKD:	MM
DATE:	MARCH 2018	FIG. No.:	2



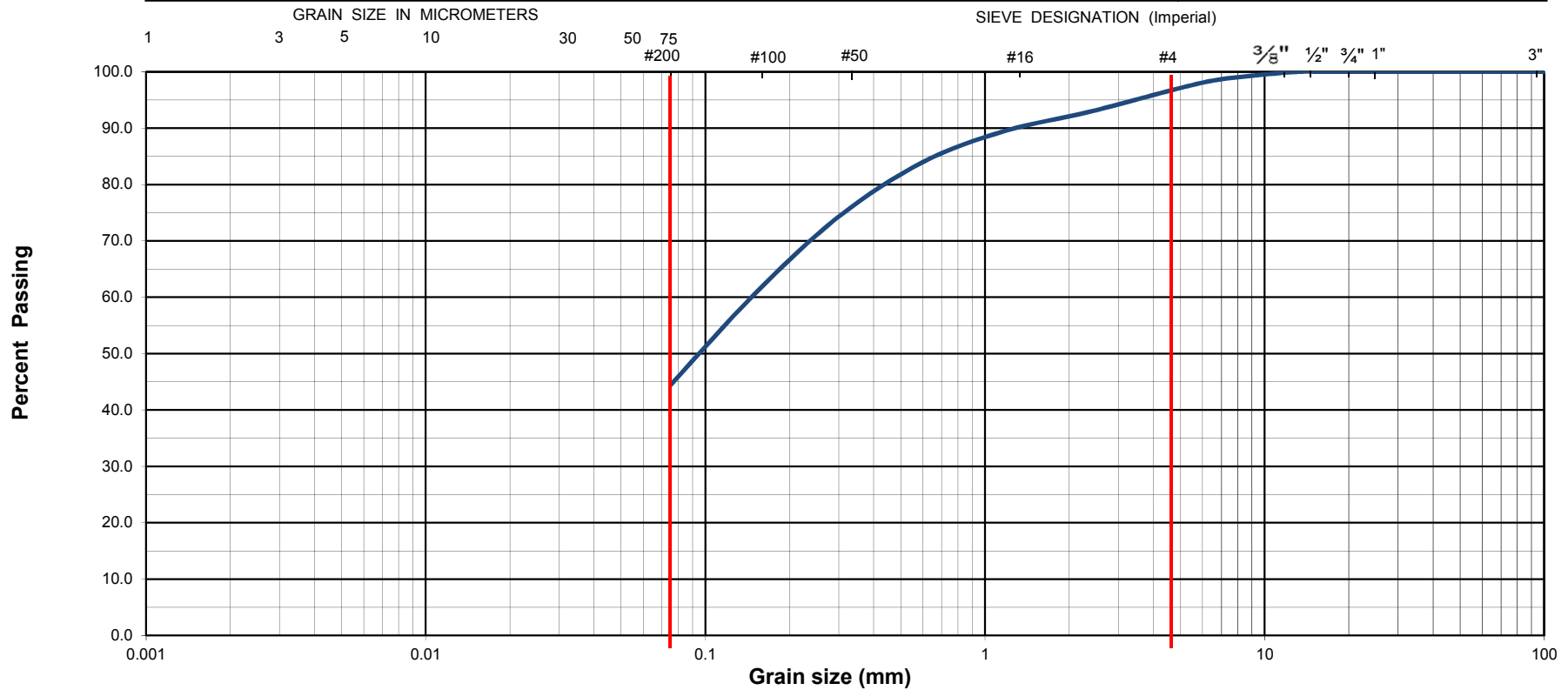
# Grain-Size Distribution Curve

EXP Services Inc.  
 100-2650 Queensview Drive  
 Ottawa, ON K2B 8H6

## Method of Test for Sieve Analysis of Aggregate ASTM C-136

### Unified Soil Classification System

CLAY AND SILT	SAND			GRAVEL	
	Fine	Medium	Coarse	Fine	Coarse



EXP Project No.:	OTT-00245054	Project Name :	Geotechnical Investigation Proposed Residential Development		
Client :	Theberge Homes	Project Location :	1158 Second Line Road, Ottawa		
Date Sampled :	February 16, 2018	Test Pit No:	TP1	Sample:	SS1
Sample Description :	<b>Silty Sand (SM)</b>			Depth (m) :	0.3-1.2
				Figure :	15



**Photograph No. 1**

View of the fill and vent pipes for the interior un-used furnace oil tank



**Photograph No. 2**

View of the soil sample location



*EXP Services Inc.*

*Theberge Homes  
Soil Sampling Program  
1158 Second Line Road, Ottawa, Ontario  
EXP Project Number: OTT-00245054-A0  
March 13, 2018*

## **APPENDIX B: SUMMARY OF ANALITICAL RESULTS**



**TABLE 1 SOIL ANALYTICAL RESULTS ( $\mu\text{g/g}$ )  
Petroleum Hydrocarbons (PHCs) and BTEX  
1158 Second Line Road, Ottawa**

Parameter	MOECC Table 2 <sup>1</sup>	SA-1
Sample Date (d/m/y)	<b>Residential</b>	22-Feb-18
Sample Depth (mbsg)		0.05 - 0.15
Benzene	0.21	<0.02
Ethylbenzene	2.1	<0.05
Toluene	2.3	<0.05
Total Xylenes	26	<0.05
F1 (C6-C10)	55	<7
F2 (C10-C16 Hydrocarbons)	98	<4
F3 (C16-C34 Hydrocarbons)	300	<8
F4 (C34-C50 Hydrocarbons)	2800	<6

**NOTES:**

1 MOECC *Soil, Ground Water and Sediment Standards for Use Under Part XV.1 of the EPA, April 2011, Table 2 Potable Residential SCS, coarse grained soil.*

Shaded Concentration exceeds MOECC Table 2 Residential SCS.

*EXP Services Inc.*

*Theberge Homes  
Soil Sampling Program  
1158 Second Line Road, Ottawa, Ontario  
EXP Project Number: OTT-00245054-A0  
March 13, 2018*

## **APPENDIX C: LABORATORY CERTIFICATES OF ANALYSIS**



## Certificate of Analysis

exp Services Inc. (Ottawa)  
100-2650 Queensview Dr.  
Ottawa, ON K2B 8K2  
Attn: Mark McCalla

Client PO:  
Project: OTT00245054A0  
Custody: 115920

Report Date: 28-Feb-2018  
Order Date: 22-Feb-2018

**Order #: 1808326**

This Certificate of Analysis contains analytical data applicable to the following samples as submitted:

Parcel ID	Client ID
1808326-01	SA-1

Approved By:



Mark Foto, M.Sc.  
Lab Supervisor

Certificate of Analysis  
Client: **exp Services Inc. (Ottawa)**  
Client PO:

Report Date: 28-Feb-2018  
Order Date: 22-Feb-2018  
Project Description: **OTT00245054A0**

### Analysis Summary Table

Analysis	Method Reference/Description	Extraction Date	Analysis Date
BTEX by P&T GC-MS	EPA 8260 - P&T GC-MS	23-Feb-18	24-Feb-18
PHC F1	CWS Tier 1 - P&T GC-FID	23-Feb-18	24-Feb-18
PHCs F2 to F4	CWS Tier 1 - GC-FID, extraction	22-Feb-18	24-Feb-18
Solids, %	Gravimetric, calculation	23-Feb-18	23-Feb-18



Certificate of Analysis  
 Client: exp Services Inc. (Ottawa)  
 Client PO:

Report Date: 28-Feb-2018  
 Order Date: 22-Feb-2018  
 Project Description: OTT00245054A0

<b>Client ID:</b>	SA-1	-	-	-
<b>Sample Date:</b>	22-Feb-18	-	-	-
<b>Sample ID:</b>	1808326-01	-	-	-
<b>MDL/Units</b>	Soil	-	-	-

**Physical Characteristics**

% Solids	0.1 % by Wt.	86.7	-	-	-
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**Volatiles**

Benzene	0.02 ug/g dry	<0.02	-	-	-
Ethylbenzene	0.05 ug/g dry	<0.05	-	-	-
Toluene	0.05 ug/g dry	<0.05	-	-	-
m,p-Xylenes	0.05 ug/g dry	<0.05	-	-	-
o-Xylene	0.05 ug/g dry	<0.05	-	-	-
Xylenes, total	0.05 ug/g dry	<0.05	-	-	-
Toluene-d8	Surrogate	109%	-	-	-

**Hydrocarbons**

F1 PHCs (C6-C10)	7 ug/g dry	<7	-	-	-
F2 PHCs (C10-C16)	4 ug/g dry	<4	-	-	-
F3 PHCs (C16-C34)	8 ug/g dry	<8	-	-	-
F4 PHCs (C34-C50)	6 ug/g dry	<6	-	-	-

Certificate of Analysis  
 Client: exp Services Inc. (Ottawa)  
 Client PO:

Report Date: 28-Feb-2018  
 Order Date: 22-Feb-2018  
 Project Description: OTT00245054A0

**Method Quality Control: Blank**

Analyte	Result	Reporting Limit	Units	Source Result	%REC	%REC Limit	RPD	RPD Limit	Notes
<b>Hydrocarbons</b>									
F1 PHCs (C6-C10)	ND	7	ug/g						
F2 PHCs (C10-C16)	ND	4	ug/g						
F3 PHCs (C16-C34)	ND	8	ug/g						
F4 PHCs (C34-C50)	ND	6	ug/g						
<b>Volatiles</b>									
Benzene	ND	0.02	ug/g						
Ethylbenzene	ND	0.05	ug/g						
Toluene	ND	0.05	ug/g						
m,p-Xylenes	ND	0.05	ug/g						
o-Xylene	ND	0.05	ug/g						
Xylenes, total	ND	0.05	ug/g						
Surrogate: Toluene-d8	8.77		ug/g		110	50-140			

Certificate of Analysis  
 Client: exp Services Inc. (Ottawa)  
 Client PO:

Report Date: 28-Feb-2018  
 Order Date: 22-Feb-2018  
 Project Description: OTT00245054A0

**Method Quality Control: Duplicate**

Analyte	Result	Reporting Limit	Units	Source Result	%REC	%REC Limit	RPD	RPD Limit	Notes
<b>Hydrocarbons</b>									
F1 PHCs (C6-C10)	ND	7	ug/g dry	ND				40	
F2 PHCs (C10-C16)	ND	4	ug/g dry	ND				30	
F3 PHCs (C16-C34)	15	8	ug/g dry	9			46.0	30	QR-01
F4 PHCs (C34-C50)	ND	6	ug/g dry	ND			0.0	30	
<b>Physical Characteristics</b>									
% Solids	86.1	0.1	% by Wt.	88.3			2.6	25	
<b>Volatiles</b>									
Benzene	ND	0.02	ug/g dry	ND				50	
Ethylbenzene	ND	0.05	ug/g dry	ND				50	
Toluene	ND	0.05	ug/g dry	ND				50	
m,p-Xylenes	ND	0.05	ug/g dry	ND				50	
o-Xylene	ND	0.05	ug/g dry	ND				50	
Surrogate: Toluene-d8	8.01		ug/g dry		106	50-140			

Certificate of Analysis  
 Client: exp Services Inc. (Ottawa)  
 Client PO:

Report Date: 28-Feb-2018  
 Order Date: 22-Feb-2018  
 Project Description: OTT00245054A0

**Method Quality Control: Spike**

Analyte	Result	Reporting Limit	Units	Source Result	%REC	%REC Limit	RPD	RPD Limit	Notes
<b>Hydrocarbons</b>									
F1 PHCs (C6-C10)	193	7	ug/g		96.7	80-120			
F2 PHCs (C10-C16)	106	4	ug/g	ND	104	60-140			
F3 PHCs (C16-C34)	226	8	ug/g	9	103	60-140			
F4 PHCs (C34-C50)	164	6	ug/g	ND	117	60-140			
<b>Volatiles</b>									
Benzene	4.08	0.02	ug/g		102	60-130			
Ethylbenzene	3.53	0.05	ug/g		88.3	60-130			
Toluene	3.50	0.05	ug/g		87.6	60-130			
m,p-Xylenes	7.02	0.05	ug/g		87.7	60-130			
o-Xylene	3.57	0.05	ug/g		89.3	60-130			
Surrogate: Toluene-d8	8.07		ug/g		101	50-140			

Certificate of Analysis  
Client: exp Services Inc. (Ottawa)  
Client PO:

Report Date: 28-Feb-2018  
Order Date: 22-Feb-2018  
Project Description: OTT00245054A0

**Qualifier Notes:**

**QC Qualifiers :**

QR-01 : Duplicate RPD is high, however, the sample result is less than 10x the MDL.

**Sample Data Revisions**

None

**Work Order Revisions / Comments:**

None

**Other Report Notes:**

n/a: not applicable  
ND: Not Detected  
MDL: Method Detection Limit  
Source Result: Data used as source for matrix and duplicate samples  
%REC: Percent recovery.  
RPD: Relative percent difference.

Soil results are reported on a dry weight basis when the units are denoted with 'dry'.  
Where %Solids is reported, moisture loss includes the loss of volatile hydrocarbons.

*CCME PHC additional information:*

- The method for the analysis of PHCs complies with the Reference Method for the CWS PHC and is validated for use in the laboratory. All prescribed quality criteria identified in the method has been met.
- F1 range corrected for BTEX.
- F2 to F3 ranges corrected for appropriate PAHs where available.
- The gravimetric heavy hydrocarbons (F4G) are not to be added to C6 to C50 hydrocarbons.
- In the case where F4 and F4G are both reported, the greater of the two results is to be used for comparison to CWS PHC criteria.





Client Name: <b>EXP Services Inc.</b>	Project Reference: <b>OTT-00245654-A0</b>	<b>Turnaround Time:</b> <input type="checkbox"/> 1 Day <input type="checkbox"/> 3 Day <input type="checkbox"/> 2 Day <input checked="" type="checkbox"/> Regular Date Required: _____
Contact Name: <b>MARK McALLA</b>	Quote #	
Address: <b>2650 QUEENSVIEW DRIVE OTTAWA</b>	PO #	
Telephone:	Email Address: <b>MARK.MCALLA@EXP.COM</b>	

Criteria:  O. Reg. 153/04 (As Amended) Table 6     RSC Filing     O. Reg. 558/00     PWQO     CCME     SUB (Storm)     SUB (Sanitary)    Municipality: \_\_\_\_\_     Other: \_\_\_\_\_

Matrix Type: S (Soil/Sed.)    GW (Ground Water)    SW (Surface Water)    SS (Storm/Sanitary Sewer)    P (Paint)    A (Air)    O (Other)

Parcel Order Number: <b>1808326</b>		Matrix	Air Volume	# of Containers	Sample Taken		PHCs F1-F4+BTEX	VOCs	PAHs	Metals by ICP	Hg	CrVI	B (HWS)	BTEX	Other	Notes
Sample ID/Location Name	Date				Time											
1	SA-1	S		3	Feb 22/18	10:30	X									2x 120ml + MeOH vial
2																
3																
4																
5																
6																
7																
8																
9																
10																

Comments: \_\_\_\_\_ Method of Delivery: **walk-in**

Relinquished By (Sign): <b>Mark McAlla</b>	Received by Driver/Depot: <b>Karen Cull</b>	Received at Lab: <b>Rachel Subart</b>	Verified By: <b>[Signature]</b>
Relinquished By (Print): <b>MARK McALLA</b>	Date/Time: <b>Feb 22/18 10:51</b>	Date/Time: <b>Feb 22 118</b>	Date/Time: <b>02/22/18 2:58p</b>
Date/Time: <b>Feb 22/18</b>	Temperature: <b>9.6 °C</b>	Temperature: <b>9.6 °C 2:36</b>	pH Verified <input checked="" type="checkbox"/> By: <b>N/A</b>