



PHASE II ENVIRONMENTAL SITE ASSESSMENT

**Part of Lot 10, Concession 1
(North of Dundas St. E., East of Eighth Line)
Oakville, ON**

Client

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Date Submitted

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Executive Summary

Exp Services Inc. (**exp**) was retained by 2259229 Ontario Inc. (client) to complete a Phase II Environmental Site Assessment (ESA) of the property located at Part of Lot 10, Concession 1, in Oakville, Ontario, hereinafter referred to as the 'Site'. Authorization to proceed with the Phase II ESA was provided by Mr. Leo Capobianco of 2259229 Ontario Inc.

The Site is located on the north side of Dundas Street East and east of Eighth Line Road in Oakville, Ontario (Figure 1) and measures approximately 20 hectares (49 acres) in area. At the time of this Phase II ESA, the Site was unoccupied and comprised of 45.0 acres of agricultural land and approximately 4.0 acres for commercial use in the south portion of the Site..

A Phase I ESA was conducted at the Site by **exp** in May 2014 which identified the presence of several large soil stockpiles that would require sampling and testing in the event that the Site was to be redeveloped. Although there were no other recommendations for further environmental work, at the client's request, **exp** conducted a Phase II ESA to assess the soil and groundwater quality in the area of the proposed commercial development on the southern portion (the subject portion) of the Site. The commercial portion of the Site consisted of a gravel area with several large, vegetated stockpiles of soil.

This Phase II ESA was conducted in general accordance with CSA Standard Z769-00 (R2008) and in accordance with generally accepted professional practices. The Phase II ESA was completed concurrent with a Preliminary Geotechnical Investigation, which is reported separately. The Phase II ESA consisted of the advancement of three (3) boreholes each of which was instrumented with a groundwater monitoring well for groundwater sampling purposes.

For assessment purposes, **exp** selected the Ministry of Environment and Climate Change (MOECC) Table 3 Site Condition Standards (SCS) of "Soil, Groundwater and Sediment Standards for Use Under Part XV.1 of the Environmental Protection Act," April 2011, for Industrial/Commercial Property Use in a non-potable groundwater situation and full depth restoration and medium to fine-textured soil, in accordance with Ontario Regulation 153/04 (made under the Environmental Protection Act), April 2011.

Based on the results of the subsurface investigation conducted at the Site, the following findings are presented:

- 1) The Phase II ESA was completed concurrently with a Preliminary Geotechnical Investigation, and consisted of the advancement of sixteen (16) boreholes in total. Three (3) of the boreholes were advanced for environmental sampling purposes and were also completed as groundwater monitoring wells.
- 2) The general stratigraphy at the Site, as observed in the boreholes, consists of topsoil or sand and gravel fill material over laying native clayey silt till and highly weathered shale bedrock.
- 3) The depth to groundwater was measured in the drilled wells prior to well development and sampling on October 26, 2015. The groundwater elevations in the monitoring wells ranged between approximately 94.53 and 94.69 m in relation to a local benchmark. Based on the limited available groundwater information, the shallow groundwater flow direction is to the southeast.

- 4) One (1) soil sample was analyzed for Volatile Organic Compounds (VOCs). A trace concentration of Dichlorofluoromethane was detected in the sample analyzed from borehole BH3 (S3); however the concentration was well below the MOECC Table 3 SCS. The remaining VOCs in the analyzed soil samples were not detected above the laboratory Method Detection Limits (MDLs). The laboratory MDLs were below the MOECC Table 3 SCS.
- 5) Two (2) soil samples were analyzed for Petroleum Hydrocarbons (PHCs) and Benzene, Toluene, Ethylbenzene and Xylenes (BTEX). PHCs and BTEX in the analyzed soil samples were not detected above the laboratory MDLs. The laboratory MDLs were below the MOECC Table 3 SCS.
- 6) Three (3) soil samples were analyzed for metals and inorganics. The detected concentrations of metals and inorganics in the analyzed soil samples were well below the MOECC Table 3 SCS. The laboratory MDLs were also below the MOECC Table 3 SCS.
- 7) No odour was noted during well purging and groundwater sampling, and no evidence of free product (i.e. visible film or sheen) was observed.
- 8) Three (3) groundwater samples were analyzed for VOCs. The detected concentrations of toluene and xylenes in the analyzed groundwater samples were well below the MOECC Table 3 SCS. The laboratory MDLs were below the MOECC Table 3 SCS.

Based on field observations and analytical results of this subsurface investigation, no significant environmental impact of soil and groundwater was identified within the depth of the investigation on the basis of either the analytical results reported for the soil and groundwater sampling program or field observations made during the investigation of the Site. As such, no further investigation of soil and groundwater is considered warranted at this time.

This executive summary is a brief synopsis of the report and should not be read in lieu of reading the report in its entirety. Limitation of liability, scope of report and third party reliance are outlined in Section 7 of this report.

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1. Introduction

Exp Services Inc. (**exp**) was retained by 2259229 Ontario Inc. (client) to complete a Phase II Environmental Site Assessment (ESA) of the property located at Part of Lot 10, Concession 1, in Oakville, Ontario, hereinafter referred to as the 'Site'. Authorization to proceed with the Phase II ESA was provided by Mr. Leo Capobianco of 2259229 Ontario Inc.

This Phase II ESA was conducted in general accordance with CSA Standard Z769-00 (R2008) and in accordance with generally accepted professional practices. The Phase II ESA was completed concurrent with a Preliminary Geotechnical Investigation, which is reported separately. The Phase II ESA consisted of the advancement of three (3) boreholes each of which was instrumented with a groundwater monitoring well for groundwater sampling purposes.

1.1 Site Description and Background

The Site is located on the north side of Dundas Street East and east of Eighth Line Road in Oakville, Ontario (Figure 1) and measures approximately 20 hectares (49 acres) in area. At the time of this Phase II ESA, the Site was unoccupied and comprised of 45.0 acres of agricultural land and approximately 4.0 acres for commercial use in the south portion of the Site. The south, commercial portion of the Site consisted of a gravel area with several large, vegetated stockpiles of soil.

A Phase I ESA was conducted at the Site by **exp** in May 2014 which identified the presence of several large soil stockpiles that would require sampling and testing in the event that the Site was to be redeveloped. Although there were no other recommendations for further environmental work, at the client's request, **exp** conducted a Phase II ESA to assess the soil and groundwater quality in the area of the proposed commercial development on the southern portion (the subject portion) of the Site. The commercial portion of the Site consisted of a gravel area with several large, vegetated stockpiles of soil.

1.2 Scope of Work

The proposed scope of work for the Phase II ESA was as follows:

- Request local utility locating companies (cable, telephone, gas, hydro) to mark any underground utilities present at the Site;
- Retain a private contractor to mark any underground utilities present in the vicinity of the borehole locations and to clear the individual borehole locations;
- Retain a licensed drilling company to advance a total of three (3) boreholes complete with groundwater monitoring wells;
- Collect representative soil samples for analysis of Petroleum Hydrocarbons (PHCs) including Benzene, Toluene, Ethylbenzene and Xylene (BTEX), Volatile Organic Compounds (VOCs), metals and inorganics, pH and grain size;
- Collect representative groundwater samples for analysis of VOCs, and,
- Prepare a report of the findings.

Exp understands that this work is not being completed for the purposes of filing of a Record of Site Condition (RSC) for the Site with the Ontario Ministry of the Environment and Climate Change (MOECC). Should a RSC be required for this Site or a change to a more sensitive land use is planned, which would require the filing of a RSC, additional work may be required to support the filing of a RSC.

1.3 Site Assessment Criteria

The assessment criteria, Site Condition Standards (SCS), applicable to a given site in Ontario are established under subsection 168.4(1) of the Environmental Protection Act. Tabulated generic criteria are provided in “Soil, Ground Water and Sediment Standards for Use Under Part XV.1 of the Environmental Protection Act” (“the SGWS Standards”), MOECC, April, 2011. These criteria are based on site sensitivity (sensitive or non-sensitive), groundwater use (potable or non-potable), property use (residential, parkland, institutional, commercial, industrial, community and agricultural/other), soil type (coarse or medium to fine textured) and restoration depth (full or stratified restoration). In addition, site specific criteria may be established on the basis of the findings of a Risk Assessment carried out in accordance with Part IX and Schedule C of Ontario Regulation 153/04 (O. Reg. 153/04).

The SGWS Standards specify SCS for soil, groundwater and sediment that are tabulated as follows:

Table 1 – applicable to sites where background concentrations must be met (full depth) such as sensitive sites where site-specific criteria have not been derived;

Table 2 – applicable to sites with potable groundwater and full depth restoration;

Table 3 – applicable to sites with non-potable groundwater and full depth restoration;

Table 4 – applicable to sites with potable groundwater and stratified restoration;

Table 5 – applicable to sites with non-potable groundwater and stratified restoration;

Table 6 – applicable to sites with potable groundwater and less than 2 m of overburden above bedrock;

Table 7 – applicable to sites with non-potable groundwater and less than 2 m of overburden above bedrock;

Table 8 – applicable to sites with potable groundwater and less than 30 m from a water body; and

Table 9 – applicable to sites with non-potable groundwater and less than 30 m from a water body.

For assessment purposes, **exp** selected the Table 3 SCS for Industrial/Commercial Property Use in a non-potable groundwater situation and full depth restoration and medium to fine-textured soil.

The selection of this category is based on the following factors:

- The Site is not considered a sensitive site;
- To the best of **exp**'s knowledge, all properties within 250 m of the Site are serviced by the municipal water supply and based on **exp**'s knowledge of the study area and field

observations, groundwater is not used as a potable water source either on or within 250 m of the Site;

- The Site is not located in an area designated in a municipal official plan as a well-head protection area or other designation identified by the municipality for the protection of groundwater;
- The intended property use of the southern portion of the Site (the subject portion) is commercial;
- The predominant soil type on the Site was considered to be medium to fine-textured (refer to the 75 micron sieve analysis in Appendix C); and
- There is no intention to carry out a stratified restoration at the Site.

2. Methodology

2.1 Drilling and Soil Sampling

The fieldwork for the Phase II ESA was completed on October 22 and October 26, 2015. Three (3) boreholes (BH1 to BH3) were advanced on the southern portion of the Site by Determination Drilling and Soil Investigations (DDSI) under the full-time supervision of **exp** staff. A track-mounted CME 55 rig equipped with a split spoon sampler and solid stem augers was used to advance the boreholes. No petroleum-based greases or solvents were used during drilling activities. The three (3) boreholes were advanced to completion depths of approximately 6.1 and 7.6 metres below ground surface (mbgs).

A geotechnical investigation was conducted in conjunction with the Phase II ESA. Information regarding the fieldwork for the geotechnical boreholes is contained in **exp**'s Preliminary Geotechnical Investigation report dated November 2015.

The approximate locations of the environmental boreholes are shown on the Borehole Location Plan (Figure 2).

Exp continuously monitored the drilling activities to record the physical characteristics of the soil, depth of soil sample collection and total depth of borehole. Field observations are summarized on the borehole logs provided in Appendix B. Representative soil samples were recovered in the overburden of the boreholes at regular intervals using a split spoon sampler.

Dedicated nitrile gloves (i.e., one pair per sample) were used during sample handling. A portion of each soil core was placed in a sealed "zip-lock" plastic bag and allowed to reach ambient temperature prior to field screening using a RKI Eagle, calibrated with hexane. The measurements were made by inserting the instrument's probe into the plastic bag while manipulating the sample to ensure volatilization of the soil gases. These readings provide a real-time indication of the relative concentration of combustible vapours encountered in the subsurface during drilling and are used to aid in the assessment of the vertical and horizontal extent of contamination and the selection of soil samples for analysis. The vapour readings, in parts per million (ppm), are provided on the borehole logs in Appendix B. These samples were subsequently delivered to **exp**'s laboratory for visual, textural and olfactory classification.

A portion of the soil core was field preserved using laboratory-supplied vials filled and pre-weighed with methanol. The field preservation reduces the potential for induced volatilization during storage/transport prior to analysis of VOCs. Soil samples intended for other non-volatile chemical parameters were placed directly into pre-cleaned, laboratory-supplied glass sample jars/vials. The soil samples were placed in clean ice-packed coolers prior to and during transportation to the subcontract laboratory, Maxxam Analytics Inc. (Maxxam) of Mississauga, Ontario. The samples were transported/submitted under Chain of Custody documentation.

Soil samples were selected for laboratory analysis on the basis of the field screening measurement and/or visual or olfactory evidence of impacts or potential water-bearing zones. The following soil samples were submitted for laboratory analysis:

Table 2.1: Summary of Soil Samples Submitted for Chemical Analyses

Sample Identification	Depth (m)	Rationale	Analysis
BH1-S1	0 – 0.6	Fill material	Metals and Inorganics
BH1-S3	1.5 – 2.1	Vapour reading	PHCs and BTEX
BH2-S1	0 – 0.6	Fill material	Metals and Inorganics
BH2-S2	0.8 – 1.4	Observed staining	PHCs and BTEX
BH2-S4	2.3 – 2.9	Regulatory sample (>1.5 m)	pH and Grain Size
BH3-S1	0 – 0.6	Fill material	Metals and Inorganics
BH3-S2	0.8 – 1.4	Regulatory sample (<1.5 m)	pH
BH3-S3	1.5 – 2.1	Deepest sample, highest vapour reading	VOCs

Note: VOCs – Volatile Organic Compounds, PHCs – Petroleum Hydrocarbons, BTEX – Benzene, Toluene, Ethylbenzene, Xylene

2.2 Monitoring Well Installation

Three (3) groundwater monitoring wells were installed at the Site (MW1 in BH1, MW2 in BH2 and MW3 in BH3). The monitoring wells were installed in general accordance with the Ontario Water Resources Act - R.R.O. 1990, Regulation 903 - Amended to O. Reg. 128/03 and were installed by a licensed well contractor (DDSI).

The monitoring wells consisted of a 3.1 m length of 38 mm diameter PVC screen and an appropriate length of PVC riser pipe. The annular space around the well was backfilled with sand to a height of approximately 0.3 m above the top of the screen. A bentonite seal was added from the top of the sand pack to approximately 0.3 m below ground surface. The monitoring wells were completed with an aboveground protective casing for surface protection.

The current property owners are considered to be the owners of the wells installed in the specific area of the Site (“well owner”, Section 1.0, Regulation 903). When the use of the monitoring wells are no longer required, the well owner must arrange for their abandonment by a licensed well contractor in accordance with the procedure outlined in the Ontario Water Resources Act - R.R.O. 1990, Regulation 903 - Amended to O. Reg. 128/03.

Exp staff surveyed the monitoring well locations with respect to an arbitrary on-Site temporary bench mark (TBM) described as MW1 and assigned it an elevation of 100 m.

The installation details of the monitoring wells are summarized in Table 2.2.

Table 2.2: Monitoring Well Installation Details

Monitoring Well	Ground Surface Elevation (m)	Top of Sand Elevation (m)	Top of Screen Elevation (m)	Bottom of Screen Elevation (m)	Screened Interval (mbgs)	Bottom of Borehole Elevation (m)
MW1	100.00	97.3	97.0	93.9	3.0 – 6.1	93.9
MW2	99.98	95.7	95.4	92.4	4.6 – 7.6	92.4
MW3	100.26	96.0	95.7	92.7	4.6 – 7.6	92.7

Note: mbgs - metres below ground surface

2.3 Groundwater Sampling

Groundwater samples were collected on October 26, 2015 from the three (3) installed monitoring wells. The wells were purged at least three (3) well volumes using a foot valve and plastic tubing and allowed to recover prior to sampling. No odour or sheen was noted during well sampling activities. A total of three (3) groundwater samples were submitted to Maxxam for chemical analysis for VOCs.

Dedicated nitrile gloves were utilized during sample handling. Groundwater from the monitoring wells was placed directly into new laboratory supplied vials with sodium bisulphate preservative as required. Sample handling/storage procedures were consistent with those outlined previously for soil sampling. Each vial intended was inverted prior to being placed in a cooler to ensure that no head-space was present in the sample.

3. Findings

3.1 Subsurface Conditions

The detailed soil profiles encountered in each borehole are provided on the attached borehole logs (Appendix B). Boundaries of soil indicated on the log sheets are intended to reflect transition zones for the purpose of environmental assessment and should not be interpreted as exact planes of geological change. The general stratigraphy at the Site, as observed in the boreholes, consists of topsoil or sand and gravel fill material over laying native clayey silt till and highly weathered shale bedrock.

3.2 Groundwater

The depth to groundwater was measured in the monitoring wells prior to well development and sampling on October 26, 2015. The groundwater elevations in the monitoring wells ranged between approximately 94.53 and 94.69 m in relation to the local benchmark, as shown in Table 3.2.

Table 3.2: Groundwater Elevations (October 26, 2015)

Monitoring Well	Groundwater Depth (mbgs)	Groundwater Elevation (m)
MW1	5.48	94.53
MW2	5.29	94.69
MW3	5.73	94.53

Note: Elevations were measured in relation to a local benchmark (MW1) with an assumed elevation of 100 m.
mbgs - metres below ground surface

Based on the measured groundwater elevations, the shallow groundwater flow direction is to the southeast. It should be noted that the existence of equilibrium conditions (quasi-static water levels) has not been confirmed.

The local groundwater flow is expected to be influenced by utility trenches and/or the presence of disturbed soil (i.e. fill material) on the Site. Groundwater flow direction can be estimated with greater certainty using measurements of groundwater elevations at the Site on several occasions over a longer period of time.

4. Soil and Groundwater Quality

4.1 General

In accordance with the scope of work, chemical analyses were performed on selected soil samples recovered from the boreholes. The selection of representative “worst case” soil samples from the boreholes was based on field visual or olfactory evidence of impacts.

4.2 Soil Analysis

Copies of the laboratory Certificates of Analysis for the tested soil samples are provided in Appendix C.

The Table 3 SCS are applicable if soil pH is in the range of 5 to 9 for surface soil (less than 1.5 m below soil surface) and 5 to 11 for subsurface soil (greater than 1.5 m below soil surface). The Certificates of Analysis include pH measurements taken on two (2) soil samples, BH3-S2 (surface) and BH2-S4 (subsurface). The reported pH values of 7.61 in the surface soil sample and 7.89 in the subsurface soil sample are within the acceptable range to use the Table 3 SCS.

4.2.1 VOCs

One (1) soil sample was analyzed for VOCs. The results of the analysis together with the applicable MOECC Table 3 SCS are presented below in Table 4.2.1.

Table 4.2.1: Analytical Results for VOCs in Soil

Parameter	Table 3 SCS	BH3-S3 (1.5 – 2.1 m)
Acetone	28	<0.50
Benzene	0.4	<0.020
Bromodichloromethane	18	<0.050
Bromoform	1.7	<0.050
Bromomethane	0.05	<0.050
Carbon Tetrachloride	1.5	<0.050
Chlorobenzene	2.7	<0.050
Chloroform	0.18	<0.050
Dibromochloromethane	13	<0.050
1,2-Dichlorobenzene	8.5	<0.050
1,3-Dichlorobenzene	12	<0.050
1,4-Dichlorobenzene	0.84	<0.050
1,1-Dichloroethane	21	<0.050
1,2-Dichloroethane	0.05	<0.050
1,1-Dichloroethylene	0.48	<0.050
Cis-1,2-Dichloroethylene	37	<0.050
Trans-1,2-Dichloroethylene	9.3	<0.050
1,2-Dichloropropane	0.68	<0.050
Ethylbenzene	19	<0.020
Ethylene Dibromide	0.05	<0.050
Methyl Ethyl Ketone	88	<0.50
Methylene Chloride	2	<0.050
Methyl Isobutyl Ketone	210	<0.50
Methyl-t-Butyl Ether	3.2	<0.050
Styrene	43	<0.050

Parameter	Table 3 SCS	BH3-S3 (1.5 – 2.1 m)
1,1,1,2-Tetrachloroethane	0.11	<0.050
1,1,2,2-Tetrachloroethane	0.094	<0.050
Toluene	78	<0.020
Tetrachloroethylene	21	<0.050
1,1,1-Trichloroethane	12	<0.050
1,1,2-Trichloroethane	0.11	<0.050
Trichloroethylene	0.61	<0.050
Vinyl Chloride	0.25	<0.020
Total Xylenes	30	<0.020
Dichlorodifluoromethane	25	0.066
Hexane(n)	88	<0.050
Trichlorofluoromethane	5.8	<0.050
1,3-Dichloropropene (cis + trans)	0.21	<0.050

Note: Concentrations are expressed in µg/g

As shown in Table 4.2.1, a trace concentration of Dichlorofluoromethane was detected in the sample analyzed from borehole BH3 (S3), however the concentration was well below the MOECC Table 3 SCS.

The remaining VOCs in the analyzed soil samples were not detected above the laboratory Method Detection Limits (MDLs). The laboratory MDLs were below the MOECC Table 3 SCS.

4.2.2 PHCs and BTEX

Two (2) soil samples were analyzed for PHCs and BTEX. The results of the analysis together with the applicable MOECC Table 3 SCS are presented below in Table 4.2.2.

Table 4.2.2: Analytical Results for PHCs in Soil

Parameter	Table 3 SCS	BH1-S3 (1.5 – 2.1 m)	BH2-S2 (0.8 – 1.4 m)
Benzene	0.4	<0.020	<0.020
Toluene	78	<0.020	<0.020
Ethylbenzene	19	<0.020	<0.020
m/p xylenes	NV	<0.040	<0.040
o xylene	NV	<0.020	<0.020
Total Xylenes	30	<0.040	<0.040
F1 (C6-C10)	65	<10	<10
F2 (C10-C16)	250	<10	<10
F3 (C16-C34)	2500	<50	<50
F4 (C34-C50)	6600	<50	<50

As shown in Table 4.2.2, PHCs in the analyzed soil samples were not detected above the laboratory MDLs. The laboratory MDLs were below the MOECC Table 3 SCS.

4.2.3 Metals and Inorganics

Three (3) soil samples were analyzed for metals and inorganics. The results of the analysis together with the applicable MOECC Table 3 SCS are presented below in Table 4.2.3.

Table 4.2.3: Analytical Results for Metals and Inorganics in Soil

Parameter	Table 3 SCS	BH1-S1 (0 – 0.6 m)	BH2-S1 (0 – 0.6 m)	BH3-S1 (0 – 0.6 m)
Antimony	50	0.43	<0.20	0.57
Arsenic	18	4.9	6.2	9
Barium	670	87	69	62
Beryllium	10	0.78	0.86	0.51
Boron (Hot Water Soluble)	2	0.26	0.3	0.56
Cadmium	1.9	0.14	0.12	0.47
Chromium	160	23	21	26
Chromium VI	10	<0.2	<0.2	0.3
Cobalt	100	12	11	8.3
Copper	300	31	44	24
Lead	120	20	20	44
Mercury	20	<0.050	<0.050	<0.050
Molybdenum	40	0.96	0.5	0.75
Nickel	340	27	24	53
Selenium	5.5	<0.50	<0.50	0.68
Silver	50	<0.20	<0.20	<0.20
Thallium	3.3	0.12	0.11	0.12
Vanadium	86	34	30	27
Zinc	340	82	74	110
pH (pH Units)	NV	7.53	7.48	7.43
Conductivity (ms/cm)	1.4	0.17	0.19	0.20
Sodium Adsorption Ratio	12	0.24	0.22	0.33
Cyanide, Free	0.051	0.01	0.02	0.01
Boron (Total)	120	12	8.1	7.4
Uranium	33	0.63	0.59	0.44

As shown in Table 4.2.3, various metals and inorganics parameters were detected in the analyzed soil samples. The detected concentrations of metals and inorganics in the analyzed soil samples were well below the MOECC Table 3 SCS. Additionally, the laboratory MDLs were below the MOECC Table 3 SCS.

4.3 Groundwater Quality

Copies of the laboratory Certificates of Analysis for the groundwater sample are provided in Appendix C.

No odour was noted during well purging and groundwater sampling, and no evidence of free product (i.e. visible film or sheen) was observed.

4.3.1 VOCs

Three (3) groundwater samples were analyzed for VOCs. The results of the analysis together with the applicable MOECC Table 3 SCS are presented below in Table 4.3.1.

Table 4.3.1: Analytical Results for VOCs in Groundwater

Parameter	Table 3 SCS	MW1	MW2	MW3
Acetone	130000	<10	<10	<10
Benzene	430	<0.20	<0.20	<0.20
Bromodichloromethane	85000	<0.50	<0.50	<0.50
Bromoform	770	<1.0	<1.0	<1.0
Bromomethane	56	<0.50	<0.50	<0.50
Carbon Tetrachloride	8.4	<0.20	<0.20	<0.20
Chlorobenzene	630	<0.20	<0.20	<0.20
Chloroform	22	<0.20	<0.20	<0.20
Dibromochloromethane	82000	<0.50	<0.50	<0.50
1,2-Dichlorobenzene	9600	<0.50	<0.50	<0.50
1,3-Dichlorobenzene	9600	<0.50	<0.50	<0.50
1,4-Dichlorobenzene	67	<0.50	<0.50	<0.50
1,1-Dichloroethane	3100	<0.20	<0.20	<0.20
1,2-Dichloroethane	12	<0.50	<0.50	<0.50
1,1-Dichloroethylene	17	<0.20	<0.20	<0.20
Cis-1,2-Dichloroethylene	17	<0.50	<0.50	<0.50
Trans-1,2-Dichloroethylene	17	<0.50	<0.50	<0.50
1,2-Dichloropropane	140	<0.20	<0.20	<0.20
Ethylbenzene	2300	<0.20	<0.20	<0.20
Ethylene Dibromide	0.83	<0.20	<0.20	<0.20
Methyl Ethyl Ketone	1500000	<10	<10	<10
Methylene Chloride	5500	<2.0	<2.0	<2.0
Methyl Isobutyl Ketone	580000	<5.0	<5.0	<5.0
Methyl-t-Butyl Ether	1400	<0.50	<0.50	<0.50
Styrene	9100	<0.50	<0.50	<0.50
1,1,1,2-Tetrachloroethane	28	<0.50	<0.50	<0.50
1,1,2,2-Tetrachloroethane	15	<0.50	<0.50	<0.50
Toluene	18000	0.26	0.34	0.51
Tetrachloroethylene	17	<0.20	<0.20	<0.20
1,1,1-Trichloroethane	6700	<0.20	<0.20	<0.20
1,1,2-Trichloroethane	30	<0.50	<0.50	<0.50
Trichloroethylene	17	<0.20	<0.20	<0.20
Vinyl Chloride	1.7	<0.20	<0.20	<0.20
Total Xylenes	4200	<0.20	0.25	<0.20
Dichlorodifluoromethane	4400	<1.0	<1.0	<1.0
Hexane(n)	520	<1.0	<1.0	<1.0
Trichlorofluoromethane	2500	<0.50	<0.50	<0.50
1,3-Dichloropropene (cis + trans)	45	<0.50	<0.50	<0.50

Notes: Concentrations are expressed in µg/L

As shown in Table 4.3.1, trace concentrations of Toluene were detected in the three (3) groundwater samples collected. A trace concentration of xylenes was also detected in the groundwater analysed from monitoring well MW2. However the detected concentrations were well below the MOECC Table 3 SCS.

The remaining VOCs in the analyzed groundwater samples were not detected above the laboratory MDLs. The laboratory MDLs were below the MOECC Table 3 SCS.

4.4 Quality Assurance

Details regarding quality assurance measures taken in the field, including instrument calibration, decontamination procedures, use of dedicated equipment, sample storage and Chain of Custody documentation are provided in Section 2, Methodology.

The subcontract laboratory used during this investigation, Maxxam Analytics Inc., is accredited by 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” for the analysis of all parameters for all samples in the scope of work for which SCS have been established under Ontario Regulation 153/04 as amended by Ontario Regulation 511/09.

The “Protocol for Analytical Methods Used in the Assessment of Properties under Part XV.1 of the Environmental Protection Act” (“the Analytical Protocol”), MOECC, April 2011, establishes criteria used in assessing the performance of analytical laboratories when the data are used in support of the filing of Records of Site Condition.

The laboratory quality assurance program included the analysis of laboratory duplicate (replicate) samples, method blanks, spiked blanks, spiked samples and samples of reference materials in accordance with the Analytical Protocol. These analytical results comprise portions of the Certificates of Analysis in Appendix C.

A duplicate groundwater sample of groundwater sample MW3 (labelled MW-13) was analysed for VOCs. The duplicate sample results exhibited an acceptable correlation when compared with the original sample results.

5. Conclusions

Based on the results of the subsurface investigation conducted at the Site, the following findings are presented:

- 9) The Phase II ESA was completed concurrently with a Preliminary Geotechnical Investigation, and consisted of the advancement of sixteen (16) boreholes in total. Three (3) of the boreholes were advanced for environmental sampling purposes and were also completed as groundwater monitoring wells.
- 10) The general stratigraphy at the Site, as observed in the boreholes, consists of topsoil or sand and gravel fill material over laying native clayey silt till and highly weathered shale bedrock.
- 11) The depth to groundwater was measured in the drilled wells prior to well development and sampling on October 26, 2015. The groundwater elevations in the monitoring wells ranged between approximately 94.53 and 94.69 m in relation to the local benchmark. Based on the limited available groundwater information, the shallow groundwater flow direction is to the southeast.
- 12) One (1) soil sample was analyzed for VOCs. A trace concentration of Dichlorofluoromethane was detected in the sample analyzed from borehole BH3 (S3); however the concentration was well below the MOECC Table 3 SCS. The remaining VOCs in the analyzed soil samples were not detected above the laboratory Method Detection Limits (MDLs). The laboratory MDLs were below the MOECC Table 3 SCS.
- 13) Two (2) soil samples were analyzed for PHCs and BTEX. PHCs and BTEX in the analyzed soil samples were not detected above the laboratory MDLs. The laboratory MDLs were below the MOECC Table 3 SCS.
- 14) Three (3) soil samples were analyzed for metals and inorganics. The detected concentrations of metals and inorganics in the analyzed soil samples were well below the MOECC Table 3 SCS. The laboratory MDLs were also below the MOECC Table 3 SCS.
- 15) No odour was noted during well purging and groundwater sampling, and no evidence of free product (i.e. visible film or sheen) was observed.
- 16) Three (3) groundwater samples were analyzed for VOCs. The detected concentrations of toluene and xylenes in the analyzed groundwater samples were well below the MOECC Table 3 SCS. The laboratory MDLs were below the MOECC Table 3 SCS.

Based on field observations and analytical results of this subsurface investigation, no significant environmental impact of soil and groundwater was identified within the depth of the investigation on the basis of either the analytical results reported for the soil and groundwater sampling program or field observations made during the investigation of the Site. As such, no further investigation of soil and groundwater is considered warranted at this time.

6. References

This study was conducted in accordance with the applicable Regulations, Guidelines, Policies, Standards, Protocols and Objectives administered by the Ministry of the Environment. Specific reference is made to the following:

- “*Guidance on Sampling and Analytical Methods for Use at Contaminated Sites in Ontario*,” Ministry of the Environment of Ontario, December 1996;
- *The Ontario Water Resources Act - R.R.O. 1990, Regulation 903 - Amended to O. Reg. 128/03*, August 2003;
- “*Soil, Ground Water and Sediment Standards for Use Under Part XV.1 of the Environmental Protection Act*,” April 2011;
- “*Protocol for Analytical Methods Used in the Assessment of Properties under Part XV.1 of the Environmental Protection Act*,” March 2004 (as amended by O. Reg. 179/11);
- *Ontario Regulation 153/04 (made under the Environmental Protection Act)*, May 2004 (as amended by O. Reg. 179/11) (MOECC);
- *Environmental Protection Act*, R.S.O. 1990, Chapter E.19, as amended, September 2004;
- Ontario Geological Survey, Map 2441, *Geological Highway Map of Southern Ontario area*, published by The Ministry of Natural Resources; and
- “*Phase I Environmental Site Assessment, Part of Lot 10, Concession 1 (North of Dundas St. E., east of Eighth Line), Oakville, Ontario*,” **exp** Services Inc., May 2014.

7. General Limitations

The information presented in this report is based on a limited investigation designed to provide information to support an assessment of the current environmental conditions within the subject property. The conclusions and recommendations presented in this report reflect Site conditions existing at the time of the investigation (October 2015).

More specific information with respect to the conditions between samples, or the lateral and vertical extent of materials may become apparent during excavation operations. The interpretation of the borehole information must, therefore, be validated during any such excavation operations. Consequently, during the future development of the property, conditions not observed during this investigation may become apparent. Should this occur, **exp** Services Inc. should be contacted to assess the situation, and the need for additional testing and reporting. **Exp** has qualified personnel to provide assistance in regards to any future geotechnical and environmental issues related to this property.

The environmental investigation was carried out to address the intent of applicable provincial Regulations, Guidelines, Policies, Standards, Protocols and Objectives administered by the Ministry of Environment. It should also be noted that current environmental Regulations, Guidelines, Policies, Standards, Protocols and Objectives are subject to change, and such changes, when put into effect, could alter the conclusions and recommendations noted throughout this report. Achieving the study objectives stated in this report has required us to arrive at conclusions based upon the best information presently known to us. No investigative method can completely eliminate the possibility of obtaining partially imprecise or incomplete information; it can only reduce the possibility to an acceptable level. Professional judgment was exercised in gathering and analyzing the information obtained and in the formulation of the conclusions. Like all professional persons rendering advice we do not act as absolute insurers of the conclusions we reach, but we commit ourselves to care and competence in reaching those conclusions.

Our undertaking at **exp**, therefore, is to perform our work within limits prescribed by our clients, with the usual thoroughness and competence of the engineering profession. It is intended that the outcome of this investigation assist in reducing the client's risk associated with environmental impairment. Our work should not be considered 'risk mitigation'. No other warranty or representation, either expressed or implied, is included or intended in this report.

This report was prepared for the exclusive use of 2259229 Ontario Inc. and may not be reproduced in whole or in part, without the prior written consent of **exp**, or used or relied upon in whole or in part by other parties for any purposes whatsoever. Any use which a third party makes of this report, or any part thereof, or any reliance on or decisions to be made based on it, are the responsibility of such third parties. **Exp** Services Inc. accepts no responsibility for damages, if any, suffered by any third party as a result of decisions made or actions based on this report.

We trust this report is satisfactory for your purposes. Should you have any questions, please do not hesitate to contact this office.

exp Services Inc.



for Maria Strybos, BSc
Environmental Scientist
Earth & Environment Division



Jon Charles, P. Geo. (Limited) QP_{ESA}
Senior Environmental Scientist
Earth & Environment Division

Appendix A: Figures





Sources: Esri, HERE, DeLorme, USGS, Intermap, increment P Corp., NRCAN, Esri Japan, METI, Esri China (Hong Kong), Esri (Thailand), TomTom, MapmyIndia, © OpenStreetMap contributors, and the GIS User Community

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 • INDUSTRIAL • INFRASTRUCTURE • SUSTAINABILITY •

0 130 260 390 520 650
 m

 Approximate Site Boundary

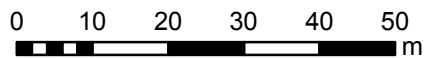
TITLE AND LOCATION:
SITE LOCATION PLAN
Phase II ESA
Part Lot 10, Concession 1
North of Dundas St E., East of Eighth Line Rd.
Oakville, Ontario

PROJECT No.:	HAM-00800615-D0	DWN:	MS
SCALE:	AS NOTED	CHKD:	JC
DATE:	NOVEMBER 2015	FIG. No.:	1



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 Canada
 www.exp.com



Approximate Site Boundary

● Approximate BH/MW Location

TITLE AND LOCATION:

**BOREHOLE & MONITORING WELL
 LOCATION PLAN
 Phase II ESA
 Part Lot 10, Concession 1
 North of Dundas St E., East of Eighth Line Rd.
 Oakville, Ontario**

PROJECT No.:	HAM-00800615-D0	DWN:	MS
SCALE:	AS NOTED	CHKD:	JC
DATE:	NOVEMBER 2015	FIG. No.:	2

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Appendix B: Borehole Logs

Log of Borehole BH/MW-1

Project No. HAM-00800615-D0

Drawing No. 1

Project: Phase II Environmental Site Assessment

Sheet No. 1 of 1

Location: North of Dundas Street East and East of Eighth Line, Oakville, ON

Please refer to Borehole Location Plan

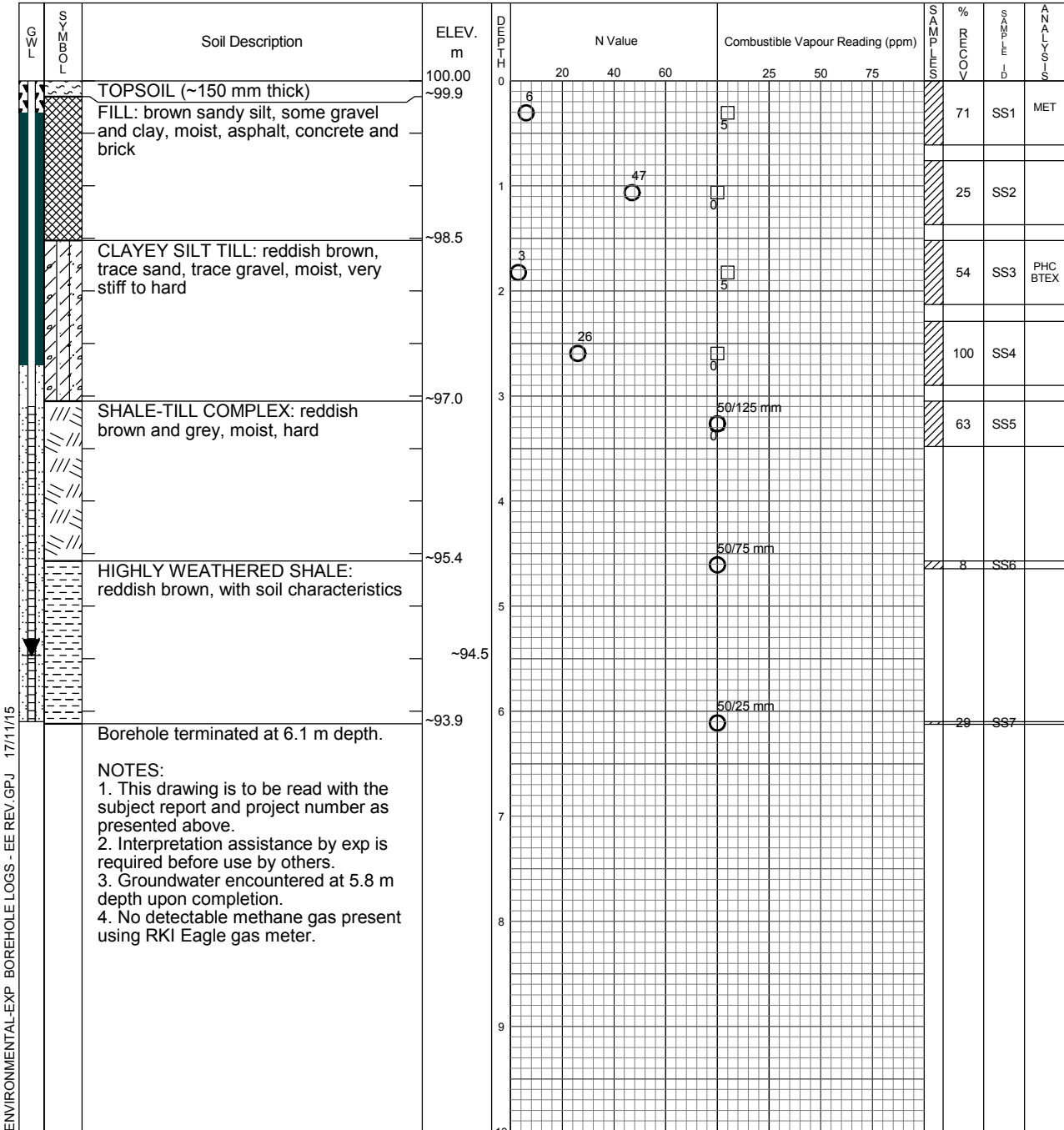
Date Drilled: October 22, 2015

Drill Type: Track Mount. Solid Stem Augers.

Datum: Relative

Chemical Analysis

BTEX	Benzene, Toluene, Ethylbenzene and Xylenes	* Duplicate Sample
ING	Metals and Inorganics	PCB Polychlorinated Biphenyls
MET	Metals	PHC Petroleum Hydrocarbons (F1-F4)
PAH	Polycyclic Aromatic Hydrocarbons	VOC Volatile Organic Compounds
PEST	Organochlorine Pesticides	



ENVIRONMENTAL-EXP BOREHOLE LOGS - EE REV.GPJ 17/11/15

Time	Water Level (m)	Depth to Cave (m)
Upon Completion	5.8	6
October 26, 2015	5.5	N/A

Log of Borehole BH/MW-2

Project No. HAM-00800615-D0

Drawing No. 2

Project: Phase II Environmental Site Assessment

Sheet No. 1 of 1

Location: North of Dundas Street East and East of Eighth Line, Oakville, ON

Please refer to Borehole Location Plan

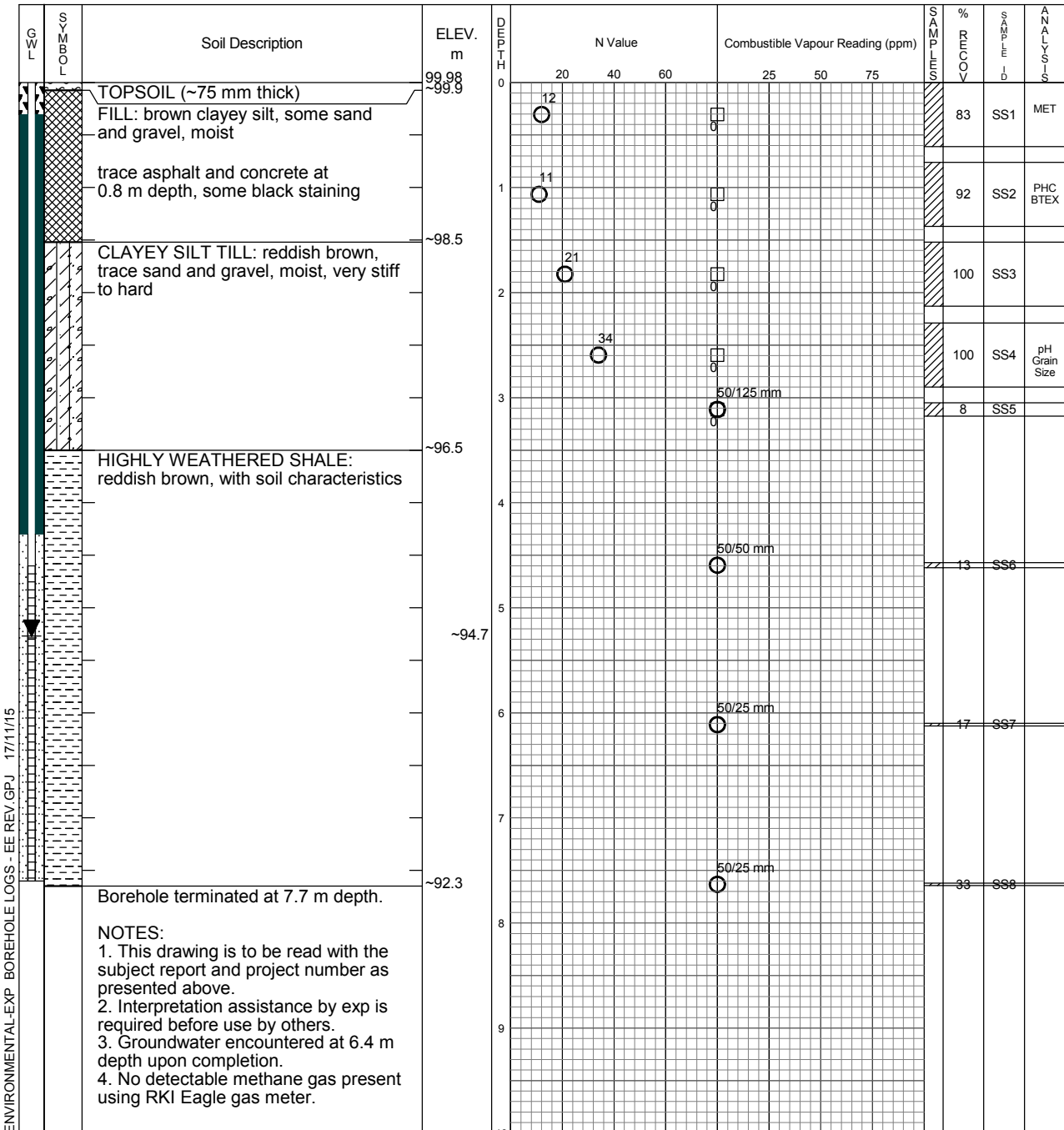
Date Drilled: October 22, 2015

Drill Type: Track Mount. Solid Stem Augers.

Datum: Relative

Chemical Analysis

BTEX	Benzene, Toluene, Ethylbenzene and Xylenes	*	Duplicate Sample
ING	Metals and Inorganics	PCB	Polychlorinated Biphenyls
MET	Metals	PHC	Petroleum Hydrocarbons (F1-F4)
PAH	Polycyclic Aromatic Hydrocarbons	VOC	Volatile Organic Compounds
PEST	Organochlorine Pesticides		



ENVIRONMENTAL-EXP BOREHOLE LOGS - EE REV.GPJ 17/11/15



exp Services Inc.
Hamilton, Ontario
Telephone: 905-573-4000
Facsimile: 905-573-9693

Time	Water Level (m)	Depth to Cave (m)
Upon Completion	6.4	7.6
October 26, 2015	5.3	N/A

Log of Borehole BH/MW-3

Project No. HAM-00800615-D0

Drawing No. 3

Project: Phase II Environmental Site Assessment

Sheet No. 1 of 1

Location: North of Dundas Street East and East of Eighth Line, Oakville, ON

Please refer to Borehole Location Plan

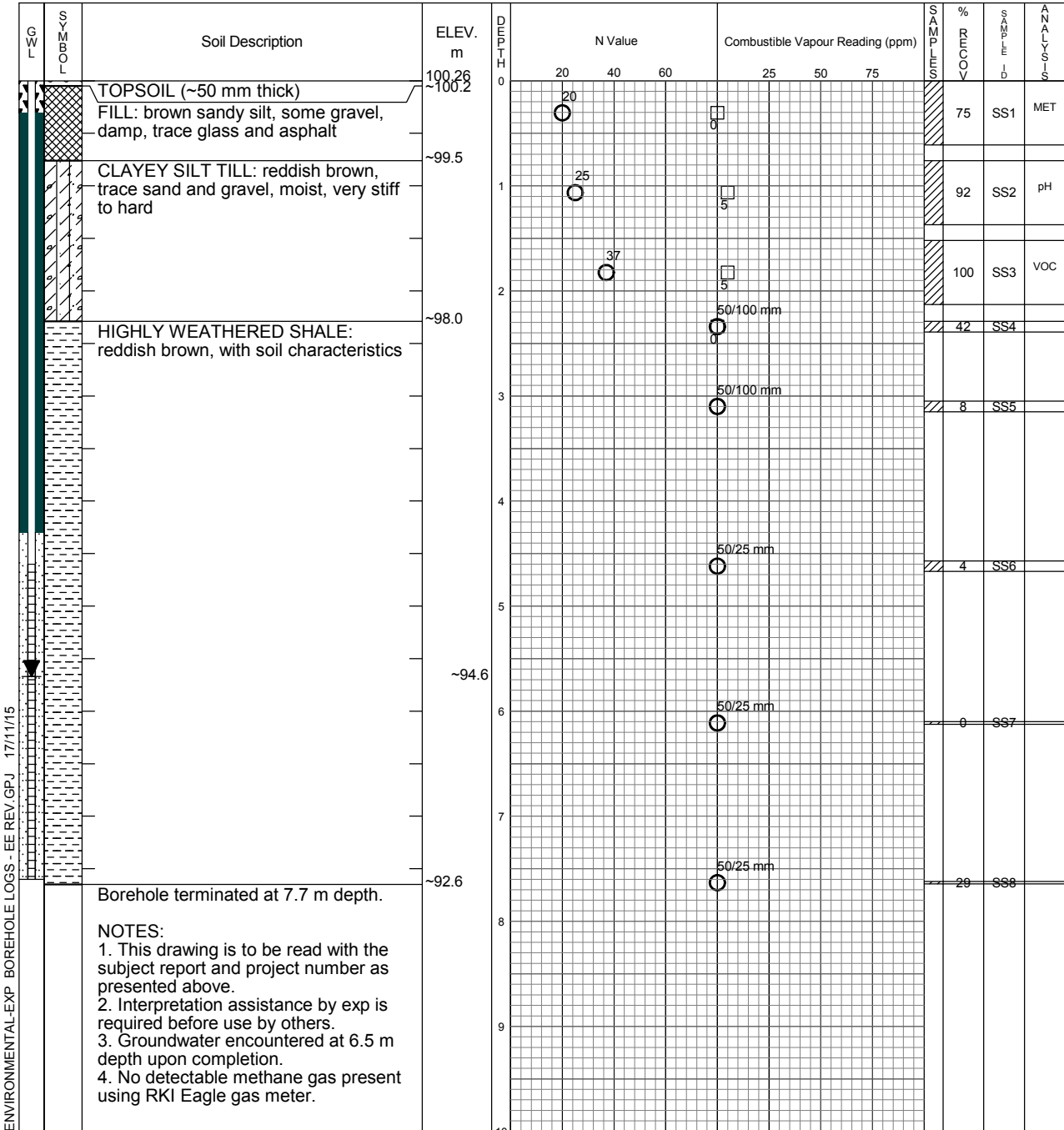
Date Drilled: October 22, 2015

Drill Type: Track Mount. Solid Stem Augers.

Datum: Relative

Chemical Analysis

BTEX	Benzene, Toluene, Ethylbenzene and Xylenes	*	Duplicate Sample
ING	Metals and Inorganics	PCB	Polychlorinated Biphenyls
MET	Metals	PHC	Petroleum Hydrocarbons (F1-F4)
PAH	Polycyclic Aromatic Hydrocarbons	VOC	Volatile Organic Compounds
PEST	Organochlorine Pesticides		



ENVIRONMENTAL-EXP BOREHOLE LOGS - EE REV.GPJ 17/11/15



exp Services Inc.
 Hamilton, Ontario
 Telephone: 905-573-4000
 Facsimile: 905-573-9693

Time	Water Level (m)	Depth to Cave (m)
Upon Completion	6.5	7
October 26, 2015	5.7	N/A

Appendix C: Certificates of Analysis

Your Project #: HAM-00800615-D0
 Site Location: PART LOT 10, CONC 1, OAKVILLE
 Your C.O.C. #: na

Attention:Jon Charles

exp Services Inc
 80 Bancroft St
 Hamilton, ON
 L8E 2W5

Report Date: 2015/11/02
 Report #: R3746604
 Version: 1 - Final

CERTIFICATE OF ANALYSIS

MAXXAM JOB #: B5L7418

Received: 2015/10/23, 16:15

Sample Matrix: Soil
 # Samples Received: 8

Analyses	Quantity	Date Extracted	Date Analyzed	Laboratory Method	Reference
Hot Water Extractable Boron	3	2015/10/27	2015/10/28	CAM SOP-00408	R153 Ana. Prot. 2011
1,3-Dichloropropene Sum	1	N/A	2015/10/28		EPA 8260C m
Free (WAD) Cyanide	2	2015/10/26	2015/11/02	CAM SOP-00457	OMOE E3015 m
Free (WAD) Cyanide	1	2015/10/27	2015/11/01	CAM SOP-00457	OMOE E3015 m
Conductivity	3	N/A	2015/10/28	CAM SOP-00414	OMOE E3138 v2 m
Hexavalent Chromium in Soil by IC (1)	3	2015/10/27	2015/10/28	CAM SOP-00436	EPA 3060/7199 m
Petroleum Hydro. CCME F1 & BTEX in Soil (2)	1	N/A	2015/10/27	CAM SOP-00315	CCME PHC-CWS m
Petroleum Hydro. CCME F1 & BTEX in Soil (2)	1	N/A	2015/10/28	CAM SOP-00315	CCME PHC-CWS m
Petroleum Hydrocarbons F2-F4 in Soil (3)	2	2015/10/27	2015/10/27	CAM SOP-00316	CCME CWS m
Strong Acid Leachable Metals by ICPMS	3	2015/10/27	2015/10/28	CAM SOP-00447	EPA 6020A m
Moisture	1	N/A	2015/10/24	CAM SOP-00445	Carter 2nd ed 51.2 m
Moisture	5	N/A	2015/10/26	CAM SOP-00445	Carter 2nd ed 51.2 m
pH CaCl2 EXTRACT	5	2015/10/28	2015/10/28	CAM SOP-00413	EPA 9045 D m
Sieve, 75um	1	N/A	2015/10/28	CAM SOP-00467	Carter 2nd ed m
Sodium Adsorption Ratio (SAR)	3	N/A	2015/10/29	CAM SOP-00102	EPA 6010
Volatile Organic Compounds in Soil	1	N/A	2015/10/28	CAM SOP000228	EPA 8260C m

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.

(1) Soils are reported on a dry weight basis unless otherwise specified.

(2) No lab extraction date is given for F1BTEX & VOC samples that are field preserved with methanol. Extraction date is the date sampled unless otherwise stated.

(3) All CCME PHC results met required criteria unless otherwise stated in the report. The CWS PHC methods employed by Maxxam conform to all prescribed elements of the reference method and performance based elements have been validated. All modifications have been validated and proven equivalent following "Alberta Environment's Interpretation of the Reference Method for the Canada-Wide Standard for Petroleum Hydrocarbons in Soil Validation of Performance-Based Alternative Methods September 2003". Documentation is available upon request. Modifications from Reference Method for the Canada-wide Standard for Petroleum Hydrocarbons in Soil-Tier 1 Method: F2/F3/F4 data reported using validated cold solvent extraction instead of Soxhlet extraction.

Your Project #: HAM-00800615-D0
Site Location: PART LOT 10, CONC 1, OAKVILLE
Your C.O.C. #: na

Attention:Jon Charles

exp Services Inc
80 Bancroft St
Hamilton, ON
L8E 2W5

Report Date: 2015/11/02
Report #: R3746604
Version: 1 - Final

CERTIFICATE OF ANALYSIS

MAXXAM JOB #: B5L7418

Received: 2015/10/23, 16:15

Encryption Key

Please direct all questions regarding this Certificate of Analysis to your Project Manager.
Hina Siddiqui, Project Manager –Environmental Customer Service
Email: HSiddiqui@maxxam.ca
Phone# (905) 817-5700

=====
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.

O.REG 153 METALS & INORGANICS PKG (SOIL)

Maxxam ID		BFL159		BFL161		BFL164		
Sampling Date		2015/10/22		2015/10/22		2015/10/22		
COC Number		na		na		na		
	UNITS	BH1-S1	QC Batch	BH2-S1	QC Batch	BH3-S1	RDL	QC Batch
Calculated Parameters								
Sodium Adsorption Ratio	N/A	0.24	4243892	0.22	4243892	0.33		4243892
Inorganics								
Chromium (VI)	ug/g	<0.2	4246629	<0.2	4246629	0.3	0.2	4246629
Conductivity	mS/cm	0.17	4248050	0.19	4248050	0.20	0.002	4248050
Free Cyanide	ug/g	0.01	4245361	0.02	4246365	0.01	0.01	4245361
Moisture	%	11	4245744	9.9	4245744	6.0	1.0	4245744
Available (CaCl2) pH	pH	7.53	4245436	7.48	4245436	7.43	N/A	4245436
Metals								
Hot Water Ext. Boron (B)	ug/g	0.26	4247002	0.30	4247002	0.56	0.050	4247002
Acid Extractable Antimony (Sb)	ug/g	0.43	4246994	<0.20	4246994	0.57	0.20	4246994
Acid Extractable Arsenic (As)	ug/g	4.9	4246994	6.2	4246994	9.0	1.0	4246994
Acid Extractable Barium (Ba)	ug/g	87	4246994	69	4246994	62	0.50	4246994
Acid Extractable Beryllium (Be)	ug/g	0.78	4246994	0.86	4246994	0.51	0.20	4246994
Acid Extractable Boron (B)	ug/g	12	4246994	8.1	4246994	7.4	5.0	4246994
Acid Extractable Cadmium (Cd)	ug/g	0.14	4246994	0.12	4246994	0.47	0.10	4246994
Acid Extractable Chromium (Cr)	ug/g	23	4246994	21	4246994	26	1.0	4246994
Acid Extractable Cobalt (Co)	ug/g	12	4246994	11	4246994	8.3	0.10	4246994
Acid Extractable Copper (Cu)	ug/g	31	4246994	44	4246994	24	0.50	4246994
Acid Extractable Lead (Pb)	ug/g	20	4246994	20	4246994	44	1.0	4246994
Acid Extractable Molybdenum (Mo)	ug/g	0.96	4246994	0.50	4246994	0.75	0.50	4246994
Acid Extractable Nickel (Ni)	ug/g	27	4246994	24	4246994	53	0.50	4246994
Acid Extractable Selenium (Se)	ug/g	<0.50	4246994	<0.50	4246994	0.68	0.50	4246994
Acid Extractable Silver (Ag)	ug/g	<0.20	4246994	<0.20	4246994	<0.20	0.20	4246994
Acid Extractable Sodium (Na)	ug/g	91	4246994	97	4246994	140	50	4246994
Acid Extractable Thallium (Tl)	ug/g	0.12	4246994	0.11	4246994	0.12	0.050	4246994
Acid Extractable Uranium (U)	ug/g	0.63	4246994	0.59	4246994	0.44	0.050	4246994
Acid Extractable Vanadium (V)	ug/g	34	4246994	30	4246994	27	5.0	4246994
Acid Extractable Zinc (Zn)	ug/g	82	4246994	74	4246994	110	5.0	4246994
Acid Extractable Mercury (Hg)	ug/g	<0.050	4246994	<0.050	4246994	<0.050	0.050	4246994
RDL = Reportable Detection Limit QC Batch = Quality Control Batch N/A = Not Applicable								

O.REG 153 PETROLEUM HYDROCARBONS (SOIL)

Maxxam ID		BFL160		BFL162		
Sampling Date		2015/10/22		2015/10/22		
COC Number		na		na		
	UNITS	BH1-S3	QC Batch	BH2-S2	RDL	QC Batch
Inorganics						
Moisture	%	28	4244988	15	1.0	4244347
BTEX & F1 Hydrocarbons						
Benzene	ug/g	<0.020	4245142	<0.020	0.020	4248214
Toluene	ug/g	<0.020	4245142	<0.020	0.020	4248214
Ethylbenzene	ug/g	<0.020	4245142	<0.020	0.020	4248214
o-Xylene	ug/g	<0.020	4245142	<0.020	0.020	4248214
p+m-Xylene	ug/g	<0.040	4245142	<0.040	0.040	4248214
Total Xylenes	ug/g	<0.040	4245142	<0.040	0.040	4248214
F1 (C6-C10)	ug/g	<10	4245142	<10	10	4248214
F1 (C6-C10) - BTEX	ug/g	<10	4245142	<10	10	4248214
F2-F4 Hydrocarbons						
F2 (C10-C16 Hydrocarbons)	ug/g	<10	4246154	<10	10	4246154
F3 (C16-C34 Hydrocarbons)	ug/g	<50	4246154	<50	50	4246154
F4 (C34-C50 Hydrocarbons)	ug/g	<50	4246154	<50	50	4246154
Reached Baseline at C50	ug/g	Yes	4246154	Yes		4246154
Surrogate Recovery (%)						
1,4-Difluorobenzene	%	101	4245142	98		4248214
4-Bromofluorobenzene	%	91	4245142	101		4248214
D10-Ethylbenzene	%	91	4245142	86		4248214
D4-1,2-Dichloroethane	%	99	4245142	98		4248214
o-Terphenyl	%	82	4246154	80		4246154
RDL = Reportable Detection Limit						
QC Batch = Quality Control Batch						

O.REG 153 VOLATILE ORGANICS (SOIL)

Maxxam ID		BFL166		
Sampling Date		2015/10/22		
COC Number		na		
	UNITS	BH3-S3	RDL	QC Batch
Inorganics				
Moisture	%	10	1.0	4245744
Calculated Parameters				
1,3-Dichloropropene (cis+trans)	ug/g	<0.050	0.050	4243890
RDL = Reportable Detection Limit				
QC Batch = Quality Control Batch				

O.REG 153 VOLATILE ORGANICS (SOIL)

Maxxam ID		BFL166		
Sampling Date		2015/10/22		
COC Number		na		
	UNITS	BH3-S3	RDL	QC Batch
Volatile Organics				
Acetone (2-Propanone)	ug/g	<0.50	0.50	4245106
Benzene	ug/g	<0.020	0.020	4245106
Bromodichloromethane	ug/g	<0.050	0.050	4245106
Bromoform	ug/g	<0.050	0.050	4245106
Bromomethane	ug/g	<0.050	0.050	4245106
Carbon Tetrachloride	ug/g	<0.050	0.050	4245106
Chlorobenzene	ug/g	<0.050	0.050	4245106
Chloroform	ug/g	<0.050	0.050	4245106
Dibromochloromethane	ug/g	<0.050	0.050	4245106
1,2-Dichlorobenzene	ug/g	<0.050	0.050	4245106
1,3-Dichlorobenzene	ug/g	<0.050	0.050	4245106
1,4-Dichlorobenzene	ug/g	<0.050	0.050	4245106
Dichlorodifluoromethane (FREON 12)	ug/g	0.066	0.050	4245106
1,1-Dichloroethane	ug/g	<0.050	0.050	4245106
1,2-Dichloroethane	ug/g	<0.050	0.050	4245106
1,1-Dichloroethylene	ug/g	<0.050	0.050	4245106
cis-1,2-Dichloroethylene	ug/g	<0.050	0.050	4245106
trans-1,2-Dichloroethylene	ug/g	<0.050	0.050	4245106
1,2-Dichloropropane	ug/g	<0.050	0.050	4245106
cis-1,3-Dichloropropene	ug/g	<0.030	0.030	4245106
trans-1,3-Dichloropropene	ug/g	<0.040	0.040	4245106
Ethylbenzene	ug/g	<0.020	0.020	4245106
Ethylene Dibromide	ug/g	<0.050	0.050	4245106
Hexane	ug/g	<0.050	0.050	4245106
Methylene Chloride(Dichloromethane)	ug/g	<0.050	0.050	4245106
Methyl Ethyl Ketone (2-Butanone)	ug/g	<0.50	0.50	4245106
Methyl Isobutyl Ketone	ug/g	<0.50	0.50	4245106
Methyl t-butyl ether (MTBE)	ug/g	<0.050	0.050	4245106
Styrene	ug/g	<0.050	0.050	4245106
1,1,1,2-Tetrachloroethane	ug/g	<0.050	0.050	4245106
1,1,2,2-Tetrachloroethane	ug/g	<0.050	0.050	4245106
Tetrachloroethylene	ug/g	<0.050	0.050	4245106
Toluene	ug/g	<0.020	0.020	4245106
1,1,1-Trichloroethane	ug/g	<0.050	0.050	4245106
RDL = Reportable Detection Limit				
QC Batch = Quality Control Batch				

O.REG 153 VOLATILE ORGANICS (SOIL)

Maxxam ID		BFL166		
Sampling Date		2015/10/22		
COC Number		na		
	UNITS	BH3-S3	RDL	QC Batch
1,1,2-Trichloroethane	ug/g	<0.050	0.050	4245106
Trichloroethylene	ug/g	<0.050	0.050	4245106
Trichlorofluoromethane (FREON 11)	ug/g	<0.050	0.050	4245106
Vinyl Chloride	ug/g	<0.020	0.020	4245106
p+m-Xylene	ug/g	<0.020	0.020	4245106
o-Xylene	ug/g	<0.020	0.020	4245106
Total Xylenes	ug/g	<0.020	0.020	4245106
Surrogate Recovery (%)				
4-Bromofluorobenzene	%	99		4245106
D10-o-Xylene	%	100		4245106
D4-1,2-Dichloroethane	%	101		4245106
D8-Toluene	%	101		4245106
RDL = Reportable Detection Limit				
QC Batch = Quality Control Batch				

RESULTS OF ANALYSES OF SOIL

Maxxam ID		BFL163	BFL163	BFL165	
Sampling Date		2015/10/22	2015/10/22	2015/10/22	
COC Number		na	na	na	
	UNITS	BH2-S4	BH2-S4 Lab-Dup	BH3-S2	QC Batch
Inorganics					
Available (CaCl2) pH	pH	7.89		7.61	4245436
Miscellaneous Parameters					
Grain Size	%	FINE	FINE		4247382
Sieve - #200 (<0.075mm)	%	84	85		4247382
Sieve - #200 (>0.075mm)	%	16	15		4247382
QC Batch = Quality Control Batch Lab-Dup = Laboratory Initiated Duplicate					

TEST SUMMARY

Maxxam ID: BFL159
Sample ID: BH1-S1
Matrix: Soil

Collected: 2015/10/22
Shipped:
Received: 2015/10/23

Test Description	Instrumentation	Batch	Extracted	Date Analyzed	Analyst
Hot Water Extractable Boron	ICP	4247002	2015/10/27	2015/10/28	Suban Kanapathipplai
Free (WAD) Cyanide	TECH	4245361	2015/10/26	2015/11/02	Christine Pham
Conductivity	AT	4248050	N/A	2015/10/28	Lemeneh Addis
Hexavalent Chromium in Soil by IC	IC/SPEC	4246629	2015/10/27	2015/10/28	Sally Coughlin
Strong Acid Leachable Metals by ICPMS	ICP/MS	4246994	2015/10/27	2015/10/28	Grace Bu
Moisture	BAL	4245744	N/A	2015/10/26	Valentina Kaftani
pH CaCl2 EXTRACT	AT	4245436	2015/10/28	2015/10/28	Neil Dassanayake
Sodium Adsorption Ratio (SAR)	CALC/MET	4243892	N/A	2015/10/29	Automated Statchk

Maxxam ID: BFL160
Sample ID: BH1-S3
Matrix: Soil

Collected: 2015/10/22
Shipped:
Received: 2015/10/23

Test Description	Instrumentation	Batch	Extracted	Date Analyzed	Analyst
Petroleum Hydro. CCME F1 & BTEX in Soil	HSGC/MSFD	4245142	N/A	2015/10/27	Georgeta Rusu
Petroleum Hydrocarbons F2-F4 in Soil	GC/FID	4246154	2015/10/27	2015/10/27	Barbara Wowk
Moisture	BAL	4244988	N/A	2015/10/26	Valentina Kaftani

Maxxam ID: BFL161
Sample ID: BH2-S1
Matrix: Soil

Collected: 2015/10/22
Shipped:
Received: 2015/10/23

Test Description	Instrumentation	Batch	Extracted	Date Analyzed	Analyst
Hot Water Extractable Boron	ICP	4247002	2015/10/27	2015/10/28	Suban Kanapathipplai
Free (WAD) Cyanide	TECH	4246365	2015/10/27	2015/11/01	Christine Pham
Conductivity	AT	4248050	N/A	2015/10/28	Lemeneh Addis
Hexavalent Chromium in Soil by IC	IC/SPEC	4246629	2015/10/27	2015/10/28	Sally Coughlin
Strong Acid Leachable Metals by ICPMS	ICP/MS	4246994	2015/10/27	2015/10/28	Grace Bu
Moisture	BAL	4245744	N/A	2015/10/26	Valentina Kaftani
pH CaCl2 EXTRACT	AT	4245436	2015/10/28	2015/10/28	Neil Dassanayake
Sodium Adsorption Ratio (SAR)	CALC/MET	4243892	N/A	2015/10/29	Automated Statchk

Maxxam ID: BFL162
Sample ID: BH2-S2
Matrix: Soil

Collected: 2015/10/22
Shipped:
Received: 2015/10/23

Test Description	Instrumentation	Batch	Extracted	Date Analyzed	Analyst
Petroleum Hydro. CCME F1 & BTEX in Soil	HSGC/MSFD	4248214	N/A	2015/10/28	Jiaxuan (Simon) Xi
Petroleum Hydrocarbons F2-F4 in Soil	GC/FID	4246154	2015/10/27	2015/10/27	Barbara Wowk
Moisture	BAL	4244347	N/A	2015/10/24	Min Yang

TEST SUMMARY

Maxxam ID: BFL163
Sample ID: BH2-S4
Matrix: Soil

Collected: 2015/10/22
Shipped:
Received: 2015/10/23

Test Description	Instrumentation	Batch	Extracted	Date Analyzed	Analyst
pH CaCl2 EXTRACT	AT	4245436	2015/10/28	2015/10/28	Neil Dassanayake
Sieve, 75um	SIEV	4247382	N/A	2015/10/28	Chamika Deeyagaha

Maxxam ID: BFL163 Dup
Sample ID: BH2-S4
Matrix: Soil

Collected: 2015/10/22
Shipped:
Received: 2015/10/23

Test Description	Instrumentation	Batch	Extracted	Date Analyzed	Analyst
Sieve, 75um	SIEV	4247382	N/A	2015/10/28	Chamika Deeyagaha

Maxxam ID: BFL164
Sample ID: BH3-S1
Matrix: Soil

Collected: 2015/10/22
Shipped:
Received: 2015/10/23

Test Description	Instrumentation	Batch	Extracted	Date Analyzed	Analyst
Hot Water Extractable Boron	ICP	4247002	2015/10/27	2015/10/28	Suban Kanapathippilai
Free (WAD) Cyanide	TECH	4245361	2015/10/26	2015/11/02	Christine Pham
Conductivity	AT	4248050	N/A	2015/10/28	Lemeneh Addis
Hexavalent Chromium in Soil by IC	IC/SPEC	4246629	2015/10/27	2015/10/28	Sally Coughlin
Strong Acid Leachable Metals by ICPMS	ICP/MS	4246994	2015/10/27	2015/10/28	Grace Bu
Moisture	BAL	4245744	N/A	2015/10/26	Valentina Kaftani
pH CaCl2 EXTRACT	AT	4245436	2015/10/28	2015/10/28	Neil Dassanayake
Sodium Adsorption Ratio (SAR)	CALC/MET	4243892	N/A	2015/10/29	Automated Statchk

Maxxam ID: BFL165
Sample ID: BH3-S2
Matrix: Soil

Collected: 2015/10/22
Shipped:
Received: 2015/10/23

Test Description	Instrumentation	Batch	Extracted	Date Analyzed	Analyst
pH CaCl2 EXTRACT	AT	4245436	2015/10/28	2015/10/28	Neil Dassanayake

Maxxam ID: BFL166
Sample ID: BH3-S3
Matrix: Soil

Collected: 2015/10/22
Shipped:
Received: 2015/10/23

Test Description	Instrumentation	Batch	Extracted	Date Analyzed	Analyst
1,3-Dichloropropene Sum	CALC	4243890	N/A	2015/10/28	Automated Statchk
Moisture	BAL	4245744	N/A	2015/10/26	Valentina Kaftani
Volatile Organic Compounds in Soil	GC/MS	4245106	N/A	2015/10/28	Sarah Lam

GENERAL COMMENTS

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

Package 1	7.3°C
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Sample BFL159-01 : SAR Analysis: Sodium was not detected. To report SAR the sodium detection limit was used in the calculation. This value represents a maximum ratio.

Sample BFL161-01 : SAR Analysis: Sodium was not detected. To report SAR the sodium detection limit was used in the calculation. This value represents a maximum ratio.

Results relate only to the items tested.

QUALITY ASSURANCE REPORT

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
4245106	4-Bromofluorobenzene	2015/10/27	101	60 - 140	100	60 - 140	100	%				
4245106	D10-o-Xylene	2015/10/27	102	60 - 130	95	60 - 130	103	%				
4245106	D4-1,2-Dichloroethane	2015/10/27	99	60 - 140	101	60 - 140	102	%				
4245106	D8-Toluene	2015/10/27	100	60 - 140	100	60 - 140	99	%				
4245142	1,4-Difluorobenzene	2015/10/26	99	60 - 140	93	60 - 140	95	%				
4245142	4-Bromofluorobenzene	2015/10/26	96	60 - 140	98	60 - 140	94	%				
4245142	D10-Ethylbenzene	2015/10/26	89	60 - 140	87	60 - 140	92	%				
4245142	D4-1,2-Dichloroethane	2015/10/26	97	60 - 140	102	60 - 140	110	%				
4246154	o-Terphenyl	2015/10/27	91	60 - 130	98	60 - 130	88	%				
4248214	1,4-Difluorobenzene	2015/10/28	98	60 - 140	98	60 - 140	99	%				
4248214	4-Bromofluorobenzene	2015/10/28	105	60 - 140	101	60 - 140	100	%				
4248214	D10-Ethylbenzene	2015/10/28	110	60 - 140	118	60 - 140	99	%				
4248214	D4-1,2-Dichloroethane	2015/10/28	96	60 - 140	96	60 - 140	100	%				
4244347	Moisture	2015/10/24							3.6	20		
4244988	Moisture	2015/10/26							1.7	20		
4245106	1,1,1,2-Tetrachloroethane	2015/10/28	97	60 - 140	98	60 - 130	<0.050	ug/g	NC	50		
4245106	1,1,1-Trichloroethane	2015/10/28	99	60 - 140	97	60 - 130	<0.050	ug/g	NC	50		
4245106	1,1,2,2-Tetrachloroethane	2015/10/28	95	60 - 140	98	60 - 130	<0.050	ug/g	NC	50		
4245106	1,1,2-Trichloroethane	2015/10/28	95	60 - 140	95	60 - 130	<0.050	ug/g	NC	50		
4245106	1,1-Dichloroethane	2015/10/28	98	60 - 140	98	60 - 130	<0.050	ug/g	NC	50		
4245106	1,1-Dichloroethylene	2015/10/28	111	60 - 140	109	60 - 130	<0.050	ug/g	NC	50		
4245106	1,2-Dichlorobenzene	2015/10/28	95	60 - 140	99	60 - 130	<0.050	ug/g	NC	50		
4245106	1,2-Dichloroethane	2015/10/28	96	60 - 140	97	60 - 130	<0.050	ug/g	NC	50		
4245106	1,2-Dichloropropane	2015/10/28	94	60 - 140	95	60 - 130	<0.050	ug/g	NC	50		
4245106	1,3-Dichlorobenzene	2015/10/28	90	60 - 140	93	60 - 130	<0.050	ug/g	NC	50		
4245106	1,4-Dichlorobenzene	2015/10/28	97	60 - 140	101	60 - 130	<0.050	ug/g	NC	50		
4245106	Acetone (2-Propanone)	2015/10/28	111	60 - 140	106	60 - 140	<0.50	ug/g	NC	50		
4245106	Benzene	2015/10/28	98	60 - 140	97	60 - 130	<0.020	ug/g	NC	50		
4245106	Bromodichloromethane	2015/10/28	102	60 - 140	104	60 - 130	<0.050	ug/g	NC	50		
4245106	Bromoform	2015/10/28	87	60 - 140	91	60 - 130	<0.050	ug/g	NC	50		
4245106	Bromomethane	2015/10/28	88	60 - 140	89	60 - 140	<0.050	ug/g	NC	50		

QUALITY ASSURANCE REPORT(CONT'D)

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
4245106	Carbon Tetrachloride	2015/10/28	98	60 - 140	96	60 - 130	<0.050	ug/g	NC	50		
4245106	Chlorobenzene	2015/10/28	109	60 - 140	110	60 - 130	<0.050	ug/g	NC	50		
4245106	Chloroform	2015/10/28	98	60 - 140	98	60 - 130	<0.050	ug/g	NC	50		
4245106	cis-1,2-Dichloroethylene	2015/10/28	104	60 - 140	104	60 - 130	<0.050	ug/g	NC	50		
4245106	cis-1,3-Dichloropropene	2015/10/28	86	60 - 140	92	60 - 130	<0.030	ug/g	NC	50		
4245106	Dibromochloromethane	2015/10/28	93	60 - 140	96	60 - 130	<0.050	ug/g	NC	50		
4245106	Dichlorodifluoromethane (FREON 12)	2015/10/28	101	60 - 140	106	60 - 140	0.082, RDL=0.050	ug/g	NC	50		
4245106	Ethylbenzene	2015/10/28	102	60 - 140	101	60 - 130	<0.020	ug/g	NC	50		
4245106	Ethylene Dibromide	2015/10/28	91	60 - 140	93	60 - 130	<0.050	ug/g	NC	50		
4245106	Hexane	2015/10/28	103	60 - 140	101	60 - 130	<0.050	ug/g	NC	50		
4245106	Methyl Ethyl Ketone (2-Butanone)	2015/10/28	103	60 - 140	102	60 - 140	<0.50	ug/g	NC	50		
4245106	Methyl Isobutyl Ketone	2015/10/28	97	60 - 140	101	60 - 130	<0.50	ug/g	NC	50		
4245106	Methyl t-butyl ether (MTBE)	2015/10/28	97	60 - 140	98	60 - 130	<0.050	ug/g	NC	50		
4245106	Methylene Chloride(Dichloromethane)	2015/10/28	105	60 - 140	105	60 - 130	<0.050	ug/g	NC	50		
4245106	o-Xylene	2015/10/28	94	60 - 140	94	60 - 130	<0.020	ug/g	NC	50		
4245106	p+m-Xylene	2015/10/28	83	60 - 140	82	60 - 130	<0.020	ug/g	NC	50		
4245106	Styrene	2015/10/28	92	60 - 140	94	60 - 130	<0.050	ug/g	NC	50		
4245106	Tetrachloroethylene	2015/10/28	93	60 - 140	92	60 - 130	<0.050	ug/g	NC	50		
4245106	Toluene	2015/10/28	94	60 - 140	93	60 - 130	<0.020	ug/g	NC	50		
4245106	Total Xylenes	2015/10/28					<0.020	ug/g	NC	50		
4245106	trans-1,2-Dichloroethylene	2015/10/28	95	60 - 140	95	60 - 130	<0.050	ug/g	NC	50		
4245106	trans-1,3-Dichloropropene	2015/10/28	91	60 - 140	100	60 - 130	<0.040	ug/g	NC	50		
4245106	Trichloroethylene	2015/10/28	94	60 - 140	94	60 - 130	<0.050	ug/g	NC	50		
4245106	Trichlorofluoromethane (FREON 11)	2015/10/28	106	60 - 140	103	60 - 130	<0.050	ug/g	NC	50		
4245106	Vinyl Chloride	2015/10/28	108	60 - 140	108	60 - 130	<0.020	ug/g	NC	50		
4245142	Benzene	2015/10/26	79	60 - 140	85	60 - 140	<0.020	ug/g	NC	50		
4245142	Ethylbenzene	2015/10/26	77	60 - 140	89	60 - 140	<0.020	ug/g	NC	50		
4245142	F1 (C6-C10) - BTEX	2015/10/26					<10	ug/g	NC	30		
4245142	F1 (C6-C10)	2015/10/26	75	60 - 140	96	80 - 120	<10	ug/g	NC	30		
4245142	o-Xylene	2015/10/26	91	60 - 140	102	60 - 140	<0.020	ug/g	NC	50		

QUALITY ASSURANCE REPORT(CONT'D)

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
4245142	p+m-Xylene	2015/10/26	73	60 - 140	91	60 - 140	<0.040	ug/g	NC	50		
4245142	Toluene	2015/10/26	79	60 - 140	91	60 - 140	<0.020	ug/g	NC	50		
4245142	Total Xylenes	2015/10/26					<0.040	ug/g	NC	50		
4245361	Free Cyanide	2015/11/02	98	75 - 125	101	80 - 120	<0.01	ug/g	NC	35		
4245436	Available (CaCl2) pH	2015/10/28			100	97 - 103			0.64	N/A		
4245744	Moisture	2015/10/26							1.4	20		
4246154	F2 (C10-C16 Hydrocarbons)	2015/10/27	91	50 - 130	93	80 - 120	<10	ug/g	NC	30		
4246154	F3 (C16-C34 Hydrocarbons)	2015/10/27	93	50 - 130	98	80 - 120	<50	ug/g	NC	30		
4246154	F4 (C34-C50 Hydrocarbons)	2015/10/27	94	50 - 130	98	80 - 120	<50	ug/g	NC	30		
4246365	Free Cyanide	2015/11/01	103	75 - 125	102	80 - 120	<0.01	ug/g	NC	35		
4246629	Chromium (VI)	2015/10/28	89	75 - 125	105	80 - 120	<0.2	ug/g	NC	35	119	80 - 120
4246994	Acid Extractable Antimony (Sb)	2015/10/28	97	75 - 125	98	80 - 120	<0.20	ug/g	NC	30		
4246994	Acid Extractable Arsenic (As)	2015/10/28	100	75 - 125	97	80 - 120	<1.0	ug/g	NC	30		
4246994	Acid Extractable Barium (Ba)	2015/10/28	NC	75 - 125	100	80 - 120	<0.50	ug/g	1.1	30		
4246994	Acid Extractable Beryllium (Be)	2015/10/28	100	75 - 125	102	80 - 120	<0.20	ug/g	NC	30		
4246994	Acid Extractable Boron (B)	2015/10/28	97	75 - 125	96	80 - 120	<5.0	ug/g				
4246994	Acid Extractable Cadmium (Cd)	2015/10/28	100	75 - 125	100	80 - 120	<0.10	ug/g	NC	30		
4246994	Acid Extractable Chromium (Cr)	2015/10/28	102	75 - 125	97	80 - 120	<1.0	ug/g	3.8	30		
4246994	Acid Extractable Cobalt (Co)	2015/10/28	101	75 - 125	97	80 - 120	<0.10	ug/g	6.5	30		
4246994	Acid Extractable Copper (Cu)	2015/10/28	101	75 - 125	100	80 - 120	<0.50	ug/g	6.3	30		
4246994	Acid Extractable Lead (Pb)	2015/10/28	102	75 - 125	100	80 - 120	<1.0	ug/g	NC	30		
4246994	Acid Extractable Mercury (Hg)	2015/10/28	109	75 - 125	109	80 - 120	<0.050	ug/g	NC	30		
4246994	Acid Extractable Molybdenum (Mo)	2015/10/28	103	75 - 125	100	80 - 120	<0.50	ug/g	NC	30		
4246994	Acid Extractable Nickel (Ni)	2015/10/28	99	75 - 125	98	80 - 120	<0.50	ug/g	2.7	30		
4246994	Acid Extractable Selenium (Se)	2015/10/28	104	75 - 125	102	80 - 120	<0.50	ug/g	NC	30		
4246994	Acid Extractable Silver (Ag)	2015/10/28	101	75 - 125	99	80 - 120	<0.20	ug/g	NC	30		
4246994	Acid Extractable Sodium (Na)	2015/10/28	88	75 - 125	98	80 - 120	<50	ug/g				
4246994	Acid Extractable Thallium (Tl)	2015/10/28	102	75 - 125	102	80 - 120	<0.050	ug/g	NC	30		
4246994	Acid Extractable Uranium (U)	2015/10/28	102	75 - 125	100	80 - 120	<0.050	ug/g	3.7	30		
4246994	Acid Extractable Vanadium (V)	2015/10/28	NC	75 - 125	94	80 - 120	<5.0	ug/g	NC	30		
4246994	Acid Extractable Zinc (Zn)	2015/10/28	NC	75 - 125	97	80 - 120	<5.0	ug/g	NC	30		

QUALITY ASSURANCE REPORT(CONT'D)

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
4247002	Hot Water Ext. Boron (B)	2015/10/28	102	75 - 125	97	75 - 125	<0.050	ug/g	NC	40		
4247382	Sieve - #200 (<0.075mm)	2015/10/28							1.1	20	89	88 - 91
4247382	Sieve - #200 (>0.075mm)	2015/10/28							5.9	20	11	9 - 12
4248050	Conductivity	2015/10/28			100	90 - 110	<0.002	mS/cm	1.4	10		
4248214	Benzene	2015/10/28	93	60 - 140	115	60 - 140	<0.020	ug/g	NC	50		
4248214	Ethylbenzene	2015/10/28	86	60 - 140	121	60 - 140	<0.020	ug/g	1.4	50		
4248214	F1 (C6-C10) - BTEX	2015/10/28					<10	ug/g	NC	30		
4248214	F1 (C6-C10)	2015/10/28	83	60 - 140	103	80 - 120	<10	ug/g	NC	30		
4248214	o-Xylene	2015/10/28	98	60 - 140	122	60 - 140	<0.020	ug/g	NC	50		
4248214	p+m-Xylene	2015/10/28	84	60 - 140	113	60 - 140	<0.040	ug/g	3.7	50		
4248214	Toluene	2015/10/28	88	60 - 140	110	60 - 140	<0.020	ug/g	NC	50		
4248214	Total Xylenes	2015/10/28					<0.040	ug/g	5.0	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).

FUNDAMENTAL LABORATORY ACCEPTANCE GUIDELINE

Invoice To:

exp Services Inc
ATTN: Accounts Payable
80 Bancroft St
Hamilton, ON
L8E 2W5
Client Contact:
Jon Charles

Maxxam Job #: B5L7418
Date Received: 2015/10/23
Your C.O.C. #: na
Your Project #: HAM-00800615-D0
Maxxam Project Manager: Hina Siddiqui
Quote #: B46066

Chain of Custody information incomplete

Report Comments

Received Date:	<u>2015/10/23</u>	Time:	<u>16:15</u>	By:	<u>M_P</u>
Inspected Date:	<u>2015/10/23</u>	Time:	<u>22:07</u>	By:	<u>M_P</u>
FLAG Created Date:	<u>2015/10/23</u>	Time:	<u>22:09</u>	By:	<u>M_P</u>

VALIDATION SIGNATURE PAGE

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

Cristina Carriere

Cristina Carriere, Scientific Services

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.

Your Project #: HAM-00800615-D0
Site Location: PART LOT 10, CONC 1, OAKVILLE
Your C.O.C. #: na

Attention:Jon Charles

exp Services Inc
80 Bancroft St
Hamilton, ON
L8E 2W5

Report Date: 2015/10/30
Report #: R3740329
Version: 1 - Final

CERTIFICATE OF ANALYSIS

MAXXAM JOB #: B5L9516

Received: 2015/10/27, 16:37

Sample Matrix: Water
Samples Received: 4

Analyses	Date		Laboratory Method	Reference
	Quantity	Extracted		
1,3-Dichloropropene Sum	4	N/A	2015/10/30	EPA 8260C m
Volatile Organic Compounds in Water	4	N/A	2015/10/30 CAM SOP000228	EPA 8260C m

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.

Hina Siddiqui, Project Manager –Environmental Customer Service

Email: HSiddiqui@maxxam.ca

Phone# (905) 817-5700

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O.REG 153 VOLATILE ORGANICS (WATER)

Maxxam ID		BFX073	BFX074	BFX075	BFX076		
Sampling Date		2015/10/26 12:30	2015/10/26 14:00	2015/10/26 16:00	2015/10/26 16:00		
COC Number		na	na	na	na		
	UNITS	MW1	MW2	MW3	MW13	RDL	QC Batch
Calculated Parameters							
1,3-Dichloropropene (cis+trans)	ug/L	<0.50	<0.50	<0.50	<0.50	0.50	4246534
Volatile Organics							
Acetone (2-Propanone)	ug/L	<10	<10	<10	<10	10	4248204
Benzene	ug/L	<0.20	<0.20	<0.20	<0.20	0.20	4248204
Bromodichloromethane	ug/L	<0.50	<0.50	<0.50	<0.50	0.50	4248204
Bromoform	ug/L	<1.0	<1.0	<1.0	<1.0	1.0	4248204
Bromomethane	ug/L	<0.50	<0.50	<0.50	<0.50	0.50	4248204
Carbon Tetrachloride	ug/L	<0.20	<0.20	<0.20	<0.20	0.20	4248204
Chlorobenzene	ug/L	<0.20	<0.20	<0.20	<0.20	0.20	4248204
Chloroform	ug/L	<0.20	<0.20	<0.20	<0.20	0.20	4248204
Dibromochloromethane	ug/L	<0.50	<0.50	<0.50	<0.50	0.50	4248204
1,2-Dichlorobenzene	ug/L	<0.50	<0.50	<0.50	<0.50	0.50	4248204
1,3-Dichlorobenzene	ug/L	<0.50	<0.50	<0.50	<0.50	0.50	4248204
1,4-Dichlorobenzene	ug/L	<0.50	<0.50	<0.50	<0.50	0.50	4248204
Dichlorodifluoromethane (FREON 12)	ug/L	<1.0	<1.0	<1.0	<1.0	1.0	4248204
1,1-Dichloroethane	ug/L	<0.20	<0.20	<0.20	<0.20	0.20	4248204
1,2-Dichloroethane	ug/L	<0.50	<0.50	<0.50	<0.50	0.50	4248204
1,1-Dichloroethylene	ug/L	<0.20	<0.20	<0.20	<0.20	0.20	4248204
cis-1,2-Dichloroethylene	ug/L	<0.50	<0.50	<0.50	<0.50	0.50	4248204
trans-1,2-Dichloroethylene	ug/L	<0.50	<0.50	<0.50	<0.50	0.50	4248204
1,2-Dichloropropane	ug/L	<0.20	<0.20	<0.20	<0.20	0.20	4248204
cis-1,3-Dichloropropene	ug/L	<0.30	<0.30	<0.30	<0.30	0.30	4248204
trans-1,3-Dichloropropene	ug/L	<0.40	<0.40	<0.40	<0.40	0.40	4248204
Ethylbenzene	ug/L	<0.20	<0.20	<0.20	<0.20	0.20	4248204
Ethylene Dibromide	ug/L	<0.20	<0.20	<0.20	<0.20	0.20	4248204
Hexane	ug/L	<1.0	<1.0	<1.0	<1.0	1.0	4248204
Methylene Chloride(Dichloromethane)	ug/L	<2.0	<2.0	<2.0	<2.0	2.0	4248204
Methyl Ethyl Ketone (2-Butanone)	ug/L	<10	<10	<10	<10	10	4248204
Methyl Isobutyl Ketone	ug/L	<5.0	<5.0	<5.0	<5.0	5.0	4248204
Methyl t-butyl ether (MTBE)	ug/L	<0.50	<0.50	<0.50	<0.50	0.50	4248204
Styrene	ug/L	<0.50	<0.50	<0.50	<0.50	0.50	4248204
1,1,1,2-Tetrachloroethane	ug/L	<0.50	<0.50	<0.50	<0.50	0.50	4248204
1,1,2,2-Tetrachloroethane	ug/L	<0.50	<0.50	<0.50	<0.50	0.50	4248204
RDL = Reportable Detection Limit							
QC Batch = Quality Control Batch							

O.REG 153 VOLATILE ORGANICS (WATER)

Maxxam ID		BFX073	BFX074	BFX075	BFX076		
Sampling Date		2015/10/26 12:30	2015/10/26 14:00	2015/10/26 16:00	2015/10/26 16:00		
COC Number		na	na	na	na		
	UNITS	MW1	MW2	MW3	MW13	RDL	QC Batch
Tetrachloroethylene	ug/L	<0.20	<0.20	<0.20	<0.20	0.20	4248204
Toluene	ug/L	0.26	0.34	0.51	0.51	0.20	4248204
1,1,1-Trichloroethane	ug/L	<0.20	<0.20	<0.20	<0.20	0.20	4248204
1,1,2-Trichloroethane	ug/L	<0.50	<0.50	<0.50	<0.50	0.50	4248204
Trichloroethylene	ug/L	<0.20	<0.20	<0.20	<0.20	0.20	4248204
Trichlorofluoromethane (FREON 11)	ug/L	<0.50	<0.50	<0.50	<0.50	0.50	4248204
Vinyl Chloride	ug/L	<0.20	<0.20	<0.20	<0.20	0.20	4248204
p+m-Xylene	ug/L	<0.20	0.25	<0.20	<0.20	0.20	4248204
o-Xylene	ug/L	<0.20	<0.20	<0.20	<0.20	0.20	4248204
Total Xylenes	ug/L	<0.20	0.25	<0.20	<0.20	0.20	4248204
Surrogate Recovery (%)							
4-Bromofluorobenzene	%	93	94	93	95		4248204
D4-1,2-Dichloroethane	%	101	103	103	108		4248204
D8-Toluene	%	103	100	101	99		4248204
RDL = Reportable Detection Limit							
QC Batch = Quality Control Batch							

TEST SUMMARY

Maxxam ID: BFX073
Sample ID: MW1
Matrix: Water

Collected: 2015/10/26
Shipped:
Received: 2015/10/27

Test Description	Instrumentation	Batch	Extracted	Date Analyzed	Analyst
1,3-Dichloropropene Sum	CALC	4246534	N/A	2015/10/30	Automated Statchk
Volatile Organic Compounds in Water	GC/MS	4248204	N/A	2015/10/30	Manpreet Sarao

Maxxam ID: BFX074
Sample ID: MW2
Matrix: Water

Collected: 2015/10/26
Shipped:
Received: 2015/10/27

Test Description	Instrumentation	Batch	Extracted	Date Analyzed	Analyst
1,3-Dichloropropene Sum	CALC	4246534	N/A	2015/10/30	Automated Statchk
Volatile Organic Compounds in Water	GC/MS	4248204	N/A	2015/10/30	Manpreet Sarao

Maxxam ID: BFX075
Sample ID: MW3
Matrix: Water

Collected: 2015/10/26
Shipped:
Received: 2015/10/27

Test Description	Instrumentation	Batch	Extracted	Date Analyzed	Analyst
1,3-Dichloropropene Sum	CALC	4246534	N/A	2015/10/30	Automated Statchk
Volatile Organic Compounds in Water	GC/MS	4248204	N/A	2015/10/30	Manpreet Sarao

Maxxam ID: BFX076
Sample ID: MW13
Matrix: Water

Collected: 2015/10/26
Shipped:
Received: 2015/10/27

Test Description	Instrumentation	Batch	Extracted	Date Analyzed	Analyst
1,3-Dichloropropene Sum	CALC	4246534	N/A	2015/10/30	Automated Statchk
Volatile Organic Compounds in Water	GC/MS	4248204	N/A	2015/10/30	Manpreet Sarao

GENERAL COMMENTS

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

Package 1	5.0°C
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Results relate only to the items tested.

QUALITY ASSURANCE REPORT

exp Services Inc
Client Project #: HAM-00800615-D0
Site Location: PART LOT 10, CONC 1, OAKVILLE
Sampler Initials: MS

QC Batch	Parameter	Date	Matrix Spike		SPIKED BLANK		Method Blank		RPD	
			% Recovery	QC Limits	% Recovery	QC Limits	Value	UNITS	Value (%)	QC Limits
4248204	4-Bromofluorobenzene	2015/10/29	98	70 - 130	98	70 - 130	97	%		
4248204	D4-1,2-Dichloroethane	2015/10/29	102	70 - 130	99	70 - 130	99	%		
4248204	D8-Toluene	2015/10/29	101	70 - 130	101	70 - 130	100	%		
4248204	1,1,1,2-Tetrachloroethane	2015/10/29	91	70 - 130	88	70 - 130	<0.50	ug/L	NC	30
4248204	1,1,1-Trichloroethane	2015/10/29	95	70 - 130	92	70 - 130	<0.20	ug/L	NC	30
4248204	1,1,2,2-Tetrachloroethane	2015/10/29	95	70 - 130	90	70 - 130	<0.50	ug/L	NC	30
4248204	1,1,2-Trichloroethane	2015/10/29	93	70 - 130	87	70 - 130	<0.50	ug/L	NC	30
4248204	1,1-Dichloroethane	2015/10/29	94	70 - 130	90	70 - 130	<0.20	ug/L	NC	30
4248204	1,1-Dichloroethylene	2015/10/29	103	70 - 130	100	70 - 130	<0.20	ug/L	NC	30
4248204	1,2-Dichlorobenzene	2015/10/29	92	70 - 130	89	70 - 130	<0.50	ug/L	NC	30
4248204	1,2-Dichloroethane	2015/10/29	93	70 - 130	88	70 - 130	<0.50	ug/L	NC	30
4248204	1,2-Dichloropropane	2015/10/29	92	70 - 130	88	70 - 130	<0.20	ug/L	NC	30
4248204	1,3-Dichlorobenzene	2015/10/29	87	70 - 130	84	70 - 130	<0.50	ug/L	NC	30
4248204	1,4-Dichlorobenzene	2015/10/29	94	70 - 130	90	70 - 130	<0.50	ug/L	NC	30
4248204	Acetone (2-Propanone)	2015/10/29	105	60 - 140	97	60 - 140	<10	ug/L	NC	30
4248204	Benzene	2015/10/29	93	70 - 130	90	70 - 130	<0.20	ug/L	NC	30
4248204	Bromodichloromethane	2015/10/29	99	70 - 130	95	70 - 130	<0.50	ug/L	NC	30
4248204	Bromoform	2015/10/29	86	70 - 130	82	70 - 130	<1.0	ug/L	NC	30
4248204	Bromomethane	2015/10/29	88	60 - 140	81	60 - 140	<0.50	ug/L	NC	30
4248204	Carbon Tetrachloride	2015/10/29	98	70 - 130	95	70 - 130	<0.20	ug/L	NC	30
4248204	Chlorobenzene	2015/10/29	103	70 - 130	99	70 - 130	<0.20	ug/L	NC	30
4248204	Chloroform	2015/10/29	93	70 - 130	90	70 - 130	<0.20	ug/L	NC	30
4248204	cis-1,2-Dichloroethylene	2015/10/29	98	70 - 130	94	70 - 130	<0.50	ug/L	NC	30
4248204	cis-1,3-Dichloropropene	2015/10/29	95	70 - 130	84	70 - 130	<0.30	ug/L	NC	30
4248204	Dibromochloromethane	2015/10/29	90	70 - 130	86	70 - 130	<0.50	ug/L	NC	30
4248204	Dichlorodifluoromethane (FREON 12)	2015/10/29	95	60 - 140	96	60 - 140	<1.0	ug/L	NC	30
4248204	Ethylbenzene	2015/10/29	99	70 - 130	95	70 - 130	<0.20	ug/L	NC	30
4248204	Ethylene Dibromide	2015/10/29	88	70 - 130	83	70 - 130	<0.20	ug/L	NC	30
4248204	Hexane	2015/10/29	101	70 - 130	98	70 - 130	<1.0	ug/L	NC	30
4248204	Methyl Ethyl Ketone (2-Butanone)	2015/10/29	102	60 - 140	95	60 - 140	<10	ug/L	NC	30
4248204	Methyl Isobutyl Ketone	2015/10/29	98	70 - 130	91	70 - 130	<5.0	ug/L	NC	30

QUALITY ASSURANCE REPORT(CONT'D)

QC Batch	Parameter	Date	Matrix Spike		SPIKED BLANK		Method Blank		RPD	
			% Recovery	QC Limits	% Recovery	QC Limits	Value	UNITS	Value (%)	QC Limits
4248204	Methyl t-butyl ether (MTBE)	2015/10/29	92	70 - 130	88	70 - 130	<0.50	ug/L	NC	30
4248204	Methylene Chloride(Dichloromethane)	2015/10/29	97	70 - 130	93	70 - 130	<2.0	ug/L	NC	30
4248204	o-Xylene	2015/10/29	89	70 - 130	86	70 - 130	<0.20	ug/L	NC	30
4248204	p+m-Xylene	2015/10/29	81	70 - 130	78	70 - 130	<0.20	ug/L	NC	30
4248204	Styrene	2015/10/29	88	70 - 130	84	70 - 130	<0.50	ug/L	NC	30
4248204	Tetrachloroethylene	2015/10/29	86	70 - 130	83	70 - 130	<0.20	ug/L	NC	30
4248204	Toluene	2015/10/29	91	70 - 130	87	70 - 130	<0.20	ug/L	NC	30
4248204	Total Xylenes	2015/10/29					<0.20	ug/L	NC	30
4248204	trans-1,2-Dichloroethylene	2015/10/29	90	70 - 130	87	70 - 130	<0.50	ug/L	NC	30
4248204	trans-1,3-Dichloropropene	2015/10/29	101	70 - 130	86	70 - 130	<0.40	ug/L	NC	30
4248204	Trichloroethylene	2015/10/29	NC	70 - 130	84	70 - 130	<0.20	ug/L	NC	30
4248204	Trichlorofluoromethane (FREON 11)	2015/10/29	98	70 - 130	96	70 - 130	<0.50	ug/L	NC	30
4248204	Vinyl Chloride	2015/10/29	97	70 - 130	95	70 - 130	<0.20	ug/L	NC	30

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).

FUNDAMENTAL LABORATORY ACCEPTANCE GUIDELINE

Invoice To:

exp Services Inc
ATTN: JEFFREY GOLDER
80 Bancroft St
Hamilton, ON
L8E 2W5
Client Contact:
Jon Charles

Maxxam Job #:	B5L9516
Date Received:	2015/10/27
Your C.O.C. #:	na
Your Project #:	HAM-00800615-D0
Maxxam Project Manager:	Hina Siddiqui
Quote #:	B46066

No discrepancies noted.

Report Comments

Received Date:	<u>2015/10/27</u>	Time:	<u>16:37</u>	By:	_____
Inspected Date:	_____	Time:	_____	By:	_____
FLAG Created Date:	_____	Time:	_____	By:	_____

VALIDATION SIGNATURE PAGE

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

Cristina Carriere

Cristina Carriere, Scientific Services

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