

Phase II Environmental Site Assessment

1208 Old Montreal Road, Ottawa, Ontario

Client: DCR/Phoenix Group of Companies 18 Bentley Avenue Ottawa, Ontario K2E 6T8

Project Number: OTT-00234493-B0

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Date Submitted: September 13, 2016

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Date Submitted: September 13, 2016

Executive Summary

Exp Services Inc. (**exp**) was retained by DCR/Phoenix Group of Companies to complete a Phase II Environmental Site Assessment (ESA) of the property located at 1208 Old Montreal Road in Ottawa, Ontario. The purpose of this Phase I ESA was to determine if past or present site activities have resulted in actual or potential contamination at the site.

This report will be used for due diligence purposes in support of a real estate transaction. **Exp** understands this report will not be used to support a City of Ottawa permit application or to submit a Record of Site Condition due to a change in land use.

The site is located on the south side of Old Montreal Road, at 1154, 1172, 1176, 1180, and 1208 Old Montreal Road. At the time of the investigation, the site was used for residential and agricultural purposes. The surrounding properties are mostly residential and agricultural. The site is rectangular in shape and covers a total area of 14.6 hectares (36 acres). The area of the investigation is occupied by a residence and several barns/sheds in the northeast corner of the site.

The topography of the site consists of a topographic high at the house and barn locations of the site, with a steep slope downwards to the north to Old Montreal Road. The local groundwater flow direction is anticipated to be north towards the Ottawa River, at a distance of 1.2 km.

In August 2016, **exp** conducted a Phase I ESA of the Site with the findings summarized in a report entitled "Phase I Environmental Site Assessment, 1154, 1172, 1176, 1180, and 1208 Old Montreal Road, Ottawa, Ontario", dated August 19, 2016. Based on the findings of the Phase I ESA report, the following areas of potential environmental concern (APEC) were identified:

Areas of Potential Environmental Concern	Media	Potential Contaminants of Concern	Comments
APEC 1 – The former aboveground fuel tank used to refuel farm vehicles	Soil and Groundwater	Petroleum Hydrocarbon (PHC) including benzene, toluene, ethylbenzene, and xylene (BTEX)	There was a former fuel tank located in the loft of a barn near the old farm house (1208 Old Montreal Road), which was used to refuel farm vehicles. The ground surface in the vicinity of the former tank is gravel. There may have been spillage associated with the tank and dispenser that could have potentially impacted the subsurface.

Based on the Phase I ESA findings, **exp** recommended conducting a Phase II ESA at the Site to determine the presence or absence of impacted soil and/or groundwater.

The Phase II ESA consisted of drilling ten (10) boreholes across the subject site in the vicinity of the former fuel tank. Each of the boreholes were completed as monitoring wells. Soil and groundwater samples were collected and submitted for laboratory analysis of petroleum hydrocarbon fractions (PHC) F1-F4 and BTEX.

Based on the Phase II ESA results, the following conclusions and recommendations are provided:

- On August 16, 2016, BH7 was advanced in the dispensing area of the former gasoline storage tank. Impacted soil and groundwater were found at this location. On August 19, 2016, three (3) boreholes (BH7A to BH7C) were advanced at the Site approximately 5 m north, south and west of BH7 in an attempt to delineate the petroleum impact. Impacted soil and groundwater were found to the north and to a lesser extent to the south.
- On August 31 and September 1, 2016, six (6) boreholes (BH8 to BH13) were drilled to the south (BH10), east (BH8 and BH9), and north (BH11 to BH13) of BH7 in an attempt to delineate the impact to soil and groundwater at the site.
- The stratigraphy at the Site generally consists of a layer of granular fill material followed by silty clay to a maximum depth drilled of 8.23 m. A sand a gravel till layer was found in BH13 at a depth of 4.16 m. There were petroleum odours noticed in soil samples in BH7 from 1.5 m to 3.3 m, BH7A from 1.5 m to 3.2 m, and in BH7C from 0.3 m to 3.0 m.
- On September 8, 2016, groundwater was encountered at a depth of 1.34 m to 5.90 m below the ground surface. No petroleum odours were observed in monitoring well BH7. All of the other monitoring wells did not have petroleum odours in the purge water during the sampling event. The groundwater flow direction was calculated to be to the northwest.
- The concentrations of BTEX parameters in BH7, BH7A and BH7C exceeded the Ministry of the Environment and Climate Change (MOECC) 2011 Table 2 site condition standards (SCS). The concentration of PHC F1 in the sample from BH7A also exceeded the MOECC 2011 Table 2 SCS. The remaining soil samples had PHC and BTEX concentrations that were less than the laboratory detection limits and were less than the MOECC 2011 Table 2 SCS.
- The BTEX concentrations measured in the groundwater sample collected from BH7 significantly exceeded the MOECC 2011 Table 3 SCS. The concentrations of PHC and BTEX measured in the remaining groundwater samples were less than the laboratory detection limits and were less than the MOECC 2011 Table 3 SCS.
- Petroleum impacted soil and groundwater were found at the location of the former tractor refuelling area of the site. The likely area of impacted soil has been estimated to be 600 m². Assuming an estimated thickness of impact of 1.5 m, the resulting volume of impacted soil in this zone is 900 m³. The worst case area of impacted soil has been estimated to be 1,050 m². Assuming an estimated thickness of impact of 1.5 m, the resulting volume of impacted soil in the worst case zone is 1,575 m³.
- Using a remediation cost of \$120/m³, the cost to remediate the petroleum-impacted areas ranges from \$108,000 to \$189,000. These costs do not include impacted groundwater treatment and disposal. It is possible that since the soil at the site is silty clay, that there will be minimal groundwater infiltration into the remedial excavation.

This executive summary is a brief synopsis of the report and should not be read in lieu of reading the report in its entirety.

Table of Contents

1. Introduction 1 1.1 Site Description 1 1.2 Background 1 1.3 Objective 1 2. Scope of Investigation 2 3. Site Assessment Criteria 3
1.2 Background
1.3 Objective .1 2. Scope of Investigation .2 3. Site Assessment Criteria .3
 Scope of Investigation
3. Site Assessment Criteria
4 Madhaalalaan
4. Methodology4
4.1 Service Clearances4
4.2 Drilling and Soil Sampling4
4.3 Monitoring Well Installation5
4.4 Groundwater Monitoring and Sampling6
4.5 Deviations from CSA Standard6
5. Findings7
5.1 Subsurface Conditions .7 5.1.1 Fill Material .7 5.1.2 Native Material .7
5.2 Groundwater
6. Analytical Results9
6.1 Soil Quality
6.2 Groundwater Quality
6.3 Quality Assurance9
6.4 Discussion
7. Conclusions and Recommendations11
 Conclusions and Recommendations

List of Figures

Figure 1 – Site Location Plan

- Figure 2 Borehole Location Plan and Groundwater Elevations
- Figure 3 Estimated Areas of Petroleum Impacted Soil and Groundwater

DCR/Phoenix Group of Companies Phase II Environmental Site Assessment 1208 Old Montreal Road, Ottawa, ON OTT-00234493-B0 September 13, 2016

List of Appendices

- Appendix A: Figures
- Appendix B: Borehole Logs
- Appendix C: Analytical Summary Tables
- Appendix D: Laboratory Certificates of Analysis

1. Introduction

Exp Services Inc. (**exp**) was retained by DCR/Phoenix Group of Companies to complete a Phase II Environmental Site Assessment (ESA) of the property located at 1208 Old Montreal Road in Ottawa, Ontario, herein referred to as "the site". **Exp** understands that the Phase II ESA is required for due diligence purposes in support of a real estate transaction and that a Record of Site Condition is not required at this time.

1.1 Site Description

The site is located on the south side of Old Montreal Road, at 1154, 1172, 1176, 1180, and 1208 Old Montreal Road, as shown on Figure 1 in Appendix A. At the time of the investigation, the site was used for residential and agricultural purposes. The surrounding properties are mostly residential and agricultural. The site is rectangular in shape and covers a total area of 14.6 hectares (36 acres). The area of the Phase II ESA is occupied by a residence and several barns/sheds in the northeast corner of the site and has an area of approximately 0.4 ha. A site plan is provided in Figure 2 of Appendix A.

The topography of the site consists of a topographic high at the house and barn locations of the site, with a steep slope downwards to the north to Old Montreal Road. The local groundwater flow direction is anticipated to be north towards the Ottawa River, at a distance of 1.2 km.

1.2 Background

In August 2016, **exp** conducted a Phase I ESA of the Site with the findings summarized in a report entitled "Phase I Environmental Site Assessment1154, 1172, 1176, 1180, and1208 Old Montreal Road, Ottawa, Ontario", dated August 19, 2016. Based on the findings of the Phase I ESA report, the following areas of potential environmental concern (APEC) were identified and addressed as part of this investigation:

• There was a former fuel tank located in the loft of a barn near the old farm house which was used to refuel farm vehicles. The ground surface in the vicinity of the former tank is gravel. There may have been spillage associated with the tank and dispenser that could have potentially impacted the subsurface.

Based on the Phase I ESA findings, **exp** recommended conducting a Phase II ESA at the Site to determine the presence or absence of impacted soil and/or groundwater and delineate the possible impacts.

1.3 Objective

The purpose of the Phase II ESA is to confirm the presence or absence of subsurface soil or groundwater impact from the APEC as identified following the completion of the Phase I ESA.

2. Scope of Investigation

The Phase II ESA scope of work for the on-Site investigation consisted of the following activities:

- Request local public utility locating companies (cable, telephone, gas, hydro) to mark any underground utilities present at the Site;
- Retain a private utility locating company to mark all underground utilities present in the vicinity of the borehole locations and to clear the individual borehole locations;
- Advance a total of ten (10) boreholes boreholes at the Site, and instrument eight (8) of them with a monitoring well to facilitate groundwater sampling;
- Collect representative soil samples for chemical analysis of petroleum hydrocarbon fractions (PHC) F1-F4 and benzene, toluene, ethylbenzene, xylenes (BTEX);
- Collect groundwater samples from the monitoring wells for chemical analysis of BTEX and PHC.
- Measure groundwater levels of the monitoring wells and complete an elevation survey of the monitoring wells relative to an assumed benchmark;
- Inspect groundwater from all accessible monitoring wells;
- Review the analytical data and prepare a report summarizing the findings; and,
- Estimate costs to remediate the site if impacts are found.

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*, MOE, July 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 153/09 (O. Reg. 153/09).

For assessment purposes, **exp** selected the Table 2 SCS for a residential land use with fine grained soil in a potable groundwater condition. The fine grained criteria were used based on field observations of soil texture.

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

- The site was not considered a sensitive site and 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 site and neighbouring properties rely on water wells for potable water;
- The site will be used for residential purposes;
- The predominant soil type on the site was considered to be fine-textured; and,
- There is no intention to carry out a stratified restoration at the site.

4. Methodology

4.1 Service Clearances

Prior to the commencement of drilling, the locations of underground public utilities including telephone, natural gas and electrical lines were marked at the Site by locating companies. A private utility locating contractor was also retained to clear the individual borehole locations.

4.2 Drilling and Soil Sampling

On August 16, 2016, one (1) borehole (BH7) was advanced at the Site by Marathon Drilling Company Ltd., a licensed well contractor. This borehole was located in the dispensing area of the former gasoline storage tank. Impacted soil and groundwater were found at this location. On August 19, 2016, three (3) boreholes (BH7A to BH7C) were advanced at the Site approximately 5 m north, south and west of BH7 in an attempt to delineate the petroleum impact. Impacted soil and groundwater were found to the north and south, and to a lesser extent to the south.

On August 31, 2016, six (6) boreholes (BH8 to BH13) were drilled to the south (BH10), east (BH8 and BH9), and north (BH11 to BH13) of BH7 in an attempt to delineate the impact to soil and groundwater at the site. This phase of drilling was completed by M3 Drilling, a licensed well contractor.

The drilling was completed under the full-time supervision of **exp** staff. The locations of the boreholes and monitoring wells are presented on Figure 2 in Appendix A.

The boreholes were generally advanced to a maximum depth of 8.23 m below ground surface (bgs), using both a power auger drilling rig. Representative soil samples were recovered from the boreholes at regular depth intervals using stainless steel split spoon samplers. Dedicated nitrile gloves (i.e., one pair per sample) were used during sample handling. No petroleum-based greases or solvents were used during drilling activities.

Exp staff continuously monitored the drilling activities to log the stratigraphy observed from the recovered soil cores, to record the depth of soil sample collection, to record total depths of borings, and to record visual or olfactory observations of potential impacts. Field observations are summarized on the borehole logs provided in Appendix B.

Soil samples identified for possible laboratory analysis were collected from the split-spoon sampler and placed directly into pre-cleaned, laboratory-supplied glass sample jars/vials. Samples to be analysed for PHC fraction F1 and BTEX were collected using a soil core sampler and placed in to 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 remaining portion of each soil sample was placed in a sealed Ziploc plastic bag and allowed to reach ambient temperature prior to field screening with a combustible vapour meter calibrated to hexane gas prior to use. The field screening 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 'headspace' 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 potential impacts and the selection of soil samples for analysis.

Soil samples were selected for laboratory analysis based on combustible vapour measurements and visual and olfactory evidence of impacts, where observed. The following representative soil samples were submitted for laboratory analysis:

Borehole & Soil Sample Identification	Depth (m)	Rationale for Submission	Analysis
BH7 SS4	3.1 to 3.7	PHC odours and combustible vapour reading	PHC, BTEX
BH7 SS5	4.6 to 5.2	Attempt to delineate impact	PHC, BTEX
BH7A SS3	2.3 to 2.9	PHC odours and combustible vapour reading	PHC, BTEX
BH7A SS3 2.3 to 2.9		PHC odours and combustible vapour reading	PHC, BTEX
BH7A SS3 2.3 to 2.9		PHC odours and combustible vapour reading	PHC, BTEX
BH8 SS6	4.6 to 5.2	Highest combustible vapour reading	PHC, BTEX
BH9 SS6	4.6 to 5.2	Combustible vapour reading and or proximity to the water table	PHC, BTEX
BH10 SS2	1.5 to 2.1	Combustible vapour reading and or proximity to the water table	PHC, BTEX
BH11 SS9	6.8 to 7.4	Combustible vapour reading and or proximity to the water table	PHC, BTEX
BH12 SS3	4.6 to 5.2	Combustible vapour reading and or proximity to the water table	PHC, BTEX
BH13 SS3	4.6 to 5.1	Combustible vapour reading and or proximity to the water table	PHC, BTEX

Table 4.2: Summary of Soil Samples Submitted for Laboratory Analyses

Note: PHC – petroleum hydrocarbons fractions F1 to F4

BTEX – benzene, toluene, ethylbenzene, xylenes

4.3 Monitoring Well Installation

A groundwater monitoring well was installed in boreholes BH7, BH7B, and BH8 to BH13. 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 was installed by licensed well contractors (Marathon Drilling and M3 Drilling).

The monitoring wells were constructed of a 30 mm diameter, 3.0 m long Schedule 40 PVC screen and appropriate length riser pipe. The well screen has a slot size of approximately 0.25 mm (slot 10) and was sealed at the base with a PVC end cap. The annular space around the well screen was backfilled with silica sand to approximately 0.3 m above the top of the screen. The sand pack was extended above the

screen to allow for compaction of the sand pack and expansion of the overlying well seal. A granular bentonite ('Hole Plug') seal was placed in the borehole annulus from the top of the sand pack to approximately 0.3 m below ground surface. All monitoring wells were completed with a flush-mount protective steel casing cemented into place. Details of the well installations are provided on the borehole logs in Appendix B.

An elevation survey of the monitoring wells was completed on September 6, 2016. Elevations were referenced to a geodetic benchmark using a high precision global positioning system meter relative to mean sea level (m AMSL).

4.4 Groundwater Monitoring and Sampling

Groundwater monitoring and sampling activities were conducted on September 8, 2016. Prior to sampling, the depths to groundwater in the monitoring wells were measured using a water level meter and groundwater was purged from each monitoring well.

Groundwater sampling activities were completed using low-flow techniques. Purging and groundwater sampling was completed using a peristaltic pump, equipped with dedicated polyethylene tubing for each monitoring well. Groundwater samples were placed directly into the laboratory supplied bottles and/or vials and placed in a cooler containing ice for sample preservation purposes. The vials were inverted prior to being placed in a cooler to ensure that no head-space was present in the samples.

The representative groundwater samples were transported to Paracel Laboratories Ltd. (Paracel) of Ottawa, under Chain of Custody protocol, within 24 hours of sample collection for chemical analysis. Sample handling/storage procedures were consistent with those outlined previously for soil sampling. The groundwater samples were submitted for laboratory analysis of PHC and BTEX.

4.5 Deviations from CSA Standard

No deviations from the CSA Standard Z769-00 (R 2013) for Phase II ESAs, published in March 2000, were encountered during this Phase II ESA.

5. Findings

5.1 Subsurface Conditions

The detailed soil profiles encountered in the borehole are provided on the attached borehole logs (Appendix B). Boundaries of soils indicated on the logs are intended to reflect transition zones for the purpose of environmental assessment and should not be interpreted as exact planes of geological change. A brief description of the soil stratigraphy at the Site, in order of depth, is summarized in the following sections.

5.1.1 Fill Material

A 0.1 m thick layer of grey crushed stone was observed in several boreholes at the ground surface. Brown sand and gravel mixed with silty sand was found in each of the boreholes either below the crushed stone or at the ground surface. The brown sand and gravel ranged in thickness from 0.5 m to 0.8 m. No indications of petroleum impact were identified in the fill.

5.1.2 Native Material

Below the fill was a brown to grey silty clay. This extended to the maximum depth drilled of 8.23 m. A sand a gravel till layer was found in BH13 at a depth of 4.16 m. There were petroleum odours noticed in soil samples in BH7 from 1.5 m to 3.3 m, BH7A from 1.5 m to 3.2 m, and in BH7C from 0.3 m to 3.0 m.

5.2 Groundwater

Groundwater elevations and water levels were measured at the Site on September 8, 2016. Groundwater was encountered at a depth of 1.34 m to 5.90 m below the ground surface. Petroleum sheens and odours were observed in the purge water from BH7. No other petroleum sheens or odours were observed during the sampling event. A summary of the elevation survey and groundwater levels for each well are shown on Table 5.1.

Monitoring	Top of Well	Septemb	er 8, 2016
Well ID	Casing (m)	Water Level (mbtoc)	Water Level (MASL)
BH7	85.17	1.24	83.93
BH7B	84.99	1.79	83.20
BH8	84.49	2.48	82.01
BH9	86.29	2.42	83.87
BH10	85.80	1.79	84.01
BH11	79.18	5.73	73.45
BH12	77.10	5.22	71.88
BH13	75.14	2.19	72.95

Note: Elevations were referenced to a geodetic benchmark using a high precision global positioning system meter relative to mean sea level (m AMSL). mbtoc – metres below top of plastic well casing

MASL – metres above sea level

Based on the water levels measured on September 8, 2016, the principal direction of groundwater flow in the overburden materials was to the northwest. **Exp** notes that groundwater flow direction and level can be influenced by utility trenches and other subsurface structures and may migrate in the bedding stone of nearby subsurface utility trenches. The elevation contours are presented on Figure 2.

6. Analytical Results

6.1 Soil Quality

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 each borehole was based on field screening for combustible vapours and visual and/or olfactory evidence, where observed. Soil analytical results are summarized on Tables 1 in Appendix C and the Certificates of Analysis are enclosed in Appendix D.

6.1.1 Petroleum Hydrocarbons and BTEX

The PHC and BTEX concentrations in soil are shown in Table 1 in Appendix C. The concentrations of BTEX parameters in BH7, BH7A and BH7C exceeded the MOECC 2011 Table 2 SCS. The concentration of PHC F1 in the sample from BH7A also exceeded the MOECC 2011 Table 2 SCS. The remaining soil samples had PHC and BTEX concentrations that were less than the laboratory detection limits and were less than the MOECC 2011 Table 2 SCS.

6.2 Groundwater Quality

Groundwater samples were obtained from the eight newly installed monitoring wells. The groundwater analytical results are summarized on Table 2 in Appendix C and the Certificates of Analysis are enclosed in Appendix D.

6.2.1 Petroleum Hydrocarbons and BTEX

The PHC and BTEX concentrations in the submitted groundwater samples are shown in Table 2 in Appendix C. The monitoring wells are labeled BH7 to BH13. The BTEX concentrations measured in the groundwater sample collected from BH7 significantly exceeded the MOECC 2011 Table 3 SCS. The concentrations of PHC and BTEX measured in the remaining groundwater samples were less than the laboratory detection limits and were less than the MOECC 2011 Table 3 SCS.

6.3 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 were provided in Section 4, Methodology.

The subcontract laboratory used during this investigation, Paracel Laboratories Ltd., is accredited by the Standards Council of Canada/Canadian Association of Environmental Analytical Laboratories (Accredited Laboratory No.97) 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.

The "Protocol for Analytical Methods Used in the Assessment of Properties under Part XV.1 of the Environmental Protection Act" ("the Analytical Protocol"), prepared by the MOE, March 2004 amended as of July 1, 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 analytical program conducted by Paracel included analytical test group specific QA/QC measures to evaluate the accuracy and precision of the analytical results and the efficiency of analyte recovery during

solute extraction procedures. The Paracel laboratory QA/QC program consisted of the preparation and analysis of laboratory duplicate samples to assess precision and sample homogeneity, method blanks to assess analytical bias, spiked blanks and QC standards to evaluate analyte recovery, matrix spikes to evaluate matrix interferences and surrogate compound recoveries (VOCs only) to evaluate extraction efficiency. The laboratory QA/QC results are presented in the Quality Assurance Report provided in the Certificate of Analysis prepared by Paracel. The QA/QC results are reported as percent recoveries for matrix spikes, spike blanks and QC standards, relative percent difference for laboratory duplicates and analyte concentrations for method blanks.

6.4 Discussion

Petroleum impacted soil and groundwater were found at the location of the former tractor refuelling area of the site. The area of petroleum impact has been delineated. Based on the soil and groundwater results and groundwater flow direction in the silty clay, the most likely area of petroleum impact is shown in orange on Figure 3 in Appendix A. A worst case area of soil and groundwater impact is shown in yellow on Figure 3.

Based on laboratory results indicating exceedences of the MOECC SCS and field observations, the maximum thickness of impact of 3.5 m was measured in BH7. The likely area of impacted soil has been estimated to be 600 m². Assuming an estimated average thickness of impact of 1.5 m, the resulting volume of impacted soil in this zone is 900 m³. The worst case area of impacted soil has been estimated to be $1,050 \text{ m}^2$. Assuming an estimated average thickness of 1.5 m, the resulting volume of impacted soil in this zone is $1,575 \text{ m}^3$.

Using a remediation cost of \$120/m³, the cost to remediate the petroleum-impacted areas ranges from \$108,000 to \$189,000. These costs also assume that the buildings have been removed and the water well has been decommissioned by a licensed well driller. These costs do not include impacted groundwater treatment and disposal. It is possible that since the soil at the site is silty clay, that there will be minimal groundwater infiltration into the remedial excavation.

7. Conclusions and Recommendations

Based on the Phase II ESA results, the following conclusions and recommendations are provided:

- On August 16, 2016, BH7 was advanced in the dispensing area of the former gasoline storage tank. Impacted soil and groundwater were found at this location. On August 19, 2016, three (3) boreholes (BH7A to BH7C) were advanced at the Site approximately 5 m north, south and west of BH7 in an attempt to delineate the petroleum impact. Impacted soil and groundwater were found to the north and to a lesser extent to the south.
- On August 31 and September 1, 2016, six (6) boreholes (BH8 to BH13) were drilled to the south (BH10), east (BH8 and BH9), and north (BH11 to BH13) of BH7 in an attempt to delineate the impact to soil and groundwater at the site.
- The stratigraphy at the Site generally consists of a layer of granular fill material followed by silty clay to a maximum depth drilled of 8.23 m. A sand a gravel fill layer was found in BH13 at a depth of 4.16 m. There were petroleum odours noticed in soil samples in BH7 from 1.5 m to 3.3 m, BH7A from 1.5 m to 3.2 m, and in BH7C from 0.3 m to 3.0 m.
- On September 8, 2016, groundwater was encountered at a depth of 1.34 m to 5.90 m below the ground surface. No petroleum odours were observed in monitoring well BH7. All of the other monitoring wells did not have petroleum odours in the purge water during the sampling event. The groundwater flow direction was calculated to be to the northwest.
- The concentrations of BTEX parameters in BH7, BH7A and BH7C exceeded the Ministry of the Environment and Climate Change (MOECC) 2011 Table 2 site condition standards (SCS). The concentration of PHC F1 in the sample from BH7A also exceeded the MOECC 2011 Table 2 SCS. The remaining soil samples had PHC and BTEX concentrations that were less than the laboratory detection limits and were less than the MOECC 2011 Table 2 SCS.
- The BTEX concentrations measured in the groundwater sample collected from BH7 significantly
 exceeded the MOECC 2011 Table 3 SCS. The concentrations of PHC and BTEX measured in the
 remaining groundwater samples were less than the laboratory detection limits and were less than
 the MOECC 2011 Table 3 SCS.
- Petroleum impacted soil and groundwater were found at the location of the former tractor refuelling area of the site. The likely area of impacted soil has been estimated to be 600 m². Assuming an estimated thickness of impact of 1.5 m, the resulting volume of impacted soil in this zone is 900 m³. The worst case area of impacted soil has been estimated to be 1,050 m². Assuming an estimated thickness of impact of 1.5 m, the resulting volume of impacted soil in the worst case zone is 1,575 m³.
- Using a remediation cost of \$120/m³, the cost to remediate the petroleum-impacted areas ranges from \$108,000 to \$189,000. These costs do not include impacted groundwater treatment and disposal. It is possible that since the soil at the site is silty clay, that there will be minimal groundwater infiltration into the remedial excavation.

8. Limitation of Liability, Scope of Report, and Third Party Reliance

Basis of Report

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 DCR/Phoenix Group 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.

Where applicable, recommended field services are the minimum necessary to ascertain that construction is being carried out in general conformity with building code guidelines, generally accepted practices and **exp**'s recommendations. Any reduction in the level of services recommended will result in **exp** providing qualified opinions regarding the adequacy of the work. **Exp** can assist design professionals or contractors retained by the Client to review applicable plans, drawings, and specifications as they relate to the Report or to conduct field reviews during construction.

Reliance on Information Provided

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.

Standard of Care

The Report has been prepared in a manner consistent with the degree of care and skill exercised by engineering consultants currently practicing under similar circumstances and locale. No other warranty, expressed or implied, is made. Unless specifically stated otherwise, the Report does not contain environmental consulting advice.

Complete Report

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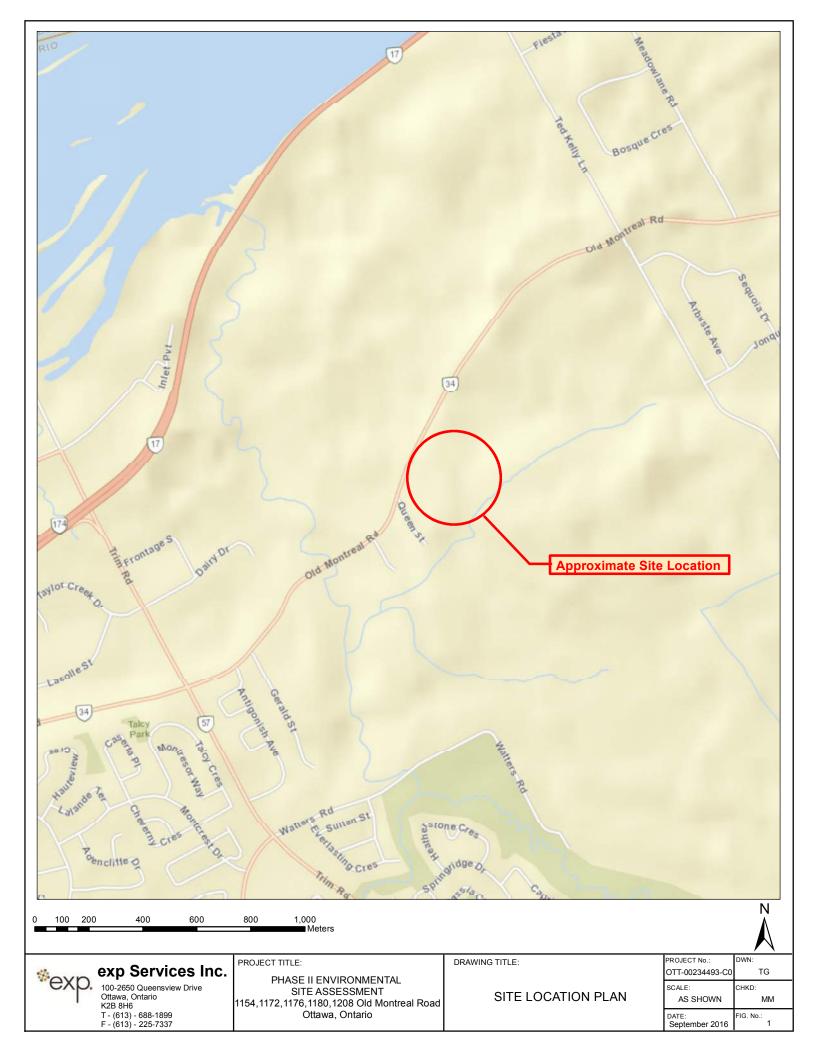
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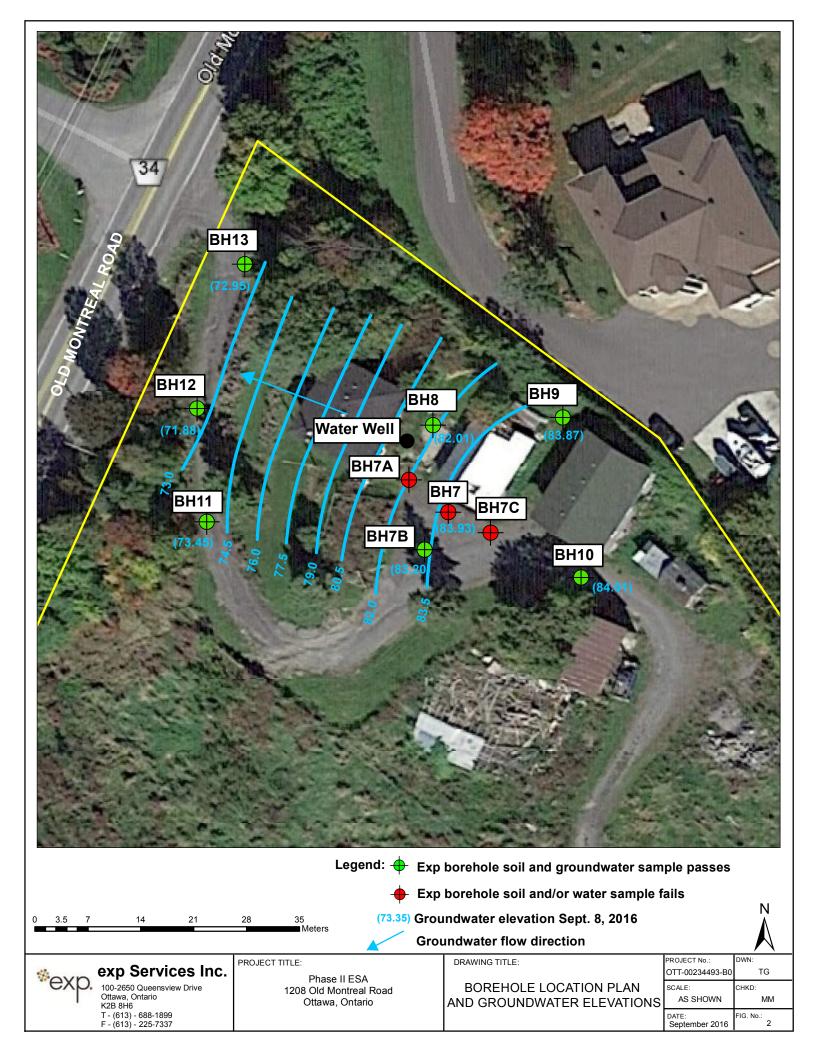
DCR/Phoenix Group of Companies Phase II Environmental Site Assessment 1208 Old Montreal Road, Ottawa, ON OTT-00234493-B0 September 13, 2016

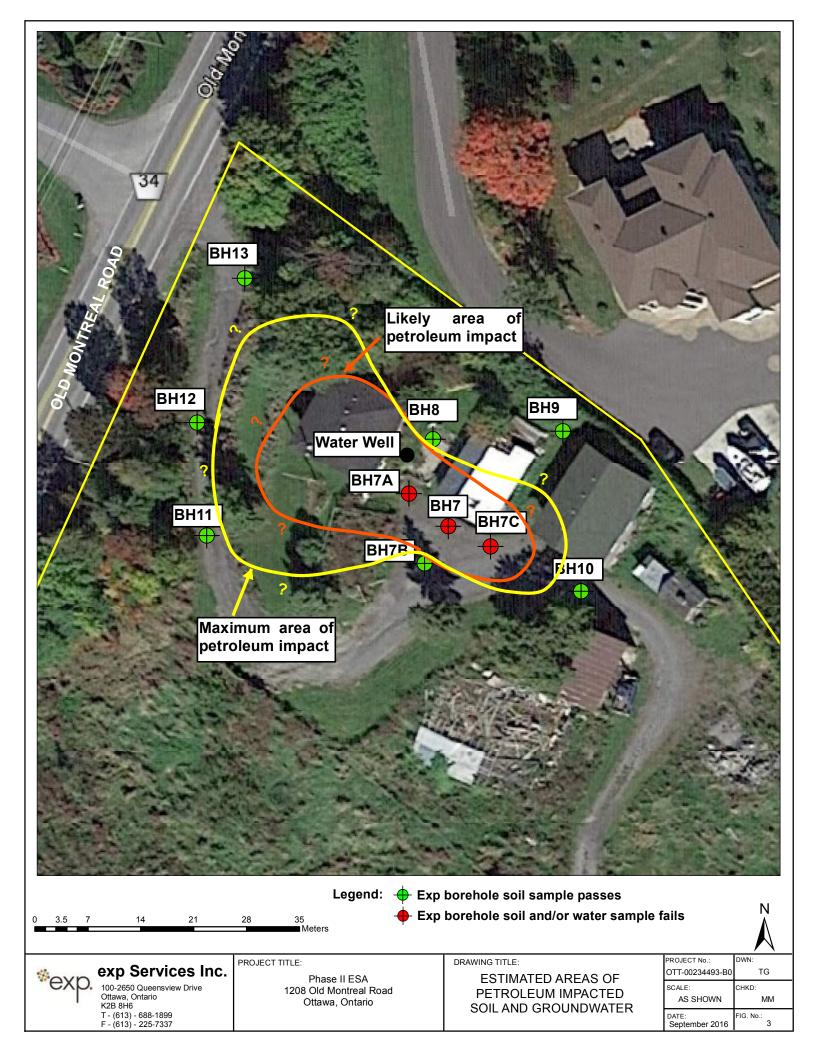
Appendices

DCR/Phoenix Group of Companies Phase II Environmental Site Assessment 1208 Old Montreal Road, Ottawa, ON OTT-00234493-B0 September 13, 2016

Appendix A: Figures







DCR/Phoenix Group of Companies Phase II Environmental Site Assessment 1208 Old Montreal Road, Ottawa, ON OTT-00234493-B0 September 13, 2016

Appendix B: Borehole Logs

Log of Borehole B	H.	7
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Project No: OTT-00234493-A0

exp	•
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			Figure No.
Project:	Phase II ESA	•	
Location:	1208 Montreal Road, Ottawa		Page. <u>1</u> of <u>1</u>
Date Drilled:	8/16/16	Split Spoon Sample	Combustible Vapour Reading
Drill Type:	CME 75	Auger Sample	Natural Moisture Content X Atterberg Limits
Datum:	Assumed	Dynamic Cone Test	Undrained Triaxial at \oplus % Strain at Failure
Logged by:	MAD Checked by: IT	Shear Strength by + Vane Test S	Shear Strength by Areator Penetrometer Test

G W L		SYMBOL	SOIL DESCRIPTION		Assumed	D e p t h	Shear :	20 Strength		50	80 kPa	Na Atter	tural Mois berg Limit	500 75 ture Conter is (% Dry W	50 nt % /eight)	2425-180	Natural Unit Wt. kN/m ³
┢	t	Ē	FILL		85.17	0		50	100 1	50 2	00		20	40 6	0	<u>Š</u>	
	1		Sand and gravel mixed with silty sar - brown, moist, (loose)	nd,			6	133		203	Ċ	p –	1212314			X	
Ш	2		i brown, moist, (loose)	-			3203	143		1018	322	1.243	223	1111	1215	Ή	
Ш	7	000	-SILTY CLAY		84.3	Ι,	10 O	diam.	3243	1383	1423	1.4.4.4	120-000		12.33	∇	
		16	Brown to grey, moist to wet, petroleu odours from 1.5 m to 3.3 m, (hard to	um	83.8	3	0	192		2014	E	P			10413	Ň	
-		X))	odours from 1.5 m to 3.3 m, (hard to	stiff).	66.6	1	0.00.9	11.5		-2010	1000	0.055	0801		200 T 0	Ħ	
		X					13 0	119	1111	1211			290			X	
		X),	-	-		2	0.000	10.00	(-5.6.1.1	10244	2010 2010	110.01		1000	μ	
		XÛ					10000	133		-1213	1222		2523			Ы	
	k	XI	F	1			1014	123	P 40.25	22.52	0.000	2:013	33563	121222	1.41		
旧		H)	_	_		3		143									
							9	1200		18.13	1000	0.048 17715	46	50	1211	M	
ΙĒ		10	-	-					-			1.0.1		-	1.1	\square	
							Sec.12	- Histor		1013	1222	1.7.10					
	8	II)	-	-		4				120111	111.7.1.	14.25		1.1.1.1.1			
IE	K	Ŵ									日語	11111	122.23	Titon.		h	
IE	ß	II)		-				1.2			1.50	8.0	1993			K	
		Ŵ					4	1222		12313		85	11111			X	
15		ß,				5	3711	133	5 3133	1000	1243	1735		11111	1211	μ	
IJ		U.	_	_			2313	133	8433	19200	1.5.5	3.23.5	33653		20166	A	
	Ł	II.						1120			1325		1993		100		
	ł	X,	-	_		6	8.5.65	162.0	6 5 6 6	-1613	8-1-5-C	446.84	18.84			Й	
1	ł	X),					0	1 Rogan						1111		M	
	¥	X	1 1	-			f	100.0	19 02000 19 02000	12000]	010000			Ш	
	Ł	XI					1211	120		1214						NIT.	
£	Ľ	X)	Borehole Terminated at 7.16 m E	-	78.0	7	0.020		-	5.0000			-				
			Borenole Terminated at 7.16 m L	vepun				11									
3								68					1000				
3 ≷								18.8									
8												14.51					
<u>ş</u>									1.1								
								11	111								
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<u>j</u>							8 8	188									
												15.81					
+ FN	от	ES:	1									_					
ייומי	DO	reno	ole data requires interpretation by exp. before others			RL	EVEL R	ECORI			Dura					_	
12			I	Elaps Tim	e	l	Water _evel (m)		Hole Op To (m		Run No.	Dep (n	жП I)	% Red	с. 	Н	QD %
	sta co	indpi mple	mount monitoring well with a 51 mm slotted ipe was installed in the borehole upon tion.	5 day	ys		2.1		-								
Щ. Э.			ork supervised by an exp representative.	23 da	iys		1.3										
žI –			otes on Sample Descriptions														
2 2 5 5	Th	is Fi IT-0	gure is to read with exp. Services Inc. report 0234493-A0														

Project No: Project:	OTT-00234493-A0 Phase II ESA							F	igure N	No		_		
ocation:	1208 Montreal Road, Ottawa							_	Pa	ge	<u>1</u> of	1		
			· <u> </u>					_						
ate Drilled:				lit Spor Iger Sa	on Samp mole	e			Combus Natural I		iour Readi Content	ng		
rill Type:	CME 75		- SF	τ (N) Υ	/alue		0		Atterberg	g Limits		ŀ	-	Ð
atum:	Assumed			namic elby Ti	Cone Te Jbe	51			Undraine % Strain	at Failu	1 8		(€
ogged by:	TG Checked by: MM			ear Str ine Tes	ength by		+ s		Shear St Penetror				4	
ş				Sta	ndard Pe	netration *	Test N Vali	10		stible Vaj	oour Readi	ng (ppm) '50	S A	Vatura
S M B O L	SOIL DESCRIPTION	Assumed	e p t h	Shear S	Strength		60 8	kPa		ural Mois berg Limit	ture Conte ts (% Dry V		ΠΡ̈́ιι	Init W kN/m
FILL		84.88 84.8	0	5	0 1	00 1	150 20	0	2	20	40 (60	Š	
(loos	ned stone, grey, moist, no odours, e)	-		213	1. 1				1.2.2.1.1.1.1.1.1.1.1.1.1.1.1.1.1.1.1.1					
Sand	, some silt, trace clay, brown to grey,	84.1	- 20	13	10.05		10011				1158		Н	
SILT	, no odours, (loose). Y CLAY		1.00	0	134-1			C	P				W	
Brow odou	n to grey, moist to wet, petroleum rs from 1.5 m to 3.2 m, (hard to stiff).	-		15					12:53		500		$\overline{\mathbb{N}}$	
-		-	2	0					1933		0	10110	-Å	
									313		1151	1	600	
													\mathbb{N}	
		-	3			110		11-1-11	65 ()		1993		М	
		-							Ч		11.01		Ш	
			4								24.52		Н	
			1000				1211	C	p				Ň	
		80.0												
Bo	prehole Terminated at 4.88 m Depth													
				1000										
				1.02.02										
						10								
					- 313	44	1.11	iin k	11.13		3718			
OTES: Borehole data re use by others	quires interpretation by exp. before			_	CORD						ILLING R			
use by others		ne me		ater el (m)		Hole Op To (m		Run No.	Dep (m)		% Re	C.	RO	D %
	vised by an exp representative.													
	mple Descriptions													
OTT-00234493-/	read with exp. Services Inc. report						- 11							

Project No: Project:	OTT-00234493-A0 Phase II ESA	f Bo	or	ehole _.	BH		Figure N	_		6.47 ****	9	xp.
Location:	1208 Montreal Road, Ottawa						Pag	je. <u>1</u>	of	1		
Date Drilled: Drill Type: Datum: Logged by:	8/16/16 CME 75 Assumed TG Checked by: MM		· • ! • !	Split Spoon Sample Auger Sample SPT (N) Value Dynamic Cone Test Shelby Tube Shear Strength by Vane Test		⊠ ∎ ■ +s	Natural M Atterberg Undraine % Strain Shear St	ible Vapo Ioisture C Limits of Triaxial at Failure rength by nater Test	ontent at	ng 		□ × ⊕
G M B U D	SOIL DESCRIPTION	Assumed m 85.06	Depth	Standard Penetra 20 40 Shear Strength 50 100	tion Test N 1 60 150	Value 80 kPa 200	25 Nati	aral Moistu erg Limits	00 75 ire Contei (% Dry W	50 nt % /eight)		Natural Unit Wt. kN/m ³
-i(loos FILL Sand	hed stone, grey, moist, no odours,	85.0 84.3	1				0			-	- V	

	malat as adams	85.0		5513.	165.0 E	5735		11001	10(100)	and a	1933	0.838	
Crushed stone, grey, r	noist, no odours,			122.2.1	1121.	153	1.14					1.00]]
		84.3			132.8	10133	结接	1.3.3.1.	3355	12.55	2000	22.13	11
Sand, some silt, trace	clay, brown to grey.	П ^т			A COLORADO	1138		1.1.1.1.1		1211	1407	3545	
moist, no odours, (loos	se).	H	11		1-1-1-	1.000	in and		Ď	1.2.2.2.	1.041-	2.1.1.1	1)(1
SILTY CLAY					244	11120						2012	\mathbb{N}
Brown to grey, moist to	o wet, no odours ,	-											, ,
(hard to stiff).		83.2	,	20-02-	1000		1912	F	o ₽	18.24	1153	1999	M
			2	0.041	10.045	100	9.629	1-1-0-0	Ľ	1000		11010	-M
			122	11.1.4		1	10.11		11111	121111	+325	1000	H
				1		1933		1-1	5	1112-1		1247	М
		7		2225	1997	2.22	33000		p	10011	1.1.2.2	See 18	IXI
				1000	1221	2.52	11000	Letter 1	1111			1.11	\square
		-	3	1999-100	10000	14-4-1-1	-base	1.000	0			1000	\mathbf{H}
			1	201	100	1202404	15.12	E	Þ	1411	1.25	12513	IXI
		-	1		*****								-121
			i i	22.12	1111	01.75	1313	1.1001	Sec. 1		0.1521	102.13	Ц
		_	4					1.1.1.1	5	1	1111		-M
				54.19	1222	2222	2465	1.5 2.4	P	11/26	34.92	1000	IXI
				2242	12.00	143.6	21.2.2			1.1.1.1.1	-1419E		А
		7					1.000	1.1.1.1.	2002				
			1	3135	12113	12233	18.05	13.351	1233	MARINE	7632	3833	
		1	5	63.940	1011	5120	1000	1.1.2.940 B	0535	- Calife		23-12	
		79.6											
Borehole Terminate	ed at 5.48 m Depth		\top			21212	2225	11111	12.23	12122			
						1991	100	1.111					
NOTES:		MATE		EVEL RE	COPPO					ייסה פס		50095	
 Borehole data requires interpretation by use by others 	y exp. belore		_										
NOTES: 1.Borehole data requires interpretation by use by others 2.A flushmount monitoring well with a 51	mm slotted	psed ime		Water evel (m)		Hole Ope To (m)		Run No.	Dep (m	มา)	% Re	G.	RQD %
 A flushmount monitoring well with a 51 standpipe was installed in the borehole completion. 	upon 20	days		1.9									
	11												
3. Field work supervised by an exp repres	sentative.												
4 See Notes on Sample Descriptions													
5. This Figure is to read with exp. Service OTT-00234493-A0	s Inc. report												
UTT-00234493-A0													

	OTT-00234493-A0					Figure N	lo	
Project:	Phase II ESA					Pag	ge1_ of _	1
ocation:	1208 Montreal Road, Ottawa							
ate Drilled:			Split Spoon Auger Sam	-			ible Vapour Reading Aoisture Content	, [] X
rill Type:	CME 75		SPT (N) Val	19	0	Atterberg) Limits	⊢–ê
atum:	Assumed		Dynamic Co Shelby Tubi			% Strain	ed Triaxial at at Failure	\oplus
ogged by:	TG Checked by: MM	_	Shear Stren Vane Test	gth by	+ s		rength by neter Test	
SY MBO L	SOIL DESCRIPTION	Assumed	p 20 t Shear Str	ard Penetration 40 noth	60 BO	25	tible Vapour Reading 50 500 750 ural Moisture Content erg Limits (% Dry We	Natura
FILL	1	85.39 85.3	h 50	•	150 200	2		S S S
	hed stone, grey, moist, no odours, / e).							
KAL FILT		84.6						
mois	t, no odours, (loose).					ů.		X
Brow	n to grey, moist to wet, petroleum – rs from 2.3 m to 3.0 m, (hard to stiff).					10		Ħ
			2			0		Х
			1211				500	\square
	-						Ψ	X
	-		3	2012 (S12) 9615 (He		20	North Direct	
	_							Ň
	-		4			Ū.		X
B	prehole Terminated at 4.88 m Depth	80.5						
		WATER		ORDS		00	RE DRILLING RE	CORD
use by others	equires interpretation by exp. before	ed	R LEVEL REC	Hole O	pen I	Run Dep		
Borehole data re use by others		ed			pen 1		th % Aec.	

		Log	of	Borehole	BH8	
Project No:	OTT-00234493-A0	-				

	ex	p,
Figure No.		

Page.	1	of	1
-			-

Location:	1208 Montrea	l Road, Ottawa				-
Date Drilled:			Split Spoon Sample	\boxtimes	Combustible Vapour Reading	
Drill Type:			Auger Sample	(11)	Natural Moisture Content	×
опп туре.			SPT (N) Value	0	Atterberg Limits	⊢0
Datum:	Assumed		Dynamic Cone Test		Undrained Triaxial at	Ð
	-		Shelby Tube		% Strain at Fallure	-
Logged by:	TG	Checked by: MM	Shear Strength by Vane Test	+ s	Shear Strength by Penetrometer Test	

Project:

Phase II ESA

v V		SYMBOL	SOIL DESCRIPTION	Assumed m 84.57	Dep-r o	20 Shear Strer	40		80 kPa 200	250	Vapour Reading (pp 500 750 loisture Content % imits (% Dry Weight 40 60	- 16	Natural Unit Wt. kN/m ³
LOG OF BOREHOLE LOGS OF BOREHOLES.GPJ TROW OTTAWA.GDT 9/13/16			FILL \Crushed stone, grey, moist, no odours,		1	6 0							
S Cr	NOT	ES: rehole	e data requires interpretation by exp. before there	WATE	RL	EVEL RECO	DADS			CORED	RILLING RECO	RD	_
OF BOREHOLE LOG	2. An sta coi 3. Fie 1. Se	abov andpip mpleti eld wo	e ground monitoring well with a 31 mm stotted le was installed in the borehole upon on. rk supervised by an exp representative es on Sample Descriptions	Elapsed Time 8 days	L	Water .evei (m) 2.6		e Open o (m)	Run No.	Depth (m)	% Rec.		1QD %
90	5.Th OT	iis Fig IT-002	ure is to read with exp. Services Inc. report 234493-A0										

Date Drilled: Drill Type: Datum: Ass ogged by: TG Sand and B C Sand and 	SOIL DESCRIPTION d gravel mixed with silty sand, noist, (loose) <u>AY</u>		Deplh o	Auger Sa SPT (N) Dynamic Shelby T Shear St Vane Te Sta Stear S	Value Cone Te ube rength by st undard Pe 20	netration] 	Combustit Natural Mk Atterberg Undrained % Strain a Shear Stra Penetrom Combusti 255	I Triaxlal at I Failure anglh by eter Test ble Vapour Rea) 500 al Moisture Cor ng Limits (% Dry	ading t l- ading (ppm) 750	SAMP	Natural
Drill Type: Datum: Ass .ogged by: TG 	SOIL DESCRIPTION Gravel mixed with silty sand, toist, (loose) Arrow and to wet, no odours,	Assumed m. 85.49 84.6		Auger Sa SPT (N) Dynamic Shelby T Shear St Vane Te Sta Stear S	ample Value Cone Te ube rength by st undard Pe 20 Strength	netration	Test N Va] 	Natural Mk Atterberg Undrained % Strain a Shear Stro Penetromu Combusti 255 Natur Atterbe 20	Disture Content Limits I Triaxial at I Failure englih by eter Test bite Vapour Rea 500 al Moisture Con rg Limits (% Dri	t ading (ppm) 750 ntent % y Weight)		× Đ ♣ Natural Unit Wt
Fill Fill Sand and brown, m -SillTY Cl Brown to	SOIL DESCRIPTION d gravel mixed with silty sand, noist, (loose) <u>AY</u>	m 85.49 	Depth o	Vane Te Sta Shear S	st Indard Pe 20 4 Strength	netration	Tesl N Va	llue 60 kPa 200	Penetromusii 250 Natur Atterbe 20	eter Test ble Vapour Rea) 500 al Moisture Cor rg Limits (% Dry	750 ntent % y Weight)		Unit Wt
Fill Sand and brown, m - <u>SillTY Cl</u> Brown to	d gravel mixed with silty sand, noist, (loose) - LAY - grey, moist to wet, no odours,	m 85.49 	1 7	Shear S	20 4 Strength	40	60	80	250 Natur Atterbe 20) 500 al Moisture Cor rg Limits (% Dry	750 ntent % y Weight)		Unit Wt
FILL Sand and brown, m	LAY	84.6	0 1 7		50 1		150 2			40	60	IS N	
-brown, m	LAY								0				
Brown to	grey, moist to wet, no odours,								0			M	
		83.87										团	
- - -	-	-	2		12.S		100000					IXI.	
-	-	-			1111111							Ĥ	
	-			02020	10.01							X	
66664-		-	3	05/60 05/60					p			\overline{M}	
	-	-				1122						Ĥ	
	-	1	4					E	P			X	
-	-	1			100				20			$\overline{\mathbf{M}}$	
	-		5						20			Ĥ	
	-		6									Д	
			ľ						p			$\overline{\mathbf{M}}$	
			7										
-	-											X	
-	-		8									$\overline{\mathbf{A}}$	
Boreh	ole Terminated at 8.23 m Depth	77.3	+-	****								μ.	

NOTES: of 1.Borehole data requires interpretation by exp. before	WAT	TER LEVEL RECO	RDS		CORE DR	ILLING RECOR	RD
Use by others	Elapsed Time	Water Level (m)	Hole Open To (m)	Flun No.	Depth (m)	% Rec.	RQD %
standpipe was installed in the borehole upon completion.	8 days	1.6					
3. Field work supervised by an exp representative.							
4 See Notes on Sample Descriptions							
5 This Figure is to read with exp. Services Inc. report OTT-00234493-A0							

Project No:	<u>OTT-00234493-A0</u>			U		-			ioure	No.			ΞX
Project:	Phase II ESA								-	_	1_of	•	
ocation:	1208 Montreal Road, Ottawa								10	ige	01	<u> </u>	
Date Drilled:			_	Split Spo	on Samp	6)	Combu	stible Vap	our Readi	ng	
Drill Type:				Auger Sa SPT (N)				-		Moisture rg Limits	Content	L	×
Datum:	Assumed				Cone Te	st		-	Undrair	- ned Triaxla		ľ	 ⊕
ogged by:	TG Checked by: MM			Shelby T Shear St	ube rength by		-+		Shear S	n at Failur Strength b	У		
				Vane Te			+ s		Penetro	meter Te	st		-
S M M B O	0011 050001071011	Assumed	D				Test N Va			250 !	our Readi 500 7	50	A Natu
- O L	SOIL DESCRIPTION	m 85.97	P t h	Shear :	Strength			80 kPa 200			ture Conte s (% Dry V 40 (nt % Veight) 50	S A Natu P Unit L KN/r
FILL	hed stone, grey, moist, no odours,	1 85.9	0	112.5	1955				5435	11200			
H(loos		85.2		11111	997(4) 1512(3)	112-11		1101		2632		17 65 FA	
Sand	, some silt, trace clay, brown to grey,			2010	1321							10.0000 11.5000 10.50000 10.5000 10.50000 10.50000 10.50000 10.50000 10.50000 10.50000 10.50000 10.50000 10.50000000000	Н
SILT	t, no odours, (loose). Y CLAY									199		12.17	M
Brow (hard	n to grey, moist to wet, no odours, I to stiff).	-		1000	1321								$\overline{\mathbf{M}}$
		84.01	1 2		13,24			1-1-1-1		1000	11110		-M
							10.53	1111					Ð
-		1		1222	1121		12711	1161	244	100	11111		1XI
		-	з					1001	APE:	1.52	11111	1.244	Ħ
					12.23			1121		1239			X
						0			243	1.33	1110	ttic	
		-	4	5253	1321			1.1.1		1.5.4.5			1XI
		_		2023	30.35			0.1121	5313	1243	1000	1222	Ĥ
					14.1			149	2118		1123		M
		1	5						015	1.11	44114 		Ή
-		-		41644	04-01	0.000				- 2031 - 2031	44.94 44.94	2020128 400028	-M-
			6	100.525				1000		133		33 B	Д
										-	112125	9-04-0 9-04-0 9-04-0	Μ
		-		2222	12,21	8.335	12213	111.1	3112	13:21	412.02.5	2013	Δ
-		-	7	1. 1. 1. 1. 1. 1. 1. 1. 1. 1. 1. 1. 1. 1	111151			1000					-17
		78.5		12.2	1.1.2.1			1111	-	1.04.0	1 2122		М
Bo	prehole Terminated at 7.46 m Depth				TH								
										11			
OTES: Borebole data re		WATE			ECORD	s			00	REDRI	LLING R	ECOR)
use by others		psed	_	Water		Hole Of To (m		Run	Dej (n	oth	% Re		RQD %
A flushmount mo standpipe was in completion.		lime Jays		<u>evel (m)</u> 2.0		_10.(IT	<u>v </u>	<u>No.</u>	(n	11			
•	vised by an exp representative.												
	mple Descriptions												
This Figure is to	read with exp. Services Inc. report												

roject:	Phase II ESA								igure N				1
ocation:	1208 Montreal Road, Ottawa								Pa	ge	of	1	
ate Drilled:				Split Spo	ion Samp	le	×		Combus	tible Vapo	our Read:	ng	
rill Type:			_	Auger S SPT (N)	ample		(III)			Voisture (- -	× —
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S M B C	SOIL DESCRIPTION	m	ייים 1 1	Shear	Strength			60 kPa	Nat Attert	ural Moist berg Limits	ure Conte 1 (% Dry V	nt % Veight}	S M Natura P Unit W L kN/m
FILL	hed stone, grey, moist, no odours,	79.25 79.2 	0		50 1		150 2	200		20 4	0 6	50	S
San	, some silt, trace clay, brown to grey, st, no odours, (loose).	78.5	1	2915 9610	5743				0				М
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		-										1218	
		- 71.6	7						0 1)				X
B	orehole Terminated at 7.62 m Depth												

-	NOTES: 1.Borehole data requires interpretation by exp. before	WAT	ER LEVEL RECO	RDS		٩D	
LOGS	use by others 2 A flushmount monitoring well with a 31 mm slotted	Elapsed	Water Level (m)	Hole Open To (m)	Rui	% Rec.	RQD %
HOLE	standpipe was installed in the borehole upon completion.	8 days	5.9				
OHE	3. Field work supervised by an exp representative.						
DF B	4 See Notes on Sample Descriptions						
90	5. This Figure is to read with exp. Services Inc. report OTT-00234493-AD						

Log of Borehole <u>BH12</u>

Project No: OTT-00234493-A0

_ exp

			Figure No	2	
Project:	Phase II ESA		Ŭ		
Location:	1208 Montreal Road, Ottawa		Page	le. <u>1</u> of <u>1</u>	
Date Drilled:		Split Spoon Sample	Combustib	ible Vapour Reading	
Drill Type:			Natural Mo Atterberg I	Iolsture Content	X
Datum:	Assumed	Dynamic Cone Test	-	d Triaxial at	. O
Logged by:	TG Checked by: MM	Shear Strength by Vane Test	+ Shear Stre S Penetrome		

V V	a l	SYMB0	SOIL DESCRIPTION		Assumed m	Depth	Shear	20 Strength	40	60 i	80 kPa	25	iole vapo io 50 iral Moistu erg Límita		50		Natural Unit Wt, kN/m ³
		ĭ			77.29			-	100	150 2	200	2			0	S	
1			FILL Sand and gravel mixed with silty sand brown, moist, (loose)	, t. 		ľ											
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l			_	-		2						0]				X	
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BOREHOLES.GPJ TROW OTTAWA.GDT 9			Borehole Terminated at 8.23 m De	epth	- - - - - - - - - - - - - - - - - - -												
зг Ъ[]	<u>بة</u> 1	TES			WATE	ך איפ איפ	.EVEL R	ECOPI			1	CO		LING R	ECOBI	<u> </u>	
ğ	u: 2. A st co	se b flus tand omp	hole data requires interpretation by exp. before by others shmount monitoring well with a 31 mm slotted pipe was installed in the borehole upon sletion.	Elap Tin 8 da	sed		Water Level (m 5.4		Hole C)pen m)	Run No.	(m)	th	% Re		_	QD %
빏	I.S	ee l	work supervised by an exp representative. Notes on Sample Descriptions Figure is to read with exp. Services Inc. report 00234493-A0														

	Log o		avn			
Project No:	OTT-00234493-A0				•	enp.
Project:	Phase II ESA				Figure No.	
Location:	1208 Montreal Road, Ottawa				Page. <u>1</u> of <u>1</u>	_
Date Drilled:	·		Split Spoon Sample	\boxtimes	Combustible Vapour Reading	
Drill Type:			Auger Sample	010	Natural Molsture Content	×
	· · · · · · · · · · · · · · · · · · ·		- SPT (N) Value	0	Atterberg Limits	⊢ −Ð
Datum:	Assumed		Dynamic Cone Test – Shelby Tube		Undrained Triaxial at % Strain at Fallure	\oplus
Logged by:	TG Checked by: MM	_	Shear Strength by Vane Test	+ s	Shear Strength by Penetrometer Test	A
G M		Assumed	D Standard Penetration Tes		Combustible Vapour Reading (250 500 750	ppm) S A M Natural

Ľ	В 0 L	SOIL DESCRIPTION	m 75.32		50	40 Igth 100		80 kPa 200	Natur Atterber 20	al Moisture Content % g Limits (% Dry Weight 40 60) LES	Unit Wi kN/m ³
		FILL \ Crushed stone, grey, moist, no odours, -\(loose). FILL \ Sand, some silt, trace clay, brown to grey moist, no odours, (loose). <u>SILTY CLAY</u> -Brown to grey, moist to wet, no odours, (hard to stiff).	75.32 1 75.3 1 - J 74.6	11 1 2	50				20 0 0			
		-	_	4					5		_X	
ii		- Borehole Terminated at 5.08 m Depth	- 70.2	5					85		X	
	se by d flushn tandpir omplet	nount monitoring well with a 31 mm slotted be was installed in the borehole upon ion.	WATE Elapsed Time 8 days		EVEL RECO Water .evel (m) 2.4	Hole	Open (m)	Flun No.	CORI Depth (m)	E DRILLING RECO		QD %
4.S	ee Not	rk supervised by an exp representative. tes on Sample Descriptions ure Is to read with exp. Services Inc. report 234493-A0	1									

DCR/Phoenix Group of Companies Phase II Environmental Site Assessment 1208 Old Montreal Road, Ottawa, ON OTT-00234493-B0 September 13, 2016

Appendix C: Analytical Summary Tables

TABLE 1 SOIL ANALYTICAL RESULTS (µg/g) PETROLEUM HYDROCARBONS 1208 Old Montreal Road, Ottawa

Parameter	MOECC Table 2 ¹	BH7-SS4	BH7-SS5	BH7A-SS3	BH7B-SS3	BH7C-SS3
Sample Date (d/m/y)	Residential	16/08/16	16/08/16	19/08/16	19/08/16	19/08/16
Sample Depth (mbsg)	Residential	3.1 - 3.7	4.6 - 5.2	2.3 - 2.9	2.3 - 2.9	2.3 - 2.9
Benzene	0.17	6.67	6.74	2.62	<0.02	0.4
Ethylbenzene	1.6	3.25	1.12	9.15	<0.05	1.25
Toluene	6	14.7	0.3	18.5	<0.05	0.67
Xylenes	25	7.74	1.63	33.1	<0.05	2.71
PHC F ₁ (>C ₆ -C ₁₀)	65	27	8	76	<7	<7
PHC F ₂ (>C ₁₀ -C ₁₆)	150	26	<4	13	<4	47
PHC F ₃ (>C ₁₆ -C ₃₄)	1300	<8	<8	<8	<8	<8
PHC F ₄ (>C ₃₄ -C ₅₀)	5600	<6	<6	<6	<6	<6

Parameter	MOECC Table 2 ¹	BH8-SS6	BH9-SS6	BH10-SS2	BH11-SS9	BH12-SS3	BH13-SS3
Sample Date (d/m/y)	Residential	31/08/16	31/08/16	31/08/16	01/09/16	01/09/16	01/09/16
Sample Depth (mbsg)	Residential	4.6 - 5.2	4.6 - 5.2	1.5 - 2.1	6.8 - 7.4	4.6 - 5.2	4.6 - 5.1
Benzene	0.17	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02
Ethylbenzene	1.6	<0.05	<0.05	<0.05	<0.05	<0.05	< 0.05
Toluene	6	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05
Xylenes	25	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05
PHC F ₁ (>C ₆ -C ₁₀)	65	<7	<7	<7	<7	<7	<7
PHC F ₂ (>C ₁₀ -C ₁₆)	150	<4	<4	<4	<4	<4	<4
PHC F ₃ (>C ₁₆ -C ₃₄)	1300	<8	<8	<8	<8	<8	<8
PHC F ₄ (>C ₃₄ -C ₅₀)	5600	<6	<6	<6	<6	<6	<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 standards (fine grained soils).

Shaded Concentration exceeds MOECC Table 2 residential soil quality standard.



TABLE 2 GROUNDWATER ANALYTICAL RESULTS ($\mu g/L$) PHC and BTEX

1208 Old Montreal Road, Ottawa

Parameter	MOECC	BH7	BH7B	BH8	BH9	BH10	BH11	BH12	BH12
Sample Date (d/m/y)	Table 2 ¹	18/8/16	8/9/16	8/9/16	8/9/16	8/9/16	8/9/16	8/9/16	8/9/16
Benzene	5	18600	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5
Ethylbenzene	2.4	1000	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5
Toluene	24	16800	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5
Xylenes	300	9900	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5
PHC F ₁ (C ₆ -C ₁₀)	750	<25	<25	<25	<25	<25	<25	<25	<25
PHC F ₂ (>C ₁₀ -C ₁₆)	150	<100	<100	<100	<100	<100	<100	<100	<100
PHC F ₃ (>C ₁₆ -C ₃₄)	500	<100	<100	<100	<100	<100	<100	<100	<100
PHC F ₄ (>C ₃₄ -C ₅₀)	500	<100	<100	<100	<100	<100	<100	<100	<100

NOTES:

1 MOECC Soil, Ground Water and Sediment Standards for Use Under Part XV.1 of the EPA, April 2011, Table 2 potable standards (fine grained soils).

Shaded Concentration exceeds MOECC Table 2 residential groundwater quality standard.



exp Services Inc.

DCR/Phoenix Group of Companies Phase II Environmental Site Assessment 1208 Old Montreal Road, Ottawa, ON OTT-00234493-B0 September 13, 2016

Appendix D: Laboratory Certificates of Analysis



RELIABLE.

Certificate of Analysis

exp Services Inc. (Ottawa)

100-2650 Queensview Dr. Ottawa, ON K2B 8K2 Attn: Mark Devlin

Client PO: Project: OTT00234493-A Custody: 32454

Report Date: 22-Aug-2016 Order Date: 16-Aug-2016

Order #: 1634172

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

Paracel ID **Client ID** BH7-SS4 1634172-01

Approved By:



Dale Robertson, BSc Laboratory Director

Any use of these results implies your agreement that our total liability in connection with this work, however arising, shall be limited to the amount paid by you for this work, and that our employees or agents shall not under any circumstances be liable to you in connection with this work.



Order #: 1634172 Report Date: 22-Aug-2016

Order Date: 16-Aug-2016

Project Description: OTT00234493-A

Analysis Summary Table

Analysis	Method Reference/Description	Extraction Date Analysis Date
BTEX by P&T GC-MS	EPA 8260 - P&T GC-MS	18-Aug-16 20-Aug-16
PHC F1	CWS Tier 1 - P&T GC-FID	18-Aug-16 20-Aug-16
PHCs F2 to F4	CWS Tier 1 - GC-FID, extraction	19-Aug-16 21-Aug-16
Solids, %	Gravimetric, calculation	18-Aug-16 18-Aug-16



Report Date: 22-Aug-2016

Order Date: 16-Aug-2016

Project Description: OTT00234493-A

			·		
	Client ID:	BH7-SS4	-	-	-
	Sample Date:	16-Aug-16	-	-	-
	Sample ID:	1634172-01	-	-	-
	MDL/Units	Soil	-	-	-
Physical Characteristics					
% Solids	0.1 % by Wt.	67.4	-	-	-
Volatiles					
Benzene	0.02 ug/g dry	6.67	-	-	-
Ethylbenzene	0.05 ug/g dry	3.25	-	-	-
Toluene	0.05 ug/g dry	14.7	-	-	-
m,p-Xylenes	0.05 ug/g dry	4.72	-	-	-
o-Xylene	0.05 ug/g dry	3.02	-	-	-
Xylenes, total	0.05 ug/g dry	7.74	-	-	-
Toluene-d8	Surrogate	101%	-	-	-
Hydrocarbons					
F1 PHCs (C6-C10)	7 ug/g dry	27	-	-	-
F2 PHCs (C10-C16)	4 ug/g dry	26	-	-	-
F3 PHCs (C16-C34)	8 ug/g dry	<8	-	-	-
F4 PHCs (C34-C50)	6 ug/g dry	<6	-	-	-



Order #: 1634172

Report Date: 22-Aug-2016 Order Date: 16-Aug-2016

Project Description: OTT00234493-A

Method Quality Control: Blank

Analyte	Result	Reporting Limit	Units	Source Result	%REC	%REC Limit	RPD	RPD Limit	Notes
Hydrocarbons									
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						
Volatiles									
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	3.25		ug/g		102	50-140			



Order #: 1634172

Report Date: 22-Aug-2016

Order Date: 16-Aug-2016

Project Description: OTT00234493-A

Method Quality Control: Duplicate

Analyte	Result	Reporting Limit	Units	Source Result	%REC	%REC Limit	RPD	RPD Limit	Notes
Hydrocarbons									
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)	ND	8	ug/g dry	ND				30	
F4 PHCs (C34-C50)	ND	6	ug/g dry	ND				30	
Physical Characteristics									
% Šolids	59.9	0.1	% by Wt.	59.7			0.4	25	
Volatiles									
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	2.22		ug/g dry		103	50-140			



Order #: 1634172

Report Date: 22-Aug-2016 Order Date: 16-Aug-2016

Project Description: OTT00234493-A

Method Quality Control: Spike

Analyte	Result	Reporting Limit	Units	Source Result	%REC	%REC Limit	RPD	RPD Limit	Notes
Hydrocarbons									
F1 PHCs (C6-C10)	192	7	ug/g		96.0	80-120			
F2 PHCs (C10-C16)	75	4	ug/g		83.8	80-120			
F3 PHCs (C16-C34)	163	8	ug/g		87.6	80-120			
F4 PHCs (C34-C50)	109	6	ug/g		87.9	80-120			
Volatiles									
Benzene	4.22	0.02	ug/g		106	60-130			
Ethylbenzene	4.78	0.05	ug/g		120	60-130			
Toluene	4.23	0.05	ug/g		106	60-130			
m,p-Xylenes	9.04	0.05	ug/g		113	60-130			
o-Xylene	4.60	0.05	ug/g		115	60-130			
Surrogate: Toluene-d8	2.47		ug/g		77.2	50-140			



Qualifier Notes:

None

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.

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Chain of Custody (Blank) - Rev 0.4 Feb 2016



RELIABLE.

Certificate of Analysis

exp Services Inc. (Ottawa)

100-2650 Queensview Dr. Ottawa, ON K2B 8K2 Attn: Taryn Glancy

Client PO: Project: OTT000234493 Custody: 32459

Report Date: 22-Aug-2016 Order Date: 18-Aug-2016

Order #: 1634297

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

Paracel ID **Client ID** BH7 SS5 1634297-01

Approved By:

ZMYC

Tim McCooeye Senior Advisor

Any use of these results implies your agreement that our total liability in connection with this work, however arising, shall be limited to the amount paid by you for this work, and that our employees or agents shall not under any circumstances be liable to you in connection with this work.



Order #: 1634297 Report Date: 22-Aug-2016

Order Date: 18-Aug-2016

Project Description: OTT000234493

Analysis Summary Table

Analysis	Method Reference/Description	Extraction Date Analysis Date
BTEX by P&T GC-MS	EPA 8260 - P&T GC-MS	18-Aug-16 18-Aug-16
PHC F1	CWS Tier 1 - P&T GC-FID	18-Aug-16 18-Aug-16
PHCs F2 to F4	CWS Tier 1 - GC-FID, extraction	19-Aug-16 21-Aug-16
Solids, %	Gravimetric, calculation	21-Aug-16 21-Aug-16



Report Date: 22-Aug-2016

Order Date: 18-Aug-2016

Project Description: OTT000234493

			-		
	Client ID:	BH7 SS5	-	-	-
	Sample Date:	16-Aug-16	-	-	-
	Sample ID:	1634297-01	-	-	-
	MDL/Units	Soil	-	-	-
Physical Characteristics					
% Solids	0.1 % by Wt.	63.7	-	-	-
Volatiles			- -		
Benzene	0.02 ug/g dry	6.74	-	-	-
Ethylbenzene	0.05 ug/g dry	1.12	-	-	-
Toluene	0.05 ug/g dry	0.30	-	-	-
m,p-Xylenes	0.05 ug/g dry	1.03	-	-	-
o-Xylene	0.05 ug/g dry	0.60	-	-	-
Xylenes, total	0.05 ug/g dry	1.63	-	-	-
Toluene-d8	Surrogate	106%	-	-	-
Hydrocarbons					
F1 PHCs (C6-C10)	7 ug/g dry	8	-	-	-
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	-	-	-



Order #: 1634297

Report Date: 22-Aug-2016 Order Date: 18-Aug-2016

Project Description: OTT000234493

Method Quality Control: Blank

Analyte	Result	Reporting Limit	Units	Source Result	%REC	%REC Limit	RPD	RPD Limit	Notes
Hydrocarbons									
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						
Volatiles									
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	3.25		ug/g		102	50-140			



Order #: 1634297

Report Date: 22-Aug-2016 Order Date: 18-Aug-2016

Project Description: OTT000234493

Method Quality Control: Duplicate

Analyte	Result	Reporting Limit	Units	Source Result	%REC	%REC Limit	RPD	RPD Limit	Notes
Hydrocarbons									
F2 PHCs (C10-C16)	ND	4	ug/g dry	ND				30	
F3 PHCs (C16-C34)	ND	8	ug/g dry	ND				30	
F4 PHCs (C34-C50)	ND	6	ug/g dry	ND				30	
Physical Characteristics % Solids	84.9	0.1	% by Wt.	85.3			0.5	25	



Order #: 1634297

Report Date: 22-Aug-2016 Order Date: 18-Aug-2016

Project Description: OTT000234493

Method Quality Control: Spike

Analyte	Result	Reporting Limit	Units	Source Result	%REC	%REC Limit	RPD	RPD Limit	Notes
Hydrocarbons									
F1 PHCs (C6-C10)	192	7	ug/g		96.0	80-120			
F2 PHCs (C10-C16)	75	4	ug/g		83.8	80-120			
F3 PHCs (C16-C34)	163	8	ug/g		87.6	80-120			
F4 PHCs (C34-C50)	109	6	ug/g		87.9	80-120			
Volatiles									
Benzene	4.22	0.02	ug/g		106	60-130			
Ethylbenzene	4.78	0.05	ug/g		120	60-130			
Toluene	4.23	0.05	ug/g		106	60-130			
m,p-Xylenes	9.04	0.05	ug/g		113	60-130			
o-Xylene	4.60	0.05	ug/g		115	60-130			
Surrogate: Toluene-d8	2.47		ug/g		77.2	50-140			



Qualifier Notes:

None

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.

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Paracel	Order Number: 1634297 - Soil. 1634298 - Water.	Matrix	Air Volume	of Containers	Sample	Taken Time	PHC-2F4	BTEX								
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Chain of Custody (Blank) - Rev 0.4 Feb 2016



RELIABLE.

Certificate of Analysis

exp Services Inc. (Ottawa)

100-2650 Queensview Dr. Ottawa, ON K2B 8K2 Attn: Mark McCalla

Client PO: Project: OTT000234493A Custody: 109572

Report Date: 22-Aug-2016 Order Date: 19-Aug-2016

Order #: 1634410

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

Paracel ID	Client ID
1634410-01	BH7A
1634410-02	BH7B
1634410-03	BH7C

Approved By:



Dale Robertson, BSc Laboratory Director

Any use of these results implies your agreement that our total liability in connection with this work, however arising, shall be limited to the amount paid by you for this work, and that our employees or agents shall not under any circumstances be liable to you in connection with this work.



Order #: 1634410 Report Date: 22-Aug-2016

Order Date: 19-Aug-2016

Project Description: OTT000234493A

Analysis Summary Table

Analysis	Method Reference/Description	Extraction Date Analysis Date
BTEX by P&T GC-MS	EPA 8260 - P&T GC-MS	21-Aug-16 22-Aug-16
PHC F1	CWS Tier 1 - P&T GC-FID	21-Aug-16 22-Aug-16
PHCs F2 to F4	CWS Tier 1 - GC-FID, extraction	20-Aug-16 21-Aug-16
Solids, %	Gravimetric, calculation	21-Aug-16 21-Aug-16



Order #: 1634410

Report Date: 22-Aug-2016 Order Date: 19-Aug-2016

Project Description: OTT000234493A

	_			i	
	Client ID:	BH7A	BH7B	BH7C	-
	Sample Date:	19-Aug-16	19-Aug-16	19-Aug-16	-
	Sample ID:	1634410-01	1634410-02	1634410-03	-
	MDL/Units	Soil	Soil	Soil	-
Physical Characteristics					
% Solids	0.1 % by Wt.	75.1	75.3	72.2	-
Volatiles					
Benzene	0.02 ug/g dry	2.62	<0.02	0.40	-
Ethylbenzene	0.05 ug/g dry	9.15	<0.05	1.25	-
Toluene	0.05 ug/g dry	18.5	<0.05	0.67	-
m,p-Xylenes	0.05 ug/g dry	22.3	<0.05	2.07	-
o-Xylene	0.05 ug/g dry	10.8	<0.05	0.64	-
Xylenes, total	0.05 ug/g dry	33.1	<0.05	2.71	-
Toluene-d8	Surrogate	100%	97.4%	96.4%	-
Hydrocarbons					
F1 PHCs (C6-C10)	7 ug/g dry	76	<7	<7	-
F2 PHCs (C10-C16)	4 ug/g dry	13	<4	47	-
F3 PHCs (C16-C34)	8 ug/g dry	<8	<8	<8	-
F4 PHCs (C34-C50)	6 ug/g dry	<6	<6	<6	-



Order #: 1634410

Report Date: 22-Aug-2016 Order Date: 19-Aug-2016

Project Description: OTT000234493A

Method Quality Control: Blank

Analyte	Result	Reporting Limit	Units	Source Result	%REC	%REC Limit	RPD	RPD Limit	Notes
Hydrocarbons									
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						
Volatiles									
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	3.25		ug/g		102	50-140			



Order #: 1634410

Report Date: 22-Aug-2016

Order Date: 19-Aug-2016

Project Description: OTT000234493A

Method Quality Control: Duplicate

Analyte	Result	Reporting Limit	Units	Source Result	%REC	%REC Limit	RPD	RPD Limit	Notes
Hydrocarbons									
F1 PHCs (C6-C10)	96	7	ug/g dry	76			23.8	40	
F2 PHCs (C10-C16)	ND	4	ug/g dry	ND				30	
F3 PHCs (C16-C34)	105	8	ug/g dry	75			32.9	30	QR-04
F4 PHCs (C34-C50)	23	6	ug/g dry	21			8.9	30	
Physical Characteristics									
% Solids	84.9	0.1	% by Wt.	85.3			0.5	25	
Volatiles									
Benzene	2.59	0.02	ug/g dry	2.62			1.0	50	
Ethylbenzene	9.78	0.05	ug/g dry	9.15			6.7	50	
Toluene	17.6	0.05	ug/g dry	18.5			4.9	50	
m,p-Xylenes	23.3	0.05	ug/g dry	22.3			4.4	50	
o-Xylene	11.2	0.05	ug/g dry	10.8			3.8	50	
Surrogate: Toluene-d8	1.43		ug/g dry		94.7	50-140			



Order #: 1634410

Report Date: 22-Aug-2016 Order Date: 19-Aug-2016

Project Description: OTT000234493A

Method Quality Control: Spike

Analyte	Result	Reporting Limit	Units	Source Result	%REC	%REC Limit	RPD	RPD Limit	Notes
Hydrocarbons									
F1 PHCs (C6-C10)	192	7	ug/g		96.0	80-120			
F2 PHCs (C10-C16)	100	4	ug/g		111	80-120			
F3 PHCs (C16-C34)	206	8	ug/g		111	80-120			
F4 PHCs (C34-C50)	138	6	ug/g		111	80-120			
Volatiles									
Benzene	4.22	0.02	ug/g		106	60-130			
Ethylbenzene	4.78	0.05	ug/g		120	60-130			
Toluene	4.23	0.05	ug/g		106	60-130			
m,p-Xylenes	9.04	0.05	ug/g		113	60-130			
o-Xylene	4.60	0.05	ug/g		115	60-130			
Surrogate: Toluene-d8	2.47		ug/g		77.2	50-140			



Qualifier Notes:

QC Qualifiers :

QR-04 : Duplicate results exceeds RPD limits due to non-homogeneous matrix.

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.

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Chain of Custody (Env) - Rev 0.7 Feb. 2016



RELIABLE.

Certificate of Analysis

exp Services Inc. (Ottawa)

100-2650 Queensview Dr. Ottawa, ON K2B 8K2 Attn: Taryn Glancy

Client PO: Project: OTT000234493 Custody: 32571

Report Date: 9-Sep-2016 Order Date: 2-Sep-2016

Order #: 1636372

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

Paracel ID	Client ID
1636372-01	BH12 SS3
1636372-02	BH13 SS3
1636372-03	BH11 SS9
1636372-04	BH10 SS2
1636372-05	BH9 SS6
1636372-06	BH8 SS6

Approved By:

Mark Foto

Mark Foto, M.Sc. Lab Supervisor

Any use of these results implies your agreement that our total liability in connection with this work, however arising, shall be limited to the amount paid by you for this work, and that our employees or agents shall not under any circumstances be liable to you in connection with this work.



Order #: 1636372 Report Date: 09-Sep-2016

Order Date: 2-Sep-2016

Project Description: OTT000234493

Analysis Summary Table

Analysis	Method Reference/Description	Extraction Date Analysis Date
BTEX by P&T GC-MS	EPA 8260 - P&T GC-MS	2-Sep-16 7-Sep-16
PHC F1	CWS Tier 1 - P&T GC-FID	2-Sep-16 7-Sep-16
PHCs F2 to F4	CWS Tier 1 - GC-FID, extraction	6-Sep-16 7-Sep-16
Solids, %	Gravimetric, calculation	7-Sep-16 7-Sep-16



Order #: 1636372

Report Date: 09-Sep-2016 Order Date: 2-Sep-2016

Project Description: OTT000234493

	Client ID: Sample Date: Sample ID: MDL/Units	BH12 SS3 01-Sep-16 1636372-01 Soil	BH13 SS3 01-Sep-16 1636372-02 Soil	BH11 SS9 01-Sep-16 1636372-03 Soil	BH10 SS2 31-Aug-16 1636372-04 Soil
Physical Characteristics	MDL/Offics	001	001	0011	001
% Solids	0.1 % by Wt.	64.0	91.1	62.5	67.5
Volatiles			4	1	<u>.</u>
Benzene	0.02 ug/g dry	<0.02	<0.02	<0.02	<0.02
Ethylbenzene	0.05 ug/g dry	<0.05	<0.05	<0.05	<0.05
Toluene	0.05 ug/g dry	<0.05	<0.05	<0.05	<0.05
m,p-Xylenes	0.05 ug/g dry	<0.05	<0.05	<0.05	<0.05
o-Xylene	0.05 ug/g dry	<0.05	<0.05	<0.05	<0.05
Xylenes, total	0.05 ug/g dry	<0.05	<0.05	<0.05	<0.05
Toluene-d8	Surrogate	105%	104%	105%	105%
Hydrocarbons				•	
F1 PHCs (C6-C10)	7 ug/g dry	<7	<7	<7	<7
F2 PHCs (C10-C16)	4 ug/g dry	<4	<4	<4	<4
F3 PHCs (C16-C34)	8 ug/g dry	<8	<8	<8	<8
F4 PHCs (C34-C50)	6 ug/g dry	<6	<6	<6	<6
	Client ID: Sample Date: Sample ID: MDL/Units	BH9 SS6 31-Aug-16 1636372-05 Soil	BH8 SS6 31-Aug-16 1636372-06 Soil	- - -	
Physical Characteristics			1		
% Solids	0.1 % by Wt.	66.1	66.3	-	-
Volatiles			1		1
Benzene	0.02 ug/g dry	<0.02	<0.02	-	-
Ethylbenzene	0.05 ug/g dry	<0.05	<0.05	-	-
Toluene	0.05 ug/g dry	<0.05	<0.05	-	-
m,p-Xylenes	0.05 ug/g dry	<0.05	<0.05	-	-
o-Xylene	0.05 ug/g dry	<0.05	<0.05	-	-
Xylenes, total	0.05 ug/g dry	<0.05	<0.05	-	-
Toluene-d8	Surrogate	105%	105%	-	-
Hydrocarbons	· · ·		•		
F1 PHCs (C6-C10)	7 ug/g dry	<7	<7	-	-
F2 PHCs (C10-C16)	4 ug/g dry	<4	<4	-	-
F3 PHCs (C16-C34)	8 ug/g dry	<8	<8	-	-
	6 ug/g dry				



Order #: 1636372

Report Date: 09-Sep-2016 Order Date: 2-Sep-2016

Project Description: OTT000234493

Method Quality Control: Blank

Analyte	Result	Reporting Limit	Units	Source Result	%REC	%REC Limit	RPD	RPD Limit	Notes
Hydrocarbons									
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						
Volatiles									
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	8.54		ug/g		107	50-140			



Order #: 1636372

Report Date: 09-Sep-2016

Order Date: 2-Sep-2016

Project Description: OTT000234493

Method Quality Control: Duplicate

Analyte	Result	Reporting Limit	Units	Source Result	%REC	%REC Limit	RPD	RPD Limit	Notes
Hydrocarbons									
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)	ND	8	ug/g dry	ND				30	
F4 PHCs (C34-C50)	ND	6	ug/g dry	ND				30	
Physical Characteristics									
% Solids	87.6	0.1	% by Wt.	85.5			2.5	25	
Volatiles									
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	3.89		ug/g dry		108	50-140			



Order #: 1636372

Report Date: 09-Sep-2016

Order Date: 2-Sep-2016

Project Description: OTT000234493

Method Quality Control: Spike

Analyte	Result	Reporting Limit	Units	Source Result	%REC	%REC Limit	RPD	RPD Limit	Notes
Hydrocarbons									
F1 PHCs (C6-C10)	189	7	ug/g		94.4	80-120			
F2 PHCs (C10-C16)	94	4	ug/g		104	80-120			
F3 PHCs (C16-C34)	220	8	ug/g		118	80-120			
F4 PHCs (C34-C50)	148	6	ug/g		119	80-120			
Volatiles									
Benzene	3.39	0.02	ug/g		84.9	60-130			
Ethylbenzene	3.37	0.05	ug/g		84.2	60-130			
Toluene	3.85	0.05	ug/g		96.3	60-130			
m,p-Xylenes	7.08	0.05	ug/g		88.5	60-130			
o-Xylene	3.29	0.05	ug/g		82.2	60-130			
Surrogate: Toluene-d8	7.66		ug/g		95.7	50-140			



Qualifier Notes:

None

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.

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Chain of Custody (Blank) - Rev 0.4 Feb 2016



RELIABLE.

Certificate of Analysis

exp Services Inc. (Ottawa)

100-2650 Queensview Dr. Ottawa, ON K2B 8K2 Attn: Taryn Glancy

Client PO: Project: OTT000234493 Custody: 32459

Report Date: 22-Aug-2016 Order Date: 18-Aug-2016

Order #: 1634298

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

Paracel ID **Client ID** MW7 1634298-01

Approved By:



Dale Robertson, BSc Laboratory Director

Any use of these results implies your agreement that our total liability in connection with this work, however arising, shall be limited to the amount paid by you for this work, and that our employees or agents shall not under any circumstances be liable to you in connection with this work.



Order #: 1634298 Report Date: 22-Aug-2016

Order Date: 18-Aug-2016

Project Description: OTT000234493

Analysis Summary Table

Analysis	Method Reference/Description	Extraction Date Analysis Date
BTEX by P&T GC-MS	EPA 624 - P&T GC-MS	18-Aug-16 22-Aug-16
PHC F1	CWS Tier 1 - P&T GC-FID	18-Aug-16 22-Aug-16
PHCs F2 to F4	CWS Tier 1 - GC-FID, extraction	19-Aug-16 20-Aug-16



Report Date: 22-Aug-2016

Order Date: 18-Aug-2016

Project Description: OTT000234493

	=				
	Client ID:	MW7	-	-	-
	Sample Date:	18-Aug-16	-	-	-
	Sample ID:	1634298-01	-	-	-
	MDL/Units	Water	-	-	-
Volatiles					
Benzene	0.5 ug/L	18600	-	-	-
Ethylbenzene	0.5 ug/L	1000	-	-	-
Toluene	0.5 ug/L	16800	-	-	-
m,p-Xylenes	0.5 ug/L	6330	-	-	-
o-Xylene	0.5 ug/L	3570	-	-	-
Xylenes, total	0.5 ug/L	9900	-	-	-
Toluene-d8	Surrogate	92.2%	-	-	-
Hydrocarbons					
F1 PHCs (C6-C10)	25 ug/L	<25	-	-	-
F2 PHCs (C10-C16)	100 ug/L	<100	-	-	-
F3 PHCs (C16-C34)	100 ug/L	<100	-	-	-
F4 PHCs (C34-C50)	100 ug/L	<100	-	-	-
F1 + F2 PHCs	125 ug/L	<125	-	-	-
F3 + F4 PHCs	200 ug/L	<200	-	-	-



Order #: 1634298

Report Date: 22-Aug-2016 Order Date: 18-Aug-2016

Project Description: OTT000234493

Method Quality Control: Blank

Analyte	Result	Reporting Limit	Units	Source Result	%REC	%REC Limit	RPD	RPD Limit	Notes
Hydrocarbons									
F1 PHCs (C6-C10)	ND	25	ug/L						
F2 PHCs (C10-C16)	ND	100	ug/L						
F3 PHCs (C16-C34)	ND	100	ug/L						
F4 PHCs (C34-C50)	ND	100	ug/L						
Volatiles									
Benzene	ND	0.5	ug/L						
Ethylbenzene	ND	0.5	ug/L						
Toluene	ND	0.5	ug/L						
m,p-Xylenes	ND	0.5	ug/L						
o-Xylene	ND	0.5	ug/L						
Xylenes, total	ND	0.5	ug/L						
Surrogate: Toluene-d8	85.0		ug/L		106	50-140			



Order #: 1634298

Report Date: 22-Aug-2016 Order Date: 18-Aug-2016

Project Description: OTT000234493

Method Quality Control: Duplicate

Analyte	Result	Reporting Limit	Units	Source Result	%REC	%REC Limit	RPD	RPD Limit	Notes
Hydrocarbons F1 PHCs (C6-C10)	ND	25		ND				30	
Volatiles	ND	25	ug/L	ND				30	
Benzene	ND	0.5	ug/L	ND				30	
Ethylbenzene	ND	0.5	ug/L	ND				30	
Toluene	ND	0.5	ug/L	ND				30	
m,p-Xylenes	ND	0.5	ug/L	ND				30	
o-Xylene	ND	0.5	ug/L	ND				30	
Surrogate: Toluene-d8	84.6		ug/L		106	50-140			



Order #: 1634298

Report Date: 22-Aug-2016

Order Date: 18-Aug-2016

Project Description: OTT000234493

Method Quality Control: Spike

Analyte	Result	Reporting Limit	Units	Source Result	%REC	%REC Limit	RPD	RPD Limit	Notes
Hydrocarbons									
F1 PHCs (C6-C10)	2240	25	ug/L		112	68-117			
F2 PHCs (C10-C16)	1670	100	ug/L		93.0	60-140			
F3 PHCs (C16-C34)	3160	100	ug/L		85.0	60-140			
F4 PHCs (C34-C50)	2120	100	ug/L		85.3	60-140			
Volatiles									
Benzene	29.5	0.5	ug/L	ND	73.8	50-140			
Ethylbenzene	34.0	0.5	ug/L	ND	84.9	50-140			
Toluene	31.5	0.5	ug/L	ND	78.8	50-140			
m,p-Xylenes	64.5	0.5	ug/L	ND	80.7	50-140			
o-Xylene	32.5	0.5	ug/L	ND	81.3	50-140			
Surrogate: Toluene-d8	69.2		ug/L		86.5	50-140			



Qualifier Notes:

None

Sample Data Revisions None

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.

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.

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Chain of Custody (Blank) - Rev 0.4 Feb 2016



RELIABLE.

Certificate of Analysis

exp Services Inc. (Ottawa)

100-2650 Queensview Dr. Ottawa, ON K2B 8K2 Attn: Mark McCalla

Client PO: Project: OTT000234493A Custody: 32595

Report Date: 12-Sep-2016 Order Date: 8-Sep-2016

Order #: 1637215

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

Client ID
BH7B
BH8
BH9
BH10
BH11
BH12
BH13

Approved By:

Mark Foto

Mark Foto, M.Sc. Lab Supervisor

Any use of these results implies your agreement that our total liability in connection with this work, however arising, shall be limited to the amount paid by you for this work, and that our employees or agents shall not under any circumstances be liable to you in connection with this work.



Order #: 1637215

Report Date: 12-Sep-2016 Order Date: 8-Sep-2016

Project Description: OTT000234493A

Analysis Summary Table

Analysis	Method Reference/Description	Extraction Date Analysis Date	_
BTEX by P&T GC-MS	EPA 624 - P&T GC-MS	10-Sep-16 11-Sep-16	i
PHC F1	CWS Tier 1 - P&T GC-FID	10-Sep-16 11-Sep-16	i
PHCs F2 to F4	CWS Tier 1 - GC-FID, extraction	9-Sep-16 9-Sep-16	i



Order #: 1637215

Report Date: 12-Sep-2016 Order Date: 8-Sep-2016

Project Description: OTT000234493A

	Client ID: Sample Date: Sample ID: MDL/Units	BH7B 08-Sep-16 1637215-01 Water	BH8 08-Sep-16 1637215-02 Water	BH9 08-Sep-16 1637215-03 Water	BH10 08-Sep-16 1637215-04 Water
Volatiles					
Benzene	0.5 ug/L	<0.5	<0.5	<0.5	<0.5
Ethylbenzene	0.5 ug/L	<0.5	<0.5	<0.5	<0.5
Toluene	0.5 ug/L	<0.5	<0.5	<0.5	<0.5
m,p-Xylenes	0.5 ug/L	<0.5	<0.5	<0.5	<0.5
o-Xylene	0.5 ug/L	<0.5	<0.5	<0.5	<0.5
Xylenes, total	0.5 ug/L	<0.5	<0.5	<0.5	<0.5
Toluene-d8	Surrogate	101%	103%	102%	101%
Hydrocarbons					
F1 PHCs (C6-C10)	25 ug/L	<25	<25	<25	<25
F2 PHCs (C10-C16)	100 ug/L	<100	<100	<100	<100
F3 PHCs (C16-C34)	100 ug/L	<100	<100	<100	<100
F4 PHCs (C34-C50)	100 ug/L	<100	<100	<100	<100
F1 + F2 PHCs	125 ug/L	<125	<125	<125	<125
F3 + F4 PHCs	200 ug/L	<200	<200	<200	<200
	Client ID: Sample Date: Sample ID:	BH11 08-Sep-16 1637215-05 Water	BH12 08-Sep-16 1637215-06 Water	BH13 08-Sep-16 1637215-07 Water	-
Volatiles	MDL/Units	Water	Water	Water	_
Benzene	0.5 ug/L	<0.5	<0.5	<0.5	-
Ethylbenzene	0.5 ug/L	<0.5	<0.5	<0.5	-
Toluene	0.5 ug/L	<0.5	<0.5	<0.5	-
m,p-Xylenes	0.5 ug/L	<0.5	<0.5	<0.5	-
o-Xylene	0.5 ug/L	<0.5	<0.5	<0.5	-
Xylenes, total	0.5 ug/L	<0.5	<0.5	<0.5	-
Toluene-d8	Surrogate	103%	100%	102%	-
Hydrocarbons					
F1 PHCs (C6-C10)	25 ug/L	<25	<25	<25	-
F2 PHCs (C10-C16)	100 ug/L	<100	<100	<100	-
F3 PHCs (C16-C34)	100 ug/L	<100	<100	<100	-
F4 PHCs (C34-C50)	100 ug/L	<100	<100	<100	-
F1 + F2 PHCs	125 ug/L	<125	<125	<125	-
F3 + F4 PHCs	200 ug/L	<200	<200	<200	-



Order #: 1637215

Report Date: 12-Sep-2016 Order Date: 8-Sep-2016

Project Description: OTT000234493A

Method Quality Control: Blank

Analyte	Result	Reporting Limit	Units	Source Result	%REC	%REC Limit	RPD	RPD Limit	Notes
Hydrocarbons									
F1 PHCs (C6-C10)	ND	25	ug/L						
F2 PHCs (C10-C16)	ND	100	ug/L						
F3 PHCs (C16-C34)	ND	100	ug/L						
F4 PHCs (C34-C50)	ND	100	ug/L						
Volatiles									
Benzene	ND	0.5	ug/L						
Ethylbenzene	ND	0.5	uğ/L						
Toluene	ND	0.5	ug/L						
m,p-Xylenes	ND	0.5	ug/L						
o-Xylene	ND	0.5	ug/L						
Xylenes, total	ND	0.5	ug/L						
Surrogate: Toluene-d8	33.8		ug/L		106	50-140			



Order #: 1637215

Report Date: 12-Sep-2016 Order Date: 8-Sep-2016

Project Description: OTT000234493A

Method Quality Control: Duplicate

Analyte	Result	Reporting Limit	Units	Source Result	%REC	%REC Limit	RPD	RPD Limit	Notes
Hydrocarbons									
F1 PHCs (C6-C10)	ND	25	ug/L	ND				30	
Volatiles									
Benzene	ND	0.5	ug/L	ND				30	
Ethylbenzene	ND	0.5	ug/L	ND				30	
Toluene	ND	0.5	ug/L	ND				30	
m,p-Xylenes	ND	0.5	ug/L	ND				30	
o-Xylene	ND	0.5	ug/L	ND				30	
Surrogate: Toluene-d8	32.8		ug/L		102	50-140			



Order #: 1637215

Report Date: 12-Sep-2016 Order Date: 8-Sep-2016

Project Description: OTT000234493A

Method Quality Control: Spike

Analyte	Result	Reporting Limit	Units	Source Result	%REC	%REC Limit	RPD	RPD Limit	Notes
Hydrocarbons									
F1 PHCs (C6-C10)	1900	25	ug/L		95.1	68-117			
F2 PHCs (C10-C16)	1740	100	ug/L		96.8	60-140			
F3 PHCs (C16-C34)	3610	100	ug/L		97.1	60-140			
F4 PHCs (C34-C50)	2350	100	ug/L		94.8	60-140			
Volatiles									
Benzene	25.6	0.5	ug/L		64.0	60-130			
Ethylbenzene	39.6	0.5	ug/L		99.0	60-130			
Toluene	49.1	0.5	ug/L		123	60-130			
m,p-Xylenes	96.6	0.5	ug/L		121	60-130			
o-Xylene	51.1	0.5	ug/L		128	60-130			
Surrogate: Toluene-d8	25.5		ug/L		79.7	50-140			



Qualifier Notes:

None

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.

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.

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Matrix Type: S (Soil/Sed.) GW (Ground Water) SW (Surface Water) SS (Storm/Sanitary Sewer) P (Paint) A (Air) O (Other)							Req	uired Analy	ses			
Paracel Order Number: 1637215	rix	Air Volume	# of Containers	Sample	Taken	4-1-4	tex					
Sample ID/Location Name	Matrix	Air	10 #	Date	Time	P	8					
1 RH7B	64		3	5418/16		X	X					
2 RHS	1		1			1			_		_	
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4 BH 10		-							_			
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1 BH13	V		V	V		V	V					
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Chain of Custody (Blank) - Rev 0.4 Feb 2016