

PHASE TWO ENVIRONMENTAL SITE ASSESSMENT

316 SOMERSET STREET EAST, OTTAWA, ON



Project No.: CP-17-0637

Prepared for:

TC United Group
800 Industrial Ave, Unit 9
Ottawa, ON
K1G 4B8

Prepared by:

McIntosh Perry Consulting Engineers Ltd.
115 Walgreen Rd.
Carp, ON
K0A 1L0

April 25, 2018

McINTOSH PERRY

Executive Summary

McIntosh Perry Consulting Engineers Ltd. (McIntosh Perry) was retained by TC United Group (TCU) to conduct a Limited Shallow Soils Investigation at 316 Somerset Street East, Ottawa, Ontario (the Site, see Figure 1). This investigation was completed for due diligence purposes following the completion of a Phase One Environmental Site Assessment (ESA), dated January 31, 2018 completed by McIntosh Perry. The Phase One ESA identified an Area of Potential Environmental Concern (APEC) at the Site. The APEC resulted from an Ontario Spill Record, which identified a spill of an unknown amount furnace oil to the ground from an on-site above ground fuel storage tank (AST). It appears that a new tank has been installed since the date of the spill. It is unknown if any clean-up or soil removal occurred when the tank was replaced. Based on the presence of this APEC, soils in the area of the former and current AST were identified as having the potential to be impacted by petroleum hydrocarbons (PHC, F1-F4) including benzene, toluene, ethylbenzene, and xylene (BTEX) compounds.

McIntosh Perry completed a subsurface investigation at the Site, consisting of drilling two (2) boreholes immediately adjacent to the AST. Soil samples were obtained from the boreholes and submitted for laboratory analysis of BTEX and PHCs. Due to the shallow nature of bedrock at the Site, and the lack of visual, olfactory, or field screening evidence of significant downward migration of contamination, or the presence of contamination at the bedrock-overburden interface, boreholes were not advanced into bedrock. All soil analytical results were compared to MOECC Table 7 Site Condition Standards under O.Reg. 153/04 (as amended).

Analytical results for BH18-3 SS2 and BH18-4 SS2 indicate detections of PHCs (F1-F4), all detected concentrations of PHC were in compliance with MOECC Table 7 SCS.

Based on the limited nature of this investigation, there is a possibility that higher concentrations of PHCs (F1 – F4) may be present in the shallow soils in the area of the AST. The area directly west of the tank, adjacent to the residence could not be investigated due to the presence of undergrounds utilities (hydro).

Previously, McIntosh Perry recommended that if soils in the area of the AST are to be disturbed or removed from site during demolition of the residence, and that if visual or olfactory evidence of contamination is encountered, further soil testing should be completed at this time (i.e. from beneath the area of the tank and to the west of the tank), to confirm that soils in these areas do not exceed the applicable SCS. McIntosh Perry believes that this recommendation is still applicable.

TABLE OF CONTENTS

1.0	INTRODUCTION	1
1.1	<i>Phase Two Property Information</i>	<i>1</i>
1.1.1	Property Identification	1
1.1.2	Property Ownership and Contact Details	1
1.1.3	Current and Proposed Future Uses.....	1
1.2	<i>Applicable Site Condition Standards</i>	<i>1</i>
2.0	BACKGROUND INFORMATION	3
2.1	<i>Physical Setting</i>	<i>3</i>
2.1.1	Topography	3
2.1.2	Hydrology	3
2.1.3	Geology and Hydrogeology.....	3
2.2	<i>Past Investigations</i>	<i>3</i>
3.0	SCOPE OF INVESTIGATION	4
3.1	<i>Overview</i>	<i>4</i>
3.2	<i>Media Investigated</i>	<i>4</i>
3.3	<i>Contaminants of Potential Concern</i>	<i>4</i>
3.4	<i>Impediments</i>	<i>4</i>
4.0	INVESTIGATION METHOD	5
4.1	<i>Preliminary</i>	<i>5</i>
4.2	<i>Drilling</i>	<i>5</i>
4.3	<i>Soil Sampling and Field Screening.....</i>	<i>5</i>
4.4	<i>Analytical Testing.....</i>	<i>5</i>
4.5	<i>Residue Management</i>	<i>5</i>
4.6	<i>Quality Assurance and Quality Control Measures</i>	<i>6</i>
5.0	RESULTS	7
5.1	<i>Geology</i>	<i>7</i>
5.2	<i>Soil Quality</i>	<i>7</i>
5.3	<i>Quality Assurance and Quality Control Results.....</i>	<i>7</i>

6.0	CONCLUSIONS AND RECOMMENDATIONS	8
6.1	<i>Conclusions.....</i>	8
6.2	<i>Recommendations</i>	8
7.0	LIMITATIONS.....	9
8.0	REFERENCES.....	11

Tables

Table 1 – Soil Analytical Results (PHCs and BTEX)

Figures

Figure 1 – Site Location

Figure 2 – Investigation Areas

Appendices

Appendix A – Borehole Records

Appendix B – Laboratory Certificates of Analysis

1.0 INTRODUCTION

McIntosh Perry Consulting Engineers Ltd. (McIntosh Perry) was retained by TC United Group (TCU) to conduct a Phase Two Environmental Site Assessment (ESA) at 316 Somerset Street East, Ottawa, Ontario ('the Site'). The Site consists of an unoccupied 1.5-storey single-family residential dwelling with one basement level, , and associated parking and landscaped areas. The area of the site is approximately 0.035 hectare (ha). It is our understanding that the building is to be demolished and the Site redeveloped with a mixed use building which will include four residential units and one commercial unit on the ground floor.

The purpose of this Phase Two ESA is to address concerns identified during the Phase One ESA, specifically on-site Areas of Potential Environmental Concern (APECs) resulting from the following on-site Potentially Contaminating Activities:

- Ontario Spill Record for the Site, which identified a spill of an unknown amount of furnace oil to the ground from an on-site aboveground fuel storage tank (AST).

It appears that a new tank has been installed since the date of the spill. The Site location is shown on Figure 1 (Site Location). The Site layout and features, including on-site land use, are shown on Figure 2 (Investigation Areas).

1.1 Phase Two Property Information

1.1.1 *Property Identification*

The legal description of the Site is as follows;

Plan 147991 Lot 52 to 53 PT; Somerset S RP5R-6650) Part 3. PIN - 042060003

1.1.2 *Property Ownership and Contact Details*

McIntosh Perry was retained to complete this Phase Two ESA by TC United Group, the owner of the property. McIntosh Perry's site contact person for the Site is Daniel Boulanger, Director of Planning & Consulting. Mr. Boulanger can be contacted at dan.boulanger@tcunitedgroup.com.

1.1.3 *Current and Proposed Future Uses*

The Site is currently developed with an unoccupied 1.5 storey single family dwelling. Until recently, the Site was used for residential purposes. The future use of the Site will provide for a new mixed use building consisting of 4 residential units and 1 commercial unit on the ground floor.

1.2 Applicable Site Condition Standards

Site Condition Standards (SCS) for this investigation reference **Table 7** of the document titled "Soil, Ground Water and Sediment Standards for Use Under Part XV.1 of the Environmental Protection Act", published by the Ontario Ministry of the Environment and Climate Change (MOECC) and dated April 2011. The SCS were selected based on the following considerations:

- Based on the drilling results, there is less than 2 m of soil between ground surface and the top of the bedrock surface over the majority of the Site;
- Based on observation of soil type encountered, and in the absence of grain size analysis, coarse-grained soil type was assumed as a conservative measure;
- Non-potable groundwater conditions were assumed given that the Site is and will remain municipally serviced;
- Residential land use is assumed, representing the most stringent standards associated with the proposed future use of the building;
- The site is not located within 30 metres of a water body
- The site is not located near any areas of natural significance (e.g. Provincially Significant Wetland)

2.0 BACKGROUND INFORMATION

2.1 Physical Setting

2.1.1 Topography

Elevation at the Site ranges from approximately 59m above sea level (m asl). The topography is generally flat with gentle slope toward the Rideau River.

2.1.2 Hydrology

The Site occurs within the Lower Rideau River watersheds, a subwatershed of the Rideau River watershed. The Rideau River is located approximately 385 m northeast of the Site, at its closest point. Site drainage consists primarily of surficial sheet flow to catch basins along Somerset Street East, with some infiltration interpreted to occur in areas of permeable ground surface.

2.1.3 Geology and Hydrogeology

Geological maps of the area classify the overburden at the Site as fine-textured glaciomarine deposits, consisting of silt and clay with minor sand and gravel. (OGS, 2017).

Based on the subsurface investigation undertaken as part of this assessment and the geotechnical investigation completed by McIntosh Perry, surficial geology consisted primarily of a thin layer of asphalt (hole drilled in driveway) underlain by fill and/or reworked native material consisting of sand and gravel, underlain by silty sand and gravel with shale fragments. No staining or odours were observed.

Geological maps of the area classify the bedrock under the Site as predominantly shale, limestone, dolostone, or siltstone of the Eastview Formation (OGS, 2017). Refusal on inferred bedrock at approximately 1.6 m below ground surface (mbgs) was encountered in the geotechnical boreholes.

The subject property is located within the Lower Rideau River watershed, a subwatershed of the Rideau River watershed. On a local and regional scale, groundwater likely flows west towards the Rideau River. The geotechnical investigation completed by McIntosh Perry identifies only moist material to 1.6 mbgs. The long-term water table at the site is interpreted to be within the bedrock layer, and was not measured as a component of the geotechnical investigation.

2.2 Past Investigations

McIntosh Perry completed a Phase One ESA for the Site in January 2018. The Phase One ESA identified the following on-site Potentially Contaminating Activity (PCA) resulting in an Area of Potential Environmental Concern (APEC):

- Ontario Spill record – Furnace Oil tank in back yard – unknown amount of fuel

Additional PCAs were identified within the Phase One ESA Study Area which were not considered to result in APECs at the Site.

3.0 SCOPE OF INVESTIGATION

3.1 Overview

The Phase Two ESA site investigation at the Site consisted of the following components:

- Underground service locates were completed using Ontario OneCall and a private locate service provider.
- Borehole drilling: a total of two (2) boreholes were drilled at the Site.
- Soil sampling and analysis: soil samples were obtained from all boreholes and submitted for laboratory analysis.

The Phase Two ESA was completed in general accordance with the requirements of O.Reg. 153/04 (as amended).

3.2 Media Investigated

Given the nature and location of the identified APEC, and the lack of significant evidence of contamination at the soil-bedrock interface or the downward migration of contamination into bedrock, media investigated during this Phase Two ESA were limited to soil.

3.3 Contaminants of Potential Concern

Based on the results of McIntosh Perry's Phase One ESA for the Site, the following Contaminants of Potential Concern (COPC) were identified:

- Petroleum Hydrocarbons, fractions 1 through 4 (PHCs F1-F4) – this parameter group includes hydrocarbon chains of various lengths associated with gasoline (F1), diesel and fuel oil (F2), and heavy oils (F3 and F4). PHCs were selected as COPCs for the Site due to the presence of the Ontario spill record associated with the AST.
- Benzene, toluene, ethylbenzene, and xylenes (BTEX) – this parameter group is commonly associated with gasoline and fuels. BTEX were selected as COPCs for the Site due to the presence of the Ontario spill record associated with the AST.

The primary contaminant transport pathway at the site consists of the downward migration of contaminants through the soil layer.

3.4 Impediments

While borehole locations were constrained by underground services (gas and electrical) and the presence of the Site building as well as adjacent buildings, the boreholes were successfully advanced immediately adjacent to the AST, and as such, no impediments to sampling and analysis were considered to be encountered.

4.0 INVESTIGATION METHOD

4.1 Preliminary

Prior to the commencement of subsurface investigations, underground service locates were obtained for the Site through Ontario One Call. Additionally, a private underground service locating company, Ottawa Locates of Ottawa, Ontario, located all on-site underground services (hydro, gas, water, sewer, and communications).

4.2 Drilling

Phil Hulan (C.E.T.) of McIntosh Perry supervised a drilling and sampling program at the Site on February 16, 2018. McIntosh Perry's field program consisted of advancing two boreholes (BH18-3 and BH18-4) in the overburden, in the area of the AST, as presented on Figure 2. It is noted that a previous geotechnical investigation was completed by McIntosh Perry, with the field investigation portion of the geotechnical investigation completed in January 2018; two boreholes were completed at this time (BH18-1 and BH18-2); these boreholes were not considered to be located in the APEC on the Site.

Drilling services were provided by OGS Inc. (OGS) using a portable drilling rig. The drilling and sampling method utilized 0.76 m (2.5') split spoon sampling equipment. Split spoon samples were collected on a continuous basis from ground surface through the overburden strata. Split spoons and drilling equipment was decontaminated between runs and borehole locations to minimize the possibility of cross-contamination.

4.3 Soil Sampling and Field Screening

Three soil samples were collected from each of the boreholes. Recovered soil samples were immediately logged for soil type, moisture, colour, texture and visual evidence of impacts. The samples were then divided into two representative portions - one portion for possible laboratory analysis (if selected based on screening results), and one portion for soil headspace combustible gas screening. Samples to be potentially subjected to laboratory analysis were immediately placed into laboratory supplied sample jars and stored in a cooler with ice. Samples to be used for screening were placed in a sealed bag.

4.4 Analytical Testing

One sample from each borehole was chosen for laboratory analysis (BH18-3 SS2 and BH18-4 SS2) of PHCs and BTEX. Soil samples which were selected for BTEX analysis were preserved immediately after sampling with laboratory supplied vials containing methanol.

Soil sample identification and details are included on the graphic borehole logs presented in Appendix A.

Copies of all laboratory Certificates of Analysis and chain of custody documentation are included in Appendix B.

4.5 Residue Management

Purge and wash waters from equipment cleaning were retained on-Site.

4.6 Quality Assurance and Quality Control Measures

All activities completed as part of this Phase Two ESA were conducted in accordance with McIntosh Perry's Standard Operating Procedures (SOPs). Details of QA/QC measures, including sampling containers, preservation, labelling, handling, and custody, equipment cleaning procedures and field quality control measurements is provided in our SOPs.

5.0 RESULTS

5.1 Geology

Soils on Site predominantly consisted of silty sand and gravelly silty sand fill. A thin layer of clay was also found in BH18-3. Weathered bedrock (shale) was encountered at approximately 1.22 meters below ground surface (m bgs) in both boreholes.

5.2 Soil Quality

Selected samples were analyzed for petroleum hydrocarbons, fractions 1 through 4 (PHCs F1-F4) and benzene, toluene, ethylbenzene, and xylenes (BTEX). Results were compared to the Ministry of the Environment and Climate Change (MOECC) Table 7 – Generic Site Condition Standards (SCS) for Shallow Soils in a Non-Potable Ground Water Condition for Residential land use.

Results for the soil samples (BH18-3 SS2 and BH18-4 SS2) that were submitted for analysis of BTEX parameters indicate that all BTEX concentrations were below laboratory detection limits and therefore in compliance with MOECC Table 7 SCS.

Results for the soil samples (BH18-3 SS2 and BH18-4 SS2) that were submitted for analysis of PHCs parameters indicated that detections of PHCs (F2 – F4) were found in BH18-3 SS2 and BH18-4 SS2. All detected PHC concentrations were below MOECC Table 7 SCS.

The Laboratory Certificate of Analysis is included as Appendix B. All analytical results are summarized in Table 1.

5.3 Quality Assurance and Quality Control Results

All soil and groundwater samples submitted as part of this assessment were handled in accordance with laboratory analytical protocols with respect to holding time, preservation method, storage requirements, and container type. A Certificate of Analysis has been received for each sample submitted for analysis, and all Certificates of Analysis are appended to this report.

Overall, the quality of the field data collected during this Phase 2 ESA are considered to be sufficient to meet the overall objectives of this assessment.

6.0 CONCLUSIONS AND RECOMMENDATIONS

6.1 Conclusions

Analytical results for BH18-3 SS2 and BH18-4 SS2 indicate detections of PHCs (F1-F4); however, all detected PHC concentrations were in compliance with MOECC Table 7 SCS.

6.2 Recommendations

Based on the limited nature of this investigation and the discrete spatial location of boreholes, there is always the possibility that higher concentrations of PHCs (F1 – F4) may be present in the non-investigated shallow soils in the area of the AST. Previously, McIntosh Perry recommended that if soils in the area of the AST are to be disturbed or removed from site during demolition of the residence, and that visual or olfactory evidence of contamination is encountered, further soil testing should be completed at this time (i.e. from beneath the area of the tank and to the west of the tank), to confirm applicable SCS compliance for the soils in these areas.

7.0 LIMITATIONS

This report has been prepared, and the work referred to in this report has been undertaken by, McIntosh Perry Consulting Engineers Ltd. for TC United Group. It is intended for the sole, and exclusive use of TC United Group, any affiliated companies and partners and their respective financial institutions, insurers, agents, employees and advisors (collectively, "TC United Group"). The report may not be relied upon by any other person or entity without the express written consent of McIntosh Perry Consulting Engineers Ltd. (in the form of a Reliance Letter).

Any use which a third party makes of this report, or any reliance on decisions made based on it, without a Reliance Letter are the responsibility of such third parties. McIntosh Perry Consulting Engineers Ltd. accepts no responsibility for damages, if any, suffered by any third party as a result of decisions made or actions based on this report.

The investigation undertaken by McIntosh Perry Consulting Engineers Ltd. with respect to this report and any conclusions or recommendations made in this report reflect McIntosh Perry Consulting Engineers Ltd.'s judgment based on the site conditions observed at the time of the site investigations, inspections and sampling on the date(s) set out in this report and on information available at the time of the preparation of this report.

This report has been prepared for specific application to this site and it is based, in part, upon visual observation of the site, subsurface investigation at discrete locations and depths, and specific analysis of specific chemical parameters and materials during a specific time interval, all as described in this report. Unless otherwise stated, the findings cannot be extended to previous or future site conditions, portions of the site which were unavailable for direct investigation, subsurface locations which were not investigated directly, or chemical parameters, materials or analysis which were not addressed. Substances other than those addressed by the investigation described in this report may exist within the site, substances addressed by the investigation may exist in areas of the site not investigated and concentrations of substances addressed which are different than those reported may exist in areas other than the locations from which samples were taken.

If site conditions or applicable standards change or if any additional information becomes available at a future date, modifications to the findings, conclusions and recommendations in this report may be necessary.

We trust that this information is satisfactory for your present requirements. Should you have any questions or require additional information, please do not hesitate to contact the undersigned.

Respectfully submitted,

McIntosh Perry Consulting Engineers Ltd.



Daniel J. Arnott, P.Eng.
Geo-Environmental Engineer



Fraser Armstrong, P.Eng.
Senior Geo-Environmental Engineer



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8.0 REFERENCES

Canadian Standards Association (CSA), Z769-00: Phase II Environmental Site Assessment, CSA International, Toronto, 2000 (Reaffirmed 2016).

EcoLog ERIS, 2018. Site-Specific Search Report Results.

McIntosh Perry Consulting Engineers Ltd. 'Phase One Environmental Site Assessment, 316 Somerset Street East, Ottawa, Ontario', January 31, 2018.

McIntosh Perry Consulting Engineers Ltd. '316 Somerset Street – Geotechnical Report (DRAFT). March 2018

Natural Resources Canada (NRCAN), 2011. Geobase online mapping tool: Hydro Network GIS Data accessed through <<http://geobase.ca/geobase/en/viewer.jsp?group=nhn>>.

Ontario Geologic Survey (OGS), 2017 GIS Data for bedrock and surficial geology stratigraphy.

Ontario Ministry of Environment and Climate Change (MOECC), Ontario Regulation (O.Reg.) 153/04; Records of Site Condition – Part XV.1 of the Act (i.e. The Environmental Protection Act), as amended.

Ontario Geological Survey (OGS), 2017 – Google Earth™ (website: http://www.mndmf.gov.on.ca/mines/ogs_earth_e.asp).


PHASE TWO ENVIRONMENTAL SITE ASSESSMENT 316 SOMERSET STREET EAST, OTTAWA, ON



FIGURES

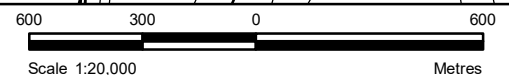


LEGEND

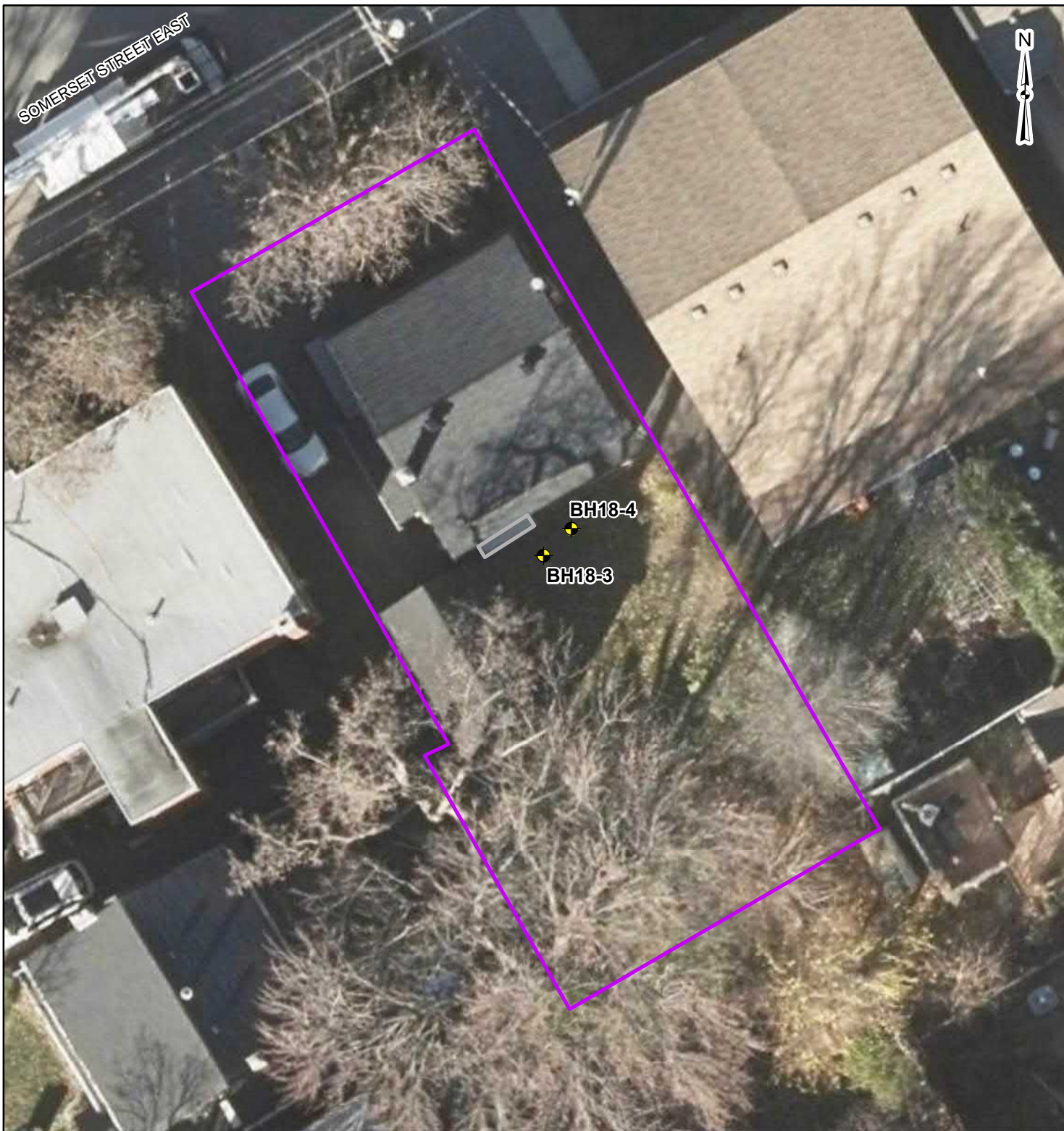
-  Site Location
-  Watercourse
-  Local Road
-  Waterbody
-  Major Road

REFERENCE

GIS data provided by the Ontario Ministry of Natural Resources and Forestry, 2018.



CLIENT:		TC UNITED	
PROJECT:		SHALLOW SOILS INVESTIGATION 316 SOMERSET ST. E	
TITLE:		SITE LOCATION	
McINTOSH PERRY <small>115 Walgreen Road, RR3, Carp, ON K0A1L0 Tel: 613-836-2184 Fax: 613-836-3742 www.mcintoshperry.com</small>		PROJECT NO: CP-17-0637	FIGURE:
		Date	Mar., 01, 2018
		GIS	JD
		Checked By	MC
			1

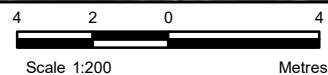


LEGEND

- Approximate Site Boundary
- Above-Ground Storage Tank
- Borehole Location

REFERENCE

GIS data provided by the Ontario Ministry of Natural Resources and Forestry, 2018.
Imagery provided by the City of Ottawa, 2015.



CLIENT:		TC UNITED	
PROJECT:		SHALLOW SOILS INVESTIGATION 316 SOMERSET ST. E	
TITLE:		INVESTIGATION AREAS	
McINTOSH PERRY <small>115 Walgreen Road, RR3, Carp, ON K0A1L0 Tel: 613-836-2184 Fax: 613-836-3742 www.mcintoshperry.com</small>		PROJECT NO: CP-17-0637	FIGURE:
		Date	Mar., 01, 2018
		GIS	JD
		Checked By	MC
			2

PHASE TWO ENVIRONMENTAL SITE ASSESSMENT 316 SOMERSET STREET EAST, OTTAWA, ON



TABLES

Table 1: Analytical Results - Soil - BTEX and PHCs

Sample Date:			16-Feb-18	16-Feb-18	MOECC Site Condition Standards **
Sample Depth (m bgs):			0.61 - 1.22	0.61 - 1.22	
Sample ID:			BH 18-3 SS2	BH 18-4 SS2	
PARAMETER	UNITS	MRL			
BTEX					
Benzene	ug/g dry	0.02	ND (0.02)	ND (0.02)	0.21
Ethylbenzene	ug/g dry	0.05	ND (0.05)	ND (0.05)	2
Toluene	ug/g dry	0.05	ND (0.05)	ND (0.05)	2.3
m/p-Xylene	ug/g dry	0.05	ND (0.05)	ND (0.05)	No SCS
o-Xylene	ug/g dry	0.05	ND (0.05)	ND (0.05)	No SCS
Xylenes, total	ug/g dry	0.05	ND (0.05)	ND (0.05)	3.1
PHCs					
F1 PHCs (C6-C10)	ug/g dry	7	ND (7)	30	55
F2 PHCs (C10-C16)	ug/g dry	4	45	24	98
F3 PHCs (C16-C34)	ug/g dry	8	127	53	300
F4 PHCs (C34-C50)	ug/g dry	6	19	ND (6)	2800

Notes:

**	O.Reg. 153/04 (as amended by O.Reg. 511/09) - Generic Site Condition Standards for Shallow Soils in a Non-Potable Groundwater Condition (Table 7) / residential land use / coarse textured soil
No SCS	No Site Condition Standard
--	Sample not analyzed for selected parameter
ND	Non Detectable (i.e. the analytical result was below the method reporting limit for the test)
<u>124</u>	Sample result exceeds the corresponding Site Condition Standard (SCS)
m bgs	meters below ground surface

PHASE TWO ENVIRONMENTAL SITE ASSESSMENT 316 SOMERSET STREET EAST, OTTAWA, ON



APPENDIX A – BOREHOLE RECORDS

PROJECT No: CP-17-0637

SITE: 316 Somerset St.

CLIENT: TCU

LOGGED BY: PH

DRILLER: OGS Inc.

DATE DRILLED: 16-Feb-18

Depth	Symbol	DESCRIPTION	Elevation	Soil Headspace	Sample Type	Sample ID	
				CGI PPM			
0		Ground Surface	0.000	0 100 300 500			
0		<i>Topsoil</i>					
1		<i>Silty Sand</i> trace to some gravel	0.152		SS	SS1	
2		<i>Clay</i> brown to dark brown	0.457				
3		<i>Gravelly Silty Sand</i> trace clay, dark brown, moist	0.610		SS	SS2	
4		<i>Weathered Bedrock</i> Shale	1.219		SS	SS3	
5		EOH - 1.37 m bgs	1.372				
6		Borehole terminated at bedrock refusal					
7							
8							

NOTES:

Descriptions are based on observations and hand testing of grab samples.

EASTING:

NORTHING:

MAP DATUM: NAD83

ELEVATION - Ground Surface:

REVIEWED BY: DA

TEMPLATE: MP - BH only w CGI (LEL)

PROJECT No: CP-17-0637

SITE: 316 Somerset St.

CLIENT: TCU

LOGGED BY: PH

DRILLER: OGS Inc.

DATE DRILLED: 16-Feb-18

Depth	Symbol	DESCRIPTION	Elevation	Soil Headspace	Sample Type	Sample ID	
				CGI PPM			
0		Ground Surface	0.000	0 100 300 500			
0		<i>Topsoil</i>					
1		<i>Silty Sand</i> trace gravel, trace clay, brown, frozen, moist	0.152		SS	SS1	
2		<i>Gravelly Silty Sand</i> trace clay, dark brown, moist, loose	0.610		SS	SS2	
3							
4		<i>Weathered Bedrock</i> Shale	1.219		SS	SS3	
5		EOH - 1.5 m bgs	1.500				
6		Borehole terminated at bedrock refusal					
7							
8							

NOTES:

EASTING:

ELEVATION - Ground Surface:

Descriptions are based on observations and hand testing of grab samples.

NORTHING:

REVIEWED BY: DA

MAP DATUM: NAD83

TEMPLATE: MP - BH only w CGI (LEL)

PHASE TWO ENVIRONMENTAL SITE ASSESSMENT 316 SOMERSET STREET EAST, OTTAWA, ON



APPENDIX B – LABORATORY CERTIFICATES OF ANALYSIS

Certificate of Analysis

McIntosh Perry Consulting Eng. (Carp)

115 Walgreen Rd.
RR#3 Carp, ON K0A 1L0
Attn: Meghan Coyle

Client PO: 316 Somerset St.
Project: CP-17-0637
Custody: 38751

Report Date: 23-Feb-2018
Order Date: 16-Feb-2018

Order #: 1807512

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

Paracel ID	Client ID
1807512-01	BH 18-3 SS#2
1807512-02	BH 18-4 SS#2

Approved By:



Tim McCooey
Senior Advisor

Certificate of Analysis

Client: McIntosh Perry Consulting Eng. (Carp)

Client PO: 316 Somerset St.

Report Date: 23-Feb-2018

Order Date: 16-Feb-2018

Project Description: CP-17-0637

Analysis Summary Table

Analysis	Method Reference/Description	Extraction Date	Analysis Date
BTEX by P&T GC-MS	EPA 8260 - P&T GC-MS	21-Feb-18	23-Feb-18
PHC F1	CWS Tier 1 - P&T GC-FID	21-Feb-18	21-Feb-18
PHCs F2 to F4	CWS Tier 1 - GC-FID, extraction	20-Feb-18	20-Feb-18
Solids, %	Gravimetric, calculation	21-Feb-18	21-Feb-18

Certificate of Analysis

Report Date: 23-Feb-2018

Client: McIntosh Perry Consulting Eng. (Carp)

Order Date: 16-Feb-2018

Client PO: 316 Somerset St.

Project Description: CP-17-0637

Client ID:	BH 18-3 SS#2	BH 18-4 SS#2	-	-
Sample Date:	16-Feb-18	16-Feb-18	-	-
Sample ID:	1807512-01	1807512-02	-	-
MDL/Units	Soil	Soil	-	-

Physical Characteristics

% Solids	0.1 % by Wt.	96.7	88.4	-	-
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Volatiles

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	112%	99.8%	-	-

Hydrocarbons

F1 PHCs (C6-C10)	7 ug/g dry	<7	30	-	-
F2 PHCs (C10-C16)	4 ug/g dry	45	24	-	-
F3 PHCs (C16-C34)	8 ug/g dry	127	53	-	-
F4 PHCs (C34-C50)	6 ug/g dry	19	<6	-	-

Certificate of Analysis

Report Date: 23-Feb-2018

Client: McIntosh Perry Consulting Eng. (Carp)

Order Date: 16-Feb-2018

Client PO: 316 Somerset St.

Project Description: CP-17-0637

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	2.95		ug/g		92.3	50-140			

Certificate of Analysis

Report Date: 23-Feb-2018

Client: McIntosh Perry Consulting Eng. (Carp)

Order Date: 16-Feb-2018

Client PO: 316 Somerset St.

Project Description: CP-17-0637

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	78.6	0.1	% by Wt.	84.6			7.4	25	

Certificate of Analysis

Report Date: 23-Feb-2018

Client: McIntosh Perry Consulting Eng. (Carp)

Order Date: 16-Feb-2018

Client PO: 316 Somerset St.

Project Description: CP-17-0637

Method Quality Control: Spike

Analyte	Result	Reporting Limit	Units	Source Result	%REC	%REC Limit	RPD	RPD Limit	Notes
Hydrocarbons									
F1 PHCs (C6-C10)	211	7	ug/g		105	80-120			
F2 PHCs (C10-C16)	129	4	ug/g	ND	110	60-140			
F3 PHCs (C16-C34)	235	8	ug/g	ND	96.9	60-140			
F4 PHCs (C34-C50)	181	6	ug/g	ND	112	60-140			
Volatiles									
Benzene	1.61	0.02	ug/g		80.4	60-130			
Ethylbenzene	2.14	0.05	ug/g		107	60-130			
Toluene	2.06	0.05	ug/g		103	60-130			
m,p-Xylenes	4.35	0.05	ug/g		109	60-130			
o-Xylene	2.23	0.05	ug/g		111	60-130			

Certificate of Analysis

Client: McIntosh Perry Consulting Eng. (Carp)

Client PO: 316 Somerset St.

Report Date: 23-Feb-2018

Order Date: 16-Feb-2018

Project Description: CP-17-0637

Qualifier Notes:***Login Qualifiers :***

Suspected methanol loss for preserved VOC soil vial.

*Applies to samples: BH 18-4 SS#2***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.



Client Name: <u>McIntosh Perry</u>	Project Reference: <u>316 Somerset St.</u>	Turnaround Time: <input type="checkbox"/> 1 Day <input type="checkbox"/> 3 Day <input type="checkbox"/> 2 Day <input checked="" type="checkbox"/> Regular Date Required: _____
Contact Name: <u>Meghan Coyle</u>	Quote #	
Address:	PO # <u>CP-17-0637</u>	
Telephone: <u>613-868-2551</u>	Email Address: <u>m.coyle@mcintoshperry.com</u>	

Criteria: ☒ O. Reg. 153/04 (As Amended) Table 9 ☐ RSC Filing ☐ O. Reg. 558/00 ☐ PWQO ☐ CCME ☐ SUB (Storm) ☐ SUB (Sanitary) Municipality: _____ ☐ Other: _____

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

Required Analyses

Parcel Order Number:

1807512

Sample ID/Location Name	Matrix	Air Volume	# of Containers	Sample Taken		PHCS	BTEX	#3 & #8 are one sample, and #1 & #9 are the second sample. The rest are extra vials as per client. KV			
				Date	Time						
1 BH 18-3 SS#1A	S		1	Feb 16, 18	8:15		X				vial
2 BH 18-3 SS#1B					8:15		X				
3 BH 18-3 SS#2					8:20		X				
4 BH 18-3 SS#3					8:30		X				
5 BH 18-4 SS#1					8:45		X				
6 BH 18-4 SS#2					8:50		X				
7 BH 18-4 SS#3					9:00		X				
8 BH 18-3 SS#2					8:20						250mL
9 BH 18-4 SS#2					8:30						250mL
10											

Comments:

* see notes above.
* please confirm analyses requested with PM above.

Method of Delivery:

Walk-in

Relinquished By (Sign): <u>[Signature]</u>	Received by (Sign): <u>[Signature]</u>	Received at Lab: <u>Rachel Subeet</u>	Verified By: <u>[Signature]</u>
Relinquished By (Print): <u>Phil Hulan</u>	Date/Time: <u>Feb 16/18 12:15</u>	Date/Time: <u>Feb 16/18</u>	Date/Time: <u>Feb 16/18 2:54</u>
Date/Time: <u>Feb 16/18 12:15</u>	Temperature: <u>17.6</u> °C	Temperature: <u>11.2</u> °C	pH Verified [] By: _____