



**Phase Two Environmental Site  
Assessment – 187 Boteler Street,  
Ottawa, Ontario**

September 15, 2023

Prepared for:

Ministry of Foreign Affairs of the State of Qatar  
c/o Embassy of Qatar in Ottawa  
150 Metcalfe Street, Suite 800  
Ottawa ON K2P 1P1

Prepared by:

Stantec Consulting Ltd.  
300-1331 Clyde Avenue  
Ottawa ON K2C 3G4

Project No.: 122151611



## Table of Contents

<b>EXECUTIVE SUMMARY .....</b>	<b>i</b>
<b>1.0 INTRODUCTION.....</b>	<b>1.1</b>
1.1 SITE DESCRIPTION.....	1.1
1.2 PROPERTY OWNERSHIP.....	1.1
1.3 CURRENT AND PROPOSED FUTURE USES .....	1.2
1.4 APPLICABLE SITE CONDITION STANDARD .....	1.2
<b>2.0 BACKGROUND INFORMATION .....</b>	<b>2.1</b>
2.1 PHYSICAL SETTING .....	2.1
2.2 PAST INVESTIGATIONS .....	2.1
<b>3.0 SCOPE OF THE INVESTIGATION .....</b>	<b>3.1</b>
3.1 OVERVIEW OF SITE INVESTIGATION .....	3.1
3.2 MEDIA INVESTIGATED.....	3.2
3.3 PHASE ONE CONCEPTUAL SITE MODEL.....	3.4
3.4 DEVIATIONS FROM THE SAMPLING AND ANALYSIS PLAN .....	3.5
3.5 IMPEDIMENTS .....	3.6
<b>4.0 INVESTIGATION METHOD .....</b>	<b>4.1</b>
4.1 GENERAL.....	4.1
4.2 DRILLING AND EXCAVATING.....	4.2
4.3 SOIL: SAMPLING.....	4.4
4.4 FIELD SCREENING MEASUREMENTS .....	4.4
4.5 GROUND WATER: MONITORING WELL INSTALLATION.....	4.5
4.6 GROUND WATER: FIELD MEASUREMENT OF WATER QUALITY PARAMETERS.....	4.6
4.7 GROUND WATER: SAMPLING .....	4.6
4.8 SEDIMENT: SAMPLING.....	4.8
4.9 ANALYTICAL TESTING .....	4.8
4.10 RESIDUE MANAGEMENT PROCEDURES .....	4.8
4.11 ELEVATION SURVEYING .....	4.8
4.12 QUALITY ASSURANCE AND QUALITY CONTROL MEASURES .....	4.9
<b>5.0 REVIEW AND EVALUATION .....</b>	<b>5.1</b>
5.1 GEOLOGY .....	5.1
5.2 GROUND WATER: ELEVATIONS AND FLOW DIRECTION .....	5.2
5.3 GROUND WATER: HYDRAULIC GRADIENTS.....	5.3
5.4 FINE-MEDIUM SOIL TEXTURE .....	5.3
5.5 SOIL: FIELD SCREENING .....	5.3
5.6 SOIL QUALITY.....	5.3
5.7 GROUND WATER QUALITY .....	5.5
5.7.1 Contaminants of Concern – Groundwater .....	5.6



5.8	SEDIMENT QUALITY.....	5.6
5.9	QUALITY ASSURANCE AND QUALITY CONTROL RESULTS.....	5.6
5.10	PHASE TWO CONCEPTUAL SITE MODEL.....	5.7
5.10.1	Areas of Potential Environmental Concern.....	5.7
5.10.2	Physical Setting.....	5.8
5.10.3	Identification and Distribution of Contaminants of Concern.....	5.9
5.10.4	Risk Assessment.....	5.10
<b>6.0</b>	<b>CONCLUSIONS.....</b>	<b>6.1</b>
6.1	SIGNATURES.....	6.2
<b>7.0</b>	<b>REFERENCES.....</b>	<b>7.1</b>

### LIST OF TABLES

Table 2-1:	Contact Information.....	1.2
Table 3-1:	Summary of Areas of Potential Environmental Concern.....	2.8
Table 4-1:	Phase One Conceptual Site Model.....	3.4

### Appendix A

Table 1:	Groundwater Monitoring Well Installation Details
Table 2:	Groundwater Elevations
Table 3:	Soil Analytical Results
Table 4:	Waste Characterization Analytical Results – TCLP
Table 5:	Waste Characterization Analytical Results – SPLP
Table 6:	Groundwater Analytical Results
Table 7:	Maximum Soil Concentrations
Table 8:	Maximum Groundwater Concentrations

### LIST OF FIGURES

### Appendix B

Figure No. 1:	Site Plan and Conceptual Site Model
Figure No. 2a:	Site Plan
Figure No. 2b:	Phase Two Property Location and Conceptual Site Model
Figure No. 3:	Summary of Soil Analytical Results
Figure No. 4:	Summary of Historical Groundwater Analytical Results (April, 2014)
Figure No. 5a:	Groundwater Flow Diagram (April 24, 2014)
Figure No. 5b:	Groundwater Flow Diagram (April 21, 2023)
Figure No. 6:	Soil Cross-Section A-A'
Figure No. 7:	Soil Cross-Section B-B'
Figure No. 8:	Groundwater Cross-Section A-A'
Figure No. 9:	Groundwater Cross-Section B-B'



**LIST OF APPENDICES**

<b>APPENDIX A</b>	<b>TABLES .....</b>	<b>A.1</b>
<b>APPENDIX B</b>	<b>FIGURES .....</b>	<b>B.1</b>
<b>APPENDIX C</b>	<b>SAMPLING AND ANALYSIS PLAN .....</b>	<b>C.1</b>
<b>APPENDIX D</b>	<b>FINALIZED FIELD LOGS .....</b>	<b>D.1</b>
<b>APPENDIX E</b>	<b>CERTIFICATES OF ANALYSIS OR ANALYTICAL REPORTS FROM LABORATORIES .....</b>	<b>E.1</b>
<b>APPENDIX F</b>	<b>RESIDUE MANAGEMENT .....</b>	<b>F.1</b>
<b>APPENDIX G</b>	<b>SURVEY OF PHASE TWO PROPERTY (NOT INCLUDED).....</b>	<b>G.1</b>
<b>APPENDIX H</b>	<b>REMEDIATION.....</b>	<b>H.1</b>
<b>APPENDIX I</b>	<b>SOIL EXCAVATED AT OR BROUGHT TO THE PHASE TWO PROPERTY .....</b>	<b>I.1</b>





# PHASE TWO ENVIRONMENTAL SITE ASSESSMENT – 187 BOTELER STREET, OTTAWA, ONTARIO

Introduction  
September 15, 2023

## Executive Summary

Stantec Consulting Ltd. (Stantec) was retained by the Ministry of Foreign Affairs of the State of Qatar (hereinafter the “Client”), c/o the Embassy of Qatar in Ottawa, to complete a Phase Two Environmental Site Assessment (ESA) Update for the vacant parcel of land located at the civic address of 187 Boteler Street in Ottawa, Ontario (hereinafter the “Phase Two Property”). The objective of the Phase Two ESA Update was to obtain additional soil and groundwater data to update historical data from previous environmental investigations at the Phase Two Property. Stantec understands that this Phase Two ESA Update is required under the City of Ottawa’s Site Plan Control to support the proposed redevelopment of the Phase Two Property.

This Phase Two ESA Update report is intended to update the findings of the previous Phase Two ESA conducted by Stantec in 2014.

### SITE DESCRIPTION AND CURRENT OPERATIONS

The civic address associated with the Phase Two Property is 187 Boteler Street, Ottawa, Ontario. The Phase Two Property consists of an approximately 0.75-hectare (ha) undeveloped parcel legally described as Part of Lot 3 and Part of Lot 7, Registrar’s Compiled Plan No. 611769, designated as Parts 2, 4, 5, and 6, Plan 4R-26468, currently in the City of Ottawa. The Phase Two Property is bounded by the on/off ramps to the MacDonald Cartier Bridge to the north, King Edward Avenue to the east, Boteler Street to the south, and the United Arab Emirates Embassy (125 Boteler Street) to the west. The location of the Phase Two Property is shown on **Figure No. 1, Appendix B**.

During site reconnaissance in October 2022, the 10 previously existing monitoring wells present at the Phase Two Property from previous investigations were confirmed to be destroyed or missing.

### PREVIOUS INVESTIGATIONS

Several previous environmental reports were provided to Stantec for review which have been summarized in section 3.2 of this Phase Two ESA.

Stantec completed a Phase One ESA in 2023 to update the previous assessment completed in 2014 to support the proposed redevelopment of the Phase Two Property and to meet the requirements of the City of Ottawa’s Site Plan Control. A Phase Two ESA was recommended to investigate the soil and groundwater conditions based on the presence of the following APECs and known contamination at the Phase Two Property:



# PHASE TWO ENVIRONMENTAL SITE ASSESSMENT – 187 BOTELER STREET, OTTAWA, ONTARIO

Introduction  
September 15, 2023

APEC	Location of APEC on Phase Two Property	PCA	Location of PCA	COPCs	Media Potentially Impacted
#1	Entire Phase Two Property	#30 - Importation of Fill Material of Unknown Quality	On-site	<ul style="list-style-type: none"> <li>• Metals and inorganics</li> <li>• PHCs</li> <li>• PAHs</li> <li>• PCBs</li> <li>• VOCs</li> </ul>	Soil and groundwater
#2	Northeast corner of the Phase Two Property	Former coal storage area. Based on the opinion of the QP <sub>ESA</sub> , this is a PCA, even though a PCA number is not assigned.	On-site	<ul style="list-style-type: none"> <li>• Metals and inorganics</li> <li>• PHCs</li> <li>• PAHs</li> <li>• BTEX</li> </ul>	Soil and groundwater

The current Phase Two ESA included the advancement of replacement monitoring wells with soil sampling (each completed by EXP Services Inc.) and development and monitoring of the new monitoring wells. The fieldwork for the Phase Two ESA was completed between February and April 2023. Soil samples were collected during the 2023 drilling activities completed by EXP. Groundwater samples were not collected during the current Phase Two ESA due to dry monitoring wells.

The findings of the Phase Two ESA were as follows:

- The MOE (2011) Table 3 SCS for Industrial/Commercial/Community land use in a non-potable groundwater condition with medium-fine textured soils were considered the standards applicable at the Phase Two Property.
- The soil profile observed by Stantec during the Phase Two ESA was generally consistent with that reported during previous investigations at the Phase Two Property. Generally, the soil profile consisted of up to 6.1 m of fill soil of varying soil types with staining, various waste debris, coal and ash which was underlain by a thin interval of native silty clay or sandy silt overlying limestone bedrock.
- Based on an available bedrock geology map (EMR, 1976), bedrock in the area of the Phase Two Property consists of Paleozoic limestone with shale partings of the Lindsay Formation. According to field observations, limestone bedrock was encountered at depths ranging from 2.0 to 6.1 m BGS.
- The depth to water measured during the April, 2023 monitoring event ranged from 3.93 m to 12.24 m BGS, with groundwater elevations ranging from 45.09 m above mean sea level (m AMSL) to 53.33 m AMSL.
- Groundwater flow direction was determined to be towards the northwest in April 2014 and in April 2023.
- Metals, PAHs and PHCs F1 to F4 were considered COCs for soil and for groundwater.



## PHASE TWO ENVIRONMENTAL SITE ASSESSMENT – 187 BOTELER STREET, OTTAWA, ONTARIO

### Introduction

September 15, 2023

- Soil sampling and analysis completed in 2013 and 2023 indicated concentrations of metals and PAHs above the Table 3 ICC SCS in fill soil across the Phase Two Property.
- Groundwater sampling completed in 2014 indicated exceedances of PHCs at MW14-1, PAHs at MW14-1, MW14-3 and MW13-10 and sodium at MW14-3. Concentrations of COCs in the groundwater samples after lab-filtration met the Table 3 ICC SCS indicating that the exceedances were due to sediment in the samples. Exceedances of PHC F3, PHC F4 and PAHs at MW14-1 and of PAHs at MW14-1, MW14-3 and MW13-10 remain as filtering prior to analysis is not permitted for these parameters (MECP, 2011c).
- A solution enhanced cavity was identified at MW14-1 at approximately 14 m BGS in 2014. MW14-1 was constructed as an open hole to from 7.5 to 14.5 m which was subsequently destroyed and replaced in 2023 by MW14-1A. MW14-1A was screened from 15.3 to 18.3 m BGS and was dry during two monitoring events in 2023. Replacement wells installed by EXP in February 2023 (MW13-1A, MW13-2A, MW13-10A, MW13-11A, MW13-12A, MW13-13A, MW13-14A, MW14-1A, MW14-2A and MW14-3A) were screened deeper than the wells they were meant to replace.
- Groundwater sampling was not completed in 2023 as each of the monitoring wells where Table 3 SCS exceedances were previously identified (MW13-10, MW14-1, and MW14-3) were dry during two separate monitoring events in February and April, 2023.

Based on the results of the Phase Two ESA, the MOE (2011) Table 3 SCS were not met for the COCs noted above at the Phase Two Property at the time of the assessment.

Soil and groundwater impacts could be addressed through a combination of remedial excavation and completion of a Screening-Level Risk Assessment (SLRA).

The statements made in this Executive Summary text are subject to the limitations included in Section 7.1 and are to be read in conjunction with the remainder of this report



# PHASE TWO ENVIRONMENTAL SITE ASSESSMENT – 187 BOTELER STREET, OTTAWA, ONTARIO

Introduction  
September 15, 2023

## 1.0 INTRODUCTION

Stantec Consulting Ltd. (Stantec) was retained by the Ministry of Foreign Affairs of the State of Qatar (hereinafter the “Client”), c/o the Embassy of Qatar in Ottawa, to complete a Phase Two Environmental Site Assessment (ESA) Update for the vacant parcel of land located at the civic address of 187 Boteler Street in Ottawa, Ontario (hereinafter the “Phase Two Property”). The objective of the Phase Two ESA Update was to obtain additional soil and groundwater data to update historical data from previous environmental investigations at the Phase Two Property. Stantec understands that this Phase Two ESA Update is required under the City of Ottawa’s Site Plan Control to support the proposed redevelopment of the Phase Two Property.

This Phase Two ESA Update report is intended to update the findings of the previous Phase Two ESA conducted by Stantec in 2014 (herein referred to as ‘2014 Phase Two ESA’).

As this report is not being used to support filing of a Record of Site Condition with the Ontario Ministry of the Environment, Conservation and Parks (MECP), the report does not meet all the requirements of Ontario Regulation 153/04.

### 1.1 SITE DESCRIPTION

The civic address associated with the Phase Two Property is 187 Boteler Street, Ottawa, Ontario. The Phase Two Property consists of an approximately 0.75-hectare (ha) undeveloped parcel legally described as Part of Lot 3 and Part of Lot 7, Registrar’s Compiled Plan No. 611769, designated as Parts 2, 4, 5, and 6, Plan 4R-26468, currently in the City of Ottawa. The Phase Two Property is bounded by the on/off ramps to the MacDonald Cartier Bridge to the north, King Edward Avenue to the east, Boteler Street to the south, and the United Arab Emirates Embassy (125 Boteler Street) to the west. The location of the Phase Two Property is shown on **Figure No. 1, Appendix B**.

During site reconnaissance in October 2022, the 10 previously existing monitoring wells present at the Phase Two Property from previous investigations were confirmed to be destroyed or missing.

### 1.2 PROPERTY OWNERSHIP

The Phase Two Property is currently owned by the Client and is planned to be redeveloped as the new location for the Embassy of Qatar in Ottawa.

Contact information for the Phase Two Property owner representative is provided in **Table 2-1** below.



# PHASE TWO ENVIRONMENTAL SITE ASSESSMENT – 187 BOTELER STREET, OTTAWA, ONTARIO

Introduction  
September 15, 2023

**Table 2-1: Contact Information**

Name	Position	Company	Address
Ahmad Fouad El Attar	Expert of Architecture Engineering	Ministry of Foreign Affairs of the State of Qatar c/o Embassy of Qatar in Ottawa	150 Metcalfe Street, Suite 800 Ottawa ON K2P 1P1
Ismail Ali Abdulla Al-Emadi	Director of Engineering Affairs & General Services Department	Ministry of Foreign Affairs of the State of Qatar c/o Embassy of Qatar in Ottawa	150 Metcalfe Street, Suite 800 Ottawa ON K2P 1P1

## 1.3 CURRENT AND PROPOSED FUTURE USES

The Phase Two Property is currently vacant and undeveloped and is currently zoned as 'General Mixed Use' in the City of Ottawa. Historical records reviewed during the Phase One ESA Update (Stantec, 2023) indicated that the Phase Two Property was historically used for residential, commercial, and municipal right-of way purposes since at least 1902 (Stantec, 2023).

The proposed future use of the Phase Two Property includes the development of a structure consisting of the new location of the Embassy of Qatar in Ottawa (i.e., commercial property use). Since the property use will not change to a more sensitive property use, the filing of a Record of Site Condition (RSC) under Ontario Regulation (O.Reg.) 153/04 is not required to support the proposed future use.

## 1.4 APPLICABLE SITE CONDITION STANDARD

The applicable site condition standards (SCS) for the Phase Two Property were considered to be the Table 3 SCS (non-potable groundwater condition) for industrial/commercial/community (ICC) property use and coarse textured soil in a non-potable groundwater condition (MECP, 2011a). The rationale for use of these SCS is provided below.

According to the Water Well Information System (Ontario, 2023a), no water supply wells are present with 250 metres (m) of the Phase Two Property. Further, the Phase Two Property, once developed, will be serviced by the municipal water system of the City of Ottawa which obtains its water from the Ottawa River. Therefore, a non-potable groundwater condition is applicable to the Phase Two Property.

Under O.Reg. 153/04, Section 41, a property is to be considered environmentally sensitive if any of the following circumstances exist:



## PHASE TWO ENVIRONMENTAL SITE ASSESSMENT – 187 BOTELER STREET, OTTAWA, ONTARIO

### Introduction

September 15, 2023

1. *The property is:*
  - i. *within an area of natural significance,*
  - ii. *includes or is adjacent to an area of natural significance or part of such an area, or*
  - iii. *includes land that is within 30 m of an area of natural significance or part of such an area.*
2. *the soil at the property has a pH value as follows:*
  - i. *for surface soil, pH is less than 5 or greater than 9, or*
  - ii. *for sub-surface soil, pH is less than 5 or greater than 11.*
3. *a qualified person is of the opinion that, given the characteristics of the property and the certifications the qualified person would be required to make in a record of site condition in relation to the property as specified in Schedule A, it is appropriate to apply this section to the property.*

A review of the Ministry of Natural Resources (MNR) natural heritage mapping (Ontario, 2023b) indicated that there are no known natural heritage areas at or adjacent to the Phase Two Property. Possible species-at-risk (SARs) including Nine-spotted Lady Beetle, Skillet Clubtail, American Eel, Lake Sturgeon, Greater Redhorse, Silver Lamprey, Barn Swallow, Eastern Meadowlark, Blistered Jellyskin, and Cupped Fringe Lichen were identified within 250 m of the Phase Two Property; however, no SARs were specifically identified at or within 30 m of the Phase Two Property, and considering the current condition of the Phase Two Property and use of the adjacent properties within 30 m, no SARs would be expected to be present. Therefore, Stantec concludes that the Phase Two Property is not located on or within 30 m of an area of natural significance.

During this recent Phase Two ESA Update, two surface and six subsurface soil samples were analyzed for pH and the results were within the range of five to nine for surface soil or five to 11 for subsurface soil. Historical pH data obtained from soil samples analyzed during the 2014 Phase Two ESA indicated similar results.

Based on these considerations outlined above, the Phase Two Property was not considered environmentally sensitive given the definitions provided in Section 41 of O.Reg. 153/04.

Under O.Reg. 153/04, Section 43.1, particular SCS are to be applied if any of the following circumstances exist:

- *the property is a shallow soil property; or*
- *the property includes all or part of a water body or is adjacent to a water body or includes land that is within 30 metres of a water body.*

Under O.Reg. 153/04, Section 43.1, a shallow soil property means “a property of which 1/3 or more of the area consists of soil equal to or less than 2 m in depth beneath the soil surface”. Based on information obtained from previous and recent subsurface investigations, it was concluded that the Phase Two Property is not a shallow soil property since bedrock was not encountered at depths shallower than 2 m below ground surface (BGS).

Additionally, the closest waterbody, the Rideau River, is located approximately 130 m to the northeast of the Phase Two Property and the Ottawa River is located approximately 360 m to the northwest. Therefore, no surface water bodies were identified within 30 m of the Phase Two Property.



## **PHASE TWO ENVIRONMENTAL SITE ASSESSMENT – 187 BOTELER STREET, OTTAWA, ONTARIO**

Introduction

September 15, 2023

Based on the site conditions outlined above, the Table 3 SCS were considered applicable to the Phase Two Property for ICC use with coarse-grained soil in a non-potable groundwater condition.

Due to the heterogeneous nature of the fill material encountered over the entire Phase Two Property, a conservative approach was taken, and soil was considered to be coarse textured. Grain size distribution analyses were not completed.



# PHASE TWO ENVIRONMENTAL SITE ASSESSMENT – 187 BOTELER STREET, OTTAWA, ONTARIO

Background Information  
September 15, 2023

## 2.0 BACKGROUND INFORMATION

### 2.1 PHYSICAL SETTING

Based on a review of topographic mapping (NRCan, 1998) and observations made during the Phase One ESA (Stantec, 2023), the topography in the area of the Phase Two Property is generally flat. The Phase Two Property is generally at grade with surrounding properties except the adjacent roadway to the north that is at a slightly higher elevation. The ground surface of the Phase Two Property consists of bare soil and vegetation. A berm is present along the northern property line and some soil piles are present along the north side of the Phase Two Property.

At the time of the Phase One ESA (Stantec, 2023), the Phase Two Property was undeveloped and overgrown with vegetation and some small trees. Water is expected to drain predominantly via infiltration through surface soils.

The anticipated groundwater flow direction at the Phase Two Property is considered to be to the north towards the confluence of the Ottawa River and Rideau River. It should be noted that the direction of the shallow groundwater flow at the Phase Two Property is potentially influenced by geological anomalies (i.e., karsts) and a municipal utility corridor that bisects the Phase Two Property, as shown on **Figure No. 1, Appendix B**. Underground utilities and/or dewatering systems at surrounding properties may also influence the direction of groundwater flow in the area of the Phase Two Property.

### 2.2 PAST INVESTIGATIONS

The following environmental and geotechnical reports related to the Phase Two Property were reviewed by Stantec:

- *Subgrade Investigation, Ottawa Approach to Proposed MacDonald-Cartier Bridge, Ottawa, Ontario*, prepared by H.Q. Golder & Associates Ltd., dated October 1962
- *Limited Phase I Environmental Site Assessment, King Edward Avenue and Sussex Drive Rights-of-Ways, Ottawa, Ontario*, prepared by Jacques Whitford Environment Ltd., dated February 2001
- *Geotechnical Inventory, King Edward Avenue, Ottawa, Ontario*, prepared by Jacques Whitford and Associates Ltd., dated February 2001
- *(Draft) Limited Phase II Environmental Site Assessment, King Edward Ave. Overpass Structures Over the Union Ave. to King Edward Ave. Ramp, Ottawa, Ontario*, prepared by Jacques Whitford Environment Ltd., dated April 2004
- *(Draft) Supplemental Phase II ESA, King Edward Avenue Right-of-way (Laurier Avenue East to Boteler Street) and Area of Structures North of King Edward Right-of-Way, Ottawa, Ontario*, prepared by Jacques Whitford Ltd., dated October 26, 2004
- *Modified Phase I Environmental Site Assessment, Boteler Street from Dalhousie Street to King Edward Avenue, Ottawa, Ontario*, prepared by Jacques Whitford Environment Ltd., dated January 2006





## PHASE TWO ENVIRONMENTAL SITE ASSESSMENT – 187 BOTELER STREET, OTTAWA, ONTARIO

Background Information  
September 15, 2023

- *Limited Phase II Environmental Site Assessment, Boteler Street from Dalhousie Street to King Edward Avenue, Ottawa, ON*, prepared by Jacques Whitford Environment Ltd., dated January 2006
- *Soil Sampling Results, United Arab Emirates (UAE) Embassy, 125 Boteler Street, Ottawa, Ontario*, prepared by Trow Associates Inc., dated April 11, 2006
- *Phase I Environmental Site Assessment, Vacant Land Parcels, Boteler Street, Parcels 1 and 2, Lot 7, RCP 611769, Ottawa, ON*, prepared by Stantec Consulting Ltd., dated June 26, 2013
- *Phase II Environmental Site Assessment, Vacant Land Parcels, Boteler Street, Parcel 1 and 2, Lot 7, RCP 611769, Ottawa, Ontario*, prepared by Stantec Consulting Ltd., dated June 27, 2013
- *Phase One Environmental Site Assessment, Vacant Land Parcel, Boteler Street, Parts 2, 4, 5 and 6 of Plan 4R-26468, Part of Lot 3 and Part of Lot 7 RCP 611769, Ottawa, Ontario*, prepared by Stantec Consulting Ltd., dated June 27, 2014
- *Phase Two Environmental Site Assessment, Vacant Land Parcel, Boteler Street, Parts 2, 4, 5 and 6 of Plan 4R-26468, Part of Lot 3 and Part of Lot 7 RCP 611769, Ottawa, Ontario*, prepared by Stantec Consulting Ltd., dated June 27, 2014
- *Geotechnical Investigation, Proposed Embassy Development, 187 Boteler Street, Ottawa, Ontario*, prepared by Paterson Group, dated July 10, 2019
- *(Draft) Phase One Environmental Site Assessment, 187 Boteler Street, Ottawa, ON K1N 0A4*, prepared by Stantec Consulting Ltd., dated February 17, 2023
- *Monitoring Well Decommissioning and Re-Installation, 187 Boteler Street, Ottawa, Ontario*, prepared by EXP Services Inc., dated March 15, 2023

A summary of relevant information obtained from these reports is provided below.

### ***Subgrade Investigation, Ottawa Approach to Proposed MacDonald-Cartier Bridge, Ottawa, Ontario, prepared by H.Q. Golder & Associates Ltd., dated October 1962***

The subgrade investigation identified the land between the Ottawa River to the north, Rideau River to the east, Boteler Street to the south, and Sussex Avenue to the west, as having a shallow depth of till overburden overlying argillaceous Ordovician limestone bedrock. The bedrock was found to slope down from Sussex Avenue to the Rideau River. Groundwater was identified to be within the overburden. Fill material consisting of silty sand with gravel, cobbles, and trace organic matter was found beneath the railway tracks across the Phase Two Property.



## PHASE TWO ENVIRONMENTAL SITE ASSESSMENT – 187 BOTELER STREET, OTTAWA, ONTARIO

Background Information  
September 15, 2023

### ***Limited Phase I Environmental Site Assessment, King Edward Avenue and Sussex Drive Rights-of-Ways, Ottawa, Ontario, prepared by Jacques Whitford Environment Ltd., dated February 2001***

The site assessed in the Limited Phase I ESA comprised: the King Edward Avenue right-of-way from Laurier Avenue to the Ottawa River; the Sussex Drive right-of-way from Alexander Street to Bruyere Street, including Green Island; areas enclosed by Boteler Street to the south, Sussex Drive to the northwest and the Rideau River to the east; Cathcart Street; Rose Street; and Bruyere Street, east of King Edward Avenue. Several criteria were used to qualitatively rank the level of environmental concern associated with activities identified on the properties within the area of assessment. Three properties positioned within the vicinity of the Phase Two Property were identified with potential environmental concerns. These include:

- Former 169 ½ Boteler Street, occupied in the 1950s to late 1960s by Peter's Garage, the 1956 fire insurance plan shows a gasoline underground storage tank (UST).
- East side of former Cumberland Street, between McTaggart Street and Boteler Street, occupied by JG Butterworth coal yard in the 1920s.
- 82 King Edward Avenue, occupied in the 1960s by Ken's Body Shop.

### ***Geotechnical Inventory, King Edward Avenue, Ottawa, Ontario, prepared by Jacques Whitford and Associates Ltd., dated February 2001***

The Geotechnical Inventory was completed as part of the Environmental Assessment study conducted by Jacques Whitford and Associates Ltd. in 2000. Bedrock was identified as sublithographic to fine crystalline limestone with interbeds of calcarenite and shale of the Lindsay Formation. Depth to bedrock varied from one metre along the Ottawa River to over 15 m east of King Edward. The soil stratigraphy consisted of glacial till, silty clay, sand, organic deposits, and fill. Fill was found in large deposits within the study area, with typical depths of 1.0 to 3.0 m. Groundwater elevations were found to be shallow, between 2.0 to 5.0 m BGS.

### ***(Draft) Limited Phase II Environmental Site Assessment, King Edward Ave. Overpass Structures over the Union Ave. to King Edward Ave. Ramp, Ottawa, Ontario, prepared by Jacques Whitford Environment Ltd., dated April 2004***

The Limited Phase II ESA was completed in conjunction with a geotechnical investigation in the vicinity of the proposed overpass structures to be located northwest of Boteler Street. The laboratory analytical results were compared to Table B criteria provided in the *Guideline for Use at Contaminated Sites in Ontario* (MECP, 1997), which were applicable at the time of the assessment. Soil with concentrations of polycyclic aromatic hydrocarbons (PAHs) exceeding the criteria applicable at the time was identified near the eastern corner of the Phase Two Property.



## PHASE TWO ENVIRONMENTAL SITE ASSESSMENT – 187 BOTELER STREET, OTTAWA, ONTARIO

Background Information  
September 15, 2023

***(Draft) Supplemental Phase II ESA, King Edward Avenue Right-of-way (Laurier Avenue East to Boteler Street) and Area of Structures North of King Edward Right-of-Way, Ottawa, Ontario, prepared by Jacques Whitford Ltd., dated October 26, 2004***

The site of this Supplemental Phase II ESA comprised a 1.4 km section of King Edward Avenue between Laurier Avenue and Boteler Street, and lands northwest of Boteler Street. Boreholes and groundwater monitoring wells were installed along King Edward Avenue to assess soil and groundwater conditions. The laboratory analytical results were compared to the soil quality standards provided in the *Soil, Ground Water, and Sediment Standards for Use Under Part XV.1 of the Environmental Protection Act*, dated March 9, 2004 (MECP, 2004), which were applicable at the time of the assessment. Soil with concentrations of PAHs exceeding the standards applicable at the time were identified near the eastern corner of the Phase Two Property. Fill material of various thicknesses was found within the study area.

***Modified Phase I Environmental Site Assessment, Boteler Street from Dalhousie Street to King Edward Avenue, Ottawa, Ontario, prepared by Jacques Whitford Environment Ltd., dated January 2006***

The focus of the Modified Phase I ESA was the Boteler Street right-of-way, between Dalhousie Street and King Edward Avenue and a 250-m wide area beyond the subject right-of-way in all directions. Based on the findings of the assessment, several historical on-site and off-site activities were identified as posing an environmental concern to the Phase Two Property. These activities include:

- JG Butterworth Coal Storage Yard, located on the north corner of the Phase Two Property in the 1920s; contaminants of concern (COCs) include metals, petroleum hydrocarbons (PHCs), and PAHs.
- Peter's Garage, located west of the Phase Two Property between 1950 and 1960; COCs include metals, PHCs, and volatile organic compounds (VOCs).
- Ken's Body Shop, located to the southeast of the Phase Two Property in the 1960s; COCs include, metals, PHCs, and VOCs.

***Limited Phase II Environmental Site Assessment, Boteler Street from Dalhousie Street to King Edward Avenue, Ottawa, ON, prepared by Jacques Whitford Environment Ltd., dated January 2006***

Boreholes and groundwater monitoring wells were installed along Boteler Street to assess soil and groundwater conditions based on the environmental concerns identified in the Modified Phase I ESA, as discussed. The laboratory analytical results were compared to the soil quality standards provided in *Soil, Ground Water, and Sediment Standards for Use Under Part XV.1 of the Environmental Protection Act*, dated March 9, 2004 (MECP, 2004), which were applicable at the time of the assessment. Soil with concentrations of sodium adsorption ratio (SAR) and PAHs exceeding the standards applicable at the time were identified in the vicinity of the Phase Two Property. Fill material was observed at depths ranging from 1.2 to 2.1 m BGS.



## **PHASE TWO ENVIRONMENTAL SITE ASSESSMENT – 187 BOTELER STREET, OTTAWA, ONTARIO**

Background Information  
September 15, 2023

### ***Soil Sampling Results, United Arab Emirates (UAE) Embassy, 125 Boteler Street, Ottawa, Ontario, prepared by Trow Associates Inc., dated April 11, 2006***

The investigation consisted of the collection of four soil samples from the walls of the excavation undertaken in preparation for construction on this property (located immediately west of the Phase Two Property), now occupied by the Embassy of the United Arab Emirates. Approximately two-thirds of the property was excavated to bedrock; therefore, no floor samples were submitted for laboratory analysis. The laboratory analytical results were compared to the soil quality standards provided in *Soil, Ground Water, and Sediment Standards for Use Under Part XV.1 of the Environmental Protection Act*, dated March 9, 2004 (MECP, 2004), which were applicable at the time of the assessment. No exceedances were identified in the assessment. This report formed the basis of the RSC filed with the Ministry of Environment (MOE) for the United Arab Emirates Embassy.

### ***Phase I ESA, Vacant Land Parcels, Boteler Street, Parcel 1 and 2, Lot 7, RCP611769, Ottawa, Ontario, prepared by Stantec Consulting Ltd., dated June 26, 2013***

Stantec conducted a Phase I ESA of two triangular parcels of undeveloped land to the west of and in the southwest corner of the Phase Two Property in the spring of 2013 in support of a land transfer. Parcel 1, owned by the City of Ottawa, is a triangular parcel of land bound by King Edward Avenue to the north, undeveloped land owned by the City of Ottawa to the east, the United Arab Emirates Embassy grounds to the south, and an undeveloped boulevard for the King Edward Avenue off-ramp to the west. Parcel 2, owned by the United Arab Emirates (at the time), is a triangular parcel of land bound by the undeveloped land owned by the City of Ottawa to the north and east, Boteler Street to the south, and the United Arab Emirates Embassy to the west. The site was approximately 0.25-ha in size. A mound of soil was present on the northeast section of Parcel 1, reportedly excess soil and likely material from the King Edward Renewal project temporarily placed on the parcel and subsequently landscaped. Based on the findings of the assessment, several historical on-site and off-site activities were identified as posing an environmental concern to the Phase Two Property, these activities include:

- Impacted soil from the King Edward Renewal Project present as a berm along the northern boundary of the Phase Two Property, and to the west of the Phase Two Property.
- Canadian Pacific Railway lines that historically extended in an east-west direction along McTaggart Street, approximately 10 m to the north of the Phase Two Property.
- Presence of a gasoline UST at 121 Boteler Street, to the west of the Phase Two Property.
- Historical neighboring property uses which included a variety of operations of concern, including: coal storage yards (northwest and east of the Phase Two Property), gasoline service stations with USTs (north, west, and south of the Phase Two Property), building material storage and warehouses (north and west of the Phase Two Property), automotive repairs (south and east of the Phase Two Property), commercial printing services (southwest of the Phase Two Property), and a train yard (west of the Phase Two Property).



## PHASE TWO ENVIRONMENTAL SITE ASSESSMENT – 187 BOTELER STREET, OTTAWA, ONTARIO

Background Information  
September 15, 2023

### ***Phase II ESA, Vacant Land Parcels, Boteler Street, Parcel 1 and 2, Lot 7, RCP 611769, Ottawa, Ontario, prepared by Stantec Consulting Ltd., dated June 27, 2013***

Boreholes and groundwater monitoring wells were installed over two triangular parcels of land to assess soil and groundwater conditions based on the environmental concerns identified in the Phase I ESA, as discussed above. The laboratory analytical results were compared to the soil and groundwater quality standards provided in *the Soil, Ground Water, and Sediment Standards for Use Under Part XV.1 of the Environmental Protection Act*, dated April 15, 2011, (MECP, 2011a). Soil with concentrations of PHCs and PAHs exceeding the standards applicable at the time were identified in the vicinity of the Phase Two Property. Concentrations of the COCs in the groundwater samples collected from the groundwater monitoring wells did not exceed the standards applicable at the time.

### ***Phase One Environmental Site Assessment, Vacant Land Parcel, Boteler Street, Parts 2, 4, 5 and 6 of Plan 4R026468, Part of Lot 3 and Part of Lot 7 RCP 611769, Ottawa, Ontario, prepared by Stantec Consulting Ltd., dated June 27, 2014***

A Phase One ESA was initiated by Stantec with a site visit completed in April 2013. The final Phase One ESA report was issued in June 2014 which had identified multiple potential environmental concerns for the Phase Two Property. A summary of the potentially contaminating activities (PCAs) that were identified at the Phase Two Property and surrounding properties and contributing to areas of potential environmental concern (APECs) at the Phase Two Property is provided below with the associated PCA item number as per Table 2, Schedule D of O.Reg. 153/04.

- Importation of Fill Material of Unknown Quality (PCA #30) – Soil of unknown quality across the entire Phase Two Property from the former King Edward Renewal project.
- Rail Yards, Tracks, and Spurs (PCA #46) – Former railway tracks were present along the former McTaggart Street, north of the Phase Two Property.
- Garages and Maintenance and Repair of Railcars, Marine Vehicles and Aviation Vehicles (PCA #27); Gasoline and Associated Product Storage in Fixed Tanks (PCA #28) – Former gasoline UST and former vehicle maintenance and repair garage to the west of the Phase Two Property.
- Commercial Autobody Shops (PCA #10) – Former autobody garage to the southeast of the Phase Two Property.
- Former coal storage yard on the northeast corner of the Phase Two Property – Although there is no associated PCA number for coal storage yards under O.Reg. 153/04, it was the opinion of the qualified person (QP<sub>ESA</sub>) that this activity represented a PCA.

A Phase Two ESA was recommended to investigate the APECs in order to determine environmental conditions and potential impacts to soil and groundwater.



## PHASE TWO ENVIRONMENTAL SITE ASSESSMENT – 187 BOTELER STREET, OTTAWA, ONTARIO

Background Information  
September 15, 2023

***Phase Two Environmental Site Assessment, Vacant Land Parcel, Boteler Street, Parts 2, 4, 5 and 6 of Plan 4R-26468, Part of Lot 3 and Part of Lot 7 RCP 611769, Ottawa, Ontario, prepared by Stantec Consulting Ltd., dated June 27, 2014***

A Phase Two ESA was completed by Stantec in 2014 for the Phase Two Property. The information from this 2014 Phase Two ESA report is provided in this current Phase Two ESA Update.

***Geotechnical Investigation, Proposed Embassy Development, 187 Boteler Street, Ottawa, Ontario, prepared by Paterson Group, dated July 10, 2019***

The geotechnical investigation conducted by Paterson Group indicated that the subsurface profile at the Phase Two Property consisted of organic topsoil overlying a fill layer consisting of silty sand with gravel and cobbles to a depth of 6.2 m BGS. Construction debris was observed in the fill layer. Weathered limestone bedrock was encountered at depths ranging from 2.4 to 6.2 m BGS. Based on the geotechnical assessment, the Phase Two Property was considered satisfactory for the proposed development. It was recommended that topsoil, asphalt, and deleterious fill material be removed from the proposed building footprint and other settlement-sensitive structures, and specific clean imported fill was recommended for grading and placement beneath the proposed building structures.

***(Draft) Phase One Environmental Site Assessment, 187 Boteler Street, Ottawa, ON K1N 0A4, prepared by Stantec Consulting Ltd., dated February 17, 2023***

Stantec completed a Phase One ESA to update the previous assessment completed in 2014 to support the proposed redevelopment of the Phase Two Property and to meet the requirements of the City of Ottawa's Site Plan Control. Based on the review of historical records, previous reports, and the site visit, the APECs and associated PCAs listed in **Table 3-1** were identified for the Phase Two Property. Locations of APECs are provided on **Figure No. 2b, Appendix B**.

Through the review of analytical results obtained in the original Phase Two ESA, the remaining PCAs identified in the original Phase One ESA completed in 2014 were no longer considered to represent APECs at the Phase Two Property and were dismissed. A Phase Two ESA was recommended to investigate the soil and groundwater conditions based on the presence of APECs and known contamination at the Phase Two Property.



**PHASE TWO ENVIRONMENTAL SITE ASSESSMENT – 187 BOTELER STREET, OTTAWA, ONTARIO**

Background Information  
September 15, 2023

**Table 3-1: Summary of Areas of Potential Environmental Concern**

APEC	Location of APEC on Phase Two Property	PCA	Location of PCA	COPCs	Media Potentially Impacted
#1	Entire Phase Two Property	#30 - Importation of Fill Material of Unknown Quality	On-site	<ul style="list-style-type: none"> <li>• Metals and inorganics</li> <li>• PHCs</li> <li>• PAHs</li> <li>• PCBs</li> <li>• VOCs</li> </ul>	Soil and groundwater
#2	Northeast corner of the Phase Two Property	Former coal storage area. Based on the opinion of the QP <sub>ESA</sub> , this is a PCA, even though a PCA number is not assigned.	On-site	<ul style="list-style-type: none"> <li>• Metals and inorganics</li> <li>• PHCs</li> <li>• PAHs</li> <li>• BTEX</li> </ul>	Soil and groundwater

**Notes:**

BTEX: benzene, toluene, ethylbenzene, and xylenes

COPCs: contaminants of potential concern

PAHs: polycyclic aromatic hydrocarbons

PCBs: polychlorinated biphenyls

VOCs: volatile organic compounds

**Monitoring Well Decommissioning and Re-Installation, 187 Boteler Street, Ottawa, Ontario, prepared by EXP Services Inc., dated March 15, 2023**

Due to the poor condition (i.e., destroyed or could not be located) of previously existing monitoring wells at the Site, a drilling program was completed by EXP Services Inc. (EXP) to reinstall 10 groundwater monitoring wells at the Phase Two Property. Prior to the drilling program, efforts were made to locate any of the destroyed wells and four of the existing monitoring wells (MW13-10, MW13-11, MW13-13 and MW13-14) were located and decommissioned. The remaining monitoring wells could not be located and were assumed to be destroyed.

Ten boreholes were advanced and completed as groundwater monitoring wells to facilitate groundwater sampling and analysis for the purposes of the Phase Two ESA Update. Soil samples were also collected and submitted for analysis of metals and inorganics [electrical conductivity (EC) and SAR], PHCs, PAHs, PCBs, and VOCs to assist with future excess soils management during site redevelopment. The 10 monitoring wells were installed in bedrock and monitored on February 2, 2023 by EXP. Three of the ten wells had sufficient groundwater for sampling while the remaining seven wells were dry or contained insufficient groundwater for sampling. Stantec also monitored the newly installed wells during a separate event (April 21, 2023) to confirm the results which have been documented as part of this Phase Two ESA Update.



## 3.0 SCOPE OF THE INVESTIGATION

### 3.1 OVERVIEW OF SITE INVESTIGATION

The 2014 Phase Two ESA program was completed between April 2013 and April 2014 to investigate the presence or absence of COPCs in soil and groundwater associated with APECs identified at the Phase Two Property. The completed scope of work consisted of the following investigations:

- Advancement of four boreholes (MW13-1 through MW13-3 and MW13-7) to the bedrock surface, completed as bedrock groundwater monitoring wells, between April 12 and April 17, 2013.
  - MW13-4 through MW13-6 were completed at locations outside the Phase Two Property.
- A groundwater monitoring and sampling program completed on April 22, 2013, where groundwater samples were collected from two of the newly installed groundwater monitoring wells (MW13-1 and MW13-2).
  - MW13-3 and MW13-7 were dry and were subsequently decommissioned on June 13, 2013, due to the lack of groundwater.
- Advancement of seven boreholes (BH13-8, BH13-9, and MW13-10 through MW13-14) to the bedrock surface with five of the boreholes (MW13-10 through MW13-14) completed as bedrock groundwater monitoring wells between July 18 and July 25, 2013.
- Advancement of 27 test pits (TP2 through TP5, TP7 through TP21, and TP23 through TP30) between July 23 and July 24, 2013.
  - TP1, TP6, and TP22 were not completed due to deviations from the sampling and analysis plan.
- A groundwater monitoring and sampling program completed between July 26 and July 31, 2013, where groundwater samples were collected from MW13-11 and MW13-14.
  - Existing groundwater monitoring wells MW13-1 and MW13-2 were not accessible given the property ownership at the time, MW13-3 and MW13-7 had been decommissioned in June 2013, and MW13-10, MW13-12, and MW13-13 were found to be dry.
- Advancement of six boreholes (MW14-1 through MW14-3 and BH14-4 through BH14-6) to the bedrock surface with three of the boreholes (MW14-1 through MW14-3) completed as bedrock groundwater monitoring wells between March 4 and March 6, 2014.
- A remedial excavation completed on April 9, 2014 (refer to **Appendix H** and **Appendix I**).
- A groundwater monitoring and sampling program completed between April 10 and April 11, 2014, and on April 24, 2014, where groundwater samples were collected from MW13-1, MW13-2, MW13-10, MW13-11, MW13-13, MW13-14, and MW14-1 through MW14-3.
  - MW13-12 could not be located and MW13-3 and MW13-7 had been decommissioned in June 2013.





## PHASE TWO ENVIRONMENTAL SITE ASSESSMENT – 187 BOTELER STREET, OTTAWA, ONTARIO

Scope of the Investigation  
September 15, 2023

The following scope of work was completed for this Phase Two ESA Update between October 2022 and April 2023:

- A site visit was conducted on October 21, 2022, to assess the current conditions of the Phase Two Property and determine the condition of existing monitoring wells.
- Completed a groundwater monitoring event to measure depth to groundwater in the 10 monitoring wells during the Spring season on April 21, 2023.

The following scope of work was completed by EXP between October 2022 and April 2023 (soil analytical data collected by EXP and has been incorporated into this report):

- Decommissioning of destroyed monitoring wells MW13-10, MW13-11, MW13-13, and MW13-14 was completed on January 25 and 26, 2023.
- Advancement of 10 boreholes and installation of monitoring wells at each borehole in the same approximate locations as the previously existing groundwater monitoring wells between January 30 to February 6, 2023.
- Completed a groundwater monitoring event to measure the depth to water in the 10 newly installed monitoring wells and developed three wells (MW13-14A, MW13-11A, and MW13-1A) on February 23, 2023.

The soil and groundwater sampling locations are indicated on **Figure No. 2a, Appendix B**. The sampling and analysis plan is provided in **Appendix C**. Deviations from the sampling and analysis plan are documented in Section 4.4.

### 3.2 MEDIA INVESTIGATED

During the 2014 Phase Two ESA, soil sampling was completed at 27 test pit locations and 14 of the total 17 borehole locations and groundwater sampling was attempted at the 12 groundwater monitoring wells. Of the 12 groundwater monitoring wells, three groundwater monitoring wells (MW13-3, MW13-7, and MW13-12) were reportedly dry and not sampled. The dry wells were subsequently decommissioned in the case of MW13-3 and MW13-7 or were dry (July 2013) and could not be located during other events (April 2014) in the case of MW13-12. The remaining groundwater monitoring wells were sampled between one to three times, based on accessibility, presence of groundwater, and whether the groundwater monitoring well existed at the time.

During this Phase Two ESA Update, soil sampling was completed at eight of ten new borehole locations completed by EXP. Groundwater was not sampled at the Site due to the dry conditions encountered in the newly-installed monitoring wells at the locations where previous groundwater exceedances were identified in unfiltered samples.

The soil and groundwater sampling locations are indicated on **Figure No. 2a, Appendix B**. The sampling and analysis plan is provided in **Appendix C**.



## PHASE TWO ENVIRONMENTAL SITE ASSESSMENT – 187 BOTELER STREET, OTTAWA, ONTARIO

Scope of the Investigation  
September 15, 2023

Selected soil and groundwater samples were submitted to independent laboratories, Paracel Laboratories Ltd. (Paracel) of Ottawa, Ontario (original Phase Two ESA), and Bureau Veritas North America (BV) of Mississauga, Ontario (Phase Two ESA Update), for chemical analysis of one or more of the following parameter suites:

- Metals and inorganics (pH, free cyanide, EC, chloride, and SAR)
- PHCs
- PAHs
- PCBs
- VOCs

Paracel and BV's accreditation and ability to perform these analyses is discussed further in Section 5.9.



**PHASE TWO ENVIRONMENTAL SITE ASSESSMENT – 187 BOTELER STREET, OTTAWA, ONTARIO**

Scope of the Investigation  
September 15, 2023

### 3.3 PHASE ONE CONCEPTUAL SITE MODEL

**Table 4-1** below summarizes the Phase One conceptual site model, as described in the Phase One ESA (Stantec, 2023).

**Table 4-1: Phase One Conceptual Site Model**

Physical Characteristics/Pathways	Description
<b>Subsurface Soils</b>	<p>Based on an available surficial geology map (NRCan, 1998), the native surficial soils in the area of the Phase Two Property consist of glaciomarine deposits of fine textured silt, and clay with sand and gravel on Paleozoic terrain. The characteristic permeability of this soil deposit is low.</p> <p>Previous subsurface investigations (listed in Section 3.2) identified silty sand and gravel fill ranging from 2.0 to 6.1 m BGS, over native silty sand and silty clay.</p>
<b>Bedrock</b>	<p>Based on an available bedrock geology map (EMR, 1976), bedrock in the area of the Phase Two Property consists of Paleozoic limestone with shale partings of the Lindsay Formation. The depth to bedrock encountered during previous investigations (listed in Section 3.2) ranged between 2.0 and 6.1 m BGS.</p>
<b>Anticipated Groundwater Flow Direction</b>	<p>Based on an available topographic map (NRCan, 1998) and the observed site topography, regional surface drainage and anticipated shallow groundwater flow direction is inferred to be to the north.</p> <p>It should be noted that the direction of the shallow groundwater flow in limited areas can also be influenced by the presence of underground utility corridors and is not necessarily a reflection of regional or local groundwater flow.</p>
<b>Underground Utilities</b>	<p>The Phase Two Property is currently vacant and is not serviced by utilities; however, a 375-millimetre (mm) polyvinyl chloride (PVC) sanitary sewer and a 1,950-mm stone storm sewer bisect the Phase Two Property, extending northwest to southeast (City of Ottawa, n.d.). Underground utilities are anticipated to be present along Boteler Street, along King Edward Avenue, and at the property neighbouring the Phase Two Property to the west.</p>



## PHASE TWO ENVIRONMENTAL SITE ASSESSMENT – 187 BOTELER STREET, OTTAWA, ONTARIO

Scope of the Investigation  
September 15, 2023

### 3.4 DEVIATIONS FROM THE SAMPLING AND ANALYSIS PLAN

The sampling and analysis plan is provided in **Appendix C**.

#### Soil

TP1 and TP6 were not completed, as a land transfer had not yet been completed transferring land from the neighboring property to the Phase Two Property; therefore, access was not granted, and sampling was not completed. TP30 and MW13-12 were moved west due to a steep slope on the east side of the Phase Two Property; therefore, TP22 was removed. These adjustments are not considered to significantly affect the interpretation of soil conditions at the Phase Two Property given the number/resolution of sampling locations.

Borehole locations MW13-10 through MW13-11 were not sampled for metals in soil, MW13-1A and MW13-10A through MW13-13A were not sampled for VOCs in soil, and soil samples were not collected from MW14-1A and MW14-3A. Given that MW13-10A and MW13-11A were sampled for metals in soil, MW13-1 and MW13-10 through MW13-13 were sampled for VOCs in soil, and soil samples were collected from MW14-1 and MW14-3 (for all required parameters), these adjustments are not considered to significantly affect the interpretation of soil conditions at the Phase Two Property.

Soil samples collected from BH14-4 through BH14-6 were only analyzed for PAHs and soil samples were not collected from MW14-2 and MW14-2A. These adjustments are not considered to significantly affect the interpretation of soil conditions at the Phase Two Property given the number/resolution of sampling locations.

#### Groundwater

Groundwater samples were not collected from MW13-3 and MW13-7 as the groundwater monitoring wells were dry in April 2013 and were subsequently decommissioned in June 2013. Groundwater samples were not collected from MW13-12 as the groundwater monitoring well was dry (July 2013) or because the groundwater monitoring well could not be located (April 2014).

Groundwater samples were not collected from MW13-1 and MW13-2 during the July 2013 groundwater monitoring and sampling event as the locations were not accessible due to the land transfer not having been completed. Groundwater samples were not collected from MW13-10, MW13-12, and MW13-13 during the July 2013 groundwater monitoring and sampling event as these locations were dry.

Groundwater samples were not obtained from the newly-installed monitoring wells during this Phase Two ESA Update due to dry conditions at the locations where previous groundwater exceedances were identified (MW13-10, MW14-1, and MW14-3).



## PHASE TWO ENVIRONMENTAL SITE ASSESSMENT – 187 BOTELER STREET, OTTAWA, ONTARIO

Scope of the Investigation  
September 15, 2023

### 3.5 IMPEDIMENTS

There was denial of access to the southwest corner of the Phase Two Property in July 2013, as a land transfer between the neighboring embassy and the City of Ottawa (owner of the Phase Two Property at the time) had not been completed; therefore, no sampling occurred at that location at that time; however, soil and groundwater data from previous (April 2013) and subsequent (2023) investigations were used. The overall objectives of the investigation and assessment were met.

Monitoring wells from which groundwater samples exceeded the Table 3 SCS in 2014 were dry during the 2023 investigation work and, as such, were not sampled as part of the current investigation.



# PHASE TWO ENVIRONMENTAL SITE ASSESSMENT – 187 BOTELER STREET, OTTAWA, ONTARIO

Investigation Method  
September 15, 2023

## 4.0 INVESTIGATION METHOD

### 4.1 GENERAL

The investigation was completed in general accordance with *Guidance on Sampling and Analytical Methods for Use at Contaminated Sites in Ontario* (MECP, 1996) and O.Reg. 153/04.

Four boreholes (MW13-1 through MW13-3 and MW13-7) were advanced between April 12 and April 17, 2013, and completed as bedrock groundwater monitoring wells. Five soil samples were collected from these locations. Bedrock was encountered at depths of approximately 3.0 to 6.1 m BGS and groundwater monitoring wells were installed in bedrock, to maximum depths of 6.4 to 12.8 m BGS. Monitoring wells were constructed with 3.05 m screen lengths, with the exception of MW13-1 and MW13-2, which had 2.3 m screen lengths.

Seven boreholes (BH13-8, BH13-9, and MW13-10 through MW13-14) were advanced between July 18 and July 25, 2013, and five boreholes (MW13-10 through MW13-14) were completed as bedrock groundwater monitoring wells. Fourteen soil samples (and one blind field duplicate) were collected from these locations, although seven soil samples were only analyzed for fraction of organic carbon (FOC). Bedrock was encountered at depths of approximately 3.5 to 4.9 m BGS and groundwater monitoring wells were installed in bedrock, to maximum depths of 7.6 to 11.6 m BGS (3.05 m screens).

Twenty-seven test pits (TP2 through TP5, TP7 through TP21, and TP23 through TP30) were advanced between July 23 and July 24, 2013. Thirty-six surficial soil samples and 27 samples (and two blind field duplicates) from soil at depth were collected from these locations, although two surficial soil samples were only analyzed for FOC. Bedrock was encountered at each test pit between 2.0 and 4.0 m BGS except at TP14 which was abandoned at 2.5 m BGS due to caving issues.

Six boreholes (MW14-1 through MW14-3 and BH14-4 through BH14-6) were advanced between March 4 and March 6, 2014, three of which (MW14-1 through MW14-3) were completed as bedrock groundwater monitoring wells. Three soil samples were collected from BH14-4 through BH14-6. Bedrock was encountered at depths of approximately 2.1 to 5.5 m BGS and groundwater monitoring wells were installed in bedrock, to maximum depths of 13.0 to 15.7 m BGS (3.05 m screens) with the exception of MW14-1 which encountered a karst formation and was left as an open hole (in bedrock).

Ten boreholes (MW13-1A, MW13-2A, MW13-10A through MW13-14A, and MW14-1A through MW14-3A) were advanced by EXP between January 30 and February 6, 2023, and completed as bedrock groundwater monitoring wells (replacing former groundwater monitoring wells). Eight soil samples were collected from these locations (no soil samples from MW14-2A or MW14-3A). Bedrock was encountered at depths of approximately 2.4 to 4.6 m BGS and groundwater monitoring wells were installed in bedrock, to maximum depths of 10.1 to 19.8 m BGS (3.05 m screens).



## PHASE TWO ENVIRONMENTAL SITE ASSESSMENT – 187 BOTELER STREET, OTTAWA, ONTARIO

Investigation Method  
September 15, 2023

Five separate groundwater monitoring and/or sampling events occurred and were completed on:

- April 22, 2013
- July 26 and July 31, 2013
- April 10 and April 11, 2014, and April 24, 2014
- February 23, 2023
- April 21, 2023

Soil and groundwater samples were placed into laboratory-supplied containers with ice. The samples were subsequently submitted to Paracel of Ottawa, Ontario (2014 Phase Two ESA), or BV of Mississauga, Ontario (Phase Two ESA Update), under chain of custody documentation, for the analysis of metals and inorganics, PHCs, PAHs, PCBs, and/or VOCs.

A summary of soil and groundwater analyses completed for the 2014 Phase Two ESA and Phase Two ESA Update is provided in **Appendix C** with deviations from the sampling and analysis plan documented in Section 4.4.

### 4.2 DRILLING AND EXCAVATING

Borehole, groundwater monitoring well, and test pit locations are illustrated on **Figure No. 2a**, **Appendix B**. Finalized field logs are provided in **Appendix D**.

#### 2014 Phase Two ESA - April 12 and April 17, 2013

Four boreholes (MW13-1 through MW13-3 and MW13-7) were advanced and soil samples were recovered using direct push methods with a disposable plastic liner and all of the recovered soil samples were screened in the field using a RKI Eagle portable hydrocarbon surveyor. Soil samples were collected approximately every 0.75 m from surface to above the bedrock, at depths ranging from 3.0 to 6.1 m BGS. The four boreholes were completed as groundwater monitoring wells (air-hammer) and were installed by a licensed well driller in accordance with O.Reg. 903.

#### 2014 Phase Two ESA - July 18 to July 25, 2013

Seven boreholes (BH13-8, BH13-9, and MW13-10 through MW13-14) were advanced and soil samples were collected approximately every 0.75 m using direct push methods with disposable plastic liner.

In boreholes where no groundwater monitoring well was installed (BH13-8 and BH13-9), the borehole was filled with granular bentonite chips. The granular bentonite chips were poured slowly down the borehole in lifts of 0.15 to 0.30 m. As the drilling equipment was removed, the borehole was continuously filled with bentonite chips. For boreholes completed as groundwater monitoring wells (MW13-10 through MW13-14), the bedrock was air-hammered and groundwater monitoring wells were installed in accordance with O.Reg. 903.

Soil samples were collected approximately every 0.75 m from removable PVC liners of the sampling tube. Samples were collected from surface to above the bedrock, at depths ranging from 3.5 to 4.9 m BGS.



## **PHASE TWO ENVIRONMENTAL SITE ASSESSMENT – 187 BOTELER STREET, OTTAWA, ONTARIO**

Investigation Method  
September 15, 2023

Twenty-seven test pits (TP2 through TP5, TP7 through TP21, and TP23 through TP30) were advanced in the overburden using an excavator by Tomlinson Group (retained by the City of Ottawa). The test pits were advanced to total depths of approximately 2.0 to 4.0 m BGS and were terminated on inferred bedrock, with the exception of TP14 which was terminated due to material caving into the test pit. Thirty-six surficial soil samples (0.0 to 0.5 m BGS) and 27 samples (and two blind field duplicates) from soils at depth (0.5 to 4.0 m BGS) were recovered as grab samples. The test pits were backfilled with the excavated soils.

### **2014 Phase Two ESA – March 4 to March 6, 2014**

Six boreholes (MW14-1 through MW14-3 and BH14-4 through BH14-6) were advanced using a track-mounted Geoprobe by Strata Soil Sampling Inc. of Stouffville, Ontario. Soil samples were recovered via direct-push continuously from the boreholes at approximately 0.75-m intervals.

In boreholes where no groundwater monitoring well was installed (BH14-4 through BH14-6), the borehole was filled with granular bentonite chips. The granular bentonite chips were poured slowly down the hole in lifts of 0.15 to 0.30 m. As the drilling equipment was removed, the borehole was continuously filled with bentonite chips. For boreholes completed as groundwater monitoring wells (MW14-1 through MW14-3), the bedrock was air-hammered and the groundwater monitoring wells were installed in accordance with O.Reg. 903.

Soil samples were collected approximately every 0.75 m from removable PVC liners of the sampling tube. Samples were collected from surface to above the bedrock, which was observed at depths ranging from 2.1 to 5.5 m BGS.

### **2014 Phase Two ESA – April 9, 2014**

A remedial excavation was undertaken. The remedial excavation is documented in **Appendix H** and **Appendix I**.

### **Phase Two ESA Update - January 30 to February 6, 2023**

Under the supervision of EXP, ten boreholes (MW13-1A, MW13-2A, MW13-10A through MW13-14A, and MW14-1A through MW14-3A) were advanced using a track-mounted drill rig operated by Strata Soil Sampling Inc. of Ottawa, Ontario. Soil samples were recovered via split-spoon continuously from the boreholes at approximately 0.75-m intervals. Samples were collected from ground surface to above the bedrock, at depths ranging from 2.4 to 4.6 m BGS. The 10 boreholes were completed as bedrock groundwater monitoring wells (via air-hammer) in accordance with O.Reg. 903.





## PHASE TWO ENVIRONMENTAL SITE ASSESSMENT – 187 BOTELER STREET, OTTAWA, ONTARIO

Investigation Method  
September 15, 2023

### 4.3 SOIL: SAMPLING

Observations of soil type, grain size, moisture, and visual or olfactory evidence of environmental impacts were noted in the field and are indicated in the finalized field logs provided in **Appendix D**.

Soil samples were handled with disposable nitrile gloves and were recovered from disposable PVC liners (direct-push), split-spoon samplers (decontaminated with Alconox and distilled water prior to reuse), or collected as grab samples from the test pit or the excavator bucket (with care to not collect soils in contact with the excavator bucket).

Each recovered soil sample was split into two representative portions. One portion was placed into a sealable plastic bag for headspace analysis of combustible gas concentrations (see Section 5.4), and the other portion was placed into laboratory supplied containers with necessary preservative (if applicable).

### 4.4 FIELD SCREENING MEASUREMENTS

Where sufficient volume permitted, soil samples collected were screened in the field using an RKI Eagle combustible gas meter (or equivalent). The RKI Eagle is a battery-powered, portable instrument designed to detect and measure combustible gas concentrations. It is equipped with two ranges of measurement, reading concentrations in parts per million by volume (ppm<sub>v</sub>) (from 5 to 500 ppm<sub>v</sub>) or in percent lower explosive limit (%LEL) (from 1 to 100% LEL). The RKI Eagle is precise to within  $\pm 5\%$  of the reading in the mode in which the instrument is calibrated. The equipment was calibrated daily according to the manufacturer's specifications. Calibration consists of exposing the instrument to a gas sample with a known concentration and adjusting the reading to equal the concentration of the calibration gas (hexane). Prepared gas mixtures in pressurized disposable cylinders and calibration accessories were used.

To obtain a measurement, the probe of the RKI Eagle was inserted into the headspace of the plastic bag and the soil was gently agitated. The highest combustible gas concentration observed during a 30 second period was recorded. Combustible gas concentrations are presented on the finalized field logs provided in **Appendix D**.

The field screening measurements were used to assist in selecting soil samples for laboratory analysis. The selection of soil samples submitted for laboratory analysis was based on physical evidence of odours/staining, headspace screening analysis, site stratigraphy and hydrogeology (e.g., presence of fill, location of the water table), the nature and location of the APEC, anticipated COPC behavior, and study objectives.



## PHASE TWO ENVIRONMENTAL SITE ASSESSMENT – 187 BOTELER STREET, OTTAWA, ONTARIO

Investigation Method  
September 15, 2023

### 4.5 GROUND WATER: MONITORING WELL INSTALLATION

Groundwater monitoring wells were installed in 12 boreholes on the Phase Two Property, all of which were subsequently decommissioned/destroyed and 10 of which were redrilled and reinstalled.

One groundwater monitoring well (MW14-1) included a karst cavity, and the well screen and sand pack could not be installed. A packer was installed at 7.6 m BGS, approximately two metres below the overburden-bedrock interface, and solid PVC riser with bentonite seal was then installed to surface (open borehole within the bedrock).

The remaining groundwater monitoring wells were constructed using 31-mm or 51-mm diameter No. 10 slot PVC well screens, typically 3.05 m in length (except for MW13-1 and MW13-2 which were constructed with 2.3 m well screens), with silica sand backfill from the bottom of the borehole to approximately 0.3 m above the well screen. The groundwater monitoring wells were installed to depths ranging from 6.4 to 19.8 m BGS. At surface, the groundwater monitoring wells were finished with flushmount well protector casings; however, upon redrilling and reinstallation in 2023, the groundwater monitoring wells were finished with above-grade monument well casings. J-plugs were installed in the top of each monitoring well.

Groundwater monitoring wells were constructed in accordance with O.Reg. 903 and construction details are provided in **Table 1, Appendix A** and on the finalized field logs provided in **Appendix D**.

The groundwater monitoring wells were developed by manually purging the groundwater monitoring wells of 10 well volumes or purging the groundwater monitoring well dry and allowing to recover three times for low-yield wells. Due to the low-yield formation of the Phase Two Property, the latter was completed at the installed groundwater monitoring wells. Development was completed using Waterra™ polyethylene (PE) tubing and foot valves and took place across the entire screened interval in the groundwater monitoring well. The volume of fluid purged from each groundwater monitoring well was measured using a calibrated bucket and the volumes were recorded.

Two groundwater monitoring wells (MW13-3 and MW13-7) were decommissioned in June 2013 due to a lack of groundwater. The remaining groundwater monitoring wells installed in 2013 and 2014 could not be located in 2022. Groundwater monitoring wells MW13-10, MW13-11, MW13-13 and MW13-14 were located and decommissioned in 2023. The remaining groundwater monitoring wells from 2013 and 2014 were assumed to have been destroyed.



Investigation Method  
September 15, 2023

## **4.6 GROUND WATER: FIELD MEASUREMENT OF WATER QUALITY PARAMETERS**

The depth to groundwater and the presence or absence of light non-aqueous phase liquids (LNAPLs) was measured in groundwater monitoring wells using a Heron Interface H-Oil Interface Probe (or equivalent). The interface probe can detect and measure LNAPL [conductivity less than 50 microsieverts per centimeter ( $\mu\text{S}/\text{cm}$ )] and dense non-aqueous phase liquids (DNAPL) (conductivity greater than 50  $\mu\text{S}/\text{cm}$ ) with a precision of 1.0 mm. The interface probe is calibrated annually per the manufacturer's instructions.

Water quality parameters were measured in the field during groundwater monitoring well development and purging using a Horiba U-52 multi-meter (or equivalent) equipped with a flow-through cell. The Horiba U-52 multi-meter continuously measures dissolved oxygen, specific conductivity, temperature, and pH and can detect pH from 0 to 14 pH units, dissolved oxygen from 0 to 50 milligrams per litre (mg/L), specific conductivity from 0 to 100 millisieverts per centimeter (mS/cm), and temperature from -10 to 55 degrees Celsius ( $^{\circ}\text{C}$ ). The sensor accuracies for the Horiba U-52 multi-meter are as follows:

- pH:  $\pm 0.1$  pH units
- Dissolved Oxygen: 0 to 20 mg/L  $\pm 0.2$  mg/L; 20 to 50 mg/L  $\pm 0.5$  mg/L
- Specific Conductivity:  $\pm 1\%$  of the reading
- Temperature:  $\pm 0.3^{\circ}\text{C}$

## **4.7 GROUND WATER: SAMPLING**

Four groundwater monitoring and sampling events were completed at the Phase Two Property:

- April 22, 2013: MW13-1 and MW13-2
- July 26 to July 31, 2013: MW13-11 and MW13-14
- April 10 to April 11, 2014, and April 24, 2014:
  - April 10 to April 11: MW13-1, MW13-2, MW13-10, MW13-11, MW13-13, MW13-14, and MW14-1 through MW14-3
- April 24, 2014 (resampling due to sediment or confirmation): MW13-10, MW13-13, MW14-1, and MW14-3

Some groundwater monitoring wells were not sampled during certain groundwater monitoring and sampling events due to the absence of groundwater in the wells (dry conditions), inaccessibility, or specific wells that could not be located (refer to Section 4.4).

Of particular note, groundwater samples from MW14-1 and MW14-3 collected on April 24, 2014, included two submissions for PAHs, one to be analyzed unfiltered and one to be analyzed after filtering by the laboratory.



## PHASE TWO ENVIRONMENTAL SITE ASSESSMENT – 187 BOTELER STREET, OTTAWA, ONTARIO

Investigation Method  
September 15, 2023

Low flow purging and sampling procedures were employed, which minimizes the drawdown of water in the groundwater monitoring well and the mixing or disturbance of the standing water within the groundwater monitoring well, by removing water from a discrete depth within the groundwater monitoring well. Low flow purging and sampling procedures were based upon the United States Environmental Protection Agency (US EPA) low flow/minimal drawdown well purging protocol, which is outlined in the document entitled, *Low Stress (Low Flow) Purging and Sampling Procedure for the Collection of Ground Water Samples from Monitoring Wells* (US EPA, 1996).

A peristaltic pump with high density polyethylene (HDPE) tubing was used to pump groundwater from the middle of the well screen at a constant rate to a Horiba U-52 multi-meter equipped with a flow-through cell. New tubing was used at each groundwater monitoring well to prevent cross contamination. Pumping continued at a constant rate, while drawdown did not exceed 0.1 m, until stabilization of field parameters occurred between three five-minute intervals. Field parameter stabilization was based on the following:

- pH:  $\pm 0.1$  pH units
- Specific Conductivity:  $\pm 3\%$
- Oxidation-Reduction Potential (ORP);  $\pm 10$  millivolts (mV)
- Temperature, Turbidity, and Dissolved oxygen:  $\pm 10\%$

If the stabilization criteria were not met, then a maximum of three well volumes was purged before a groundwater sample was collected.

Some groundwater monitoring wells were sampled using a modified methodology, which included the following:

- April 2014:
  - MW13-10 and MW14-3: The groundwater table was too deep to sample using a peristaltic pump and groundwater was sampled directly using a bailer.
  - MW14-1: Given the karst formation and the absence of a well screen, groundwater was sampled directly using a bailer.
  - MW14-2: Drawdown exceeded 0.1 m during pumping and the groundwater monitoring well was manually purged dry, allowed to recover, and sampled with a bailer.

Limited water was found in MW13-10 in April 2014, so the groundwater sampled was not analyzed for all required parameters.

Following purging, groundwater samples were collected by transferring water from the HDPE tubing into the appropriate laboratory supplied containers with necessary preservative (if applicable). Groundwater samples requiring filtration (i.e., metals) were field filtered using a high capacity, disposable 0.45-micrometre ( $\mu\text{m}$ ) in-line filter.



## PHASE TWO ENVIRONMENTAL SITE ASSESSMENT – 187 BOTELER STREET, OTTAWA, ONTARIO

Investigation Method  
September 15, 2023

### 4.8 SEDIMENT: SAMPLING

Sediment was not present at the Phase Two Property and was therefore not included in the sampling and analysis plan for the Phase Two ESA/Phase Two ESA Update.

### 4.9 ANALYTICAL TESTING

Paracel in Ottawa, Ontario, was the laboratory used to complete analytical testing in 2013 and 2014 (original Phase Two ESA), and BV in Mississauga, Ontario, was the laboratory used to complete analytical testing in 2023 (Phase Two ESA Update). The laboratories are accredited by the Standards Council of Canada (SCC) in cooperation with Canadian Association for Laboratory Accreditation Inc. (CALA); therefore, it is concluded that the accreditation requirements outlined in Section 47 of O.Reg. 153/04 were met.

The soil and groundwater sampling analytical results are summarized in **Table 3** and **Table 6**, **Appendix A**. Waste characterization analytical results are summarized in **Table 4**, **Appendix A**. Soil leachate analytical results to support potential export as excess soil area summarized in **Table 5**, **Appendix A**. Laboratory certificates of analysis are provided in **Appendix E** and document the analytical methods used and the laboratory reportable detection limits (RDLs).

### 4.10 RESIDUE MANAGEMENT PROCEDURES

During the April 2013 drilling and the July 2013 drilling and test pit excavation programs, the generated soil cuttings were left at the Phase Two Property for subsequent removal by Tomlinson to another City-owned property. During the March 2014 drilling program, the excess soil cuttings were left at the Phase Two Property. During the April, 2023 groundwater monitoring event it was observed that soil cuttings from the January/February 2023 drilling program had been removed from the Phase Two Property for disposal by EXP.

Water generated from groundwater monitoring well development and purging activities in 2013 and 2014 was deposited into 205-litre (L) drums and left on the Phase Two Property for subsequent disposal. Water generated from well development and purging activities in 2023 was left on the Phase Two Property for future removal.

### 4.11 ELEVATION SURVEYING

The coordinates of the boreholes, groundwater monitoring wells, and test pits at the Phase Two Property were surveyed on July 31, 2013, and on April 24, 2014, using a high precision digital Trimble Geo XO GPS unit. All horizontal positioning results are referenced to the UTM NAD83 (CSRS), Zone 18 datum. The vertical elevations were measured relative to mean sea level with an accuracy of 0-0.05 m in both the horizontal and vertical dimensions. In January/February 2023, the new boreholes/groundwater monitoring wells were similarly surveyed by EXP Services Inc.



## PHASE TWO ENVIRONMENTAL SITE ASSESSMENT – 187 BOTELER STREET, OTTAWA, ONTARIO

Investigation Method  
September 15, 2023

### 4.12 QUALITY ASSURANCE AND QUALITY CONTROL MEASURES

The overall data quality objective for the investigation was to collect data that were precise, accurate, reproducible, complete, and suitable for comparison with the applicable SCS.

Soil and groundwater samples were handled in accordance with the required analytical protocol, including holding time, preservation method, storage requirements, and container type. In addition, a laboratory certificate of analysis was received for each soil and groundwater sample submitted for analysis, and all laboratory certificates of analysis and analytical reports complied with the requirements under subsection 47 (3) of O.Reg. 153/04. Laboratory certificates of analysis are provided in **Appendix E**.

In order to meet the data quality objectives, quality assurance/quality control (QA/QC) procedures were incorporated into both field and laboratory methods. Efforts were made during sampling to reduce the potential for contamination so as to obtain representative samples. Accordingly:

- Samples were labeled with a unique ID, packed into coolers with ice, and transported to the analytical laboratory under chain-of-custody documentation.
- Sampling was completed using a new pair of disposable nitrile gloves for each sample.
- Non-dedicated equipment was decontaminated with Alconox and distilled water prior to reuse at each sampling location.

As a check on the laboratory analytical methods and on sample precision, the following QA/QC samples were submitted:

- One blind field duplicate soil sample for analysis of metals and inorganics, PHCs, PAHs, PCBs, and VOCs (July 25, 2013).
- Two blind field duplicate soil samples for analysis of metals, PHCs, PAHs, and VOCs (July 25, 2013).
- One blind field duplicate groundwater sample for analysis of metals and inorganics, PHCs, PAHs, and VOCs (April 22, 2013).
- Two blind field duplicate groundwater samples for analysis of metals, PHCs, PAHs, and VOCs (July 31, 2013 and April 24, 2014).
- Two water field blanks for analysis of PHCs and VOCs (April 10 and April 14).
- One laboratory prepared water trip blank for analysis of PHCs and VOCs (April 11, 2014).
- One laboratory prepared water trip blank for analysis of VOCs (July 13, 2013).



## PHASE TWO ENVIRONMENTAL SITE ASSESSMENT – 187 BOTELER STREET, OTTAWA, ONTARIO

Investigation Method  
September 15, 2023

The blind field duplicate samples were used to assess the precision of the sampling and analytical procedures. Typically, a relative percent difference (RPD) is calculated for the concentrations in the parent sample and its duplicate. The RPD is calculated using the following formula:

$$RPD = \left| \frac{C_1 - C_2}{(C_1 + C_2)/2} \right| \times 100$$

Where:  $C_1$  is the concentration in the parent sample  
 $C_2$  is the concentration in the duplicate sample

Note that RPDs are only calculated in the event that the analytical result is greater than five times the RDL, in accordance with BV's *Ontario QA/QC Interpretation Guide – Environmental Services* (BV, 2014). In addition, if the results for both the parent sample and the duplicate were below the RDL, the analytical results were assumed to have a high degree of similarity.

BV's *Ontario QA/QC Interpretation Guide – Environmental Services* (BV, 2014) indicates the following acceptable RPDs:

- Soil:
  - EC: 10%
  - Chromium IV, Chloride, and Cyanide: 35%
  - Hot Water Soluble Boron: 40%
  - Other Metals and Inorganics and PHCs: 30%
  - PAHs and PCBs: 40%
  - VOCs: 50%
- Groundwater:
  - Metals and Inorganics: 20%
  - PHCs, PAHs, PCBs, and VOCs: 30%

The results of RPD calculations for duplicate soil and groundwater samples are presented with the analytical data in **Table 3** and **Table 6, Appendix A**.

Additionally, the laboratories conducted further internal QA/QC tests, which included replicate, process blank, process recovery, matrix spike, and standard analyses. The results of these tests are provided in the laboratory certificates of analysis provided in **Appendix E**.

Apart from failing to meet a ratio of one blind field duplicate soil sample to 10 regular samples, no deviations from the QA/QC program set out in the sampling and analysis plan were noted.



Review and Evaluation  
September 15, 2023

## 5.0 REVIEW AND EVALUATION

### 5.1 GEOLOGY

#### Surficial Geology

The native surficial soils at the area Phase Two Property consist of glaciomarine and marine deposits of fine textured silt, and clay with sand and gravel on Paleozoic terrain (NRCan, 1998).

The stratigraphy observed at the Phase Two Property is described on the finalized field logs provided in **Appendix D** and illustrated on cross-sections provided on **Figure No. 6** to **Figure No. 9, Appendix B**. A general description of the observed stratigraphy is provided below.

Two main overburden units were encountered at the Phase Two Property, as follows:

- *Fill* – An interval of fill consisting of various soil types was observed across the Phase Two Property, extending to depths ranging from 2.0 to 6.1 m BGS. Material descriptions included: gravel, cobbles and boulders; dark brown sand with gravel and trace silty clay; gravel with medium, brown, sand; coarse sand and gravel; medium sand; silty sand; and brown silt with medium sand. Debris was observed in numerous locations and included: coal pieces, glass fragments, wood debris, concrete debris, crushed rock, brick debris, ceramic plates and tile pieces, black debris, metal cables, electrical wires, metal debris, road base granular material, and an ash layer.
- *Brown to Grey Silty Clay or Silty Sand* – A thin interval (0.3 to 0.4 m) of native silty clay or silty sand was observed below the fill material at the Phase Two Property. The silty clay / silty sand was considered to be native material as it was directly on top of the bedrock surface.

#### Bedrock Geology

Based on an available bedrock geology map (EMR, 1976), bedrock in the area of the Phase Two Property consists of Paleozoic limestone with shale partings of the Lindsay Formation. According to field observations, limestone bedrock was encountered at depths ranging from 2.0 to 6.1 m BGS. A solution enhanced cavity was identified at MW14-1 at approximately 14 m BGS. The Paleozoic carbonate rocks are susceptible to the formation of karst.

In 2004, the Province of Ontario revised the Provincial Policy Planning Statement to recognize the hazards associated with development in karst areas (areas subject to bedrock instability). The Ministry of Natural Resources (MNR, n.d.) suggests that no one formula exists for determining how hazardous a karst formation is or may become and recommends a site-specific assessment. A combined hydrogeological and geotechnical investigation is recommended to determine the karst dissolution rate, bedrock stability, and subsurface distribution of voids by applying appropriate geophysical techniques.





Review and Evaluation  
September 15, 2023

## 5.2 GROUND WATER: ELEVATIONS AND FLOW DIRECTION

Soil samples from borehole, groundwater monitoring well, and test pit locations, which were extended down to bedrock, were predominantly reported to be dry. As such, groundwater monitoring wells were installed in bedrock to intercept the groundwater table, based on field observations.

Groundwater was identified in the limestone bedrock in two of the four groundwater monitoring wells present at the Phase Two Property in April 2013 (the remaining groundwater monitoring wells were dry). Groundwater levels ranged between 4.7 and 5.4 m BGS and groundwater elevations ranged between 51.1 and 52.3 m above mean sea level (AMSL).

Groundwater was identified in the limestone bedrock in two of the seven groundwater monitoring wells present at the Phase Two Property in July 2013 (the remaining groundwater monitoring wells were dry or not accessible). Groundwater levels ranged between 4.0 and 7.3 m BGS and groundwater elevations ranged between 50.9 and 53.1 m AMSL.

Groundwater was identified in the limestone bedrock in nine of the 10 groundwater monitoring wells present at the Phase Two Property on April 24, 2014 (MW13-12 could not be located). Groundwater levels ranged between 4.1 and 14.0 m BGS and groundwater elevations ranged between 44.0 and 53.0 m AMSL.

During the Phase Two ESA Update, groundwater was identified in the fractured limestone bedrock in four of the ten newly-installed groundwater monitoring wells at the Phase Two Property on April 21, 2023. Groundwater levels ranged between 3.93 m and 12.24 m BGS and groundwater elevations ranged between 45.09 m to 53.33 m AMSL.

The interpreted groundwater flow directions from April 24, 2014, and from April 21, 2023 are presented on **Figure No. 5a and Figure No. 5b, Appendix B**, respectively. Groundwater flow direction was interpreted to be in a northwest direction based on the groundwater monitoring data from April 24, 2014, and from April 21, 2023. The interpreted groundwater flow at the Phase Two Property is likely influenced by the solution cavity, identified at MW14-1, and the sewer lines running northwest-southeast across the center of the Phase Two Property. The anticipated groundwater flow direction is to the north, based on the confluence of the Ottawa River and Rideau River to the north of the Phase Two Property.

Temporal variability could not be established, as the groundwater monitoring wells have only been monitored in the spring/summer, although some seasonal fluctuation in groundwater elevations would be expected.



# PHASE TWO ENVIRONMENTAL SITE ASSESSMENT – 187 BOTELER STREET, OTTAWA, ONTARIO

Review and Evaluation  
September 15, 2023

## 5.3 GROUND WATER: HYDRAULIC GRADIENTS

Representative horizontal hydraulic gradients at the Phase Two Property were calculated to be 0.10 in a northwest direction (using groundwater contours between MW13-13 and MW13-10), based on groundwater elevations measured on April 24, 2014. Due to the limited groundwater data from the newly installed wells in 2023, hydraulic gradients were not determined. Multi-level groundwater monitoring wells were not installed at the Phase Two Property, as such; vertical hydraulic gradients were not calculated.

## 5.4 FINE-MEDIUM SOIL TEXTURE

Fine-medium soil texture has not been considered in the selection of the appropriate SCS.

## 5.5 SOIL: FIELD SCREENING

Headspace combustible gas concentrations for soil samples ranged from less than five parts per million by volume at various borehole, groundwater monitoring well, and test pit locations to 165 ppm<sub>v</sub> at TP10. The measured headspace combustible gas concentrations readings are presented on the finalized field logs provided in **Appendix D**.

Black staining and creosote odours were identified at MW13-3, TP4, TP15, TP19, and TP21, all at depths between 1.0 and 3.0 m BGS, with the exception of MW13-3 where the creosote odour was identified between 4.3 and 4.7 m BGS. Black staining and coal fragments were noted in BH14-4 between 1.8 and 2.6 m BGS; and black staining was noted in MW14-2 (and MW14-2A) between 3.0 and 3.8 m BGS as well as MW13-13A between 0.0 and 1.5 m BGS.

## 5.6 SOIL QUALITY

A summary of soil analytical results compared with the applicable SCS is presented in **Table 3, Appendix A**. Laboratory certificates of analysis are provided in **Appendix E**.

If a chemical parameter was less than the laboratory RDL in all of the samples analyzed for that substance, it was assumed to be absent from the Phase Two Property. A chemical parameter was considered a COC if it was detected at a concentration greater than the applicable SCS.

Soil COCs that were identified based on the applicable SCS included the following:

- EC
- SAR
- PHC F2
- Arsenic
- Copper
- Lead
- Mercury
- Zinc
- Acenaphthylene
- Anthracene
- Benzo(a)anthracene
- Benzo(a)pyrene
- Benzo(b)fluoranthene
- Benzo(b/j)fluoranthene
- Benzo(g,h,i)perylene
- Benzo(k)fluoranthene
- Chrysene
- Dibenzo(a,h)anthracene
- Fluoranthene
- Indeno(1,2,3-cd)pyrene
- Phenanthrene
- Pyrene



## PHASE TWO ENVIRONMENTAL SITE ASSESSMENT – 187 BOTELER STREET, OTTAWA, ONTARIO

Review and Evaluation  
September 15, 2023

Based on the soil analytical data, the following locations exhibited exceedances of the applicable SCS:

- EC: BH13-8, BH13-9, MW13-11, TP8
- SAR: BH13-8, BH13-9, MW13-10A
- PHC F2: TP19
- Arsenic: TP21
- Copper: TP7
- Lead: MW13-1, MW13-7, BH13-8, MW14-2A, TP5, TP7 through TP13, TP17, TP19 through TP21, TP24, TP25, TP27, TP30
- Mercury: TP13
- Zinc: TP5, TP8
- PAHs (multiple): MW13-1, MW13-1A, MW13-7, BH13-8, MW13-10A, MW13-11, MW13-11A, MW14-2A, BH14-4, BH14-5, TP2 through TP5, TP7 through TP12, TP15 through TP21, TP24, TP25, TP27, TP28, TP30

The distribution of COCs in soil across the Phase Two Property is illustrated in plan view on **Figure No. 3, Appendix B**, and in cross-sections on **Figure No. 6 and Figure No. 7, Appendix B**. Of particular note is that the mercury exceedance of the applicable SCS at TP13 was remediated and remedial actions (remedial excavation) are documented in **Appendix H and Appendix I**.

Locations and depths of samples with maximum measured concentrations are provided in **Table 7, Appendix A**. It is of note that the maximum measured concentrations have been modified since assessment as a result of remedial actions (see **Appendix H and Appendix I**).

The presence of metals and PAHs in soil is a source of contaminant mass that could contribute to groundwater impacts. The concentration of PHCs in soils is not indicative of the presence of free phase product (MECP, 2011b).

Additionally, waste characterization analytical results are summarized in **Table 4, Appendix A**. Laboratory certificates of analysis are provided in **Appendix E**.



# PHASE TWO ENVIRONMENTAL SITE ASSESSMENT – 187 BOTELER STREET, OTTAWA, ONTARIO

Review and Evaluation  
September 15, 2023

## 5.7 GROUND WATER QUALITY

The groundwater analytical results compared with the applicable SCS, are presented in **Table 6, Appendix A**. Locations and depths of samples with maximum measured concentrations are provided in **Table 8, Appendix A**. Laboratory certificates of analysis are provided in **Appendix E**.

### Original Phase Two ESA (2013-2014)

Based on review of the analytical results, no parameters had concentrations greater than the applicable SCS with the exception of the following locations (all measured on April 10, 2014):

- MW13-10: benzo(g,h,i)perylene
- MW14-1: PHC F3, PHC F4, acenaphthylene, anthracene, benzo(a)anthracene, benzo(a)pyrene, benzo[b]fluoranthene, benzo(g,h,i)perylene, benzo(k)fluoranthene, chrysene, dibenzo(a,h)anthracene and indeno(1,2,3-cd)pyrene
- MW14-3: sodium, benzo(b)fluoranthene, benzo(g,h,i)perylene, benzo(k)fluoranthene, and indeno(1,2,3-cd)pyrene

The concentrations of PHCs and/or PAHs in groundwater at MW13-10, MW14-1, and MW14-3 may have been influenced by the presence of sediment in the submitted samples from April 10 and 11, 2014. The laboratory noted significant sediment in the samples, which would be expected to result in reduced accuracy of the reported results. PHCs and PAHs are known to bind to sediment particles which could present concentrations greater than the dissolved concentration found in the groundwater. Therefore, resampling was completed on April 24, 2014, in which groundwater samples from MW13-10, MW14-1 and MW14-3 were collected in two sets of bottles for PAHs. One sample would be filtered at the laboratory and the second would be unfiltered to demonstrate the effect of sediment in the sample. The results from the filtered and non-filtered pairings indicate that the concentrations of PHCs and PAHs identified at samples from April 10, 2014, were likely associated with the presence of sediment in the collected samples.

Filtering of groundwater samples for PHC and PAH analysis is not a recognized analytical methodology (MECP, 2011c).

### Phase Two ESA Update

Sufficient groundwater was only present in three of the newly installed wells at the Phase Two Property during monitoring events in 2023. The monitoring wells at locations where groundwater impacts were previously identified were dry. Therefore, recent groundwater analytical data was not obtained for the Site due to the dry conditions.

The distribution of COCs in groundwater across the Phase Two Property is illustrated in plan view on **Figure No. 4, Appendix B**, and in cross-sections on **Figure No. 8 and Figure No. 9, Appendix B**.



## PHASE TWO ENVIRONMENTAL SITE ASSESSMENT – 187 BOTELER STREET, OTTAWA, ONTARIO

Review and Evaluation  
September 15, 2023

### 5.7.1 Contaminants of Concern – Groundwater

The following parameters were considered COCs in groundwater:

- PHC F3, PHC F4,
- acenaphthylene, anthracene, benzo(a)anthracene, benzo(a)pyrene, benzo[b]fluoranthene, benzo(g,h,i)perylene, benzo(k)fluoranthene, chrysene, dibenzo(a,h)anthracene and indeno(1,2,3-cd)pyrene
- sodium

## 5.8 SEDIMENT QUALITY

Sediment was not present at the Phase Two Property and was therefore not included in the sampling and analysis plan for the Phase Two ESA.

## 5.9 QUALITY ASSURANCE AND QUALITY CONTROL RESULTS

Soil and groundwater samples were handled in accordance with the required analytical protocols, including holding time, preservation method, storage requirements, and container type. In addition, a laboratory certificate of analysis was received for each soil and groundwater sample submitted for analysis, and laboratory certificates of analysis and analytical reports complied with the requirements under Subsection 47 (3) of O.Reg. 153/04. Laboratory certificates of analysis are provided in **Appendix E**.

As shown on **Table 3, Appendix A**, the calculated RPDs for the blind field duplicate soil samples and their corresponding parent samples were less than the respective RPD screening criteria, with the following exceptions:

- MW13-12 SS5/MW13-120 SS5
  - EC
  - Anthracene, benzo(a)anthracene, benzo(a)pyrene, benzo(b)fluoranthene, chrysene, fluoranthene, phenanthrene, and pyrene
- TP19
  - PHC F2 and PHC F3
  - Barium, copper, lead, and vanadium
  - Acenaphthylene, anthracene, benzo(a)anthracene, benzo(a)pyrene, benzo(b)fluoranthene, benzo(g,h,i)perylene, chrysene, fluoranthene, phenanthrene, and pyrene
- TP20
  - Barium, copper, and lead
  - Benzo(a)pyrene



## PHASE TWO ENVIRONMENTAL SITE ASSESSMENT – 187 BOTELER STREET, OTTAWA, ONTARIO

Review and Evaluation  
September 15, 2023

As shown on **Table 6, Appendix A**, the calculated RPDs for the blind field duplicate groundwater samples and their corresponding parent samples were less than the respective RPD screening criteria, with the following exceptions:

- MW14-A (field duplicate of MW14-2)
  - Selenium and vanadium

As shown on **Table 6, Appendix A**, PHCs and/or VOCs were not measured at concentrations equal or greater than the laboratory RDL in the field and trip blank samples.

In addition to the assessment of blind field duplicate samples, Paracel and BV followed internal QA/QC protocols, which included replicate, process blank, process recovery, matrix spike, and standard analyses. Paracel and BV reported that the results for their internal QA/QC were within acceptable limits.

Given the nature of the fill material, including observed debris, it would be expected the soils would be fairly heterogeneous and difficult to homogenize, thus the RPDs are not considered to affect the interpretation of the analytical results. It is of note that the maximum concentration between a parent sample and its duplicate was assumed when assessing the Phase Two Property.

Based on the above assessment, it is Stantec's opinion that the results of the QA/QC procedures indicate that the DQO for the soil and groundwater data were generally met, that the overall objectives of the investigation and assessment were met, and that the soil and groundwater data were of acceptable quality.

## 5.10 PHASE TWO CONCEPTUAL SITE MODEL

### 5.10.1 Areas of Potential Environmental Concern

The Phase One ESA identified two APECs, as listed in Section 4.3, which were assessed in the Phase Two ESA/Phase Two ESA Update. A description and assessment of what is known about each of the APECs follows, in light of the results of the Phase Two ESA/Phase Two ESA Update:

- **APEC #1** – The presence of fill of unknown quality covering the entire Phase Two Property; activities such as leveling of residences, the former roadway, and a soil berm have attributed to this APEC. Metal and inorganic, PHC, and PAH impacts in soil may be attributed to these historical activities at the Phase Two Property.
- **APEC #2** – Historical presence of coal storage yard at the Phase Two Property; the presence of PAH impacts in soil at the northeast corner of the Phase Two Property may be attributable to the historical presence of the coal storage yard.



## PHASE TWO ENVIRONMENTAL SITE ASSESSMENT – 187 BOTELER STREET, OTTAWA, ONTARIO

Review and Evaluation  
September 15, 2023

### 5.10.2 Physical Setting

The Phase One ESA estimated physical characteristics and pathways at the Phase Two Property based on a review of available information. Following the completion of the Phase Two ESA, a more accurate understanding of the physical characteristics and contaminant pathways was developed, with respect to the subsurface environment and groundwater flow.

The stratigraphic and hydrogeological characteristics of the Phase Two Property are presented on the finalized field logs provided in **Appendix D**, on cross-sections provided on **Figure No. 6** to **Figure No. 9**, **Appendix B**, and on the groundwater contour maps provided on **Figure 5a** and **Figure 5b**, **Appendix B**. The following presents a summary of the major findings.



## PHASE TWO ENVIRONMENTAL SITE ASSESSMENT – 187 BOTELER STREET, OTTAWA, ONTARIO

Review and Evaluation  
September 15, 2023

Two stratigraphic units were identified underlying the Phase Two Property, as follows:

- *Fill* – A layer of fill consisting of various soil types was observed across the Phase Two Property, extending to depths ranging from 2.0 to 6.1 m BGS. The fill layer material descriptions included: gravel, cobbles and boulders; dark brown sand with gravel and trace silty clay; gravel with medium, brown, sand; coarse sand and gravel; medium sand; silty sand; and brown silt with medium sand. Within the fill in numerous locations across the Phase Two Property debris was observed, including: coal pieces, glass fragments, wood debris, concrete debris, crushed rock, brick debris, ceramic plates and tile pieces, black debris, metal cables, electrical wires, metal debris, road base granular material, and an ash layer.
- *Brown to Grey Silty Clay* – A thin interval (0.3 to 0.4 m) of native silty clay to silty sand was observed at the Phase Two Property. The silty clay / silty sand was considered to be native material as it was a thin interval directly on top of the bedrock surface.

Bedrock was encountered at depths ranging from 2.0 to 6.1 m BGS. Bedrock was observed to consist predominantly of limestone.

Horizontal hydraulic gradients at the Phase Two Property were calculated to be 0.10 in a northwest direction (using MW13-13 and MW13-10), based on groundwater elevations measured on April 24, 2014. The groundwater flow direction is likely affected by the solution cavity in MW14-1 and sewer alignments running northwest-southeast across the center of the Phase Two Property.

### 5.10.3 Identification and Distribution of Contaminants of Concern

#### 5.10.3.1 Soil

The lateral and vertical distribution of COCs assessed in soil is considered to be all the soil at the Phase Two Property (from property line to property line and from ground surface to bedrock), although the non-impacted soils of an appreciable quantity may be present on the eastern property line (in the vicinity of test pit TP29). The soil COCs identified are listed in Section 6.6, and comprise arsenic, copper, lead, mercury, EC, SAR, PHC F2, and PAHs (multiple).

#### 5.10.3.2 Groundwater

A review of the groundwater analytical data indicated that the parameters analyzed were less than the applicable SCS, with the exception of PHC F3 and F4 in MW14-1 and sodium in MW14-3 in April 2014. As previously discussed, sediment was present in groundwater samples submitted for analysis of PAHs in April 2014. Laboratory filtered samples indicated low detectable concentrations of dissolved PAHs that did not exceed the applicable SCS. Therefore, the groundwater COCs are limited to sodium, PHC F3, and PHC F4 and PAHs.





## PHASE TWO ENVIRONMENTAL SITE ASSESSMENT – 187 BOTELER STREET, OTTAWA, ONTARIO

Review and Evaluation  
September 15, 2023

### 5.10.4 Risk Assessment

Should a risk assessment be completed, a diagram identifying the release mechanisms, contaminant transport pathways, the human and ecological receptors located on, in or under the Phase Two Property, the reception exposure points, and routes of exposure for each area where a COC is present on, in or under the Phase Two Property at a concentration greater than the applicable SCS will be created.



Conclusions  
September 15, 2023

## 6.0 CONCLUSIONS

Stantec offers the following conclusions with respect to the results of the Phase Two ESA:

- The soil profile observed by Stantec during the Phase Two ESA was generally consistent with that reported during previous investigations at the Phase Two Property. Generally, the soil profile consisted of up to 6.1 m of fill soil of varying soil types with aesthetic impacts, various waste debris, coal and ash which was underlain by a thin interval (0.3 to 0.4 m) of native silty clay or sandy silt overlying limestone bedrock.
- Soil sampling and analysis completed in 2013 and 2023 indicated concentrations of metals and PAHs above the Table 3 ICC SCS in fill soil across the Phase Two Property.
- Groundwater sampling completed in 2014 indicated exceedances of PHCs at MW14-1, PAHs at MW14-1, MW14-3 and MW13-10 and sodium at MW14-3. Concentrations of COCs in the groundwater samples after lab-filtration met the Table 3 ICC SCS indicating that the exceedances were likely due to sediment in the samples. Exceedances of PHC F3, PHC F4 and PAHs at MW14-1 and of PAHs at MW14-1, MW14-3 and MW13-10 remain as filtering prior to analysis is not permitted for these parameters (MECP, 2011c).
- A solution enhanced cavity was identified at MW14-1 at approximately 14 m BGS in 2014. MW14-1 was constructed as an open hole to from 7.5 to 14.5 m which was subsequently destroyed and replaced in 2023 by MW14-1A. MW14-1A was screened from 15.3 to 18.3 m BGS and was dry during two monitoring events in 2023. Replacement wells installed by EXP in February 2023 (MW13-1A, MW13-2A, MW13-10A, MW13-11A, MW13-12A, MW13-13A, MW13-14A, MW14-1A, MW14-2A and MW14-3A) were screened deeper than the wells they were meant to replace.
- Groundwater sampling was not completed in 2023 as each of the monitoring wells where Table 3 SCS exceedances were previously identified were dry during two separate monitoring events in February and April, 2023.

Based on the results of the Phase Two ESA, the MOE (2011) Table 3 SCS were not met for the COCs noted above at the Phase Two Property at the time of the assessment.

Soil and groundwater impacts could be addressed through a combination of remedial excavation and completion of a Screening-Level Risk Assessment (SLRA).



# PHASE TWO ENVIRONMENTAL SITE ASSESSMENT – 187 BOTELER STREET, OTTAWA, ONTARIO

Conclusions  
September 15, 2023

## 6.1 SIGNATURES

This report documents work that was performed in accordance with generally accepted professional standards at the time and location in which the services were provided. No other representations, warranties, or guarantees are made concerning the accuracy or completeness of the data or conclusions contained within this report, including no assurance that this work has uncovered all potential liabilities associated with the identified property.

This report provides an evaluation of selected environmental conditions associated with the identified portion of the property that was assessed at the time the work was conducted and is based on information obtained by and/or provided to Stantec at that time. There are no assurances regarding the accuracy and completeness of this information. All information received from the client or third parties in the preparation of this report has been assumed by Stantec to be correct. Stantec assumes no responsibility for any deficiency or inaccuracy in information received from others.

The opinions in this report can only be relied upon as they relate to the condition of the portion of the identified property that was assessed at the time the work was conducted. Activities at the property subsequent to Stantec's assessment may have significantly altered the property's condition. Stantec cannot comment on other areas of the property that were not assessed.

Conclusions made within this report consist of Stantec's professional opinion as of the time of the writing of this report and are based solely on the scope of work described in the report, the limited data available, and the results of the work. They are not a certification of the property's environmental condition. This report should not be construed as legal advice.

This report has been prepared for the exclusive use of the client identified herein and any use by any third party is prohibited. Stantec assumes no responsibility for losses, damages, liabilities, or claims, howsoever arising, from third party use of this report.

This report is limited by the following:

- Sampling locations as shown on **Figure No. 2a, Appendix A**. Conditions may vary between sampling locations.
- The sampling and analysis plan provided in **Appendix C** and deviations from the sampling and analysis plan discussed in Section 4.4 and impediments discussed in Section 4.5.

The locations of any utilities, buildings and structures, and property boundaries illustrated in or described within this report, if any, including pole lines, conduits, water mains, sewers, and other surface or sub-surface utilities and structures are not guaranteed. Before starting work, the exact location of all such utilities and structures should be confirmed and Stantec assumes no liability for damage to them.



## PHASE TWO ENVIRONMENTAL SITE ASSESSMENT – 187 BOTELER STREET, OTTAWA, ONTARIO

### Conclusions

September 15, 2023

The conclusions are based on the site conditions encountered by Stantec at the time the work was performed at the specific testing and/or sampling locations, and conditions may vary among sampling locations. Factors such as areas of potential concern identified in previous studies, site conditions (e.g., utilities), and cost may have constrained the sampling locations used in this assessment. In addition, analysis has been carried out for only a limited number of chemical parameters, and it should not be inferred that other chemical species are not present. Due to the nature of the investigation and the limited data available, Stantec does not warrant against undiscovered environmental liabilities nor that the sampling results are indicative of the condition of the entire Site. As the purpose of this report is to identify site conditions which may pose an environmental risk; the identification of non-environmental risks to structures or people on the Site is beyond the scope of this assessment.

Should additional information become available which differs significantly from our understanding of conditions presented in this report, Stantec specifically disclaims any responsibility to update the conclusions in this report.

This report was prepared by Tarek Ghadieh, M.Eng., P.Eng. and reviewed by Jill Peters-Dechman, M.Eng., P.Eng.

As QP<sub>ESA</sub>, I (Joel Van Popta) confirm that I have supervised the carrying out of this Phase Two ESA Update and concur with the findings and conclusions of this report. In addition, I confirm that I have completed a technical review of the Phase Two ESA Update and also concur with the findings and conclusions of this report.

All of which is respectfully submitted,

### STANTEC CONSULTING LTD.

**Philip Resendes**, B.Sc.  
Environmental Site Assessor  
Tel: 226 338 9164  
Philip.Resendes@stantec.com

**Joel Van Popta**, M.Sc., P.Geo..  
Senior Associate  
Tel: 905 381 3273  
Joel.VanPopta@stantec.com

TG/JVP/DE/lw



## PHASE TWO ENVIRONMENTAL SITE ASSESSMENT – 187 BOTELER STREET, OTTAWA, ONTARIO

### Conclusions

September 15, 2023

*The objectives and requirements set out in Ontario Regulation 153/04 for a Phase Two Environmental Site Assessment were applied in carrying out the environmental site assessment and preparing this report, with the exception of the current legal survey signed and sealed by an Ontario Land Surveyor which has not been included. This legal survey will be included in the report when it is available. Additionally, figures illustrating exceedances for each parameter group were not prepared.*



## PHASE TWO ENVIRONMENTAL SITE ASSESSMENT – 187 BOTELER STREET, OTTAWA, ONTARIO

### References

September 15, 2023

## 7.0 REFERENCES

- BV. (2014). *Ontario QA/QC Interpretation Guide – Environmental Services*. Maxxam Analytics Inc. City of Ottawa. (n.d.). *geoOttawa*. Retrieved April 3, 2023, from City of Ottawa: <https://maps.ottawa.ca/geoOttawa/>
- EMR. (1976). *Generalized Bedrock Geology of Ottawa-Hull, Map 1508A*. Geological Survey of Canada, Energy Mines and Resources.
- EXP Services Inc. (2023). *Monitoring Well Decommissioning and Re-Installation, 187 Boteler Street, Ottawa, Ontario*.
- H.Q. Golder Associates Ltd. (1962). *Subgrade Investigation, Ottawa Approach to Proposed MacDonald-Cartier Bridge, Ottawa, Ontario*.
- Jacques Whitford and Associates Ltd. (2001). *Geotechnical Inventory, King Edward Avenue, Ottawa, Ontario*.
- Jacques Whitford Environment Ltd. (2001). *Limited Phase I Environmental Site Assessment, King Edward Avenue and Sussex Drive Rights-of-Ways, Ottawa, Ontario*.
- Jacques Whitford Environment Ltd. (2004). *(Draft) Limited Phase II Environmental Site Assessment, King Edward Ave. Overpass Structures Over the Union Ave. to King Edward Ave. Ramp, Ottawa, Ontario*.
- Jacques Whitford Environment Ltd. (2006a). *Modified Phase I Environmental Site Assessment, Boteler Street from Dalhousie Street to King Edward Avenue, Ottawa, Ontario*.
- Jacques Whitford Environment Ltd. (2006b). *Limited Phase II Environmental Site Assessment, Boteler Street from Dalhousie Street to King Edward Avenue, Ottawa, ON*.
- Jacques Whitford Ltd. (2004). *(Draft) Supplemental Phase II ESA, King Edward Avenue Right-of-way (Laurier Avenue East to Boteler Street) and Area of Structures North of King Edward Right-of-Way, Ottawa, Ontario*.
- MECP. (1996). *Guidance on Sampling and Analytical Methods for Use at Contaminated Sites in Ontario*. Ministry of Environment and Energy.
- MECP. (1997). *Guideline for Use at Contaminated Sites in Ontario*. Ministry of Environment and Energy.
- MECP. (2004). *Soil, Ground Water, and Sediment Standards for Use Under Part XV.1 of the Environmental Protection Act*.
- MECP. (2011a). *Ground Water and Sediment Standards for Use Under Part XV.1 of the Environmental Protection Act*. Ministry of the Environment.
- MECP. (2011b). *Rationale for the Development of Soil and Groundwater Standards for Use at Contaminated Sites in Ontario*. Ministry of the Environment and Climate Change.
- MECP. (2011c). *Protocol for Analytical Methods Used in the Assessment of Properties under Part XV.1 of the Environmental Protection Act*. Ministry of the Environment.
- MNR. (n.d.). *Soil and Bedrock Instability: What You Need to Know*.
- NRCan. (1998). *City of Ottawa, Map 31 G/5*. Natural Resources Canada.
- Ontario. (2023a, January 18). *WWIS - Microsoft Access*. Retrieved from Ontario.ca: <https://data.ontario.ca/dataset/well-records/resource/0ba34f33-6c7a-467d-b5bb-aac1499c8e1a>
- Ontario. (2023b, March 23). *Make a natural heritage area map*. Retrieved from Ontario.ca: <https://www.ontario.ca/page/make-natural-heritage-area-map>
- Paterson Group. (2019). *Geotechnical Investigation, Proposed Embassy Development, 187 Boteler Street, Ottawa, Ontario*.
- Stantec. (2013a). *Phase I Environmental Site Assessment, Vacant Land Parcels, Boteler Street, Parcels 1 and 2, Lot 7, RCP 611769, Ottawa, ON*.
- Stantec. (2013b). *Phase II Environmental Site Assessment, Vacant Land Parcels, Boteler Street, Parcel 1 and 2, Lot 7, RCP 611769, Ottawa, Ontario*.



## PHASE TWO ENVIRONMENTAL SITE ASSESSMENT – 187 BOTELER STREET, OTTAWA, ONTARIO

### References

September 15, 2023

- Stantec. (2014). *Phase One Environmental Site Assessment, Vacant Land Parcel, Boteler Street, Parts 2, 4, 5 and 6 of Plan 4R-26468, Part of Lot 3 and Part of Lot 7 RCP 611769, Ottawa, Ontario.*
- Stantec. (2014a). *Phase One Environmental Site Assessment, Vacant Land Parcel, Boteler Street, Parts 2, 4, 5 and 6 of Plan 4R-26468, Part of Lot 3 and Part of Lot 7 RCP 611769, Ottawa, Ontario.*
- Stantec. (2014b). *Phase Two Environmental Site Assessment, Vacant Land Parcel, Boteler Street, Parts 2, 4, 5 and 6 of Plan 4R-26468, Part of Lot 3 and Part of Lot 7 RCP 611769, Ottawa, Ontario.*
- Stantec. (2023). *(Draft) Phase One Environmental Site Assessment, 187 Boteler Street, Ottawa, ON K1N 0A4.*
- Trow Associates Inc. (2006). *Soil Sampling Results, United Arab Emirates (UAE) Embassy, 125 Boteler Street, Ottawa, Ontario.*
- US EPA. (1996). *Low Stress (Low Flow) Purging and Sampling Procedure for the Collection of Ground Water Samples from Monitoring Wells.*



# **APPENDICES**



**PHASE TWO ENVIRONMENTAL SITE ASSESSMENT – 187 BOTELER STREET, OTTAWA,  
ONTARIO**

Appendix A Tables

**APPENDIX A TABLES**





**Table 1**  
**Groundwater Monitoring Well Installation Details**  
**Phase Two Environmental Site Assessment**  
**187 Boteler Street, Ottawa ON, K1N 0A4**  
**Ministry of Foreign Affairs of the State of Qatar c/o Embassy of Qatar in Ottawa**

Location ID	Coordinates		Elevation		Stick-Up/ Stick-Down (m BGS)	Borehole			Well Diameter (mm)	Well Screen				Sand Pack				
	Easting	Northing	Top of Casing (m AMSL)	Ground Surface (m AMSL)		Depth (m BGS)	Depth (m AMSL)	Diameter (mm)		Top		Bottom		Screen Slot Size	Top		Bottom	
										(m BGS)	(m AMSL)	(m BGS)	(m AMSL)		(m BGS)	(m AMSL)	(m BGS)	(m AMSL)
MW13-1***	445690.98	5031575.78	56.420	56.530	-0.110	6.40	50.13	38	31	4.10	52.43	6.40	50.13	10	3.66	52.87	6.40	50.13
MW13-2***	445664.97	5031561.79	56.877	56.953	-0.076	6.40	50.55	38	31	4.10	52.85	6.40	50.55	10	3.66	53.29	6.40	50.55
MW13-3***	445643.25	5031590.96	61.175	60.220	0.955	12.80	47.42	38	31	9.75	50.47	12.80	47.42	10	9.45	50.77	12.80	47.42
MW13-7***	445657.85	5031569.82	56.958	57.067	-0.109	9.75	47.32	38	31	6.70	50.37	9.75	47.32	10	6.40	50.67	9.75	47.32
MW13-10***	445668.37	5031609.63	58.266	58.279	-0.013	11.58	46.70	unknown	51	8.53	49.75	11.58	46.70	10	8.22	50.06	11.58	46.70
MW13-11***	445705.63	5031628.80	58.054	58.224	-0.170	10.67	47.55	unknown	51	7.62	50.60	10.67	47.55	10	7.32	50.90	10.67	47.55
MW13-12***	445745.10	5031646.31	57.877**	57.877	0.000**	10.67	47.21	unknown	51	7.62	50.26	10.67	47.21	10	7.32	50.56	10.67	47.21
MW13-13***	445723.19	5031598.25	57.205	57.244	-0.039	7.62	49.62	unknown	51	4.57	52.67	7.62	49.62	10	4.27	52.97	7.62	49.62
MW13-14***	445793.83	5031638.06	56.918	57.069	-0.151	7.62	49.45	unknown	51	4.57	52.50	7.62	49.45	10	4.27	52.80	7.62	49.45
MW14-1***	445662.64	5031595.58	57.934	57.988	-0.054	14.50	43.49	unknown	51	7.62*	50.37*	14.5*	43.49*	*	*	*	*	*
MW14-2***	445725.32	5031630.09	57.901	58.010	-0.109	15.70	42.31	unknown	51	12.65	45.36	15.70	42.31	10	11.58	46.43	15.70	42.31
MW14-3***	445700.47	5031603.99	57.802	57.906	-0.104	13.00	44.91	unknown	51	9.98	47.93	13.00	44.91	10	9.14	48.77	13.00	44.91
MW13-1A	445691	5031576	57.66	56.842	0.818	10.70	46.14	unknown	51	7.09	49.75	10.14	46.70	10	6.79	50.06	10.70	46.14
MW13-2A	445665	5031562	57.87	57.027	0.843	10.70	46.33	unknown	51	7.09	49.94	10.14	46.89	10	6.79	50.24	10.70	46.33
MW13-10A	445668	5031610	59.09	58.335	0.755	15.25	43.09	unknown	51	12.20	46.14	15.25	43.09	10	11.90	46.44	15.25	43.09
MW13-11A	445706	5031629	59.14	58.357	0.783	15.25	43.11	unknown	51	12.20	46.16	15.25	43.11	10	11.90	46.46	15.25	43.11
MW13-12A	445745	5031646	58.95	58.197	0.753	15.25	42.95	unknown	51	12.20	46.00	15.25	42.95	10	11.90	46.30	15.25	42.95
MW13-13A	445723	5031598	58.20	57.360	0.840	12.20	45.16	unknown	51	9.15	48.21	12.20	45.16	10	8.85	48.51	12.20	45.16
MW13-14A	445794	5031638	58.11	57.265	0.845	12.20	45.07	unknown	51	9.15	48.12	12.20	45.07	10	8.85	48.42	12.20	45.07
MW14-1A	445663	5031596	58.87	58.002	0.868	18.30	39.70	unknown	51	15.25	42.75	18.30	39.70	10	14.95	43.06	18.30	39.70
MW14-2A	445725	5031630	59.08	58.236	0.844	19.83	38.41	unknown	51	16.78	41.46	19.83	38.41	10	16.48	41.76	19.83	38.41
MW14-3A	445700	5031604	59.01	58.122	0.888	18.30	39.82	unknown	51	15.25	42.87	18.30	39.82	10	14.95	43.18	18.30	39.82

**Notes:**

- \* no screen or sand pack installed; open hole depth indicated
- \*\* top of casing elevation not measured; assumed to be equal to ground surface elevation
- \*\*\* groundwater monitoring well decommissioned/destroyed
- m AMSL metres above mean sea level
- m BGS metres below ground surface
- mm millimetres

**Table 2**  
**Groundwater Elevations**  
**Phase Two Environmental Site Assessment**  
**187 Boteler Street, Ottawa ON, K1N 0A4**  
**Ministry of Foreign Affairs of the State of Qatar c/o Embassy of Qatar in Ottawa**

Location ID	Monitoring Date	Ground Surface Elevation (m AMSL)	Top of Casing Elevation (m AMSL)	Water Level Elevation (m AMSL)	Water Level Depth (m BTOC)	Water Level Depth (m BGS)	Well Headspace Combustible Gas Concentration (ppm <sub>v</sub> )	LNAPL Thickness (mm)
MW13-1**	2013/04/22	56.530	56.420	51.12	5.30	5.41	25	0
	2013/07/26			not accessible	not accessible	not accessible	not accessible	not accessible
	2014/04/10			51.15	5.27	5.38	<5	0
	2014/04/24			51.12	5.30	5.41	<5	0
MW13-2**	2013/04/22	56.953	56.877	52.25	4.63	4.71	35	0
	2013/07/26			not accessible	not accessible	not accessible	not accessible	not accessible
	2014/04/10			52.37	4.51	4.59	<5	0
	2014/04/24			52.21	4.67	4.75	<5	0
MW13-3*	2013/04/22	60.220	61.175	dry	dry	dry	35	0
MW13-7*	2013/04/22	57.067	56.958	dry	dry	dry	90	0
MW13-10**	2013/07/26	58.279	58.266	dry	dry	dry	6	0
	2014/04/10			48.77	9.50	9.51	20	0
	2014/04/24			46.94	11.33	11.34	<5	0
MW13-11**	2013/07/26	58.224	58.054	50.93	7.12	7.29	<5	0
	2014/04/10			51.07	6.98	7.15	<5	0
	2014/04/24			50.95	7.10	7.27	<5	0
MW13-12**	2013/07/26	57.877	57.877	dry	dry	dry	65	0
	2014/04/10			could not locate	could not locate	could not locate	could not locate	could not locate
	2014/04/24			could not locate	could not locate	could not locate	could not locate	could not locate
MW13-13**	2013/07/26	57.244	57.205	dry	dry	dry	220	0
	2014/04/10			57.10***	0.11***	0.15***	5	0
	2014/04/24			52.44	4.77	4.81	15	0
MW13-14**	2013/07/26	57.069	56.918	53.08	3.84	3.99	90	0
	2014/04/10			53.29	3.63	3.78	20	0
	2014/04/24			52.99	3.93	4.08	<5	0
MW14-1**	2014/04/10	57.988	57.934	44.11	13.82	13.87	<5	0
	2014/04/24			44.01	13.92	13.97	10	0
MW14-2**	2014/04/10	58.010	57.901	49.34	8.56	8.67	60	0
	2014/04/24			49.39	8.51	8.62	10	0
MW14-3**	2014/04/10	57.906	57.802	48.38	9.42	9.52	10	0
	2014/04/24			48.34	9.46	9.56	<5	0
MW13-1A	2023/04/21	56.842	57.66	52.54	5.13	4.31	<5	0
MW13-2A	2023/04/21	57.027	57.87	dry	dry	dry	110	0
MW13-10A	2023/04/21	58.335	59.09	dry	dry	dry	<5	0
MW13-11A	2023/04/21	58.357	59.14	50.97	8.18	7.39	<5	0
MW13-12A	2023/04/21	58.197	58.95	dry	dry	dry	45	0
MW13-13A	2023/04/21	57.360	58.20	45.09	13.12	12.28	<5	0
MW13-14A	2023/04/21	57.265	58.11	53.26	4.85	4.01	<5	0
MW14-1A	2023/04/21	58.002	58.87	dry	dry	dry	<5	0
MW14-2A	2023/04/21	58.236	59.08	dry	dry	dry	<5	0
MW14-3A	2023/04/21	58.122	59.01	dry	dry	dry	10	0

**Notes:**

- LNAPL light non-aqueous phase liquid
- m AMSL metres above mean sea level
- m BGS metres below ground surface
- m BTOC metres below top of casing
- mm millimetres
- ppm<sub>v</sub> parts per million by volume
- \* Groundwater monitoring wells MW13-3 and MW13-7 were decommissioned on June 13, 2013
- \*\* Groundwater monitoring wells decommissioned/destroyed after 2014
- \*\*\* Groundwater level due to likely infiltration

**Table 3**  
**Soil Analytical Results**  
**Phase Two Environmental Site Assessment**  
**187 Boteler Street, Ottawa, ON, K1N 0A4**  
**Ministry of Foreign Affairs of the State of Qatar c/o Embassy of Qatar in Ottawa**

Sample Location			MW13-1/MW13-1A		MW13-2/MW13-2A		MW13-3		MW13-7	BH13-8	BH13-9	25-Jul-13	MW13-10/MW13-10A	MW13-11/MW13-11A	MW13-12/MW13-12A					31-Jan-23		
Sample Date			30-Jan-23	12-Apr-13	15-Apr-13	30-Jan-23	15-Apr-13	15-Apr-13	17-Apr-13	25-Jul-13	25-Jul-13	25-Jul-13	2-Feb-23	18-Jul-13	1-Feb-23	18-Jul-13	25-Jul-13	25-Jul-13	25-Jul-13	25-Jul-13	25-Jul-13	31-Jan-23
Sample ID			MW13-1A	MW13-1 SS3	MW13-2 SS3	MW13-2A	MW13-3 SS1	MW13-3 SS3	MW13-7 SS2	BH13-8	BH13-9	BH13-9	MW13-10A	MW13-10 SS7	MW13-11A	MW13-11 SS6	MW13-12 SS1	MW13-12 SS5	MW13-120 SS5	MW13-120 SS5	MW13-12	MW13-12A
Sample Depth			1.5 - 2.1 m	1.52 - 2.28 m	1.52 - 2.28 m	1.8 - 2.5 m	0 - 0.76 m	4.75 - 5.22 m	0.76 - 1.52 m	3.8 - 4.3 m	1.52 - 2.28 m	3.05 - 3.81 m	1.8 - 2.4 m	4.6 - 4.85 m	0 - 0.8 m	3.8 - 4.25 m	0 - 0.76 m	3.05 - 3.81 m	3.05 - 3.81 m	3.05 - 3.81 m	3.05 - 4.55 m	3.5 - 4.2 m
Sampling Company				STANTEC	STANTEC	STANTEC	STANTEC	STANTEC	STANTEC	STANTEC	STANTEC	STANTEC	STANTEC	STANTEC	EXP	STANTEC	STANTEC	STANTEC	STANTEC	STANTEC	STANTEC	STANTEC
Laboratory			BV	PARACEL	PARACEL	BV	PARACEL	PARACEL	PARACEL	PARACEL	PARACEL	PARACEL	BV	PARACEL	BV	PARACEL	PARACEL	PARACEL	PARACEL	PARACEL	PARACEL	BV
Laboratory Work Order			C332988	1316202	1316202	C332988	1316202	1316202	1316202	1330318	1330318	1330318	C332988	1329318	C332988	1329318	1330318	1330318	1330318	1330318	1330318	C332988
Laboratory Sample ID			UYX904	1316202-01	1316202-02	UYX903	1316202-03	1316202-04	1316202-09	1330318-13	1330318-10	1330318-11	UYX910	1329318-01	UYX909	1329318-02	1330318-03	1330318-01	1330318-07	RPD (%)	1330318-02	UYX907
Sample Type		Units	Ontario SCS																			
<b>General Chemistry</b>																						
Available (CaCl2) pH	S.U.	5-9/5-11 <sub>512</sub> <sup>A</sup>	8.01	-	-	7.74	-	-	-	-	-	-	7.53	-	7.75	-	-	-	-	-	-	7.78
Cyanide (Free)	µg/g	0.051 <sup>A</sup>	<0.01	<0.03	<0.03	<0.01	-	-	-	-	-	-	<0.01	-	<0.01	-	-	-	-	-	-	<0.01
Electrical Conductivity, Lab	µS/cm	1,400 <sup>A</sup>	200	375	301	190	-	-	-	4,790 <sup>A</sup>	-	5,250 <sup>A</sup>	320	294	170	2,590 <sup>A</sup>	-	360	440	20%	-	150
Fraction of Organic Carbon Rep.#1	g/g	n/v	-	-	-	-	-	-	0.0380	-	0.0110	-	-	-	-	-	0.0535	-	-	-	-	<0.00500
Fraction of Organic Carbon Rep.#2	g/g	n/v	-	-	-	-	-	-	0.0390	0.0260	0.0140	-	-	-	-	-	0.0660	-	-	-	<0.00500	-
Fraction of Organic Carbon Rep.#3	g/g	n/v	-	-	-	-	-	-	0.0390	0.0210	0.00690	-	-	-	-	-	0.0480	-	-	-	<0.00500	-
Moisture Content	%	n/v	11	-	-	18	-	-	-	-	-	-	9.6	-	9.4	-	-	-	-	-	-	18
Percent Solids	%wt	n/v	-	87.1	83.8	-	92.0	90.5	85.5	82.7	-	89.2	-	-	-	89.3	-	82.9	-	89.3	92.2	3%
pH, lab	S.U.	5-9/5-11 <sub>512</sub> <sup>A</sup>	-	7.95	7.73	-	-	7.83	-	-	-	-	-	-	-	-	-	7.92	7.92	0%	-	-
Soil Adsorption Ratio (SAR)	none	12 <sup>A</sup>	0.24 SDC	6.03	4.52	0.69	-	-	-	12.2 <sup>A</sup>	-	35.6 <sup>A</sup>	-	83 <sup>A</sup>	0.23	0.26 SDC	0.59	-	2.68	2.26	17%	0.29 SDC
<b>Petroleum Hydrocarbons</b>																						
PHC F1 (C6-C10 range)	µg/g	57 <sup>A</sup>	-	<7	<7	-	<7	<7	<7	<7	-	<7	-	<7	-	<7	-	<7	<7	<7	nc	-
PHC F2 (>C10-C16 range)	µg/g	230 <sub>15</sub> <sup>A</sup>	-	<4	5	-	<4	<4	18	<4	-	<4	-	<4	-	<4	-	<4	<4	<4	nc	-
PHC F3 (>C16-C34 range)	µg/g	1,700 <sub>85</sub> <sup>A</sup>	-	85	60	-	35	21	82	<8	-	<8	-	<8	-	<8	-	<8	<8	<8	nc	-
PHC F4 (>C34-C50 range)	µg/g	3,300 <sub>10</sub> <sup>A</sup>	-	50	80	-	52	40	100	<6	-	<6	-	<6	-	<6	-	<6	<6	<6	nc	-
<b>Metals</b>																						
Antimony	µg/g	40 <sup>A</sup>	<0.20	<1.0	<1.0	<0.20	<1.0	<1.0	<1.0	1.2	-	<1.0	0.69	-	0.27	-	-	<1.0	<1.0	nc	-	<0.20
Arsenic	µg/g	18 <sup>A</sup>	1.4	1.2	1.8	<1.0	<1.0	1.4	3.5	5.1	-	2.4	3.7	-	2.2	-	-	1.1	1.2	nc	-	<1.0
Barium	µg/g	670 <sup>A</sup>	35	133	90.9	65	47.7	80.3	198	180	-	136	110	-	85	-	-	84.6	74.2	13%	-	100
Beryllium	µg/g	8 <sup>A</sup>	0.21	<1.0	<1.0	0.36	<1.0	<1.0	<1.0	<1.0	-	<1.0	0.43	-	0.30	-	-	<1.0	<1.0	nc	-	0.33
Boron	µg/g	120 <sub>16</sub> <sup>A</sup>	<5.0	3.7	1.9	<5.0	2.9	4.1	4.8	7.8	-	5.6	6.7	-	<5.0	-	-	3.0	2.8	nc	-	<5.0
Boron (Available)	µg/g	2 <sub>16</sub> <sup>A</sup>	0.065	<0.5	<0.5	0.057	<0.5	<0.5	<0.5	1.0	-	1.1	0.77	-	0.24	-	-	<0.5	<0.5	nc	-	0.099
Cadmium	µg/g	1.9 <sup>A</sup>	<0.10	<0.5	<0.5	<0.10	<0.5	<0.5	<0.10	<0.5	-	<0.5	0.17	-	<0.10	-	-	<0.5	<0.5	nc	-	<0.10
Chromium	µg/g	160 <sup>A</sup>	9.3	11.9	14.3	20	8.3	15.9	19.7	17.1	-	20.7	23	-	16	-	-	14.2	17.4	20%	-	20
Chromium (Hexavalent)	µg/g	8 <sup>A</sup>	<0.18	<0.2	<0.2	<0.18	<0.2	<0.2	<0.2	<0.2	-	<0.2	<0.18	-	<0.18	-	-	<0.2	<0.2	nc	-	<0.18
Cobalt	µg/g	80 <sup>A</sup>	4.2	3.0	2.9	6.0	2.4	4.5	5.4	5.6	-	6.2	7.1	-	5.2	-	-	4.7	4.7	nc	-	6.0
Copper	µg/g	230 <sup>A</sup>	7.2	12.4	7.3	13	7.3	8.5	97.9	68.6	-	11.1	35	-	16	-	-	10.5	10.5	0%	-	14
Lead	µg/g	120 <sup>A</sup>	4.9	290 <sup>A</sup>	56.4	3.7	15.1	5.6	278 <sup>A</sup>	464 <sup>A</sup>	-	8.0	78	-	35	-	-	14.4	14.4	0%	-	5.3
Mercury	µg/g	3.9 <sup>A</sup>	<0.050	0.4	0.2	<0.050	<0.1	<0.1	0.7	0.7	-	<0.1	0.25	-	0.11	-	-	<0.1	<0.1	nc	-	<0.050
Molybdenum	µg/g	40 <sup>A</sup>	<0.50	<1.0	<1.0	<0.50	<1.0	<1.0	<1.0	<1.0	-	<1.0	0.93	-	0.70	-	-	<1.0	1.5	nc	-	0.58
Nickel	µg/g	270 <sup>A</sup>	6.7	6.3	6.6	11	5.5	8.2	11.2	10.9	-	12.5	17	-	11	-	-	7.9	8.0	1%	-	12
Selenium	µg/g	5.5 <sup>A</sup>	<0.50	<1.0	<1.0	<0.50	<1.0	<1.0	<1.0	<1.0	-	<1.0	<0.50	-	<0.50	-	-	<1.0	<1.0	nc	-	<0.50
Silver	µg/g	40 <sup>A</sup>	<0.20	<0.5	<0.5	<0.20	<0.5	<0.5	<0.5	<0.5	-	<0.5	<0.20	-	<0.20	-	-	<0.5	<0.5	nc	-	<0.20
Thallium	µg/g	3.3 <sup>A</sup>	0.095	<1.0	<1.0	0.13	<1.0	<1.0	<1.0	<1.0	-	<1.0	0.15	-	0.13	-	-	<1.0	<1.0	nc	-	0.13
Uranium	µg/g	33 <sup>A</sup>	0.42	<1.0	<1.0	0.60	<1.0	<1.0	<1.0	<1.0	-	<1.0	0.66	-	0.86	-	-	<1.0	<1.0	nc	-	0.94
Vanadium	µg/g	86 <sup>A</sup>	16	14.6	20.4	36	13.1	22.0	27.9	23.2	-	43.3	29	-	24	-	-	21.0	20.7	1%	-	30
Zinc	µg/g	340 <sup>A</sup>	16	94.5	55.7	29	19.9	20.5	177	113	-	47.3	73	-	42	-	-	25.1	22.8	10%	-	29
<b>Polycyclic Aromatic Hydrocarbons</b>																						
Acenaphthene	µg/g	96 <sup>A</sup>	0.34	0.09	<0.02	<0.0050	<0.02	<0.02	0.23	0.09	-	<0.02	0.12	<0.02	0.032	0.19	-	<0.02	<0.02	nc	-	<0.0050
Acenaphthylene	µg/g	0.15 <sup>A</sup>	0.0089	0.81 <sup>A</sup>	0.02	<0.0050	0.08	<0.02	1.16 <sup>A</sup>	0.27 <sup>A</sup>	-	<0.02	0.27 <sup>A</sup>	<0.02	0.20 <sup>A</sup>	0.04	-	0.08	0.13	nc	-	0.011
Anthracene	µg/g	0.67 <sup>A</sup>	0.64	0.67	<0.02	<0.0050	0.07	<0.02	1.74 <sup>A</sup>	0.47	-	<0.02	0.41	<0.02	0.29	0.51	-	0.11	0.17	43%	-	0.011
Benzo(a)anthracene	µg/g	0.96 <sup>A</sup>	0.86	1.51 <sup>A</sup>	0.03	<0.0050	0.19	<0.02	3.39 <sup>A</sup>	0.76	-	<0.02	1.3 <sup>A</sup>	<0.02	0.96	1.20 <sup>A</sup>	-	0.16	0.29	58%	-	0.045
Benzo(a)pyrene	µg/g	0.3 <sup>A</sup>	0.69 <sup>A</sup>	1.50 <sup>A</sup>	0.03	<0.0050	0.13	<0.02	2.30 <sup>A</sup>	0.82 <sup>A</sup>	-	<0.02	1.3 <sup>A</sup>	<0.02	0.89 <sup>A</sup>	0.81 <sup>A</sup>	-	0.14	0.23	49%	-	0.045
Benzo(b)fluoranthene	µg/g	0.96 <sup>A</sup>	-	1.50 <sup>A</sup>	0.03	-	0.16	<0.02	3.45 <sup>A</sup>	0.93	-	<0.02	-	<0.02	-	1.82 <sup>A</sup>	-	0.11	0.27	84%	-	-
Benzo(b)fluoranthene	µg/g	0.96 <sub>22</sub> <sup>A</sup>	0.87	-	-	<0.0050	-	-	-	-	-	-	1.7 <sup>A</sup>	-	1.2 <sup>A</sup>	-	-	-	-	-	-	0.060
Benzo(g,h,i)perylene	µg/g	9.6 <sup>A</sup>	0.44	0.67	0.08	<0.0050	0.10	<0.02	1.33	0.41	-	<0.02	0.79	<0.02	0.52	0.40	-	0.06	0.11	nc	-	0.032
Benzo(k)fluoranthene	µg/g	0.96 <sup>A</sup>	0.37	0.55	<0.02	<0.0050	0.06	<0.02	1.36 <sup>A</sup>	0.33	-	<0.02	0.64	<0.02	0.44	0.88	-	0.05	0.10	nc	-	0.022
Chrysene	µg/g	9.6 <sup>A</sup>	0.70	1.93	0.04	<0.0050	0.21	<0.02	3.28	0.87	-	<0.02	1.1	<0.02	0.81	1.31	-	0.15	0.28	60%	-	0.039
Dibenzo(a,h)anthracene	µg/g	0.1 <sup>A</sup>	0.15 <sup>A</sup>	0.18 <sup>A</sup>	<0.02																	

**Table 3  
Soil Analytical Results  
Phase Two Environmental Site Assessment  
187 Boteler Street, Ottawa, ON, K1N 0A4  
Ministry of Foreign Affairs of the State of Qatar c/o Embassy of Qatar in Ottawa**

Sample Location			MW13-1/MW13-1A		MW13-2/MW13-2A		MW13-3		MW13-7	BH13-8		BH13-9		MW13-10/MW13-10A		MW13-11/MW13-11A		MW13-12/MW13-12A							
Sample Date			30-Jan-23	12-Apr-13	15-Apr-13	30-Jan-23	15-Apr-13	15-Apr-13	17-Apr-13	25-Jul-13		25-Jul-13		2-Feb-23	18-Jul-13	1-Feb-23	18-Jul-13	25-Jul-13	25-Jul-13	25-Jul-13	25-Jul-13	25-Jul-13	31-Jan-23		
Sample ID			MW13-1A	MW13-1 SS3	MW13-2 SS3	MW13-2A	MW13-3 SS1	MW13-3 SS3	MW13-7 SS2	BH13-8		BH13-9 SS5		MW13-10A	MW13-10 SS7	MW13-11A	MW13-11 SS6	MW13-12 SS1	MW13-12 SS5	MW13-120 SS5	MW13-120 SS5	MW13-12	MW13-12A		
Sample Depth			1.5 - 2.1 m	1.52 - 2.28 m	1.52 - 2.28 m	1.8 - 2.5 m	0 - 0.76 m	4.75 - 5.22 m	0.76 - 1.52 m	3.8 - 4.3 m		3.05 - 3.81 m		1.8 - 2.4 m	4.6 - 4.85 m	0 - 0.8 m	3.8 - 4.25 m	0 - 0.76 m	3.05 - 3.81 m	3.05 - 3.81 m	3.05 - 3.81 m	3.05 - 4.55 m	3.5 - 4.2 m		
Sampling Company			EXP	STANTEC	STANTEC	STANTEC	STANTEC	STANTEC	STANTEC	STANTEC		STANTEC		STANTEC	STANTEC	EXP	STANTEC	STANTEC	STANTEC	STANTEC	STANTEC	STANTEC	EXP		
Laboratory			BV	PARACEL	PARACEL	BV	PARACEL	PARACEL	PARACEL	PARACEL		PARACEL		BV	PARACEL	BV	PARACEL	PARACEL	PARACEL	PARACEL	PARACEL	PARACEL	BV		
Laboratory Work Order			C332988	1316202	1316202	C332988	1316202	1316202	1316202	1330318		1330318		C332988	1329318	C332988	1329318	1330318	1330318	1330318	1330318	1330318	C332988		
Laboratory Sample ID			UYX904	1316202-01	1316202-02	UYX903	1316202-03	1316202-04	1316202-09	1330318-13		1330318-11		UYX910	1329318-01	UYX909	1329318-02	1330318-03	1330318-01	1330318-07	RPD	1330318-02	UYX907		
Sample Type	Units	Ontario SCS																		Field Duplicate	(%)				
<b>Polychlorinated Biphenyls</b>																									
Aroclor 1242	µg/g		<0.010	-	-	<0.010	-	-	-	-	-	-	-	<0.010	-	<0.010	-	-	-	-	-	-	-	<0.010	
Aroclor 1248	µg/g	<sup>A</sup> <sub>s14</sub>	<0.010	-	-	<0.010	-	-	-	-	-	-	-	<0.010	-	<0.010	-	-	-	-	-	-	-	<0.010	
Aroclor 1254	µg/g	<sup>A</sup> <sub>s14</sub>	<0.010	-	-	<0.010	-	-	-	-	-	-	-	<0.010	-	<0.010	-	-	-	-	-	-	-	<0.010	
Aroclor 1260	µg/g	<sup>A</sup> <sub>s14</sub>	<0.010	-	-	<0.010	-	-	-	-	-	-	-	<0.010	-	<0.010	-	-	-	-	-	-	-	<0.010	
Polychlorinated Biphenyls (PCBs)	µg/g	<sup>A</sup> <sub>s14</sub>	<0.010	<0.05	<0.05	<0.010	-	-	-	<0.05	-	<0.05	-	<0.010	-	<0.010	-	-	-	<0.05	<0.05	nc	-	<0.010	
<b>Volatile Organic Compounds</b>																									
Acetone	µg/g	16 <sup>A</sup>	-	<0.50	<0.50	<0.49	<0.50	<0.50	<0.50	<0.50	-	<0.50	-	-	<0.50	-	<0.50	-	<0.50	<0.50	<0.50	nc	-	-	
Benzene	µg/g	0.32 <sup>A</sup>	-	<0.02	<0.02	<0.0060	<0.02	<0.02	<0.02	<0.02	-	<0.02	-	-	<0.02	-	<0.02	-	<0.02	<0.02	<0.02	nc	-	-	
Bromobenzene	µg/g	n/v	-	<0.05	<0.05	-	<0.05	<0.05	<0.05	<0.05	-	<0.05	-	-	<0.05	-	<0.05	-	<0.05	<0.05	<0.05	nc	-	-	
Bromodichloromethane	µg/g	18 <sup>A</sup>	-	<0.05	<0.05	<0.040	<0.05	<0.05	<0.05	<0.05	-	<0.05	-	-	<0.05	-	<0.05	-	<0.05	<0.05	<0.05	nc	-	-	
Bromoform (Tribromomethane)	µg/g	0.61 <sup>A</sup>	-	<0.05	<0.05	<0.040	<0.05	<0.05	<0.05	<0.05	-	<0.05	-	-	<0.05	-	<0.05	-	<0.05	<0.05	<0.05	nc	-	-	
Bromomethane (Methyl bromide)	µg/g	0.05 <sup>A</sup>	-	-	-	<0.040	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	
Carbon Tetrachloride (Tetrachloromethane)	µg/g	0.21 <sup>A</sup>	-	<0.05	<0.05	<0.040	<0.05	<0.05	<0.05	<0.05	-	<0.05	-	-	<0.05	-	<0.05	-	<0.05	<0.05	<0.05	nc	-	-	
Chlorobenzene (Monochlorobenzene)	µg/g	2.4 <sup>A</sup>	-	<0.05	<0.05	<0.040	<0.05	<0.05	<0.05	<0.05	-	<0.05	-	-	<0.05	-	<0.05	-	<0.05	<0.05	<0.05	nc	-	-	
Chloroethane (Ethyl Chloride)	µg/g	n/v	-	<0.05	<0.05	-	<0.05	<0.05	<0.05	<0.05	-	<0.05	-	-	<0.05	-	<0.05	-	<0.05	<0.05	<0.05	nc	-	-	
Chloroform (Trichloromethane)	µg/g	0.47 <sup>A</sup>	-	<0.05	<0.05	<0.040	<0.05	<0.05	<0.05	<0.05	-	<0.05	-	-	<0.05	-	<0.05	-	<0.05	<0.05	<0.05	nc	-	-	
Chloromethane	µg/g	n/v	-	<0.20	<0.20	-	<0.20	<0.20	<0.20	<0.20	-	<0.20	-	-	<0.20	-	<0.20	-	<0.20	<0.20	<0.20	nc	-	-	
Dibromochloromethane	µg/g	13 <sup>A</sup>	-	<0.05	<0.05	<0.040	<0.05	<0.05	<0.05	<0.05	-	<0.05	-	-	<0.05	-	<0.05	-	<0.05	<0.05	<0.05	nc	-	-	
Dichlorobenzene, 1,2-	µg/g	6.8 <sup>A</sup>	-	<0.05	<0.05	<0.040	<0.05	<0.05	<0.05	<0.05	-	<0.05	-	-	<0.05	-	<0.05	-	<0.05	<0.05	<0.05	nc	-	-	
Dichlorobenzene, 1,3-	µg/g	9.6 <sup>A</sup>	-	<0.05	<0.05	<0.040	<0.05	<0.05	<0.05	<0.05	-	<0.05	-	-	<0.05	-	<0.05	-	<0.05	<0.05	<0.05	nc	-	-	
Dichlorobenzene, 1,4-	µg/g	0.2 <sup>A</sup>	-	<0.05	<0.05	<0.040	<0.05	<0.05	<0.05	<0.05	-	<0.05	-	-	<0.05	-	<0.05	-	<0.05	<0.05	<0.05	nc	-	-	
Dichlorodifluoromethane (Freon 12)	µg/g	16 <sup>A</sup>	-	<0.05	<0.05	<0.040	<0.05	<0.05	<0.05	<0.05	-	<0.05	-	-	<0.05	-	<0.05	-	<0.05	<0.05	<0.05	nc	-	-	
Dichloroethane, 1,1-	µg/g	17 <sup>A</sup>	-	<0.05	<0.05	<0.040	<0.05	<0.05	<0.05	<0.05	-	<0.05	-	-	<0.05	-	<0.05	-	<0.05	<0.05	<0.05	nc	-	-	
Dichloroethane, 1,2-	µg/g	0.05 <sup>A</sup>	-	<0.05	<0.05	<0.049	<0.05	<0.05	<0.05	<0.05	-	<0.05	-	-	<0.05	-	<0.05	-	<0.05	<0.05	<0.05	nc	-	-	
Dichloroethane, 1,1-	µg/g	0.064 <sup>A</sup>	-	<0.05	<0.05	<0.040	<0.05	<0.05	<0.05	<0.05	-	<0.05	-	-	<0.05	-	<0.05	-	<0.05	<0.05	<0.05	nc	-	-	
Dichloroethane, cis-1,2-	µg/g	55 <sup>A</sup>	-	<0.05	<0.05	<0.040	<0.05	<0.05	<0.05	<0.05	-	<0.05	-	-	<0.05	-	<0.05	-	<0.05	<0.05	<0.05	nc	-	-	
Dichloroethane, trans-1,2-	µg/g	1.3 <sup>A</sup>	-	<0.05	<0.05	<0.040	<0.05	<0.05	<0.05	<0.05	-	<0.05	-	-	<0.05	-	<0.05	-	<0.05	<0.05	<0.05	nc	-	-	
Dichloroethane-1,2- (sum)	µg/g	n/v	-	<0.05	<0.05	-	<0.05	<0.05	<0.05	<0.05	-	<0.05	-	-	<0.05	-	<0.05	-	<0.05	<0.05	<0.05	nc	-	-	
Dichloropropane, 1,2-	µg/g	0.16 <sup>A</sup>	-	<0.05	<0.05	<0.040	<0.05	<0.05	<0.05	<0.05	-	<0.05	-	-	<0.05	-	<0.05	-	<0.05	<0.05	<0.05	nc	-	-	
Dichloropropene, 1,3- (sum of isomers cis + trans)	µg/g	0.18 <sup>A</sup> <sub>s11</sub>	-	<0.05	<0.05	<0.050	<0.05	<0.05	<0.05	<0.05	-	<0.05	-	-	<0.05	-	<0.05	-	<0.05	<0.05	<0.05	nc	-	-	
Dichloropropene, cis-1,3-	µg/g	<sup>A</sup> <sub>s11</sub>	-	<0.05	<0.05	<0.030	<0.05	<0.05	<0.05	<0.05	-	<0.05	-	-	<0.05	-	<0.05	-	<0.05	<0.05	<0.05	nc	-	-	
Dichloropropene, trans-1,3-	µg/g	<sup>A</sup> <sub>s11</sub>	-	<0.05	<0.05	<0.040	<0.05	<0.05	<0.05	<0.05	-	<0.05	-	-	<0.05	-	<0.05	-	<0.05	<0.05	<0.05	nc	-	-	
Ethylbenzene	µg/g	9.5 <sup>A</sup>	-	<0.05	<0.05	<0.010	<0.05	<0.05	<0.05	<0.05	-	<0.05	-	-	<0.05	-	<0.05	-	<0.05	<0.05	<0.05	nc	-	-	
Ethylene Dibromide (Dibromoethane, 1,2-)	µg/g	0.05 <sup>A</sup>	-	<0.05	<0.05	<0.040	<0.05	<0.05	<0.05	<0.05	-	<0.05	-	-	<0.05	-	<0.05	-	<0.05	<0.05	<0.05	nc	-	-	
Hexane (n-Hexane)	µg/g	46 <sup>A</sup>	-	<0.05	<0.05	<0.040	<0.05	<0.05	<0.05	<0.05	-	<0.05	-	-	<0.05	-	<0.05	-	<0.05	<0.05	<0.05	nc	-	-	
Hexanone, 2- (Methyl Butyl Ketone)	µg/g	n/v	-	<2.00	<2.00	-	<2.00	<2.00	<2.00	<2.00	-	<2.00	-	-	<2.00	-	<2.00	-	<2.00	<2.00	<2.00	nc	-	-	
Methyl Ethyl Ketone (MEK) (2-Butanone)	µg/g	70 <sup>A</sup>	-	<0.50	<0.50	<0.40	<0.50	<0.50	<0.50	<0.50	-	<0.50	-	-	<0.50	-	<0.50	-	<0.50	<0.50	<0.50	nc	-	-	
Methyl Isobutyl Ketone (MIBK)	µg/g	31 <sup>A</sup>	-	<0.50	<0.50	<0.40	<0.50	<0.50	<0.50	<0.50	-	<0.50	-	-	<0.50	-	<0.50	-	<0.50	<0.50	<0.50	nc	-	-	
Methyl tert-butyl ether (MTBE)	µg/g	11 <sup>A</sup>	-	<0.05	<0.05	<0.040	<0.05	<0.05	<0.05	<0.05	-	<0.05	-	-	<0.05	-	<0.05	-	<0.05	<0.05	<0.05	nc	-	-	
Methylene Chloride (Dichloromethane)	µg/g	1.6 <sup>A</sup>	-	<0.05	<0.05	<0.049	<0.05	<0.05	<0.05	<0.05	-	<0.05	-	-	<0.05	-	<0.05	-	<0.05	<0.05	<0.05	nc	-	-	
Styrene	µg/g	34 <sup>A</sup>	-	<0.05	<0.05	<0.040	<0.05	<0.05	<0.05	<0.05	-	<0.05	-	-	<0.05	-	<0.05	-	<0.05	<0.05	<0.05	nc	-	-	

**Table 3**  
**Soil Analytical Results**  
**Phase Two Environmental Site Assessment**  
**187 Boteler Street, Ottawa, ON, K1N 0A4**  
**Ministry of Foreign Affairs of the State of Qatar c/o Embassy of Qatar in Ottawa**

Sample Location	Units Ontario SCS		MW13-13/MW13-13A			MW13-14/MW13-14A			MW14-2A	TP2		TP3		TP4		TP5		TP7				
			30-Jan-23 MW13-13A 0 - 0.8 m EXP	25-Jul-13 MW13-13 2.3 - 3.5 m STANTEC	25-Jul-13 MW13-13 SS5 3.05 - 3.5 m PARACEL	25-Jul-13 MW13-14 SS1 0 - 0.76 m STANTEC	31-Jan-23 MW13-14A 1.5 - 2.1 m EXP	25-Jul-13 MW13-14 SS3 1.52 - 2.28 m STANTEC	25-Jul-13 MW13-14 2.3 - 3.65 m STANTEC	31-Jan-23 MW14-2A 1.5 - 2.1 m EXP	23-Jul-13 TP2-1 0 - 0.5 m STANTEC	23-Jul-13 TP2-5 2 - 2.5 m STANTEC	23-Jul-13 TP3-1 0 - 0.5 m STANTEC	23-Jul-13 TP3-3 1 - 1.5 m STANTEC	23-Jul-13 TP4-1 0 - 0.5 m STANTEC	30-Jul-13 TP4-1 (2) 0 - 0.5 m STANTEC	23-Jul-13 TP4-5 2 - 2.5 m STANTEC	29-Aug-13 TP5-1 0 - 0.5 m STANTEC	23-Jul-13 TP5-1 0 - 0.5 m STANTEC	23-Jul-13 TP5-6 2.5 - 3 m STANTEC	23-Jul-13 TP7-1 0 - 0.5 m STANTEC	23-Jul-13 TP7-3 1 - 1.5 m STANTEC
Sample Date			30-Jan-23	25-Jul-13	25-Jul-13	25-Jul-13	31-Jan-23	25-Jul-13	25-Jul-13	31-Jan-23	23-Jul-13	23-Jul-13	23-Jul-13	23-Jul-13	30-Jul-13	23-Jul-13	29-Aug-13	23-Jul-13	23-Jul-13	23-Jul-13	23-Jul-13	
Sample ID			MW13-13A	MW13-13	MW13-13 SS5	MW13-14 SS1	MW13-14A	MW13-14 SS3	MW13-14	MW14-2A	TP2-1	TP2-5	TP3-1	TP3-3	TP4-1	TP4-1 (2)	TP4-5	TP5-1	TP5-1	TP5-6	TP7-1	TP7-3
Sample Depth			0 - 0.8 m	2.3 - 3.5 m	3.05 - 3.5 m	0 - 0.76 m	1.5 - 2.1 m	1.52 - 2.28 m	2.3 - 3.65 m	1.5 - 2.1 m	0 - 0.5 m	2 - 2.5 m	0 - 0.5 m	1 - 1.5 m	0 - 0.5 m	0 - 0.5 m	0 - 0.5 m	0 - 0.5 m	0 - 0.5 m	2.5 - 3 m	0 - 0.5 m	1 - 1.5 m
Sampling Company			EXP	STANTEC	PARACEL	STANTEC	STANTEC	STANTEC	STANTEC	EXP	STANTEC	STANTEC	STANTEC	STANTEC	STANTEC	STANTEC	STANTEC	STANTEC	STANTEC	STANTEC	STANTEC	STANTEC
Laboratory			BV	PARACEL	PARACEL	PARACEL	EXP	PARACEL	PARACEL	BV	PARACEL	PARACEL	PARACEL	PARACEL	PARACEL	PARACEL	PARACEL	PARACEL	PARACEL	PARACEL	PARACEL	PARACEL
Laboratory Work Order			C332988	1330318	1330318	1330318	C332988	1330318	1330318	C332988	1330139	1330140	1330139	1330140	1330139	1331107	1330140	1335238	1330139	1330140	1330139	1330140
Laboratory Sample ID			UYX905	1330318-09	1330318-08	1330318-05	UYX906	1330318-04	1330318-06	UYX908	1330139-01	1330140-01	1330139-02	1330140-02	1330139-04	1331107-01	1330140-04	1335238-01	1330139-03	1330140-03	1330139-10	1330140-05
Sample Type																						
<b>General Chemistry</b>																						
Available (CaCl2) pH	S.U.	5-9/5-11 <sup>12</sup> <sup>A</sup>	7.69	-	-	-	7.74	-	-	7.63	-	-	-	-	-	-	-	-	-	-	-	-
Cyanide (Free)	µg/g	0.051 <sup>A</sup>	<0.01	-	-	-	<0.01	-	-	<0.01	-	-	-	-	-	-	-	-	-	-	-	-
Electrical Conductivity, Lab	µS/cm	1,400 <sup>A</sup>	180	-	311	-	260	351	-	210	-	-	-	-	-	-	-	-	-	-	-	-
Fraction of Organic Carbon Rep.#1	g/g	n/v	-	0.0170	-	<0.00500	-	-	<0.00500	-	-	-	-	-	0.0170	-	-	-	-	-	-	-
Fraction of Organic Carbon Rep.#2	g/g	n/v	-	0.0110	-	<0.00500	-	-	<0.00500	-	-	-	-	-	0.0160	-	-	-	-	-	-	-
Fraction of Organic Carbon Rep.#3	g/g	n/v	-	0.0200	-	<0.00500	-	-	<0.00500	-	-	-	-	-	0.0160	-	-	-	-	-	-	-
Moisture Content	%	n/v	13	-	-	-	23	-	-	21	-	-	-	-	-	-	-	-	-	-	-	-
Percent Solids	%wt	n/v	-	-	83.7	-	-	81.8	-	-	89.4	82.3	90.5	90.0	90.8	-	87.4	-	88.5	85.4	83.8	79.5
pH, Lab	S.U.	5-9/5-11 <sup>12</sup> <sup>A</sup>	-	-	-	-	-	-	-	-	-	-	-	-	-	-	7.70	-	-	-	-	-
Sodium Adsorption Ratio (SAR)	none	12 <sup>A</sup>	0.25 SDC	-	1.72	-	-	4.1	3.32	-	-	-	-	-	-	-	-	-	-	-	-	-
<b>Petroleum Hydrocarbons</b>																						
PHC F1 (C6-C10 range)	µg/g	27 <sup>A</sup>	-	-	<7	-	-	<7	-	-	<7	<7	<7	<7	<7	-	<7	-	<7	<7	<7	<7
PHC F2 (>C10-C16 range)	µg/g	230 <sup>15</sup> <sup>A</sup>	-	-	<4	-	-	<4	-	-	<4	<4	<4	<4	<4	-	<4	-	<4	<4	<4	<4
PHC F3 (>C16-C34 range)	µg/g	1,700 <sup>10</sup> <sup>A</sup>	-	-	<8	-	-	<8	-	-	38	<8	<8	<8	<8	-	58	-	47	<8	51	49
PHC F4 (>C34-C50 range)	µg/g	3,300 <sup>10</sup> <sup>A</sup>	-	-	<6	-	-	<6	-	-	8	<6	<6	<6	<6	-	16	-	55	<6	19	8
<b>Metals</b>																						
Antimony	µg/g	40 <sup>A</sup>	0.67	-	<1.0	-	<0.20	<1.0	-	2.1	<1.0	<1.0	<1.0	<1.0	<1.0	-	<1.0	-	2.9	<1.0	<1.0	<1.0
Arsenic	µg/g	18 <sup>A</sup>	1.5	-	<1.0	-	<1.0	<1.0	-	4.0	3.0	1.9	2.3	2.9	2.3	-	2.2	-	5.9	1.8	2.6	4.0
Barium	µg/g	670 <sup>A</sup>	220	-	115	-	62	47.4	-	120	95.4	109	87.3	88.4	113	-	109	-	494	126	141	325
Beryllium	µg/g	8 <sup>A</sup>	0.39	-	<1.0	-	0.29	<1.0	-	0.25	<1.0	<1.0	<1.0	<1.0	<1.0	-	<1.0	-	<1.0	<1.0	<1.0	<1.0
Boron	µg/g	120 <sup>16</sup> <sup>A</sup>	<5.0	-	2.6	-	<5.0	2.0	-	5.9	3.4	3.0	3.5	3.3	3.4	-	3.6	-	6.5	3.0	3.3	5.7
Boron (Available)	µg/g	2 <sup>16</sup> <sup>A</sup>	0.14	-	<0.5	-	0.052	<0.5	-	0.66	<0.5	<0.5	<0.5	<0.5	<0.5	-	<0.5	-	<0.5	<0.5	<0.5	<0.5
Cadmium	µg/g	1.9 <sup>A</sup>	0.12	-	<0.5	-	<0.10	<0.5	-	0.20	<0.5	<0.5	<0.5	<0.5	<0.5	-	<0.5	-	0.6	<0.5	<0.5	<0.5
Chromium	µg/g	160 <sup>A</sup>	45	-	16.8	-	19	11.0	-	16	14.1	15.6	14.0	12.8	13.1	-	14.8	-	19.4	16.9	20.5	20.3
Chromium (Hexavalent)	µg/g	8 <sup>A</sup>	<0.18	-	<0.2	-	<0.18	<0.2	-	<0.18	<0.2	<0.2	<0.2	0.5	<0.2	-	<0.2	-	0.3	<0.2	0.5	<0.2
Cobalt	µg/g	80 <sup>A</sup>	10	-	5.4	-	4.8	4.0	-	4.8	4.4	4.9	4.3	4.2	4.9	-	4.7	-	5.2	5.8	6.0	5.5
Copper	µg/g	230 <sup>A</sup>	37	-	10.9	-	15	8.7	-	160	16.2	14.1	14.4	15.9	13.6	-	10.4	-	52.0	12.1	13.9	506 <sup>A</sup>
Lead	µg/g	120 <sup>A</sup>	51	-	4.0	-	3.1	3.4	-	340 <sup>A</sup>	51.9	64.4	50.0	66.4	22.8	-	25.7	-	903 <sup>A</sup>	19.1	54.8	313 <sup>A</sup>
Mercury	µg/g	3.9 <sup>A</sup>	0.11	-	<0.1	-	<0.050	<0.1	-	0.90	0.2	0.1	0.2	0.2	<0.1	-	0.2	-	0.8	<0.1	0.4	0.7
Molybdenum	µg/g	40 <sup>A</sup>	<0.50	-	<1.0	-	0.73	<1.0	-	0.70	<1.0	<1.0	<1.0	<1.0	<1.0	-	<1.0	-	<1.0	<1.0	<1.0	<1.0
Nickel	µg/g	270 <sup>A</sup>	26	-	9.3	-	12	6.4	-	11	9.1	9.4	8.4	8.5	8.9	-	9.1	-	11.1	10.5	11.1	11.9
Selenium	µg/g	5.5 <sup>A</sup>	<0.50	-	<1.0	-	<0.50	<1.0	-	<0.50	<1.0	<1.0	<1.0	<1.0	<1.0	-	<1.0	-	<1.0	<1.0	<1.0	<1.0
Silver	µg/g	40 <sup>A</sup>	<0.20	-	<0.5	-	<0.20	<0.5	-	0.22	<0.5	<0.5	<0.5	<0.5	<0.5	-	<0.5	-	0.5	<0.5	<0.5	<0.5
Thallium	µg/g	3.3 <sup>A</sup>	0.22	-	<1.0	-	0.17	<1.0	-	0.10	<1.0	<1.0	<1.0	<1.0	<1.0	-	<1.0	-	<1.0	<1.0	<1.0	<1.0
Uranium	µg/g	33 <sup>A</sup>	0.48	-	<1.0	-	0.56	<1.0	-	0.56	<1.0	<1.0	<1.0	<1.0	<1.0	-	<1.0	-	<1.0	<1.0	<1.0	<1.0
Vanadium	µg/g	86 <sup>A</sup>	48	-	27.4	-	37	20.5	-	18	20.7	25.0	20.0	18.3	21.4	-	24.3	-	23.3	26.9	29.2	27.0
Zinc	µg/g	340 <sup>A</sup>	73	-	23.0	-	29	16.4	-	130	52.7	56.4	47.0	53.0	42.7	-	38.6	-	482 <sup>A</sup>	39.7	72.5	218
<b>Polycyclic Aromatic Hydrocarbons</b>																						
Acenaphthene	µg/g	96 <sup>A</sup>	0.012	-	<0.02	-	<0.0050	<0.02	-	0.014	0.03	<0.02	<0.02	<0.02	0.02	-	<0.02	-	0.03	<0.02	<0.02	<0.02
Acenaphthylene	µg/g	0.15 <sup>A</sup>	0.061	-	<0.02	-	<0.0050	<0.02	-	0.053	0.28 <sup>A</sup>	0.06	0.15	0.22 <sup>A</sup>	0.16 <sup>A</sup>	-	0.02	-	0.27 <sup>A</sup>	0.05	0.25 <sup>A</sup>	0.63 <sup>A</sup>
Anthracene	µg/g	0.67 <sup>A</sup>	0.055	-	<0.02	-	<0.0050	<0.02	-	0.073	0.29	0.07	0.16	0.23	0.20	-	0.03	-	0.31	0.05	0.19	0.62
Benzo(a)anthracene	µg/g	0.96 <sup>A</sup>	0.28	-	<0.02	-	<0.0050	<0.02	-	0.35	0.62	0.15	0.32	0.48	0.34	-	0.04	-	0.48	0.10	0.39	1.08 <sup>A</sup>
Benzo(a)pyrene	µg/g	0.3 <sup>A</sup>	0.30	-	<0.02	-	<0.0050	<0.02	-	0.33 <sup>A</sup>	0.56 <sup>A</sup>	0.11	0.28	0.42 <sup>A</sup>	0.28	-	0.03	-	0.40 <sup>A</sup>	0.07	0.40 <sup>A</sup>	0.94 <sup>A</sup>
Benzo(b)fluoranthene	µg/g	0.96 <sup>A</sup>	-	-	<0.02	-	<0.02	<0.02	-	-	1.21 <sup>A</sup>	0.25	0.62	0.89	0.56	-	0.07	-	0.91	0.14	0.77	1.86 <sup>A</sup>
Benzo(b)fluoranthene	µg/g	0.96 <sup>22</sup> <sup>A</sup>	0.41	-	-	-	<0.0050	-	-	0.43	-	-	-	-	-	-	-	-	-	-	-	-
Benzo(g,h,i)perylene	µg/g	9.6 <sup>A</sup>	0.22	-	<0.02	-	<0.0050	<0.02	-	0.20	0.40	0.06	0.18	0.24	0.16	-	0.02	-	0.25	0.03	0.24	0.49
Benzo(k)fluoranthene	µg/g	0.96 <sup>A</sup>	0.16	-	<0.02	-	<0.0050	<0.02	-	0.16	0.46	0.09	0.23	0.31	0.23	-	0.03	-	0.34	0.07	0.34	0.74
Chrysene	µg/g	9.6 <sup>A</sup>	0.26	-	<0.02	-	<0.0050	<0.02	-	0.32	0.66	0.16	0.34	0.49	0.37	-	0.04	-	0.53	0.09	0.42	1.09
Dibenzo(a,h)anthracene	µg/g	0.1 <sup>A</sup>	0.064	-	<0.02	-	<0.0050	<0.02	-	0.066	0.11 <sup>A</sup>	0.02	0.05	0.07	0.05	-	<0.02	-	0.09	<0.02	0.06	0.17 <sup>A</sup>
Fluoranthene	µg/g	9.6 <sup>A</sup>	0.51	-	<0.02	-	0.0057	<0.02	-	0.58	1.16	0.32	0.61	0.88	0.79	-	0.08	-	1.12	0.24	0.78	2.22
Fluorene	µg/g	62 <sup>A</sup>	0.016	-	<0.02	-	<0.0050	<0.02	-	0.024	0.04	<0.02	0.02	0.02	0.04	-	<0.02	-	0.05	<0.02	0.02	0.07
Indeno(1,2,3-cd)pyrene	µg/g	0.76 <sup>A</sup>	0.23	-	<0.02	-	<0.0050	<0.02	-	0.21	0.38	0.06	0.17	0.24	0.16	-	<0.02	-	0.25	0.04	0.25	0.53
Methylnaphthalene (Total)	µ																					

**Table 3**  
**Soil Analytical Results**  
**Phase Two Environmental Site Assessment**  
**187 Boteler Street, Ottawa, ON, K1N 0A4**  
**Ministry of Foreign Affairs of the State of Qatar c/o Embassy of Qatar in Ottawa**

Sample Location	Units	Ontario SCS	MW13-13/MW13-13A			MW13-14/MW13-14A			MW14-2A	TP2		TP3		TP4		TP5		TP7		
Sample Date			30-Jan-23	25-Jul-13	25-Jul-13	25-Jul-13	31-Jan-23	25-Jul-13	25-Jul-13	31-Jan-23	23-Jul-13	23-Jul-13	23-Jul-13	23-Jul-13	29-Aug-13	23-Jul-13	23-Jul-13	23-Jul-13	23-Jul-13	
Sample ID			MW13-13A	MW13-13	MW13-13 SS5	MW13-14 SS1	MW13-14A	MW13-14 SS3	MW13-14	MW14-2A	TP2-1	TP2-5	TP3-1	TP3-3	TP4-1	TP4-1 (2)	TP4-5	TP5-1	TP5-1	
Sample Depth			0 - 0.8 m	2.3 - 3.5 m	3.05 - 3.5 m	0 - 0.76 m	1.5 - 2.1 m	1.52 - 2.28 m	2.3 - 3.65 m	1.5 - 2.1 m	0 - 0.5 m	2 - 2.5 m	0 - 0.5 m	1 - 1.5 m	0 - 0.5 m	0 - 0.5 m	2 - 2.5 m	0 - 0.5 m	0 - 0.5 m	
Sampling Company			EXP	STANTEC	STANTEC	STANTEC	EXP	STANTEC	STANTEC	EXP	STANTEC	STANTEC	STANTEC	STANTEC	STANTEC	STANTEC	STANTEC	STANTEC	STANTEC	
Laboratory			BV	PARACEL	PARACEL	PARACEL	BV	PARACEL	PARACEL	BV	PARACEL	PARACEL	PARACEL	PARACEL	PARACEL	PARACEL	PARACEL	PARACEL	PARACEL	
Laboratory Work Order			C332988	1330318	1330318	1330318	C332988	1330318	1330318	C332988	1330139	1330140	1330139	1330140	1330139	1331107	1330140	1335238	1330139	
Laboratory Sample ID			UYX905	1330318-09	1330318-08	1330318-05	UYX906	1330318-04	1330318-06	UYX908	1330139-01	1330140-01	1330139-02	1330140-02	1330139-04	1331107-01	1330140-04	1335238-01	1330139-03	
Sample Type																				
<b>Polychlorinated Biphenyls</b>																				
Aroclor 1242	µg/g	s14 <sup>A</sup>	<0.010	-	-	-	<0.010	-	-	<0.010	-	-	-	-	-	-	-	-	-	-
Aroclor 1248	µg/g	s14 <sup>A</sup>	<0.010	-	-	-	<0.010	-	-	<0.010	-	-	-	-	-	-	-	-	-	-
Aroclor 1254	µg/g	s14 <sup>A</sup>	<0.010	-	-	-	<0.010	-	-	<0.010	-	-	-	-	-	-	-	-	-	-
Aroclor 1260	µg/g	s14 <sup>A</sup>	<0.010	-	-	-	<0.010	-	-	<0.010	-	-	-	-	-	-	-	-	-	-
Polychlorinated Biphenyls (PCBs)	µg/g	1.1 s14 <sup>A</sup>	<0.010	-	-	-	<0.010	<0.05	-	<0.010	-	-	-	-	-	-	-	-	-	-
<b>Volatile Organic Compounds</b>																				
Acetone	µg/g	16 <sup>A</sup>	-	-	<0.50	-	<0.49	<0.50	-	<0.49	<0.50	<0.50	<0.50	<0.50	-	<0.50	-	<0.50	<0.50	<0.50
Benzene	µg/g	0.32 <sup>A</sup>	-	-	<0.02	-	<0.0060	<0.02	-	<0.0060	<0.02	<0.02	<0.02	<0.02	-	<0.02	-	<0.02	<0.02	<0.02
Bromobenzene	µg/g	n/v	-	-	<0.05	-	-	<0.05	-	-	<0.05	<0.05	<0.05	<0.05	-	<0.05	-	<0.05	<0.05	<0.05
Bromodichloromethane	µg/g	18 <sup>A</sup>	-	-	<0.05	-	<0.040	<0.05	-	<0.040	<0.05	<0.05	<0.05	<0.05	-	<0.05	-	<0.05	<0.05	<0.05
Bromoform (Tribromomethane)	µg/g	0.61 <sup>A</sup>	-	-	<0.05	-	<0.040	<0.05	-	<0.040	<0.05	<0.05	<0.05	<0.05	-	<0.05	-	<0.05	<0.05	<0.05
Bromomethane (Methyl bromide)	µg/g	0.05 <sup>A</sup>	-	-	-	-	<0.040	-	-	<0.040	-	-	-	-	-	-	-	-	-	-
Carbon Tetrachloride (Tetrachloromethane)	µg/g	0.21 <sup>A</sup>	-	-	<0.05	-	<0.040	<0.05	-	<0.040	<0.05	<0.05	<0.05	<0.05	-	<0.05	-	<0.05	<0.05	<0.05
Chlorobenzene (Monochlorobenzene)	µg/g	2.4 <sup>A</sup>	-	-	<0.05	-	<0.040	<0.05	-	<0.040	<0.05	<0.05	<0.05	<0.05	-	<0.05	-	<0.05	<0.05	<0.05
Chloroethane (Ethyl Chloride)	µg/g	n/v	-	-	<0.05	-	-	<0.05	-	-	<0.05	<0.05	<0.05	<0.05	-	<0.05	-	<0.05	<0.05	<0.05
Chloroform (Trichloromethane)	µg/g	0.47 <sup>A</sup>	-	-	<0.05	-	<0.040	<0.05	-	<0.040	<0.05	<0.05	<0.05	<0.05	-	<0.05	-	<0.05	<0.05	<0.05
Chloromethane	µg/g	n/v	-	-	<0.20	-	-	<0.20	-	-	<0.20	<0.20	<0.20	<0.20	-	<0.20	-	<0.20	<0.20	<0.20
Dibromochloromethane	µg/g	13 <sup>A</sup>	-	-	<0.05	-	<0.040	<0.05	-	<0.040	<0.05	<0.05	<0.05	<0.05	-	<0.05	-	<0.05	<0.05	<0.05
Dichlorobenzene, 1,2-	µg/g	6.8 <sup>A</sup>	-	-	<0.05	-	<0.040	<0.05	-	<0.040	<0.05	<0.05	<0.05	<0.05	-	<0.05	-	<0.05	<0.05	<0.05
Dichlorobenzene, 1,3-	µg/g	9.6 <sup>A</sup>	-	-	<0.05	-	<0.040	<0.05	-	<0.040	<0.05	<0.05	<0.05	<0.05	-	<0.05	-	<0.05	<0.05	<0.05
Dichlorobenzene, 1,4-	µg/g	0.2 <sup>A</sup>	-	-	<0.05	-	<0.040	<0.05	-	<0.040	<0.05	<0.05	<0.05	<0.05	-	<0.05	-	<0.05	<0.05	<0.05
Dichlorodifluoromethane (Freon 12)	µg/g	16 <sup>A</sup>	-	-	<0.05	-	<0.040	<0.05	-	<0.040	<0.05	<0.05	<0.05	<0.05	-	<0.05	-	<0.05	<0.05	<0.05
Dichloroethane, 1,1-	µg/g	17 <sup>A</sup>	-	-	<0.05	-	<0.040	<0.05	-	<0.040	<0.05	<0.05	<0.05	<0.05	-	<0.05	-	<0.05	<0.05	<0.05
Dichloroethane, 1,2-	µg/g	0.05 <sup>A</sup>	-	-	<0.05	-	<0.049	<0.05	-	<0.049	<0.05	<0.05	<0.05	<0.05	-	<0.05	-	<0.05	<0.05	<0.05
Dichloroethene, 1,1-	µg/g	0.064 <sup>A</sup>	-	-	<0.05	-	<0.040	<0.05	-	<0.040	<0.05	<0.05	<0.05	<0.05	-	<0.05	-	<0.05	<0.05	<0.05
Dichloroethene, cis-1,2-	µg/g	55 <sup>A</sup>	-	-	<0.05	-	<0.040	<0.05	-	<0.040	<0.05	<0.05	<0.05	<0.05	-	<0.05	-	<0.05	<0.05	<0.05
Dichloroethene, trans-1,2-	µg/g	1.3 <sup>A</sup>	-	-	<0.05	-	<0.040	<0.05	-	<0.040	<0.05	<0.05	<0.05	<0.05	-	<0.05	-	<0.05	<0.05	<0.05
Dichloroethene-1,2- (sum)	µg/g	n/v	-	-	<0.05	-	-	<0.05	-	-	<0.05	<0.05	<0.05	<0.05	-	<0.05	-	<0.05	<0.05	<0.05
Dichloropropane, 1,2-	µg/g	0.16 <sup>A</sup>	-	-	<0.05	-	<0.040	<0.05	-	<0.040	<0.05	<0.05	<0.05	<0.05	-	<0.05	-	<0.05	<0.05	<0.05
Dichloropropene, 1,3- (sum of isomers cis + trans)	µg/g	0.18 s11 <sup>A</sup>	-	-	<0.05	-	<0.050	<0.05	-	<0.050	<0.05	<0.05	<0.05	<0.05	-	<0.05	-	<0.05	<0.05	<0.05
Dichloropropene, cis-1,3-	µg/g	s11 <sup>A</sup>	-	-	<0.05	-	<0.030	<0.05	-	<0.030	<0.05	<0.05	<0.05	<0.05	-	<0.05	-	<0.05	<0.05	<0.05
Dichloropropene, trans-1,3-	µg/g	s11 <sup>A</sup>	-	-	<0.05	-	<0.040	<0.05	-	<0.040	<0.05	<0.05	<0.05	<0.05	-	<0.05	-	<0.05	<0.05	<0.05
Ethylbenzene	µg/g	9.5 <sup>A</sup>	-	-	<0.05	-	<0.010	<0.05	-	<0.010	<0.05	<0.05	<0.05	<0.05	-	<0.05	-	<0.05	<0.05	<0.05
Ethylene Dibromide (Dibromoethane, 1,2-)	µg/g	0.05 <sup>A</sup>	-	-	<0.05	-	<0.040	<0.05	-	<0.040	<0.05	<0.05	<0.05	<0.05	-	<0.05	-	<0.05	<0.05	<0.05
Hexane (n-Hexane)	µg/g	46 <sup>A</sup>	-	-	<0.05	-	<0.040	<0.05	-	<0.040	<0.05	<0.05	<0.05	<0.05	-	<0.05	-	<0.05	<0.05	<0.05
Hexanone, 2- (Methyl Butyl Ketone)	µg/g	n/v	-	-	<2.00	-	-	<2.00	-	-	<2.00	<2.00	<2.00	<2.00	-	<2.00	-	<2.00	<2.00	<2.00
Methyl Ethyl Ketone (MEK) (2-Butanone)	µg/g	70 <sup>A</sup>	-	-	<0.50	-	<0.40	<0.50	-	<0.40	<0.50	<0.50	<0.50	<0.50	-	<0.50	-	<0.50	<0.50	<0.50
Methyl Isobutyl Ketone (MIBK)	µg/g	31 <sup>A</sup>	-	-	<0.50	-	<0.40	<0.50	-	<0.40	<0.50	<0.50	<0.50	<0.50	-	<0.50	-	<0.50	<0.50	<0.50
Methyl tert-butyl ether (MTBE)	µg/g	11 <sup>A</sup>	-	-	<0.05	-	<0.040	<0.05	-	<0.040	<0.05	<0.05	<0.05	<0.05	-	<0.05	-	<0.05	<0.05	<0.05
Methylene Chloride (Dichloromethane)	µg/g	1.6 <sup>A</sup>	-	-	<0.05	-	<0.049	<0.05	-	<0.049	<0.05	<0.05	<0.05	<0.05	-	<0.05	-	<0.05	<0.05	<0.05
Styrene	µg/g	34 <sup>A</sup>	-	-	<0.05	-	<0.040	<0.05	-	<0.040	<0.05	<0.05	<0.05	<0.05	-	<0.05	-	<0.05	<0.05	<0.05
Tetrachloroethane, 1,1,1,2-	µg/g	0.087 <sup>A</sup>	-	-	<0.05	-	<0.040	<0.05	-	<0.040	<0.05	<0.05	<0.05	<0.05	-	<0.05	-	<0.05	<0.05	<0.05
Tetrachloroethane, 1,1,2,2-	µg/g	0.05 <sup>A</sup>	-	-	<0.05	-	<0.040	<0.05	-	<0.040	<0.05	<0.05	<0.05	<0.05	-	<0.05	-	<0.05	<0.05	<0.05
Tetrachloroethene (PCE)	µg/g	4.5 <sup>A</sup>	-	-	<0.05	-	<0.040	<0.05	-	<0.040	<0.05	<0.05	<0.05	<0.05	-	<0.05	-	<0.05	<0.05	<0.05
Toluene	µg/g	68 <sup>A</sup>	-	-	<0.05	-	<0.020	<0.05	-	<0.020	<0.05	<0.05	<0.05	0.12	<0.05	<0.05	-	<0.05	<0.05	<0.05
Trichlorobenzene, 1,2,4-	µg/g	3.2 <sup>A</sup>	-	-	<0.05	-	-	<0.05	-	-	<0.05	<0.05	<0.05	<0.05	-	<0.05	-	<0.05	<0.05	<0.05
Trichloroethane, 1,1,1-	µg/g	6.1 <sup>A</sup>	-	-	<0.05	-	<0.040	<0.05	-	<0.040	<0.05	<0.05	<0.05	<0.05	-	<0.05	-	<0.05	<0.05	<0.05
Trichloroethane, 1,1,2-	µg/g	0.05 <sup>A</sup>	-	-	<0.05	-	<0.040	<0.05	-	<0.040	<0.05	<0.05	<0.05	<0.05	-	<0.05	-	<0.05	<0.05	<0.05
Trichloroethene (TCE)	µg/g	0.91 <sup>A</sup>	-																	



**Table 3**  
**Soil Analytical Results**  
**Phase Two Environmental Site Assessment**  
**187 Boteler Street, Ottawa, ON, K1N 0A4**  
**Ministry of Foreign Affairs of the State of Qatar c/o Embassy of Qatar in Ottawa**

Sample Location	Units	Ontario SCS	23-Jul-13 TP8-1 0 - 0.5 m STANTEC PARACEL 1330139 1330139-05	TP8 23-Jul-13 TP8-4 1.5 - 2 m STANTEC PARACEL 1330140 1330140-06	30-Jul-13 TP8-2 (2) 0.5 - 1 m STANTEC PARACEL 1331107 1331107-04	TP9 23-Jul-13 TP9-1 0 - 0.5 m STANTEC PARACEL 1330139 1330139-06	23-Jul-13 TP9-4 1.5 - 2 m STANTEC PARACEL 1330140 1330140-07	TP10 23-Jul-13 TP10-1 0 - 0.5 m STANTEC PARACEL 1330139 1330139-09	23-Jul-13 TP10-3 1 - 1.5 m STANTEC PARACEL 1330140 1330140-10	29-Aug-13 TP11-1 0 - 0.5 m STANTEC PARACEL 1335238 1335238-02	TP11 23-Jul-13 TP11-1 0 - 0.5 m STANTEC PARACEL 1330139 1330139-08	23-Jul-13 TP11-3 1 - 1.5 m STANTEC PARACEL 1330140 1330140-09	TP12 23-Jul-13 TP12-1 0 - 0.5 m STANTEC PARACEL 1330139 1330139-07	30-Jul-13 TP12-1 (2) 0 - 0.5 m STANTEC PARACEL 1331107 1331107-02	23-Jul-13 TP12-3 1 - 1.5 m STANTEC PARACEL 1330140 1330140-08	TP13 24-Jul-13 TP13-1 0 - 0.5 m STANTEC PARACEL 1330254 1330254-01	24-Jul-13 TP13-4 1.5 - 2 m STANTEC PARACEL 1330222 1330222-01	TP14 24-Jul-13 TP14-1 0 - 0.5 m STANTEC PARACEL 1330254 1330254-02	TP15 24-Jul-13 TP15-1 0 - 0.5 m STANTEC PARACEL 1330254 1330254-03	24-Jul-13 TP15-2 0.5 - 1 m STANTEC PARACEL 1330222 1330222-02	29-Aug-13 TP16-1 0 - 0.5 m STANTEC PARACEL 1335238 1335238-03	TP16 24-Jul-13 TP16-1 0 - 0.5 m STANTEC PARACEL 1330254 1330254-06	24-Jul-13 TP16-5 2 - 2.5 m STANTEC PARACEL 1330222 1330222-05			
<b>General Chemistry</b>																										
Available (CaCl2) pH	S.U.	5-9/5-11 <sub>512</sub> <sup>A</sup>	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Cyanide (Free)	µg/g	0.051 <sup>A</sup>	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Electrical Conductivity, Lab	µS/cm	1,400 <sup>A</sup>	-	-	1,610 <sup>A</sup>	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Fraction of Organic Carbon Rep.#1	g/g	n/v	-	-	-	-	-	-	-	-	-	-	-	0.0190	-	-	-	-	-	-	-	-	-	-	-	-
Fraction of Organic Carbon Rep.#2	g/g	n/v	-	-	-	-	-	-	-	-	-	-	-	0.0170	-	-	-	-	-	-	-	-	-	-	-	-
Fraction of Organic Carbon Rep.#3	g/g	n/v	-	-	-	-	-	-	-	-	-	-	-	0.200	-	-	-	-	-	-	-	-	-	-	-	-
Moisture Content	%	n/v	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Percent Solids	%wt	n/v	94.8	78.2	82.4	91.1	82.0	90.9	91.4	-	89.3	80.2	89.3	-	85.0	85.4	84.3	86.9	88.2	87.6	-	-	87.6	-	82.0	
pH, Lab	S.U.	5-9/5-11 <sub>512</sub> <sup>A</sup>	-	-	-	-	-	-	-	7.65	-	-	-	-	-	-	-	-	-	-	-	7.74	-	-	-	-
Sodium Adsorption Ratio (SAR)	none	12 <sup>A</sup>	-	-	1.60	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
<b>Petroleum Hydrocarbons</b>																										
PHC F1 (C6-C10 range)	µg/g	57 <sup>A</sup>	<7	<7	-	<7	<7	<7	<7	-	<7	<7	<7	-	<7	<7	<7	<7	<7	<7	<7	-	<7	-	<7	<7
PHC F2 (>C10-C16 range)	µg/g	230 <sub>515</sub> <sup>A</sup>	<4	<4	-	<4	<4	26	20	-	<4	<4	<4	-	111	<4	<4	<4	<4	<4	<4	-	<4	-	<4	<4
PHC F3 (>C16-C34 range)	µg/g	1,700 <sub>85</sub> <sup>A</sup>	<8	92	-	126	<8	184	205	-	<8	82	89	-	249	<8	<8	<8	<8	<8	<8	66	<8	-	57	<8
PHC F4 (>C34-C50 range)	µg/g	3,300 <sub>510</sub> <sup>A</sup>	<6	26	-	50	<6	55	87	-	<6	13	19	-	<6	<6	<6	<6	<6	<6	18	<6	-	9	<6	
<b>Metals</b>																										
Antimony	µg/g	40 <sup>A</sup>	<1.0	<1.0	-	<1.0	<1.0	<1.0	<1.0	-	9.6	<1.0	<1.0	-	<1.0	<1.0	1.5	<1.0	<1.0	<1.0	<1.0	<1.0	-	<1.0	-	<1.0
Arsenic	µg/g	18 <sup>A</sup>	3.5	4.0	-	4.5	<1.0	3.2	3.4	-	8.9	5.4	1.9	-	6.1	1.7	4.9	1.6	3.2	3.7	-	-	4.2	-	2.6	
Barium	µg/g	670 <sup>A</sup>	117	359	-	120	101	114	146	-	336	247	125	-	337	71.3	120	122	117	138	-	-	152	-	272	
Beryllium	µg/g	8 <sup>A</sup>	<1.0	<1.0	-	<1.0	<1.0	<1.0	<1.0	-	<1.0	<1.0	<1.0	-	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	-	<1.0	<1.0	
Boron	µg/g	120 <sub>516</sub> <sup>A</sup>	5.4	6.0	-	4.9	2.1	5.4	5.0	-	8.2	6.4	3.5	-	3.7	2.9	3.5	3.5	5.1	4.5	-	-	5.1	-	3.8	
Boron (Available)	µg/g	2 <sub>516</sub> <sup>A</sup>	<0.5	0.9	-	<0.5	<0.5	<0.5	<0.5	-	<0.5	1.2	<0.5	-	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	-	<0.5	<0.5	
Cadmium	µg/g	1.9 <sup>A</sup>	<0.5	<0.5	-	<0.5	<0.5	<0.5	<0.5	-	<0.5	<0.5	<0.5	-	0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	-	<0.5	<0.5	
Chromium	µg/g	160 <sup>A</sup>	8.5	21.7	-	13.9	12.1	11.6	14.6	-	16.9	20.2	15.6	-	14.8	14.0	13.7	14.5	15.3	17.2	-	-	13.4	-	37.4	
Chromium (Hexavalent)	µg/g	8 <sup>A</sup>	<0.2	0.6	-	<0.2	<0.2	<0.2	<0.2	-	0.3	<0.2	<0.2	-	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	-	<0.2	<0.2	
Cobalt	µg/g	80 <sup>A</sup>	3.6	5.0	-	4.8	4.0	4.3	5.1	-	5.5	4.0	5.1	-	4.8	5.1	4.8	4.8	5.1	5.1	-	-	5.0	-	9.6	
Copper	µg/g	230 <sup>A</sup>	9.8	91.3	-	24.8	9.6	22.8	22.2	-	41.9	31.6	13.9	-	57.4	10.5	44.7	13.4	22.8	22.0	-	-	17.7	-	25.0	
Lead	µg/g	120 <sup>A</sup>	29.2	421 <sup>A</sup>	-	131 <sup>A</sup>	4.7	88.6	141 <sup>A</sup>	-	742 <sup>A</sup>	306 <sup>A</sup>	71.6	-	530 <sup>A</sup>	24.4	142 <sup>A</sup>	22.6	77.0	106	-	-	49.0	-	51.7	
Mercury	µg/g	3.9 <sup>A</sup>	<0.1	0.5	-	0.4	<0.1	0.4	0.5	-	1.9	0.6	0.1	-	0.5	<0.1	35.5 <sup>A</sup>	0.1	0.3	0.6	-	-	0.2	-	0.2	
Molybdenum	µg/g	40 <sup>A</sup>	<1.0	<1.0	-	<1.0	<1.0	<1.0	<1.0	-	<1.0	<1.0	<1.0	-	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	-	<1.0	<1.0	
Nickel	µg/g	270 <sup>A</sup>	7.8	10.4	-	9.9	7.2	9.2	10.1	-	10.6	11.7	9.8	-	10.0	8.5	10.8	9.2	10.2	10.7	-	-	9.8	-	21.5	
Selenium	µg/g	5.5 <sup>A</sup>	<1.0	<1.0	-	<1.0	<1.0	<1.0	<1.0	-	<1.0	<1.0	<1.0	-	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	-	<1.0	<1.0	
Silver	µg/g	40 <sup>A</sup>	<0.5	<0.5	-	<0.5	<0.5	<0.5	<0.5	-	0.6	<0.5	<0.5	-	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	-	<0.5	<0.5	
Thallium	µg/g	3.3 <sup>A</sup>	<1.0	<1.0	-	<1.0	<1.0	<1.0	<1.0	-	<1.0	<1.0	<1.0	-	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	-	<1.0	<1.0	
Uranium	µg/g	33 <sup>A</sup>	<1.0	<1.0	-	<1.0	<1.0	<1.0	<1.0	-	<1.0	<1.0	<1.0	-	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	-	<1.0	<1.0	
Vanadium	µg/g	86 <sup>A</sup>	11.6	24.2	-	18.1	21.5	17.0	21.1	-	17.4	27.1	23.9	-	19.2	21.8	23.8	22.6	20.7	25.1	-	-	19.3	-	42.1	
Zinc	µg/g	340 <sup>A</sup>	27.9	757 <sup>A</sup>	-	73.4	18.7	58.9	97.9	-	285	198	67.8	-	226	38.0	114	58.2	63.7	76.8	-	-	52.7	-	88.2	
<b>Polycyclic Aromatic Hydrocarbons</b>																										
Acenaphthene	µg/g	96 <sup>A</sup>	<0.02	0.19	-	0.04	<0.02	2.22	0.05	-	0.06	<0.02	0.22	-	0.12	<0.02	<0.02	<0.02	0.05	0.07	-	-	0.18	-	0.03	
Acenaphthylene	µg/g	0.15 <sup>A</sup>	0.19 <sup>A</sup>	1.17 <sup>A</sup>	-	0.50 <sup>A</sup>	<0.02	11.3 <sup>A</sup>	0.27 <sup>A</sup>	-	0.10	0.73 <sup>A</sup>	0.54 <sup>A</sup>	-	0.90 <sup>A</sup>	0.07	0.03	0.09	0.25 <sup>A</sup>	0.42 <sup>A</sup>	-	-	0.34 <sup>A</sup>	-	0.17 <sup>A</sup>	
Anthracene	µg/g	0.67 <sup>A</sup>	0.23	1.81 <sup>A</sup>	-	0.67	<0.02	28.1 <sup>A</sup>	0.36	-	0.27	0.61	1.18 <sup>A</sup>	-	1.15 <sup>A</sup>	0.10	0.05	0.15	0.47	0.54	-	-	1.02 <sup>A</sup>	-	0.18	
Benzo(a)anthracene	µg/g	0.96 <sup>A</sup>	0.40	2.58 <sup>A</sup>	-	1.05 <sup>A</sup>	<0.02	44.4 <sup>A</sup>	0.86	-	0.45	1.01 <sup>A</sup>	2.47 <sup>A</sup>	-	1.62 <sup>A</sup>	0.21	0.14	0.24	0.87	1.10 <sup>A</sup>	-	-	1.19 <sup>A</sup>	-	0.39	
Benzo(a)pyrene	µg/g	0.3 <sup>A</sup>	0.33 <sup>A</sup>	2.20 <sup>A</sup>	-	0.78 <sup>A</sup>	<0.02	34.4 <sup>A</sup>	0.77 <sup>A</sup>	-	0.35 <sup>A</sup>	0.95 <sup>A</sup>	1.94 <sup>A</sup>	-	1.51 <sup>A</sup>	0.20	0.12	0.24	0.85 <sup>A</sup>	1.00 <sup>A</sup>	-	-	1.22 <sup>A</sup>	-	0.34 <sup>A</sup>	
Benzo(b)fluoranthene	µg/g	0.96 <sup>A</sup>	0.62	4.39 <sup>A</sup>	-	1.46 <sup>A</sup>	<0.02	67.5 <sup>A</sup>	1.53 <sup>A</sup>	-	0.75	2.01 <sup>A</sup>	3.08 <sup>A</sup>	-	4.08 <sup>A</sup>	0.24	0.20	0.28	0.37	1.62 <sup>A</sup>	-	-	1.85 <sup>A</sup>	-	0.56	
Benzo(b)fluoranthene	µg/g	0.96 <sup>A</sup>	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	
Benzo(g,h,i)perylene	µg/g	9.6 <sup>A</sup>	0.18	1.13	-	0.41	<0.02	21.4 <sup>A</sup>	0.45	-	0.18	0.52	1.00	-	1.23	0.13	0.07	0.16	0.57	0.63	-	-	0.66	-	0.19	
Benzo(k)fluoranthene	µg/g	0.96 <sup>A</sup>	0.23	1.47 <sup>A</sup>	-	0.57	<0.02	26.7 <sup>A</sup>	0.62	-	0.29	0.79	1.38 <sup>A</sup>	-	1.32 <sup>A</sup>	0.09	0.07	0.11	0.35	0.63	-	-	0.73	-	0.23	
Chrysene	µg/g	9.6 <sup>A</sup>	0.42	2.87	-																					



**Table 3**  
**Soil Analytical Results**  
**Phase Two Environmental Site Assessment**  
**187 Boteler Street, Ottawa, ON, K1N 0A4**  
**Ministry of Foreign Affairs of the State of Qatar c/o Embassy of Qatar in Ottawa**

Sample Location	Units	Ontario SCS	23-Jul-13 TP8-1 0 - 0.5 m STANTEC PARACEL 1330139 1330139-05	TP8 23-Jul-13 TP8-4 1.5 - 2 m STANTEC PARACEL 1330140 1330140-06	30-Jul-13 TP8-2 (2) 0.5 - 1 m STANTEC PARACEL 1331107 1331107-04	TP9 23-Jul-13 TP9-1 0 - 0.5 m STANTEC PARACEL 1330139 1330139-06	23-Jul-13 TP9-4 1.5 - 2 m STANTEC PARACEL 1330140 1330140-07	TP10 23-Jul-13 TP10-1 0 - 0.5 m STANTEC PARACEL 1330139 1330139-09	23-Jul-13 TP10-3 1 - 1.5 m STANTEC PARACEL 1330140 1330140-10	29-Aug-13 TP11-1 0 - 0.5 m STANTEC PARACEL 1335238 1335238-02	TP11 23-Jul-13 TP11-1 0 - 0.5 m STANTEC PARACEL 1330139 1330139-08	23-Jul-13 TP11-3 1 - 1.5 m STANTEC PARACEL 1330140 1330140-09	TP12 23-Jul-13 TP12-1 0 - 0.5 m STANTEC PARACEL 1330139 1330139-07	30-Jul-13 TP12-1 (2) 0 - 0.5 m STANTEC PARACEL 1331107 1331107-02	23-Jul-13 TP12-3 1 - 1.5 m STANTEC PARACEL 1330140 1330140-08	TP13 24-Jul-13 TP13-1 0 - 0.5 m STANTEC PARACEL 1330254 1330254-01	24-Jul-13 TP13-4 1.5 - 2 m STANTEC PARACEL 1330222 1330222-01	TP14 24-Jul-13 TP14-1 0 - 0.5 m STANTEC PARACEL 1330254 1330254-02	TP15 24-Jul-13 TP15-1 0 - 0.5 m STANTEC PARACEL 1330254 1330254-03	24-Jul-13 TP15-2 0.5 - 1 m STANTEC PARACEL 1330222 1330222-02	TP16 29-Aug-13 TP16-1 0 - 0.5 m STANTEC PARACEL 1335238 1335238-03	24-Jul-13 TP16-1 0 - 0.5 m STANTEC PARACEL 1330254 1330254-06	24-Jul-13 TP16-5 2 - 2.5 m STANTEC PARACEL 1330222 1330222-05		
<b>Polychlorinated Biphenyls</b>																									
Aroclor 1242	µg/g	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Aroclor 1248	µg/g	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Aroclor 1254	µg/g	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Aroclor 1260	µg/g	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Polychlorinated Biphenyls (PCBs)	µg/g	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
<b>Volatile Organic Compounds</b>																									
Acetone	µg/g	16 <sup>A</sup>	<0.50	<0.50	-	<0.50	<0.50	<0.50	<0.50	-	<0.50	<0.50	<0.50	-	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	-	<0.50	<0.50	<0.50	<0.50
Benzene	µg/g	0.32 <sup>A</sup>	<0.02	<0.02	-	<0.02	<0.02	<0.02	<0.02	-	<0.02	<0.02	<0.02	-	<0.02	0.05	<0.02	<0.02	<0.02	<0.02	<0.02	-	<0.02	<0.02	<0.02
Bromobenzene	µg/g	n/v	<0.05	<0.05	-	<0.05	<0.05	<0.05	<0.05	-	<0.05	<0.05	<0.05	-	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	-	<0.05	<0.05	<0.05
Bromodichloromethane	µg/g	18 <sup>A</sup>	<0.05	<0.05	-	<0.05	<0.05	<0.05	<0.05	-	<0.05	<0.05	<0.05	-	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	-	<0.05	<0.05	<0.05
Bromoform (Tribromomethane)	µg/g	0.61 <sup>A</sup>	<0.05	<0.05	-	<0.05	<0.05	<0.05	<0.05	-	<0.05	<0.05	<0.05	-	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	-	<0.05	<0.05	<0.05
Bromomethane (Methyl bromide)	µg/g	0.05 <sup>A</sup>	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Carbon Tetrachloride (Tetrachloromethane)	µg/g	0.21 <sup>A</sup>	<0.05	<0.05	-	<0.05	<0.05	<0.05	<0.05	-	<0.05	<0.05	<0.05	-	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	-	<0.05	<0.05	<0.05
Chlorobenzene (Monochlorobenzene)	µg/g	2.4 <sup>A</sup>	<0.05	<0.05	-	<0.05	<0.05	<0.05	<0.05	-	<0.05	<0.05	<0.05	-	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	-	<0.05	<0.05	<0.05
Chloroethane (Ethyl Chloride)	µg/g	n/v	<0.05	<0.05	-	<0.05	<0.05	<0.05	<0.05	-	<0.05	<0.05	<0.05	-	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	-	<0.05	<0.05	<0.05
Chloroform (Trichloromethane)	µg/g	0.47 <sup>A</sup>	<0.05	<0.05	-	<0.05	<0.05	<0.05	<0.05	-	<0.05	<0.05	<0.05	-	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	-	<0.05	<0.05	<0.05
Chloromethane	µg/g	n/v	<0.20	<0.20	-	<0.20	<0.20	<0.20	<0.20	-	<0.20	<0.20	<0.20	-	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	-	<0.20	<0.20	<0.20
Dibromochloromethane	µg/g	13 <sup>A</sup>	<0.05	<0.05	-	<0.05	<0.05	<0.05	<0.05	-	<0.05	<0.05	<0.05	-	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	-	<0.05	<0.05	<0.05
Dichlorobenzene, 1,2-	µg/g	6.8 <sup>A</sup>	<0.05	<0.05	-	<0.05	<0.05	<0.05	<0.05	-	<0.05	<0.05	<0.05	-	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	-	<0.05	<0.05	<0.05
Dichlorobenzene, 1,3-	µg/g	9.6 <sup>A</sup>	<0.05	<0.05	-	<0.05	<0.05	<0.05	<0.05	-	<0.05	<0.05	<0.05	-	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	-	<0.05	<0.05	<0.05
Dichlorobenzene, 1,4-	µg/g	0.2 <sup>A</sup>	<0.05	<0.05	-	<0.05	<0.05	<0.05	<0.05	-	<0.05	<0.05	<0.05	-	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	-	<0.05	<0.05	<0.05
Dichlorodifluoromethane (Freon 12)	µg/g	16 <sup>A</sup>	<0.05	<0.05	-	<0.05	<0.05	<0.05	<0.05	-	<0.05	<0.05	<0.05	-	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	-	<0.05	<0.05	<0.05
Dichloroethane, 1,1-	µg/g	17 <sup>A</sup>	<0.05	<0.05	-	<0.05	<0.05	<0.05	<0.05	-	<0.05	<0.05	<0.05	-	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	-	<0.05	<0.05	<0.05
Dichloroethane, 1,2-	µg/g	0.05 <sup>A</sup>	<0.05	<0.05	-	<0.05	<0.05	<0.05	<0.05	-	<0.05	<0.05	<0.05	-	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	-	<0.05	<0.05	<0.05
Dichloroethane, 1,1,1-	µg/g	0.064 <sup>A</sup>	<0.05	<0.05	-	<0.05	<0.05	<0.05	<0.05	-	<0.05	<0.05	<0.05	-	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	-	<0.05	<0.05	<0.05
Dichloroethane, cis-1,2-	µg/g	55 <sup>A</sup>	<0.05	<0.05	-	<0.05	<0.05	<0.05	<0.05	-	<0.05	<0.05	<0.05	-	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	-	<0.05	<0.05	<0.05
Dichloroethane, trans-1,2-	µg/g	1.3 <sup>A</sup>	<0.05	<0.05	-	<0.05	<0.05	<0.05	<0.05	-	<0.05	<0.05	<0.05	-	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	-	<0.05	<0.05	<0.05
Dichloroethane-1,2- (sum)	µg/g	n/v	<0.05	<0.05	-	<0.05	<0.05	<0.05	<0.05	-	<0.05	<0.05	<0.05	-	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	-	<0.05	<0.05	<0.05
Dichloropropane, 1,2-	µg/g	0.16 <sup>A</sup>	<0.05	<0.05	-	<0.05	<0.05	<0.05	<0.05	-	<0.05	<0.05	<0.05	-	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	-	<0.05	<0.05	<0.05
Dichloropropene, 1,3- (sum of isomers cis + trans)	µg/g	0.18 <sup>A</sup>	<0.05	<0.05	-	<0.05	<0.05	<0.05	<0.05	-	<0.05	<0.05	<0.05	-	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	-	<0.05	<0.05	<0.05
Dichloropropene, cis-1,3-	µg/g	0.11 <sup>A</sup>	<0.05	<0.05	-	<0.05	<0.05	<0.05	<0.05	-	<0.05	<0.05	<0.05	-	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	-	<0.05	<0.05	<0.05
Dichloropropene, trans-1,3-	µg/g	0.064 <sup>A</sup>	<0.05	<0.05	-	<0.05	<0.05	<0.05	<0.05	-	<0.05	<0.05	<0.05	-	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	-	<0.05	<0.05	<0.05
Ethylbenzene	µg/g	9.5 <sup>A</sup>	<0.05	<0.05	-	<0.05	<0.05	<0.05	<0.05	-	<0.05	<0.05	<0.05	-	0.27	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	-	<0.05	<0.05	<0.05
Ethylene Dibromide (Dibromoethane, 1,2-)	µg/g	0.05 <sup>A</sup>	<0.05	<0.05	-	<0.05	<0.05	<0.05	<0.05	-	<0.05	<0.05	<0.05	-	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	-	<0.05	<0.05	<0.05
Hexane (n-Hexane)	µg/g	46 <sup>A</sup>	<0.05	<0.05	-	<0.05	<0.05	<0.05	<0.05	-	<0.05	<0.05	<0.05	-	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	-	<0.05	<0.05	<0.05
Hexanone, 2- (Methyl Butyl Ketone)	µg/g	n/v	<2.00	<2.00	-	<2.00	<2.00	<2.00	<2.00	-	<2.00	<2.00	<2.00	-	<2.00	<2.00	<2.00	<2.00	<2.00	<2.00	<2.00	-	<2.00	<2.00	<2.00
Methyl Ethyl Ketone (MEK) (2-Butanone)	µg/g	70 <sup>A</sup>	<0.50	<0.50	-	<0.50	<0.50	<0.50	<0.50	-	<0.50	<0.50	<0.50	-	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	-	<0.50	<0.50	<0.50
Methyl Isobutyl Ketone (MIBK)	µg/g	31 <sup>A</sup>	<0.50	<0.50	-	<0.50	<0.50	<0.50	<0.50	-	<0.50	<0.50	<0.50	-	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	-	<0.50	<0.50	<0.50
Methyl tert-butyl ether (MTBE)	µg/g	11 <sup>A</sup>	<0.05	<0.05	-	<0.05	<0.05	<0.05	<0.05	-	<0.05	<0.05	<0.05	-	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	-	<0.05	<0.05	<0.05
Methylene Chloride (Dichloromethane)	µg/g	1.6 <sup>A</sup>	<0.05	<0.05	-	<0.05	<0.05	<0.05	<0.05	-	<0.05	<0.05	<0.05	-	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	-	<0.05	<0.05	<0.05

**Table 3**  
**Soil Analytical Results**  
**Phase Two Environmental Site Assessment**  
**187 Boteler Street, Ottawa, ON, K1N 0A4**  
**Ministry of Foreign Affairs of the State of Qatar c/o Embassy of Qatar in Ottawa**

Sample Location	Units	Ontario SCS	TP17	TP18	TP19	TP20	TP21	TP23	TP24	TP25	TP25	TP25
Sample Date			24-Jul-13	24-Jul-13	24-Jul-13	24-Jul-13	24-Jul-13	24-Jul-13	24-Jul-13	24-Jul-13	24-Jul-13	24-Jul-13
Sample ID			TP17-1	TP17-4	TP18-1	TP18-6	TP19-3	TP19-3	TP20-1	TP20-4	TP20-3	TP21-1
Sample Depth			0 - 0.5 m	1.5 - 2 m	0 - 0.5 m	2.5 - 3 m	0 - 0.5 m	1 - 1.5 m	0 - 0.5 m	1.5 - 2 m	1.5 - 2 m	0 - 0.5 m
Sampling Company			STANTEC	STANTEC	STANTEC	STANTEC	STANTEC	STANTEC	STANTEC	STANTEC	STANTEC	STANTEC
Laboratory			PARACEL	PARACEL	PARACEL	PARACEL	PARACEL	PARACEL	PARACEL	PARACEL	PARACEL	PARACEL
Laboratory Work Order			1330254	1330222	1330254	1330222	1330254	1330222	1330254	1330222	1330254	1330222
Laboratory Sample ID			1330254-05	1330222-04	1330254-04	1330222-03	1330254-07	1330222-06	1330254-08	1330222-07	1330261-02	1330254-09
Sample Type							Field Duplicate	RPD (%)			Field Duplicate	RPD (%)
<b>General Chemistry</b>												
Available (CaCl2) pH	S.U.	5-9/5-11 <sub>12</sub> <sup>A</sup>	-	-	-	-	-	-	-	-	-	-
Cyanide (Free)	µg/g	0.051 <sup>A</sup>	-	-	-	-	-	-	-	-	-	-
Electrical Conductivity, Lab	µS/cm	1,400 <sup>A</sup>	-	-	-	-	-	-	-	-	-	1,000
Fraction of Organic Carbon Rep.#1	g/g	n/v	-	-	-	-	-	-	-	-	-	-
Fraction of Organic Carbon Rep.#2	g/g	n/v	-	-	-	-	-	-	-	-	-	-
Fraction of Organic Carbon Rep.#3	g/g	n/v	-	-	-	-	-	-	-	-	-	-
Moisture Content	%	n/v	-	-	-	-	-	-	-	-	-	-
Percent Solids	%wt	n/v	89.7	89.7	85.3	84.2	87.2	85.5	86.7	1%	84.5	95.0
pH, Lab	S.U.	5-9/5-11 <sub>12</sub> <sup>A</sup>	-	-	-	-	-	-	-	-	-	-
Sodium Adsorption Ratio (SAR)	none	12 <sup>A</sup>	-	-	-	-	-	-	-	-	-	-
<b>Petroleum Hydrocarbons</b>												
PHC F1 (C6-C10 range)	µg/g	57 <sup>A</sup>	<7	<7	<7	<7	<7	99	<7	nc	<7	<7
PHC F2 (>C10-C16 range)	µg/g	230 <sub>15</sub> <sup>A</sup>	<4	<4	<4	<4	13	59	469 <sup>A</sup>	155%	<4	<4
PHC F3 (>C16-C34 range)	µg/g	1,700 <sub>30</sub> <sup>A</sup>	27	<8	<8	<8	68	72	159	75%	29	<8
PHC F4 (>C34-C50 range)	µg/g	3,300 <sub>10</sub> <sup>A</sup>	<6	<6	<6	<6	13	16	<6	nc	<6	<6
<b>Metals</b>												
Antimony	µg/g	40 <sup>A</sup>	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	1.6	nc	<1.0	<1.0
Arsenic	µg/g	18 <sup>A</sup>	11.4	3.9	1.1	<1.0	4.7	2.8	<1.0	nc	5.2	1.5
Barium	µg/g	670 <sup>A</sup>	103	164	67.8	63.5	122	178	69.9	87%	279	85.9
Beryllium	µg/g	8 <sup>A</sup>	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	nc	<1.0	<1.0
Boron	µg/g	120 <sub>16</sub> <sup>A</sup>	7.6	4.8	2.2	2.2	4.3	4.6	2.2	nc	5.7	3.2
Boron (Available)	µg/g	2 <sub>16</sub> <sup>A</sup>	0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	nc	0.8	<0.5
Cadmium	µg/g	1.9 <sup>A</sup>	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	nc	<0.5	<0.5
Chromium	µg/g	160 <sup>A</sup>	11.3	13.8	12.1	11.7	13.0	18.9	15.2	22%	16.9	18.2
Chromium (Hexavalent)	µg/g	8 <sup>A</sup>	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	nc	<0.2	<0.2
Cobalt	µg/g	80 <sup>A</sup>	5.3	5.1	4.0	4.2	4.7	5.6	4.5	nc	6.1	5.1
Copper	µg/g	230 <sup>A</sup>	15.5	19.0	11.2	10.3	27.8	20.7	10.9	62%	22.0	9.0
Lead	µg/g	120 <sup>A</sup>	44.7	192 <sup>A</sup>	12.1	23.2	120	421 <sup>A</sup>	60.4	150%	183 <sup>A</sup>	57.0
Mercury	µg/g	3.9 <sup>A</sup>	0.1	<0.1	<0.1	<0.1	0.5	0.3	<0.1	nc	0.4	0.1
Molybdenum	µg/g	40 <sup>A</sup>	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	nc	<1.0	<1.0
Nickel	µg/g	270 <sup>A</sup>	11.2	9.9	7.5	7.5	10.1	12.4	9.5	26%	11.4	10.5
Selenium	µg/g	5.5 <sup>A</sup>	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	nc	<1.0	<1.0
Silver	µg/g	40 <sup>A</sup>	<0.5	<0.5	<0.5	<0.5	0.7	<0.5	<0.5	nc	<0.5	<0.5
Thallium	µg/g	3.3 <sup>A</sup>	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	nc	<1.0	<1.0
Uranium	µg/g	33 <sup>A</sup>	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	nc	<1.0	<1.0
Vanadium	µg/g	86 <sup>A</sup>	13.9	21.7	20.9	23.0	18.7	30.2	21.7	33%	26.4	32.7
Zinc	µg/g	340 <sup>A</sup>	43.2	217	39.9	24.1	114	146	39.2	nc	176	47.3
<b>Polycyclic Aromatic Hydrocarbons</b>												
Acenaphthene	µg/g	96 <sup>A</sup>	0.20	0.07	0.18	<0.02	0.24	0.07	<0.02	nc	0.09	<0.02
Acenaphthylene	µg/g	0.15 <sup>A</sup>	0.57 <sup>A</sup>	0.58 <sup>A</sup>	0.30 <sup>A</sup>	<0.02	0.74 <sup>A</sup>	0.50 <sup>A</sup>	0.15	108%	1.25 <sup>A</sup>	0.08
Anthracene	µg/g	0.67 <sup>A</sup>	2.15 <sup>A</sup>	0.57	0.74 <sup>A</sup>	<0.02	1.30 <sup>A</sup>	0.55	0.12	128%	1.19 <sup>A</sup>	0.18
Benzo(a)anthracene	µg/g	0.96 <sup>A</sup>	2.53 <sup>A</sup>	1.15 <sup>A</sup>	1.67 <sup>A</sup>	<0.02	3.44 <sup>A</sup>	1.16 <sup>A</sup>	0.22	136%	1.88 <sup>A</sup>	0.37
Benzo(a)pyrene	µg/g	0.3 <sup>A</sup>	2.07 <sup>A</sup>	1.16 <sup>A</sup>	1.57 <sup>A</sup>	<0.02	3.48 <sup>A</sup>	1.09 <sup>A</sup>	0.27	121%	1.89 <sup>A</sup>	0.30
Benzo(b)fluoranthene	µg/g	0.96 <sup>A</sup>	2.22 <sup>A</sup>	1.73 <sup>A</sup>	1.89 <sup>A</sup>	<0.02	5.65 <sup>A</sup>	2.02 <sup>A</sup>	0.27	153%	2.06 <sup>A</sup>	0.47
Benzo(b)fluoranthene	µg/g	0.96 <sub>22</sub> <sup>A</sup>	-	-	-	-	-	-	-	-	-	-
Benzo(g,h,i)perylene	µg/g	9.6 <sup>A</sup>	1.03	0.65	1.08	<0.02	2.41	0.63	0.11	141%	0.64	0.17
Benzo(k)fluoranthene	µg/g	0.96 <sup>A</sup>	0.68	0.84	0.61	0.04	3.36 <sup>A</sup>	0.78	0.09	nc	0.71	0.20
Chrysene	µg/g	9.6 <sup>A</sup>	2.28	1.11	1.50	<0.02	3.49	1.26	0.24	136%	1.75	0.33
Dibenzo(a,h)anthracene	µg/g	0.1 <sup>A</sup>	0.21 <sup>A</sup>	0.18 <sup>A</sup>	0.28 <sup>A</sup>	<0.02	0.68 <sup>A</sup>	0.17 <sup>A</sup>	0.02	nc	0.19 <sup>A</sup>	<0.02
Fluoranthene	µg/g	9.6 <sup>A</sup>	3.28	2.19	3.42	0.04	6.01	2.47	0.35	150%	5.74	0.74
Fluorene	µg/g	62 <sup>A</sup>	0.67	0.10	0.24	<0.02	0.35	0.09	0.04	nc	0.35	0.04
Indeno(1,2,3-cd)pyrene	µg/g	0.76 <sup>A</sup>	1.00 <sup>A</sup>	0.58	0.98 <sup>A</sup>	<0.02	2.30 <sup>A</sup>	0.64	0.09	nc	0.64	0.15
Methylnaphthalene (Total)	µg/g	76 <sub>33</sub> <sup>A</sup>	0.10	0.09	0.12	<0.04	0.47	0.10	0.04	nc	0.11	<0.04
Methylnaphthalene, 1-	µg/g	s <sub>3</sub> <sup>A</sup>	0.05	0.04	0.06	<0.02	0.21	0.06	0.02	nc	0.06	<0.02
Methylnaphthalene, 2-	µg/g	s <sub>3</sub> <sup>A</sup>	0.05	0.05	0.07	<0.02	0.26	0.04	0.02	nc	0.06	<0.02
Naphthalene	µg/g	9.6 <sup>A</sup>	0.15	0.07	0.10	<0.01	0.23	0.07	0.03	nc	0.11	0.01
Phenanthrene	µg/g	12 <sup>A</sup>	5.31	1.13	2.23	<0.02	3.29	1.16	0.22	136%	2.95	0.45
Pyrene	µg/g	96 <sup>A</sup>	2.57	2.09	0.94	0.03	5.62	2.10	0.33	146%	4.46	0.64

See notes on last page.



**Table 3  
Soil Analytical Results  
Phase Two Environmental Site Assessment  
187 Boteler Street, Ottawa, ON, K1N 0A4  
Ministry of Foreign Affairs of the State of Qatar c/o Embassy of Qatar in Ottawa**

Sample Location			TP26		TP27		TP28		TP29		TP30		BH14-4	BH14-5	BH14-6	
Sample Date			24-Jul-13	24-Jul-13	24-Jul-13	24-Jul-13	24-Jul-13	24-Jul-13	24-Jul-13	24-Jul-13	29-Aug-13	24-Jul-13	24-Jul-13	5-Mar-14	5-Mar-14	5-Mar-14
Sample ID			TP26-1	TP26-2	TP27-1	TP27-5	TP28-1	TP28-3	TP29-1	TP29-4	TP30-1	TP30-1	TP30-3	BH14-4 SS2	BH14-5 SS1	BH14-6 SS1
Sample Depth			0 - 0.5 m	0.5 - 1 m	0 - 0.5 m	2 - 2.5 m	0 - 0.5 m	1 - 1.5 m	0 - 0.5 m	1.5 - 2 m	0 - 0.5 m	0 - 0.5 m	1 - 1.5 m	1.5 - 2.3 m	0 - 1.5 m	0 - 1.5 m
Sampling Company			STANTEC	STANTEC	STANTEC	STANTEC	STANTEC	STANTEC	STANTEC	STANTEC	STANTEC	STANTEC	STANTEC	STANTEC	STANTEC	STANTEC
Laboratory			PARACEL	PARACEL	PARACEL	PARACEL	PARACEL	PARACEL	PARACEL	PARACEL	PARACEL	PARACEL	PARACEL	PARACEL	PARACEL	PARACEL
Laboratory Work Order			1330254	1330222	1330254	1330222	1330254	1330222	1330254	1330222	1335238	1330254	1330222	1414215	1414215	1414215
Laboratory Sample ID			1330254-12	1330222-11	1330254-15	1330222-13	1330254-16	1330222-16	1330254-14	1330222-14	1335238-05	1330254-11	1330222-10	1414215-02	1414215-01	1414215-03
Sample Type																
Units		Ontario SCS														
<b>General Chemistry</b>																
Available (CaCl2) pH	S.U.	5-9/5-11 <sub>s12</sub> <sup>A</sup>	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Cyanide (Free)	µg/g	0.051 <sup>A</sup>	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Electrical Conductivity, Lab	µS/cm	1,400 <sup>A</sup>	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Fraction of Organic Carbon Rep.#1	g/g	n/v	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Fraction of Organic Carbon Rep.#2	g/g	n/v	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Fraction of Organic Carbon Rep.#3	g/g	n/v	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Moisture Content	%	n/v	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Percent Solids	%wt	n/v	95.3	93.1	83.8	80.7	88.4	73.4	91.8	81.6	-	87.7	89.2	89.5	81.8	84.0
pH, lab	S.U.	5-9/5-11 <sub>s12</sub> <sup>A</sup>	-	-	-	-	-	-	-	-	7.80	-	-	-	-	-
Sodium Adsorption Ratio (SAR)	none	12 <sup>A</sup>	-	-	-	-	-	-	-	-	-	-	-	-	-	-
<b>Petroleum Hydrocarbons</b>																
PHC F1 (C6-C10 range)	µg/g	57 <sup>A</sup>	<7	<7	<7	<7	<7	<7	<7	<7	-	<7	<7	-	-	-
PHC F2 (>C10-C16 range)	µg/g	230 <sub>s15</sub> <sup>A</sup>	17	<4	<4	<4	<4	<4	<4	<4	-	<4	<4	-	-	-
PHC F3 (>C16-C34 range)	µg/g	1,700 <sub>s8</sub> <sup>A</sup>	1,270	<8	466	<8	<8	<8	66	<8	-	20	<8	-	-	-
PHC F4 (>C34-C50 range)	µg/g	3,300 <sub>s10</sub> <sup>A</sup>	140	<6	63	<6	<6	<6	122	<6	-	21	<6	-	-	-
<b>Metals</b>																
Antimony	µg/g	40 <sup>A</sup>	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	-	<1.0	1.9	-	-	-
Arsenic	µg/g	18 <sup>A</sup>	1.1	2.9	3.8	<1.0	1.9	1.8	2.4	<1.0	-	<1.0	2.6	-	-	-
Barium	µg/g	670 <sup>A</sup>	142	114	220	76.0	78.9	186	117	67.1	-	119	182	-	-	-
Beryllium	µg/g	8 <sup>A</sup>	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	-	<1.0	<1.0	-	-	-
Boron	µg/g	120 <sub>s16</sub> <sup>A</sup>	3.3	5.7	4.9	2.7	2.5	3.6	3.4	2.6	-	2.6	4.4	-	-	-
Boron (Available)	µg/g	2 <sub>s16</sub> <sup>A</sup>	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	-	<0.5	<0.5	-	-	-
Cadmium	µg/g	1.9 <sup>A</sup>	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	-	<0.5	<0.5	-	-	-
Chromium	µg/g	160 <sup>A</sup>	4.1	8.5	13.5	12.5	10.6	18.9	7.5	12.4	-	12.8	16.1	-	-	-
Chromium (Hexavalent)	µg/g	8 <sup>A</sup>	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	-	<0.2	<0.2	-	-	-
Cobalt	µg/g	80 <sup>A</sup>	1.9	3.5	3.8	4.3	3.6	6.0	2.9	4.3	-	4.4	4.4	-	-	-
Copper	µg/g	230 <sup>A</sup>	4.3	11.5	21.3	10.6	12.3	19.3	9.6	10.6	-	9.2	25.1	-	-	-
Lead	µg/g	120 <sup>A</sup>	8.3	43.3	354 <sup>A</sup>	47.0	13.4	68.5	24.7	3.5	-	6.6	257 <sup>A</sup>	-	-	-
Mercury	µg/g	3.9 <sup>A</sup>	<0.1	<0.1	0.6	<0.1	<0.1	0.1	0.6	<0.1	-	<0.1	<0.1	-	-	-
Molybdenum	µg/g	40 <sup>A</sup>	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	-	<1.0	<1.0	-	-	-
Nickel	µg/g	270 <sup>A</sup>	4.0	7.3	8.0	7.2	6.6	11.2	6.6	7.9	-	7.3	9.1	-	-	-
Selenium	µg/g	5.5 <sup>A</sup>	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	-	<1.0	<1.0	-	-	-
Silver	µg/g	40 <sup>A</sup>	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	-	<0.5	<0.5	-	-	-
Thallium	µg/g	3.3 <sup>A</sup>	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	-	<1.0	<1.0	-	-	-
Uranium	µg/g	33 <sup>A</sup>	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	-	<1.0	<1.0	-	-	-
Vanadium	µg/g	86 <sup>A</sup>	5.5	10.3	18.1	23.0	18.1	30.5	11.5	23.0	-	21.5	20.9	-	-	-
Zinc	µg/g	340 <sup>A</sup>	7.5	35.1	165	26.2	23.3	112	23.0	17.8	-	20.3	205	-	-	-
<b>Polycyclic Aromatic Hydrocarbons</b>																
Acenaphthene	µg/g	96 <sup>A</sup>	<0.02	<0.02	0.99	<0.02	<0.02	4.22	<0.02	<0.02	-	<0.02	<0.02	4.24	0.15	<0.02
Acenaphthylene	µg/g	0.15 <sup>A</sup>	<0.02	0.15	1.98 <sup>A</sup>	0.06	0.05	0.70 <sup>A</sup>	0.02	<0.02	-	0.41 <sup>A</sup>	1.80 <sup>A</sup>	21.7 <sup>A</sup>	0.37 <sup>A</sup>	0.06
Anthracene	µg/g	0.67 <sup>A</sup>	<0.02	0.17	4.46 <sup>A</sup>	0.10	0.07	12.7 <sup>A</sup>	0.03	<0.02	-	0.48	1.96 <sup>A</sup>	16.6 <sup>A</sup>	0.80 <sup>A</sup>	<0.02
Benzo(a)anthracene	µg/g	0.96 <sup>A</sup>	0.04	0.26	9.04 <sup>A</sup>	0.21	0.16	24.2 <sup>A</sup>	0.07	<0.02	-	0.77	2.89 <sup>A</sup>	29.8 <sup>A</sup>	1.50 <sup>A</sup>	0.02
Benzo(a)pyrene	µg/g	0.3 <sup>A</sup>	0.03	0.19	6.85 <sup>A</sup>	0.17	0.15	18.5 <sup>A</sup>	0.06	<0.02	-	0.70 <sup>A</sup>	2.58 <sup>A</sup>	24.1 <sup>A</sup>	1.16 <sup>A</sup>	<0.02
Benzo(b)fluoranthene	µg/g	0.96 <sup>A</sup>	0.05	0.34	10.1 <sup>A</sup>	0.29	0.15	23.5 <sup>A</sup>	0.10	<0.02	-	1.15 <sup>A</sup>	4.17 <sup>A</sup>	62.8 <sup>A</sup>	2.06 <sup>A</sup>	0.05
Benzo(b)fluoranthene	µg/g	0.96 <sub>s2</sub> <sup>A</sup>	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Benzo(g,h,i)perylene	µg/g	9.6 <sup>A</sup>	<0.02	0.10	3.89	0.09	0.10	8.56	0.04	<0.02	-	0.20	1.36	15.4 <sup>A</sup>	0.73	<0.02
Benzo(k)fluoranthene	µg/g	0.96 <sup>A</sup>	<0.02	0.15	3.57 <sup>A</sup>	0.12	0.05	7.16 <sup>A</sup>	0.03	<0.02	-	0.38	2.11 <sup>A</sup>	18.7 <sup>A</sup>	0.91	<0.02
Chrysene	µg/g	9.6 <sup>A</sup>	0.04	0.27	8.88	0.18	0.16	23.7 <sup>A</sup>	0.11	<0.02	-	0.66	2.76	35.0 <sup>A</sup>	1.63	0.02
Dibenzo(a,h)anthracene	µg/g	0.1 <sup>A</sup>	<0.02	0.04	1.07 <sup>A</sup>	<0.02	<0.02	2.96 <sup>A</sup>	<0.02	<0.02	-	0.05	0.50 <sup>A</sup>	4.95 <sup>A</sup>	0.23 <sup>A</sup>	<0.02
Fluoranthene	µg/g	9.6 <sup>A</sup>	0.06	0.58	17.2 <sup>A</sup>	0.41	0.26	52.2 <sup>A</sup>	0.08	<0.02	-	1.34	6.93	153 <sup>A</sup>	4.96	0.06
Fluorene	µg/g	62 <sup>A</sup>	<0.02	0.08	1.92	0.03	0.03	6.92	<0.02	<0.02	-	0.08	0.44	12.8	0.29	<0.02
Indeno(1,2,3-cd)pyrene	µg/g	0.76 <sup>A</sup>	<0.02	0.10	3.42 <sup>A</sup>	0.09	0.10	8.45 <sup>A</sup>	0.03	<0.02	-	0.19	1.43 <sup>A</sup>	14.1 <sup>A</sup>	0.66	0.04
Methylnaphthalene (Total)	µg/g	76 <sub>s3</sub> <sup>A</sup>	<0.04	0.08	<0.80 GT	<0.04	0.06	3.18	<0.04	<0.04	-	<0.04	0.21	18.5	0.32	<0.04
Methylnaphthalene, 1-	µg/g	83 <sup>A</sup>	<0.02	0.04	<0.40 GT	<0.02	0.02	1.22	<0.02	<0.02	-	<0.02	0.11	9.87	0.12	<0.02
Methylnaphthalene, 2-	µg/g	83 <sup>A</sup>	<0.02	0.03	0.41	<0.02	0.04	1.97	<0.02	<0.02	-	<0.02	0.11	8.62	0.20	<0.02
Naphthalene	µg/g	9.6 <sup>A</sup>	<0.01	0.03	0.97	0.02	0.01	8.89	<0.01	<0.01	-	0.02	0.18	4.32	0.31	<0.01
Phenanthrene	µg/g	12 <sup>A</sup>	0.04	0.55	14.1 <sup>A</sup>	0.25	0.17	49.2 <sup>A</sup>	0.06	<0.02	-	0.71	5.06	127 <sup>A</sup>	3.25	0.03
Pyrene	µg/g	96 <sup>A</sup>	0.05	0.47	14.5	0.37	0.24	40.6	0.07	<0.02	-	1.12	5.56	123 <sup>A</sup>	4.12	0.06

See notes on last page.

**Table 3  
Soil Analytical Results  
Phase Two Environmental Site Assessment  
187 Boteler Street, Ottawa, ON, K1N 0A4  
Ministry of Foreign Affairs of the State of Qatar c/o Embassy of Qatar in Ottawa**

Sample Location Sample Date Sample ID Sample Depth Sampling Company Laboratory Laboratory Work Order Laboratory Sample ID Sample Type	Units	Ontario SCS	TP26		TP27		TP28		TP29		TP30		BH14-4	BH14-5	BH14-6	
			24-Jul-13 TP26-1 0 - 0.5 m STANTEC PARACEL 1330254 1330254-12	24-Jul-13 TP26-2 0.5 - 1 m STANTEC PARACEL 1330222 1330222-11	24-Jul-13 TP27-1 0 - 0.5 m STANTEC PARACEL 1330254 1330254-15	24-Jul-13 TP27-5 2 - 2.5 m STANTEC PARACEL 1330222 1330222-13	24-Jul-13 TP28-1 0 - 0.5 m STANTEC PARACEL 1330254 1330254-16	24-Jul-13 TP28-3 1 - 1.5 m STANTEC PARACEL 1330222 1330222-16	24-Jul-13 TP29-1 0 - 0.5 m STANTEC PARACEL 1330254 1330254-14	24-Jul-13 TP29-4 1.5 - 2 m STANTEC PARACEL 1330222 1330222-14	29-Aug-13 TP30-1 0 - 0.5 m STANTEC PARACEL 1335238 1335238-05	24-Jul-13 TP30-1 0 - 0.5 m STANTEC PARACEL 1330254 1330254-11	24-Jul-13 TP30-3 1 - 1.5 m STANTEC PARACEL 1330222 1330222-10	5-Mar-14 BH14-4 SS2 1.5 - 2.3 m STANTEC PARACEL 1414215 1414215-02	5-Mar-14 BH14-5 SS1 0 - 1.5 m STANTEC PARACEL 1414215 1414215-01	5-Mar-14 BH14-6 SS1 0 - 1.5 m STANTEC PARACEL 1414215 1414215-03
<b>Polychlorinated Biphenyls</b>																
Aroclor 1242	µg/g	<sup>A</sup> <sub>s14</sub>	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Aroclor 1248	µg/g	<sup>A</sup> <sub>s14</sub>	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Aroclor 1254	µg/g	<sup>A</sup> <sub>s14</sub>	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Aroclor 1260	µg/g	<sup>A</sup> <sub>s14</sub>	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Polychlorinated Biphenyls (PCBs)	µg/g	<sup>A</sup> <sub>s14</sub>	-	-	-	-	-	-	-	-	-	-	-	-	-	-
<b>Volatile Organic Compounds</b>																
Acetone	µg/g	16 <sup>A</sup>	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	-	<0.50	<0.50	-	-	-
Benzene	µg/g	0.32 <sup>A</sup>	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	-	<0.02	<0.02	-	-	-
Bromobenzene	µg/g	n/v	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	-	<0.05	<0.05	-	-	-
Bromodichloromethane	µg/g	18 <sup>A</sup>	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	-	<0.05	<0.05	-	-	-
Bromoform (Tribromomethane)	µg/g	0.61 <sup>A</sup>	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	-	<0.05	<0.05	-	-	-
Bromomethane (Methyl bromide)	µg/g	0.05 <sup>A</sup>	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Carbon Tetrachloride (Tetrachloromethane)	µg/g	0.21 <sup>A</sup>	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	-	<0.05	<0.05	-	-	-
Chlorobenzene (Monochlorobenzene)	µg/g	2.4 <sup>A</sup>	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	-	<0.05	<0.05	-	-	-
Chloroethane (Ethyl Chloride)	µg/g	n/v	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	-	<0.05	<0.05	-	-	-
Chloroform (Trichloromethane)	µg/g	0.47 <sup>A</sup>	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	-	<0.05	<0.05	-	-	-
Chloromethane	µg/g	n/v	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	-	<0.20	<0.20	-	-	-
Dibromochloromethane	µg/g	13 <sup>A</sup>	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	-	<0.05	<0.05	-	-	-
Dichlorobenzene, 1,2-	µg/g	6.8 <sup>A</sup>	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	-	<0.05	<0.05	-	-	-
Dichlorobenzene, 1,3-	µg/g	9.6 <sup>A</sup>	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	-	<0.05	<0.05	-	-	-
Dichlorobenzene, 1,4-	µg/g	0.2 <sup>A</sup>	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	-	<0.05	<0.05	-	-	-
Dichlorodifluoromethane (Freon 12)	µg/g	16 <sup>A</sup>	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	-	<0.05	<0.05	-	-	-
Dichloroethane, 1,1-	µg/g	17 <sup>A</sup>	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	-	<0.05	<0.05	-	-	-
Dichloroethane, 1,2-	µg/g	0.05 <sup>A</sup>	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	-	<0.05	<0.05	-	-	-
Dichloroethene, 1,1-	µg/g	0.064 <sup>A</sup>	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	-	<0.05	<0.05	-	-	-
Dichloroethene, cis-1,2-	µg/g	55 <sup>A</sup>	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	-	<0.05	<0.05	-	-	-
Dichloroethene, trans-1,2-	µg/g	1.3 <sup>A</sup>	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	-	<0.05	<0.05	-	-	-
Dichloroethene-1,2- (sum)	µg/g	n/v	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	-	<0.05	<0.05	-	-	-
Dichloropropane, 1,2-	µg/g	0.16 <sup>A</sup>	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	-	<0.05	<0.05	-	-	-
Dichloropropene, 1,3- (sum of isomers cis + trans)	µg/g	0.18 <sup>A</sup> <sub>s11</sub>	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	-	<0.05	<0.05	-	-	-
Dichloropropene, cis-1,3-	µg/g	<sup>A</sup> <sub>s11</sub>	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	-	<0.05	<0.05	-	-	-
Dichloropropene, trans-1,3-	µg/g	<sup>A</sup> <sub>s11</sub>	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	-	<0.05	<0.05	-	-	-
Ethylbenzene	µg/g	9.5 <sup>A</sup>	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	-	<0.05	<0.05	-	-	-
Ethylene Dibromide (Dibromoethane, 1,2-)	µg/g	0.05 <sup>A</sup>	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	-	<0.05	<0.05	-	-	-
Hexane (n-Hexane)	µg/g	46 <sup>A</sup>	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	-	<0.05	<0.05	-	-	-
Hexanone, 2- (Methyl Butyl Ketone)	µg/g	n/v	<2.00	<2.00	<2.00	<2.00	<2.00	<2.00	<2.00	<2.00	-	<2.00	<2.00	-	-	-
Methyl Ethyl Ketone (MEK) (2-Butanone)	µg/g	70 <sup>A</sup>	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	-	<0.50	<0.50	-	-	-
Methyl Isobutyl Ketone (MIBK)	µg/g	31 <sup>A</sup>	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	-	<0.50	<0.50	-	-	-
Methyl tert-butyl ether (MTBE)	µg/g	11 <sup>A</sup>	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	-	<0.05	<0.05	-	-	-
Methylene Chloride (Dichloromethane)	µg/g	1.6 <sup>A</sup>	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	-	<0.05	<0.05	-	-	-
Styrene	µg/g	34 <sup>A</sup>	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	-	<0.05	<0.05	-	-	-
Tetrachloroethane, 1,1,1,2-	µg/g	0.087 <sup>A</sup>	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	-	<0.05	<0.05	-	-	-
Tetrachloroethane, 1,1,2,2-	µg/g	0.05 <sup>A</sup>	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	-	<0.05	<0.05	-	-	-
Tetrachloroethene (PCE)	µg/g	4.5 <sup>A</sup>	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	-	<0.05	<0.05	-	-	-
Toluene	µg/g	68 <sup>A</sup>	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	-	<0.05	<0.05	-	-	-
Trichlorobenzene, 1,2,4-	µg/g	3.2 <sup>A</sup>	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	-	<0.05	<0.05	-	-	-
Trichloroethane, 1,1,1-	µg/g	6.1 <sup>A</sup>	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	-	<0.05	<0.05	-	-	-
Trichloroethane, 1,1,2-	µg/g	0.05 <sup>A</sup>	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	-	<0.05	<0.05	-	-	-
Trichloroethene (TCE)	µg/g	0.91 <sup>A</sup>	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	-	<0.05	<0.05	-	-	-
Trichlorofluoromethane (Freon 11)	µg/g	4 <sup>A</sup>	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	-	<0.05	<0.05	-	-	-
Trimethylbenzene, 1,3,5-	µg/g	n/v	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	-	<0.05	<0.05	-	-	-
Vinyl Chloride	µg/g	0.032 <sup>A</sup>	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	-	<0.02	<0.02	-	-	-
Xylene, m & p-	µg/g	<sup>A</sup> <sub>s1</sub>	<0.05	0.11	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	-	<0.05	0.13	-	-	-
Xylene, o-	µg/g	<sup>A</sup> <sub>s1</sub>	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	-	<0.05	<0.05	-	-	-
Xylenes, Total	µg/g	26 <sup>A</sup> <sub>s1</sub>	<0.05	0.14	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	-	<0.05	0.16	-	-	-

See notes on last page.

**Table 3**  
**Soil Analytical Results**  
**Phase Two Environmental Site Assessment**  
**187 Boteler Street, Ottawa, ON, K1N 0A4**  
**Ministry of Foreign Affairs of the State of Qatar c/o Embassy of Qatar in Ottawa**

**Notes:**

Ontario SCS	Soil, Ground Water and Sediment Standards for Use under Part XV.I of the Environmental Protection Act (MOE, 2011) Site Condition Standards (SCS)
A	Table 3 - Industrial / Commercial / Community Property Use - Coarse Textured Soils
<b>6.5<sup>A</sup></b>	Concentration exceeds the indicated standard. MW13-1/MW13-1A
15.2	Measured concentration did not exceed the indicated standard.
<b>&lt;0.50</b>	Laboratory reporting limit was greater than the applicable standard.
<0.03	Analyte was not detected at a concentration greater than the laboratory reporting limit.
n/v	No standard/guideline value.
-	Parameter not analyzed / not available.
s1	Standard is applicable to total xylenes, and m & p-xylenes and o-xylenes should be summed for comparison.
s2	Standard is for benzo(b)fluoranthene; however, the analytical laboratory can not distinguish between benzo(b)fluoranthene and benzo(j)fluoranthene, and therefore, the result is a combination of the two isomers, against which the standard has been compared.
s3	Standard is applicable to both 1-methylnaphthalene and 2-methylnaphthalene, with the provision that if both are detected the sum of the two must not exceed the standard.
s7	Standard is applicable to PHC in the F1 range minus BTEX.
s8	Standard is applicable to PHC in the F3 range, minus PAHs (other than naphthalene). If PAHs were not analyzed, the standard is applied to F3.
s10	If baseline is not reached during F4 analysis, then gravimetric analysis is to be performed, and the standard is applied to the higher of the two results.
s11	Standard is applicable to 1,3-Dichloropropene, and the individual isomers (cis + trans) should be added for comparison.
s12	The criteria for pH in surface soils (0 to 1.5 m) is 5 - 9, whereas the criteria for pH in sub-surface soils (> 1.5 m depth) is 5 - 11.
s14	Standard is applicable to total PCBs, and the individual Aroclors should be added for comparison.
s15	Standard is applicable to PHC in the F2 range minus naphthalene. If naphthalene was not analyzed, the standard is applied to F2.
s16	For surface soil, the boron standard is for hot water soluble extract. For subsurface soil, the standard is for total boron (mixed strong acid digest), as ecological criteria are not considered.
GT	Elevated detection limit because of dilution required due to high target analyte concentration.
SDC	Sodium was not detected. To report SAR the sodium detection limit was used in the calculation. This value represents a maximum ratio.
RPD	Relative Percent Difference.
<b>61%</b>	RPD exceeds data quality objective of 10% for Electrical Conductivity, 40% for PAHs, and 30% for Metals. (source: BV Ontario QA/QC Interpretation Guide - Environmental Services, August 2014)
nc	RPD is not calculated if one or more values is non detect or if one or more values is less than five times the reportable detection limit.

**Table 4**  
**Waste Characterization Analytical Results – TCLP**  
**Phase Two Environmental Site Assessment**  
**187 Boteler Street, Ottawa, ON, K1N 0A4**  
**Ministry of Foreign Affairs of the State of Qatar c/o Embassy of Qatar in Ottawa**

Sample Location			Reg. 347	BH14-4	BH14-5	BH14-6
Sample Date			17-Apr-13	5-Mar-14	5-Mar-14	5-Mar-14
Sample ID			Reg. 347	BH14-4 SS2	BH14-5 SS1	BH14-6 SS1
Sampling Company			STANTEC	STANTEC	STANTEC	STANTEC
Laboratory			PARACEL	PARACEL	PARACEL	PARACEL
Laboratory Work Order			1316203	1414092	1414092	1414092
Laboratory Sample ID			1316203-01	1414092-01	1414092-02	1414092-03
Sample Type	Units	O.Reg. 347 Sch 4				
<b>Leachate Preparation</b>						
Flashpoint	deg C	n/v	<1	-	-	-
pH (Final Leach)	S.U.	n/v	6.73	-	-	-
pH (Initial Leach)	S.U.	n/v	9.52	-	-	-
<b>Semi-Volatile Organic Compounds - TCLP</b>						
Acenaphthene	µg/L	n/v	-	15.8	<0.50	<0.50
Acenaphthylene	µg/L	n/v	-	37.5	<0.50	<0.50
Anthracene	µg/L	n/v	-	11.5	<0.10	<0.10
Benzo(a)anthracene	µg/L	n/v	-	0.46	<0.10	<0.10
Benzo(a)pyrene	µg/L	1.0 <sup>A</sup>	-	<0.10	<0.10	<0.10
Benzo(b)fluoranthene	µg/L	n/v	-	<0.50	<0.50	<0.50
Benzo(g,h,i)perylene	µg/L	n/v	-	<0.50	<0.50	<0.50
Benzo(k)fluoranthene	µg/L	n/v	-	<0.50	<0.50	<0.50
Biphenyl	µg/L	n/v	-	14.0	<0.50	<0.50
Chrysene	µg/L	n/v	-	<0.50	<0.50	<0.50
Dibenzo(a,h)anthracene	µg/L	n/v	-	<0.50	<0.50	<0.50
Fluoranthene	µg/L	n/v	-	14.5	<0.10	<0.10
Fluorene	µg/L	n/v	-	71.2	<0.50	<0.50
Indeno(1,2,3-cd)pyrene	µg/L	n/v	-	<0.50	<0.50	<0.50
Methylnaphthalene (Total)	µg/L	n/v	-	56.4	<1.00	<1.00
Methylnaphthalene, 1-	µg/L	n/v	-	30.7	<0.50	<0.50
Methylnaphthalene, 2-	µg/L	n/v	-	25.7	<0.50	<0.50
Naphthalene	µg/L	n/v	-	53.5	<0.50	<0.50
Phenanthrene	µg/L	n/v	-	79.5	<0.50	<0.50
Pyrene	µg/L	n/v	-	7.10	<0.10	<0.10
<b>Polychlorinated Biphenyls</b>						
Polychlorinated Biphenyls (PCBs)	mg/L	0.3 <sup>A</sup>	<0.003	-	-	-
<b>Volatile Organic Compounds - TCLP</b>						
Benzene	mg/L	0.5 <sup>A</sup>	<0.0005	-	-	-
Carbon Tetrachloride (Tetrachloromethane)	mg/L	0.5 <sup>A</sup>	<0.0005	-	-	-
Chlorobenzene (Monochlorobenzene)	mg/L	8 <sup>A</sup>	<0.0004	-	-	-
Chloroform (Trichloromethane)	mg/L	10 <sup>A</sup>	<0.0006	-	-	-
Dichlorobenzene, 1,2-	mg/L	20 <sup>A</sup>	<0.0004	-	-	-
Dichlorobenzene, 1,4-	mg/L	0.5 <sup>A</sup>	<0.0004	-	-	-
Dichloroethane, 1,2-	mg/L	0.5 <sup>A</sup>	<0.0005	-	-	-
Dichloroethane, 1,1-	mg/L	1.4 <sup>A</sup>	<0.0006	-	-	-
Methyl Ethyl Ketone (MEK) (2-Butanone)	mg/L	200 <sup>A</sup>	<0.03	-	-	-
Methylene Chloride (Dichloromethane)	mg/L	5 <sup>A</sup>	<0.004	-	-	-
Tetrachloroethene (PCE)	mg/L	3 <sup>A</sup>	<0.0005	-	-	-
Trichloroethene (TCE)	mg/L	5 <sup>A</sup>	<0.0004	-	-	-
Vinyl Chloride	mg/L	0.2 <sup>A</sup>	<0.0005	-	-	-

**Notes:**

- O.Reg. 347 Sch 4 Ontario Ministry of the Environment
- A MOE O.Reg. 347 of R.R.O. 1990 - Schedule 4 – Leachate Quality Criteria
- 6.5<sup>A</sup>** Concentration exceeds the indicated standard.
- 15.2 Measured concentration did not exceed the indicated standard.
- <0.03 Analyte was not detected at a concentration greater than the laboratory reporting limit.
- n/v No standard/guideline value.
- Parameter not analyzed / not available.

**Table 5**  
**Soil Leachate Analytical Results – SPLP**  
**Phase Two Environmental Site Assessment**  
**187 Boteler Street, Ottawa, ON, K1N 0A4**  
**Ministry of Foreign Affairs of the State of Qatar c/o Embassy of Qatar in Ottawa**

Sample Location	Units	Ontario SQS	SPLP		
			30-Jan-23 SPLP 1 STANTEC BV C332988 UYX911	31-Jan-23 SPLP 2 STANTEC BV C332988 UYX912	31-Jan-23 SPLP 3 STANTEC BV C332988 UYX913
<b>Leachate Preparation</b>					
Dry Weight	g	n/v	100	100	100
<b>Metals - SPLP</b>					
Antimony	µg/L	6 <sup>B</sup>	<0.5	<0.5	<0.5
Arsenic	µg/L	n/v	<1	1	<1
Barium	µg/L	1,000 <sup>B</sup> 4,600 <sup>C</sup>	<5	74	7
Beryllium	µg/L	4 <sup>B</sup> 11 <sup>C</sup>	<0.5	<0.5	<0.5
Boron	µg/L	5,000 <sup>B</sup>	<10	<10	18
Cadmium	µg/L	0.5 <sup>BC</sup>	<0.1	<0.1	<0.1
Chromium	µg/L	50 <sup>B</sup> 130 <sup>C</sup>	<5	8	<5
Cobalt	µg/L	3 <sup>B</sup> 10 <sup>C</sup>	<0.5	1.4	<0.5
Copper	µg/L	14 <sup>BC</sup>	2	18 <sup>BC</sup>	2
Lead	µg/L	n/v	<0.5	2.1	<0.5
Molybdenum	µg/L	15 <sup>AB</sup> 1,500 <sup>C</sup>	2	5	2
Nickel	µg/L	78 <sup>BC</sup>	<1	6	<1
Selenium	µg/L	10 <sup>BC</sup>	<2	<2	<2
Silver	µg/L	0.3 <sup>ABC</sup>	<0.1	<0.1	<0.1
Thallium	µg/L	2 <sup>AB</sup> 80 <sup>C</sup>	<0.05	0.09	<0.05
Uranium	µg/L	20 <sup>B</sup> 66 <sup>C</sup>	<0.1	0.2	<0.1
Vanadium	µg/L	n/v	3	42	2
Zinc	µg/L	180 <sup>BC</sup>	<5	13	<5

**Notes:**

- Ontario SQS - APP 2 Excess Soil Quality Standards, Ontario Ministry Of Environment, Conservation And Parks (2019), Appendix 2 - Generic Leachate Screening Levels For Excess Soil Reuse
- A TABLE 1: Leachate Screening Levels for Excess Soil Reuse, Residential/Parkland/ Institutional/ Industrial/ Commercial/Community Property Use
- B TABLE 2.1: Leachate Screening Levels for Full Depth Excess Soil in a Potable Ground Water Condition, Volume Independent, Industrial/ Commercial/ Community Property Use
- C TABLE 3.1: Leachate Screening Levels for Full Depth Excess Soil in a Non- Potable Ground Water Condition, Volume Independent, Industrial/ Commercial/ Community Property Use
- 6.5<sup>A</sup>** Concentration exceeds the indicated standard.
- 15.2 Measured concentration did not exceed the indicated standard.
- <0.03 Analyte was not detected at a concentration greater than the laboratory reporting limit.
- n/v No standard/guideline value.
- Parameter not analyzed / not available.





**Table 6**  
**Summary of Groundwater Analytical Results**  
**Phase Two Environmental Site Assessment**  
**187 Boteler Street, Ottawa, ON, K1N 0A4**  
**Ministry of Foreign Affairs of the State of Qatar c/o Embassy of Qatar in Ottawa**

Sample Location			MW13-1		MW13-2		MW13-10		MW13-11		MW13-13		MW13-14		MW14-1		MW14-2		MW14-3		Field Blank		Trip Blank						
Sample Date			22-Apr-13	10-Apr-14	22-Apr-13	22-Apr-13	10-Apr-14	11-Apr-14	24-Apr-14	31-Jul-13	10-Apr-14	11-Apr-14	24-Apr-14	31-Jul-13	31-Jul-13	10-Apr-14	10-Apr-14	24-Apr-14	11-Apr-14	11-Apr-14	24-Apr-14	24-Apr-14	10-Apr-14	11-Apr-14	31-Jul-13	11-Apr-14			
Sample ID			MW13-1	MW13-1	MW13-2	MW99	MW13-2	MW13-10	MW13-10-F	MW13-11	MW13-11	MW13-13	MW13-13	MW13-14	MW13-140	MW14-1	MW14-1	MW14-1-F	MW14-2	MW14-A	MW14-3	MW14-3-F	Field Blank	Field Blank	Trip Blank	Trip Blank			
Sampling Company			STANTEC	STANTEC	STANTEC	STANTEC	STANTEC	STANTEC	STANTEC	STANTEC	STANTEC	STANTEC	STANTEC	STANTEC	STANTEC	STANTEC	STANTEC	STANTEC	STANTEC	STANTEC	STANTEC	STANTEC	STANTEC	STANTEC	STANTEC	STANTEC			
Laboratory			PARACEL	PARACEL	PARACEL	PARACEL	PARACEL	PARACEL	PARACEL	PARACEL	PARACEL	PARACEL	PARACEL	PARACEL	PARACEL	PARACEL	PARACEL	PARACEL	PARACEL	PARACEL	PARACEL	PARACEL	PARACEL	PARACEL	PARACEL	PARACEL			
Laboratory Work Order			1317058	1415263	1317058	1317058	1415263	1415265	1417229	1331219	1415263	1415265	1417234	1331219	1331219	1415263	1415263	1417229	1417229	1415265	1415265	1415263	1415263	1415263	1415265	1415265			
Laboratory Sample ID			1317058-01	1415263-02	1317058-02	1317058-03	1415263-01	1415265-03	1417229-05	1331219-01	1415263-06	1415265-06	1417234-01	1331219-02	1331219-03	1415263-05	1415263-04	1417229-02	1417229-01	1415265-01	1415265-02	1415263-03	1417229-04	1417229-03	1415263-07	1415265-04	1331219-04	1415265-05	
Sample Type	Units	Ontario SCS			Field Duplicate	RPD (%)								Field Duplicate	RPD (%)					Field Duplicate	RPD (%)		Field Blank	Field Blank	Trip Blank	Trip Blank			
<b>General Chemistry</b>																													
Chloride	mg/L	2,300 <sup>A</sup>	572	-	39	-	-	-	-	1,590	-	-	-	1,420	1,470	3%	-	-	-	-	-	-	-	-	-	-	-	-	-
Cyanide (Free)	µg/L	66 <sup>A</sup>	<2	-	<2	-	-	-	-	<2	-	-	-	<2	<2	nc	-	-	-	-	-	-	-	-	-	-	-	-	
pH, lab	S.U.	n/v	7.2	-	7.3	-	-	-	-	7.2	-	-	-	7.0	7.0	0%	-	-	-	-	-	-	-	-	-	-	-	-	
<b>Petroleum Hydrocarbons</b>																													
PHC F1 (C6-C10 range)	µg/L	57 <sup>A</sup>	<25	<25	<25	<25	nc	<25	-	<25	<25	<25	-	<25	<25	nc	<25	<25	-	-	<25	<25	nc	<25	-	-	<25	<25	
PHC F1 plus PHC F2	µg/L	n/v	-	<125	-	-	-	<125	-	-	<125	<125	-	-	-	-	<125	<144	-	-	<125	<125	nc	<125	-	-	<125	<125	<125
PHC F2 (>C10-C16 range)	µg/L	150 <sub>15</sub> <sup>A</sup>	<100	<100	<100	<100	nc	<100	-	<100	<100	<100	-	<100	<100	nc	<100	<119	-	-	<100	<100	nc	<100	-	-	<100	<100	
PHC F3 (>C16-C34 range)	µg/L	500 <sub>5</sub> <sup>A</sup>	<100	<100	<100	<100	nc	<100	-	<100	<100	<100	-	<100	<100	nc	<100	3,050 <sup>A</sup>	-	-	<100	<100	nc	<100	-	-	<100	<100	
PHC F4 (>C34-C50 range)	µg/L	500 <sub>10</sub> <sup>A</sup>	<100	<100	<100	<100	nc	<100	-	<100	<100	<100	-	<100	<100	nc	<100	1,760 <sup>A</sup>	-	-	<100	<100	nc	<100	-	-	<100	<100	
PHC F3 plus PHC F4	µg/L	n/v	-	<200	-	-	-	<200	-	-	<200	<200	-	-	-	-	<200	4,810	-	-	<200	<200	nc	<200	-	-	<200	<200	
<b>Metals</b>																													
Chromium (Hexavalent)	µg/L	140 <sup>A</sup>	<10	<10	<10	<10	nc	<10	-	<10	<10	<10	-	<10	<10	nc	<10	<10	-	-	<10	<10	nc	<10	-	-	<10	<10	
Antimony	µg/L	20,000 <sup>A</sup>	0.5	<0.5	0.5	0.5	nc	<0.5	-	0.7	<0.5	<0.5	-	<0.5	<0.5	nc	<0.5	<0.5	-	-	<0.5	<0.5	nc	<0.5	-	-	<0.5	<0.5	
Arsenic	µg/L	1,900 <sup>A</sup>	<1	<1	1	1	nc	<1	-	<1	1	1	-	<1	<1	nc	<1	1	-	-	1	1	nc	3	-	-	<1	<1	
Barium	µg/L	29,000 <sup>A</sup>	80	87	49	50	2%	52	-	72	49	30	71	71	0%	63	52	-	-	134	135	1%	53	-	-	-	-	-	
Beryllium	µg/L	67 <sup>A</sup>	<0.5	<0.5	<0.5	<0.5	nc	<0.5	-	<0.5	<0.5	<0.5	-	<0.5	<0.5	nc	<0.5	<0.5	-	-	<0.5	<0.5	nc	<0.5	-	-	<0.5	<0.5	
Boron	µg/L	45,000 <sup>A</sup>	63	73	77	79	3%	73	-	106	182	60	49	49	nc	81	195	-	-	257	269	5%	331	-	-	-	-	-	
Cadmium	µg/L	2.7 <sup>A</sup>	<0.1	<0.1	<0.1	<0.1	nc	<0.1	-	<0.1	<0.1	<0.1	-	<0.1	<0.1	nc	<0.1	<0.1	-	-	<0.1	<0.1	nc	<0.1	-	-	<0.1	<0.1	
Chromium	µg/L	810 <sup>A</sup>	8	8	6	5	18%	7	-	13	9	2	15	17	13%	16	<1	-	-	6	4	nc	22	-	-	-	-	-	
Cobalt	µg/L	66 <sup>A</sup>	0.6	3.1	1.3	1.0	nc	3.0	-	1.2	1.1	1.1	0.7	0.8	nc	1.0	<0.5	-	-	2.2	5.4	nc	1.7	-	-	-	-	-	
Copper	µg/L	87 <sup>A</sup>	6.0	3.8	3.5	3.3	6%	3.9	-	3.7	4.0	-	4	1.2	nc	5.0	11.4	-	-	3.7	4.0	8%	11.9	-	-	-	-	-	
Lead	µg/L	25 <sup>A</sup>	<0.1	0.2	<0.1	<0.1	nc	0.1	-	<0.1	0.1	-	0.5	<0.1	<0.1	nc	0.1	0.4	-	-	0.1	0.1	nc	0.3	-	-	<0.1	<0.1	
Mercury	µg/L	0.29 <sup>A</sup>	<0.1	<0.1	<0.1	<0.1	nc	<0.1	-	<0.1	<0.1	-	<0.1	<0.1	nc	<0.1	<0.1	-	-	<0.1	<0.1	nc	<0.1	-	-	<0.1	<0.1		
Molybdenum	µg/L	9,200 <sup>A</sup>	7.1	9.0	3.5	3.3	6%	3.3	-	6.6	4.1	-	11.6	4.3	0%	6.7	5.2	-	-	3.6	3.4	6%	12.3	-	-	-	-	-	
Nickel	µg/L	490 <sup>A</sup>	6	7	4	4	nc	4	-	15	11	-	3	7	0%	6	4	-	-	9	9	0%	9	-	-	-	-	-	
Selenium	µg/L	63 <sup>A</sup>	4	3	12	0%	9	-	-	<1	18	-	2	<1	nc	1	3	-	-	19	14	30%	9	-	-	-	-	-	
Silver	µg/L	1.5 <sup>A</sup>	<0.1	<0.1	<0.1	<0.1	nc	<0.1	-	<0.1	<0.1	<0.1	-	<0.1	<0.1	nc	<0.1	<0.1	-	-	<0.1	<0.1	nc	<0.1	-	-	<0.1	<0.1	
Sodium	µg/L	2,300,000 <sup>A</sup>	460,000	579,000	86,300	85,600	nc	64,600	-	1,090,000	354,000	-	24,400	1,060,000	1,070,000	1%	778,000	639,000	-	-	197,000	202,000	3%	2,420,000 <sup>A</sup>	-	-	-	-	
Thallium	µg/L	510 <sup>A</sup>	<0.1	<0.1	<0.1	<0.1	nc	0.1	-	<0.1	<0.1	-	<0.1	<0.1	nc	<0.1	<0.1	-	-	0.2	<0.1	nc	0.1	-	-	-	-	-	
Uranium	µg/L	420 <sup>A</sup>	2.2	2.5	3.7	3.6	3%	4.6	-	6.3	5.9	-	1.9	2.3	0%	8.7	3.9	-	-	9.0	9.1	1%	16.3	-	-	-	-	-	
Vanadium	µg/L	250 <sup>A</sup>	7.4	10.5	10.3	10.1	2%	16.1	-	8.0	13.1	-	2.9	9.8	10%	22.2	4.7	-	-	10.4	5.5	62%	23.7	-	-	-	-	-	
Zinc	µg/L	1,100 <sup>A</sup>	<5	8	<5	<5	nc	9	-	25	15	-	7	<5	12	nc	6	-	-	11	12	nc	13	-	-	-	-	-	
<b>Polycyclic Aromatic Hydrocarbons</b>																													
Acenaphthene	µg/L	600 <sup>A</sup>	<0.05	<0.05	<0.05	<0.05	nc	<0.05	<0.05	<0.05	<0.05	-	<0.05	<0.05	<0.05	nc	<0.05	1.05	0.27	<0.05	<0.05	nc	<0.05	<0.05	<0.05	-	-	-	
Acenaphthylene	µg/L	1.8 <sup>A</sup>	<0.05	<0.05	<0.05	<0.05	nc	<0.05	<0.05	<0.05	<0.05	-	0.09	<0.05	<0.05	nc	<0.05	2.88 <sup>A</sup>	0.92	<0.05	0.06	<0.05	nc	0.13	0.12	<0.05	-	-	
Anthracene	µg/L	2.4 <sup>A</sup>	<0.01	<0.01	<0.01	<0.01	nc	<0.01	0.06	<0.05	0.03	<0.01	-	0.07	<0.01	nc	<0.01	5.43 <sup>A</sup>	1.40	<0.01	0.02	0.03	nc	0.14	0.13	0.03	-	-	
Benzo(a)anthracene	µg/L	4.7 <sup>A</sup>	<0.01	<0.01	<0.01	<0.01	nc	<0.01	0.34	<0.05	0.06	<0.01	-	0.15	<0.01	nc	<0.01	18.1 <sup>A</sup>	4.79 <sup>A</sup>	<0.01	0.09	0.09	0%	0.68	0.52	<0.01	-	-	
Benzo(a)pyrene	µg/L	0.81 <sup>A</sup>	<0.01	<0.01	<0.01	<0.01	nc	<0.01	0.14	<0.05	0.03	<0.01	-	0.12	<0.01	nc	<0.01	17.3 <sup>A</sup>	4.48 <sup>A</sup>	<0.01	<0.01	0.05	nc	0.62	0.50	<0.01	-	-	
Benzo(b)fluoranthene	µg/L	0.75 <sup>A</sup>	<0.05	<0.05	<0.05	<0.05	nc	<0.05	0.37	<0.25	<0.05	<0.05	-	0.14	<0.05	nc	<0.05	31.0 <sup>A</sup>	6.55 <sup>A</sup>	<0.05	0.08	0.10	nc	0.89 <sup>A</sup>	0.54	<0.05	-	-	
Benzo(g,h,i)perylene	µg/L	0.2 <sup>A</sup>	<0.05	<0.05	<0.05	<0.05	nc	<0.05	0.42 <sup>A</sup>	<0.25	<0.05	<0.05	-	<0.05	<0.05	nc	<0.05	11.9 <sup>A</sup>	1.12 <sup>A</sup>	<0.05	<0.05	<0.05	nc	0.42 <sup>A</sup>	0.10	<0.05	-	-	
Benzo(k)fluoranthene	µg/L	0.4 <sup>A</sup>	<0.05																										

Table 6

## Summary of Groundwater Analytical Results

## Phase Two Environmental Site Assessment

187 Boteler Street, Ottawa, ON, K1N 0A4

Ministry of Foreign Affairs of the State of Qatar c/o Embassy of Qatar in Ottawa

Sample Location	Units	Ontario SCS	MW13-1		MW13-2		MW13-10		MW13-11		MW13-13		MW13-14		MW14-1		MW14-2		MW14-3		Field Blank		Trip Blank								
			22-Apr-13 MW13-1 STANTEC PARACEL 1317058-01	10-Apr-14 MW13-1 STANTEC PARACEL 1415263-02	22-Apr-13 MW13-2 STANTEC PARACEL 1317058-02	22-Apr-13 MW13-2 STANTEC PARACEL 1317058-03	10-Apr-14 MW13-2 STANTEC PARACEL 1415263-01	11-Apr-14 MW13-10 STANTEC PARACEL 1415265-03	24-Apr-14 MW13-10-F STANTEC PARACEL 1417229-05	31-Jul-13 MW13-11 STANTEC PARACEL 1331219-01	10-Apr-14 MW13-11 STANTEC PARACEL 1415263-06	11-Apr-14 MW13-13 STANTEC PARACEL 1415265-06	24-Apr-14 MW13-13 STANTEC PARACEL 1417234-01	31-Jul-13 MW13-14 STANTEC PARACEL 1331219-02	31-Jul-13 MW13-140 STANTEC PARACEL 1331219-03	10-Apr-14 MW13-14 STANTEC PARACEL 1415263-05	10-Apr-14 MW14-1 STANTEC PARACEL 1415263-04	24-Apr-14 MW14-1 STANTEC PARACEL 1417229-02	24-Apr-14 MW14-1-F STANTEC PARACEL 1417229-01	11-Apr-14 MW14-2 STANTEC PARACEL 1415265-01	11-Apr-14 MW14-A STANTEC PARACEL 1415265-02	10-Apr-14 MW14-3 STANTEC PARACEL 1415263-03	24-Apr-14 MW14-3 STANTEC PARACEL 1417229-04	24-Apr-14 MW14-3-F STANTEC PARACEL 1417229-03	10-Apr-14 Field Blank STANTEC PARACEL 1415263-07	11-Apr-14 Field Blank STANTEC PARACEL 1415265-04	31-Jul-13 Trip Blank STANTEC PARACEL 1331219-04	11-Apr-14 Trip Blank STANTEC PARACEL 1415265-05			
<b>Volatile Organic Compounds</b>																															
Acetone	µg/L	130,000 <sup>A</sup>	<5.0	<5.0	<5.0	<5.0	nc	<5.0	-	-	<5.0	<5.0	<5.0	-	<5.0	<5.0	nc	<5.0	<5.0	-	-	<5.0	<5.0	nc	<5.0	-	-	<5.0	<5.0	<5.0	<5.0
Benzene	µg/L	44 <sup>A</sup>	<0.5	<0.5	<0.5	<0.5	nc	<0.5	-	-	<0.5	<0.5	<0.5	-	<0.5	<0.5	nc	<0.5	<0.5	-	-	<0.5	<0.5	nc	<0.5	-	-	<0.5	<0.5	<0.5	<0.5
Bromobenzene	µg/L	nV	<0.5	<0.5	<0.5	<0.5	nc	<0.5	-	-	<0.5	<0.5	<0.5	-	<0.5	<0.5	nc	<0.5	<0.5	-	-	<0.5	<0.5	nc	<0.5	-	-	<0.5	<0.5	<0.5	<0.5
Bromodichloromethane	µg/L	85,000 <sup>A</sup>	<0.5	<0.5	<0.5	<0.5	nc	<0.5	-	-	<0.5	<0.5	<0.5	-	<0.5	<0.5	nc	<0.5	<0.5	-	-	<0.5	<0.5	nc	<0.5	-	-	<0.5	<0.5	<0.5	<0.5
Bromoform (Tribromomethane)	µg/L	380 <sup>A</sup>	<0.5	<0.5	<0.5	<0.5	nc	<0.5	-	-	<0.5	<0.5	<0.5	-	<0.5	<0.5	nc	<0.5	<0.5	-	-	<0.5	<0.5	nc	<0.5	-	-	<0.5	<0.5	<0.5	<0.5
Bromomethane (Methyl bromide)	µg/L	5.6 <sup>A</sup>	<0.5	<0.5	<0.5	<0.5	nc	<0.5	-	-	<0.5	<0.5	<0.5	-	<0.5	<0.5	nc	<0.5	<0.5	-	-	<0.5	<0.5	nc	<0.5	-	-	<0.5	<0.5	<0.5	<0.5
Carbon Tetrachloride (Tetrachloromethane)	µg/L	0.79 <sup>A</sup>	<0.2	<0.2	<0.2	<0.2	nc	<0.2	-	-	<0.2	<0.2	<0.2	-	<0.2	<0.2	nc	<0.2	<0.2	-	-	<0.2	<0.2	nc	<0.2	-	-	<0.2	<0.2	<0.2	<0.2
Chlorobenzene (Monochlorobenzene)	µg/L	630 <sup>A</sup>	<0.5	<0.5	<0.5	<0.5	nc	<0.5	-	-	<0.5	<0.5	<0.5	-	<0.5	<0.5	nc	<0.5	<0.5	-	-	<0.5	<0.5	nc	<0.5	-	-	<0.5	<0.5	<0.5	<0.5
Chloroethane (Ethyl Chloride)	µg/L	nV	<1.0	<1.0	<1.0	<1.0	nc	<1.0	-	-	<1.0	<1.0	<1.0	-	<1.0	<1.0	nc	<1.0	<1.0	-	-	<1.0	<1.0	nc	<1.0	-	-	<1.0	<1.0	<1.0	<1.0
Chloroform (Trichloromethane)	µg/L	2.4 <sup>A</sup>	<0.5	<0.5	<0.5	<0.5	nc	<0.5	-	-	<0.5	<0.5	<0.5	-	<0.5	<0.5	nc	<0.5	<0.5	-	-	<0.5	<0.5	nc	<0.5	-	-	<0.5	<0.5	<0.5	<0.5
Chloromethane	µg/L	nV	<3.0	<3.0	<3.0	<3.0	nc	<3.0	-	-	<3.0	<3.0	<3.0	-	<3.0	<3.0	nc	<3.0	<3.0	-	-	<3.0	<3.0	nc	<3.0	-	-	<3.0	<3.0	<3.0	<3.0
Dibromochloromethane	µg/L	82,000 <sup>A</sup>	<0.5	<0.5	<0.5	<0.5	nc	<0.5	-	-	<0.5	<0.5	<0.5	-	<0.5	<0.5	nc	<0.5	<0.5	-	-	<0.5	<0.5	nc	<0.5	-	-	<0.5	<0.5	<0.5	<0.5
Dichlorobenzene, 1,2-	µg/L	4,600 <sup>A</sup>	<0.5	<0.5	<0.5	<0.5	nc	<0.5	-	-	<0.5	<0.5	<0.5	-	<0.5	<0.5	nc	<0.5	<0.5	-	-	<0.5	<0.5	nc	<0.5	-	-	<0.5	<0.5	<0.5	<0.5
Dichlorobenzene, 1,3-	µg/L	9,600 <sup>A</sup>	<0.5	<0.5	<0.5	<0.5	nc	<0.5	-	-	<0.5	<0.5	<0.5	-	<0.5	<0.5	nc	<0.5	<0.5	-	-	<0.5	<0.5	nc	<0.5	-	-	<0.5	<0.5	<0.5	<0.5
Dichlorobenzene, 1,4-	µg/L	8 <sup>A</sup>	<0.5	<0.5	<0.5	<0.5	nc	<0.5	-	-	<0.5	<0.5	<0.5	-	<0.5	<0.5	nc	<0.5	<0.5	-	-	<0.5	<0.5	nc	<0.5	-	-	<0.5	<0.5	<0.5	<0.5
Dichlorodifluoromethane (Freon 12)	µg/L	4,400 <sup>A</sup>	<1.0	<1.0	<1.0	<1.0	nc	<1.0	-	-	<1.0	<1.0	<1.0	-	<1.0	<1.0	nc	<1.0	<1.0	-	-	<1.0	<1.0	nc	<1.0	-	-	<1.0	<1.0	<1.0	<1.0
Dichloroethane, 1,1-	µg/L	320 <sup>A</sup>	<0.5	<0.5	<0.5	<0.5	nc	<0.5	-	-	<0.5	<0.5	<0.5	-	<0.5	<0.5	nc	<0.5	<0.5	-	-	<0.5	<0.5	nc	<0.5	-	-	<0.5	<0.5	<0.5	<0.5
Dichloroethane, 1,2-	µg/L	1.6 <sup>A</sup>	<0.5	<0.5	<0.5	<0.5	nc	<0.5	-	-	<0.5	<0.5	<0.5	-	<0.5	<0.5	nc	<0.5	<0.5	-	-	<0.5	<0.5	nc	<0.5	-	-	<0.5	<0.5	<0.5	<0.5
Dichloroethane, 1,1-	µg/L	1.6 <sup>A</sup>	<0.5	<0.5	<0.5	<0.5	nc	<0.5	-	-	<0.5	<0.5	<0.5	-	<0.5	<0.5	nc	<0.5	<0.5	-	-	<0.5	<0.5	nc	<0.5	-	-	<0.5	<0.5	<0.5	<0.5
Dichloroethene, cis + trans-1,2- (sum)	µg/L	nV	-	<0.5	-	-	-	-	-	-	<0.5	<0.5	<0.5	-	<0.5	<0.5	nc	<0.5	<0.5	-	-	<0.5	<0.5	nc	<0.5	-	-	<0.5	<0.5	<0.5	<0.5
Dichloroethene, cis-1,2-	µg/L	1.6 <sup>A</sup>	<0.5	<0.5	<0.5	<0.5	nc	<0.5	-	-	<0.5	<0.5	<0.5	-	<0.5	<0.5	nc	<0.5	<0.5	-	-	<0.5	<0.5	nc	<0.5	-	-	<0.5	<0.5	<0.5	<0.5
Dichloroethene, trans-1,2-	µg/L	1.6 <sup>A</sup>	<0.5	<0.5	<0.5	<0.5	nc	<0.5	-	-	<0.5	<0.5	<0.5	-	<0.5	<0.5	nc	<0.5	<0.5	-	-	<0.5	<0.5	nc	<0.5	-	-	<0.5	<0.5	<0.5	<0.5
Dichloroethene-1,2- (sum)	µg/L	nV	<0.5	<0.5	<0.5	<0.5	nc	<0.5	-	-	<0.5	<0.5	<0.5	-	<0.5	<0.5	nc	<0.5	<0.5	-	-	<0.5	<0.5	nc	<0.5	-	-	<0.5	<0.5	<0.5	<0.5
Dichloropropane, 1,2-	µg/L	16 <sup>A</sup>	<0.5	<0.5	<0.5	<0.5	nc	<0.5	-	-	<0.5	<0.5	<0.5	-	<0.5	<0.5	nc	<0.5	<0.5	-	-	<0.5	<0.5	nc	<0.5	-	-	<0.5	<0.5	<0.5	<0.5
Dichloropropane, 1,3- (sum of isomers cis + trans)	µg/L	5.2 <sup>A</sup>	<0.5	<0.5	<0.5	<0.5	nc	<0.5	-	-	<0.5	<0.5	<0.5	-	<0.5	<0.5	nc	<0.5	<0.5	-	-	<0.5	<0.5	nc	<0.5	-	-	<0.5	<0.5	<0.5	<0.5
Dichloropropene, cis-1,3-	µg/L	st <sup>A</sup>	<0.5	<0.5	<0.5	<0.5	nc	<0.5	-	-	<0.5	<0.5	<0.5	-	<0.5	<0.5	nc	<0.5	<0.5	-	-	<0.5	<0.5	nc	<0.5	-	-	<0.5	<0.5	<0.5	<0.5
Dichloropropene, trans-1,3-	µg/L	st <sup>A</sup>	<0.5	<0.5	<0.5	<0.5	nc	<0.5	-	-	<0.5	<0.5	<0.5	-	<0.5	<0.5	nc	<0.5	<0.5	-	-	<0.5	<0.5	nc	<0.5	-	-	<0.5	<0.5	<0.5	<0.5
Ethylbenzene	µg/L	2,300 <sup>A</sup>	<0.5	<0.5	<0.5	<0.5	nc	<0.5	-	-	<0.5	<0.5	<0.5	-	<0.5	<0.5	nc	<0.5	<0.5	-	-	<0.5	<0.5	nc	<0.5	-	-	<0.5	<0.5	<0.5	<0.5
Ethylene Dibromide (Dibromoethane, 1,2-)	µg/L	0.25 <sup>A</sup>	<0.2	<0.2	<0.2	<0.2	nc	<0.2	-	-	<0.2	<0.2	<0.2	-	<0.2	<0.2	nc	<0.2	<0.2	-	-	<0.2	<0.2	nc	<0.2	-	-	<0.2	<0.2	<0.2	<0.2
Hexane (n-Hexane)	µg/L	51 <sup>A</sup>	<1.0	<1.0	<1.0	<1.0	nc	<1.0	-	-	<1.0	<1.0	<1.0	-	<1.0	<1.0	nc	<1.0	<1.0	-	-	<1.0	<1.0	nc	<1.0	-	-	<1.0	<1.0	<1.0	<1.0
Hexanone, 2- (Methyl Butyl Ketone)	µg/L	nV	<10.0	<10.0	<10.0	<10.0	nc	<10.0	-	-	<10.0	<10.0	<10.0	-	<10.0	<10.0	nc	<10.0	<10.0	-	-	<10.0	<10.0	nc	<10.0	-	-	<10.0	<10.0	<10.0	<10.0
Methyl Ethyl Ketone (MEK) (2-Butanone)	µg/L	470,000 <sup>A</sup>	<5.0	<5.0	<5.0	<5.0	nc	<5.0	-	-	<5.0	<5.0	<5.0	-	<5.0	<5.0	nc	<5.0	<5.0	-	-	<5.0	<5.0	nc	<5.0	-	-	<5.0	<5.0	<5.0	<5.0
Methyl Isobutyl Ketone (MIBK)	µg/L	140,000 <sup>A</sup>	<5.0	<5.0	<5.0	<5.0	nc	<5.0	-	-	<5.0	<5.0	<5.0	-	<5.0	<5.0	nc	<5.0	<5.0	-	-	<5.0	<5.0	nc	<5.0	-	-	<5.0	<5.0	<5.0	<5.0
Methyl tert-butyl ether (MTBE)	µg/L	190 <sup>A</sup>	<2.0	<2.0	<2.0	<2.0	nc	<2.0	-	-	<2.0	<2.0	<2.0	-	<2.0	<2.0	nc	<2.0	<2.0	-	-	<2.0	<2.0	nc	<2.0	-	-	<2.0	<2.0	<2.0	<2.0
Methylene Chloride (Dichloromethane)	µg/L	610 <sup>A</sup>	<5.0	<5.0																											

**Table 6**  
**Summary of Groundwater Analytical Results**  
**Phase Two Environmental Site Assessment**  
**187 Boteler Street, Ottawa, ON, K1N 0A4**  
**Ministry of Foreign Affairs of the State of Qatar c/o Embassy of Qatar in Ottawa**

**Notes:**

Ontario SCS	Soil, Ground Water and Sediment Standards for Use under Part XV.1 of the Environmental Protection Act (MOE, 2011) Site Condition Standards (SCS)
A	Table 3 - All Types of Property Use - Coarse Textured Soils
6.5 <sup>A</sup>	Concentration exceeds the indicated standard.
15.2	Measured concentration did not exceed the indicated standard.
<0.50	Laboratory reporting limit was greater than the applicable standard.
<0.03	Analyte was not detected at a concentration greater than the laboratory reporting limit.
n/v	No standard/guideline value.
-	Parameter not analyzed / not available.
s1	Standard is applicable to total xylenes, and m & p-xylenes and o-xylenes should be summed for comparison.
s3	Standard is applicable to both 1-methylnaphthalene and 2-methylnaphthalene, with the provision that if both are detected the sum of the two must not exceed the standard.
s7	Standard is applicable to PHC in the F1 range minus BTEX.
s8	Standard is applicable to PHC in the F3 range, minus PAHs (other than naphthalene). If PAHs were not analyzed, the standard is applied to F3.
s10	If baseline is not reached during F4 analysis, then gravimetric analysis is to be performed, and the standard is applied to the higher of the two results.
s11	Standard is applicable to 1,3-Dichloropropene, and the individual isomers (cis + trans) should be added for comparison.
s14	Standard is applicable to total PCBs, and the individual Aroclors should be added for comparison.
s15	Standard is applicable to PHC in the F2 range minus naphthalene. If naphthalene was not analyzed, the standard is applied to F2.
RPD	Relative Percent Difference.
61%	RPD exceeds data quality objective of 30%.
nc	RPD is not calculated if one or more values is non detect or if one or more values is less than five times the reportable detection limit.

**Table 7**  
**Maximum Soil Concentrations**  
**Phase Two Environmental Site Assessment**  
**187 Boteler Street, Ottawa, ON, K1N 0A4**  
**Ministry of Foreign Affairs of the State of Qatar c/o Embassy of Qatar in Ottawa**

CAS	Parameter	Unit of Measure	Maximum Concentration	Location of Maximum Concentration	Date of Maximum Concentration	Depth of Maximum Concentration (m bgs)	Maximum Reporting Limit for Non-Detects	Ontario SCS	Exceed
<b>General Chemistry</b>									
PHAVAIL	Available (CaCl <sub>2</sub> ) pH	S.U.	8.01	MW13-1/MW13-1A	30-Jan-23	1.5-2.1	n/a	5-9/5-11	No
57-12-5FREE	Cyanide (Free)	ug/g	(<0.03)	n/a	n/a	n/a	0.03	0.051	No
CONDLAB	Electrical Conductivity, Lab	uS/cm	5250	BH13-9	25-Jul-13	3.05-3.81	5	1400	Yes
FOC1	Fraction of Organic Carbon Rep.#1	g/g	0.0535	MW13-12/MW13-12A	25-Jul-13	0-0.76	0.00500	n/v	No
FOC2	Fraction of Organic Carbon Rep.#2	g/g	0.0660	MW13-12/MW13-12A	25-Jul-13	0-0.76	0.00500	n/v	No
FOC3	Fraction of Organic Carbon Rep.#3	g/g	0.200	TP12	30-Jul-13	0-0.5	0.00500	n/v	No
MOISTURE	Moisture Content	%	23	MW13-14/MW13-14A	31-Jan-23	1.5-2.1	1.0	n/v	No
SOLIDS	Percent Solids	%wt	95.3	TP26	24-Jul-13	0-0.5	0.1	n/v	No
PHLAB	pH, lab	S.U.	7.95	MW13-1/MW13-1A	12-Apr-13	1.52-2.28	0.05	5-9/5-11	No
7440-23-5AR	Sodium Adsorption Ratio (SAR)	none	83	MW13-10/MW13-10A	2-Feb-23	1.8-2.4	0.01	12	Yes
<b>Petroleum Hydrocarbons</b>									
PHC_F1	PHC F1 (C6-C10 range)	ug/g	99	TP19	24-Jul-13	1-1.5	10	n/v	No
PHC_F1-BTEX	PHC F1 (C6-C10 range) minus BTEX	ug/g	(<10)	n/a	n/a	n/a	10	55	No
PHC_F2	PHC F2 (>C10-C16 range)	ug/g	469	TP19	25-Jul-13	1-1.5	10	230	Yes
PHC_F3	PHC F3 (>C16-C34 range)	ug/g	1270	TP26	24-Jul-13	0-0.5	50	1700	No
PHC_F4	PHC F4 (>C34-C50 range)	ug/g	210	MW13-13/MW13-13A	30-Jan-23	0-0.8	50	3300	No
<b>Metals</b>									
7440-36-0	Antimony	ug/g	9.6	TP11	23-Jul-13	0-0.5	1.0	40	No
7440-38-2	Arsenic	ug/g	31.7	TP21	24-Jul-13	1-1.5	1.0	18	Yes
7440-39-3	Barium	ug/g	494	TP5	23-Jul-13	0-0.5	10.0	670	No
7440-41-7	Beryllium	ug/g	0.43	MW13-10/MW13-10A	2-Feb-23	1.8-2.4	1.0	8	No
7440-42-8	Boron	ug/g	8.2	TP11	23-Jul-13	0-0.5	5.0	120	No
7440-42-8(AVAAIL)	Boron (Available)	ug/g	1.2	TP11	23-Jul-13	1-1.5	0.5	2	No
7440-43-9	Cadmium	ug/g	0.6	TP5	23-Jul-13	0-0.5	0.5	1.9	No
7440-47-3	Chromium	ug/g	45	MW13-13/MW13-13A	30-Jan-23	0-0.8	1.0	160	No
18540-29-9	Chromium (Hexavalent)	ug/g	0.6	TP8	23-Jul-13	1.5-2	0.2	8	No
7440-48-4	Cobalt	ug/g	10	MW13-13/MW13-13A	30-Jan-23	0-0.8	1.0	80	No
7440-50-8	Copper	ug/g	506	TP7	23-Jul-13	1-1.5	10.0	230	Yes
7439-92-1	Lead	ug/g	903	TP5	23-Jul-13	0-0.5	10.0	120	Yes
7439-97-6	Mercury	ug/g	3.9	TP17	24-Jul-13	1.5-2	0.1	3.9	No
7439-98-7	Molybdenum	ug/g	5.2	TP21	24-Jul-13	1-1.5	1.0	40	No
7440-02-0	Nickel	ug/g	26.1	TP21	24-Jul-13	1-1.5	1.0	270	No
7782-49-2	Selenium	ug/g	(<1.0)	n/a	n/a	n/a	1.0	5.5	No
7440-22-4	Silver	ug/g	0.7	TP19	24-Jul-13	0-0.5	0.5	40	No
7440-28-0	Thallium	ug/g	1.1	TP21	24-Jul-13	1-1.5	1.0	3.3	No
7440-61-1	Uranium	ug/g	0.94 (<1.0)	MW13-12/MW13-12A	31-Jan-23	3.5-4.2	1.0	33	No
7440-62-2	Vanadium	ug/g	48	MW13-13/MW13-13A	30-Jan-23	0-0.8	5.0	86	No
7440-66-6	Zinc	ug/g	757	TP8	23-Jul-13	1.5-2	5.0	340	Yes
<b>Polycyclic Aromatic Hydrocarbons</b>									
83-32-9	Acenaphthene	ug/g	7.79	Lift 5	14-Apr-14	1.52-1.22	0.02	96	No
208-96-8	Acenaphthylene	ug/g	21.7	BH14-4	5-Mar-14	1.5 - 2.3	0.02	0.15	Yes
120-12-7	Anthracene	ug/g	40.8	Lift 5	14-Apr-14	1.52-1.22	0.02	0.67	Yes
56-55-3	Benzo(a)anthracene	ug/g	44.4	TP10	23-Jul-13	0-0.5	0.02	0.96	Yes
50-32-8	Benzo(a)pyrene	ug/g	34.4	TP10	23-Jul-13	0-0.5	0.02	0.3	Yes
205-99-2	Benzo(b)fluoranthene	ug/g	67.5	TP10	23-Jul-13	0-0.5	0.02	0.96	Yes
205992/205823	Benzo(b)fluoranthene	ug/g	1.7	MW13-10/MW13-10A	2-Feb-23	1.8-2.4	0.0050	0.96	Yes
191-24-2	Benzo(g,h,i)perylene	ug/g	21.4	TP10	23-Jul-13	0-0.5	0.02	9.6	Yes
207-08-9	Benzo(k)fluoranthene	ug/g	26.7	TP10	23-Jul-13	0-0.5	0.02	0.96	Yes
92-52-4	Biphenyl	ug/g	3.31	BH14-4	5-Mar-14	1.5 - 2.3	0.80	52	No
218-01-9	Chrysene	ug/g	44.2	TP10	23-Jul-13	0-0.5	0.02	9.6	Yes
53-70-3	Dibenzo(a,h)anthracene	ug/g	5.85	TP10	23-Jul-13	0-0.5	0.02	0.1	Yes
206-44-0	Fluoranthene	ug/g	153	BH14-4	5-Mar-14	1.5 - 2.3	0.02	9.6	Yes
86-73-7	Fluorene	ug/g	17.1	Lift 5	14-Apr-14	1.52-1.22	0.02	62	No
193-39-5	Indeno(1,2,3-cd)pyrene	ug/g	20.8	TP10	23-Jul-13	0-0.5	0.02	0.76	Yes
90120/91576	Methylnaphthalene (Total)	ug/g	18.5	BH14-4	5-Mar-14	1.5 - 2.3	0.80	76	No
90-12-0	Methylnaphthalene, 1-	ug/g	9.87	BH14-4	5-Mar-14	1.5 - 2.3	0.40	n/v	No
91-57-6	Methylnaphthalene, 2-	ug/g	8.62	BH14-4	5-Mar-14	1.5 - 2.3	0.40	n/v	No
91-20-3	Naphthalene	ug/g	8.89	TP28	24-Jul-13	1-1.5	0.01	9.6	No
85-01-8	Phenanthrene	ug/g	152	Lift 5	14-Apr-14	1.52-1.22	0.02	12	Yes
129-00-0	Pyrene	ug/g	123	BH14-4	5-Mar-14	1.5 - 2.3	0.02	96	Yes
<b>Volatile Organic Compounds</b>									
67-64-1	Acetone	ug/g	(<0.50)	n/a	n/a	n/a	0.50	16	No
71-43-2	Benzene	ug/g	0.05	TP12	23-Jul-13	1-1.5	0.02	0.32	No
108-86-1	Bromobenzene	ug/g	(<0.05)	n/a	n/a	n/a	0.05	n/v	No
75-27-4	Bromodichloromethane	ug/g	(<0.05)	n/a	n/a	n/a	0.05	18	No
75-25-2	Bromoform (Tribromomethane)	ug/g	(<0.05)	n/a	n/a	n/a	0.05	0.61	No
74-83-9	Bromomethane (Methyl bromide)	ug/g	(<0.040)	n/a	n/a	n/a	0.040	0.05	No
56-23-5	Carbon Tetrachloride (Tetrachloromethane)	ug/g	(<0.05)	n/a	n/a	n/a	0.05	0.21	No
108-90-7	Chlorobenzene (Monochlorobenzene)	ug/g	(<0.05)	n/a	n/a	n/a	0.05	2.4	No
75-00-3	Chloroethane (Ethyl Chloride)	ug/g	(<0.05)	n/a	n/a	n/a	0.05	n/v	No
67-66-3	Chloroform (Trichloromethane)	ug/g	(<0.05)	n/a	n/a	n/a	0.05	0.47	No
74-87-3	Chloromethane	ug/g	(<0.20)	n/a	n/a	n/a	0.20	n/v	No
124-48-1	Dibromochloromethane	ug/g	(<0.05)	n/a	n/a	n/a	0.05	13	No
95-50-1	Dichlorobenzene, 1,2-	ug/g	(<0.05)	n/a	n/a	n/a	0.05	6.8	No
541-73-1	Dichlorobenzene, 1,3-	ug/g	(<0.05)	n/a	n/a	n/a	0.05	9.6	No
106-46-7	Dichlorobenzene, 1,4-	ug/g	(<0.05)	n/a	n/a	n/a	0.05	0.2	No
75-71-8	Dichlorodifluoromethane (Freon 12)	ug/g	(<0.05)	n/a	n/a	n/a	0.05	16	No
75-34-3	Dichloroethane, 1,1-	ug/g	(<0.05)	n/a	n/a	n/a	0.05	17	No
107-06-2	Dichloroethane, 1,2-	ug/g	(<0.05)	n/a	n/a	n/a	0.05	0.05	No
75-35-4	Dichloroethane, 1,1-	ug/g	(<0.05)	n/a	n/a	n/a	0.05	0.064	No
156-59-2	Dichloroethane, cis-1,2-	ug/g	(<0.05)	n/a	n/a	n/a	0.05	55	No
156-60-5	Dichloroethane, trans-1,2-	ug/g	(<0.05)	n/a	n/a	n/a	0.05	1.3	No
540-59-0	Dichloroethane-1,2- (sum)	ug/g	(<0.05)	n/a	n/a	n/a	0.05	n/v	No
78-87-5	Dichloropropane, 1,2-	ug/g	(<0.05)	n/a	n/a	n/a	0.05	0.16	No
542-75-6	Dichloropropane, 1,3- (sum of isomers cis + trans)	ug/g	(<0.05)	n/a	n/a	n/a	0.05	0.18	No
10061-01-5	Dichloropropene, cis-1,3-	ug/g	(<0.05)	n/a	n/a	n/a	0.05	n/v	No
10061-02-6	Dichloropropene, trans-1,3-	ug/g	(<0.05)	n/a	n/a	n/a	0.05	n/v	No
100-41-4	Ethylbenzene	ug/g	0.27	TP12	23-Jul-13	1-1.5	0.05	9.5	No
106-93-4	Ethylene Dibromide (Dibromoethane, 1,2-)	ug/g	(<0.05)	n/a	n/a	n/a	0.05	0.05	No
110-54-3	Hexane (n-Hexane)	ug/g	(<0.05)	n/a	n/a	n/a	0.05	46	No
591-78-6	Hexanone, 2- (Methyl Butyl Ketone)	ug/g	(<2.00)	n/a	n/a	n/a	2.00	n/v	No
78-93-3	Methyl Ethyl Ketone (MEK) (2-Butanone)	ug/g	(<0.50)	n/a	n/a	n/a	0.50	70	No
108-10-1	Methyl Isobutyl Ketone (MIBK)	ug/g	(<0.50)	n/a	n/a	n/a	0.50	31	No
1634-04-4	Methyl tert-butyl ether (MTBE)	ug/g	(<0.05)	n/a	n/a	n/a	0.05	11	No
75-09-2	Methylene Chloride (Dichloromethane)	ug/g	(<0.05)	n/a	n/a	n/a	0.05	1.6	No
100-42-5	Styrene	ug/g	(<0.05)	n/a	n/a	n/a	0.05	34	No
630-20-6	Tetrachloroethane, 1,1,1,2-	ug/g	(<0.05)	n/a	n/a	n/a	0.05	0.087	No
79-34-5	Tetrachloroethane, 1,1,2,2-	ug/g	(<0.05)	n/a	n/a	n/a	0.05	0.05	No
127-18-4	Tetrachloroethene (PCE)	ug/g	(<0.05)	n/a	n/a	n/a	0.05	4.5	No
108-88-3	Toluene	ug/g	0.69	TP12	23-Jul-13	1-1.5	0.05	68	No
120-82-1	Trichlorobenzene, 1,2,4-	ug/g	(<0.05)	n/a	n/a	n/a	0.05	3.2	No
71-55-6	Trichloroethane, 1,1,1-	ug/g	(<0.05)	n/a	n/a	n/a	0.05	6.1	No
79-00-5	Trichloroethane, 1,1,2-	ug/g	(<0.05)	n/a	n/a	n/a	0.05	0.05	No
79-01-6	Trichloroethene (TCE)	ug/g	(<0.05)	n/a	n/a	n/a	0.05	0.91	No
75-69-4	Trichlorofluoromethane (Freon 11)	ug/g	(<0.05)	n/a	n/a	n/a	0.05	4	No
108-67-8	Trimethylbenzene, 1,3,5-	ug/g	(<0.05)	n/a	n/a	n/a	0.05	n/v	No
75-01-4	Vinyl Chloride	ug/g	(<0.02)	n/a	n/a	n/a	0.02	0.032	No
108383/106423	Xylene, m & p-	ug/g	2.29	TP12	23-Jul-13	1-1.5	0.05	n/v	No
95-47-6	Xylene, o-	ug/g	0.29	TP12	23-Jul-13	1-1.5	0.05	n/v	No
1330-20-7	Xylenes, Total	ug/g	2.57	TP12	23-Jul-13	1-1.5	0.05	26	No

**Notes:**  
Ontario SCS Soil, Ground Water and Sediment Standards for Use under Part XV.1 of the Environmental Protection Act (MOE, 2011) Site Condition Standards (SCS)  
Table 3 – Industrial / Commercial / Community Property Use - Coarse Textured Soils  
n/a Not applicable  
n/v No standard/guideline value.  
PHC F1 - F4 Petroleum hydrocarbon fractions 1 to 4  
(<0.050) The analyte was never detected above the laboratory reporting limit, the maximum reporting limit is displayed  
0.023 (<0.040) The analyte was detected, but there was a non-detect with a higher laboratory reporting limit

**Table 8**  
**Maximum Groundwater Concentrations**  
**Phase Two Environmental Site Assessment**  
**187 Boteler Street, Ottawa, ON, K1N 0A4**  
**Ministry of Foreign Affairs of the State of Qatar c/o Embassy of Qatar in Ottawa**

CAS	Parameter	Unit of Measure	Maximum Concentration	Location of Maximum Concentration	Date of Maximum Concentration	Maximum Reporting Limit for Non-Detects	Number of Sample Locations	Number of Samples Analyzed	Ontario SCS	Exceed
<b>General Chemistry</b>										
16887-00-6	Chloride	mg/l	1590	MW13-11	31-Jul-13	5	4	5	2300	No
57-12-5FREE	Cyanide (Free)	µg/L	(2)	n/a	n/a	2	4	5	66	No
	pH, lab	S.U.	7.3	MW13-2	22-Apr-13	0.1	4	5	n/v	No
<b>Petroleum Hydrocarbons</b>										
PHC F1	PHC F1 (C6-C10 range)	µg/L	(25)	n/a	n/a	25	8	15	n/v	No
PHC F1+F2	PHC F1 plus PHC F2	µg/L	(144)	n/a	n/a	144	8	9	n/v	No
PHC F2	PHC F2 (>C10-C16 range)	µg/L	(119)	n/a	n/a	119	8	15	150	No
PHC F3	PHC F3 (>C16-C34 range)	µg/L	3050	MW14-1	10-Apr-14	100	8	15	500	Yes
PHC F3+F4	PHC F3 plus PHC F4	µg/L	4810	MW14-1	10-Apr-14	200	8	9	n/v	No
PHC F4	PHC F4 (>C34-C50 range)	µg/L	1760	MW14-1	10-Apr-14	100	8	15	500	Yes
<b>Metals</b>										
7440-36-0	Antimony	µg/L	3.5	MW13-13	24-Apr-14	0.5	8	15	20000	No
7440-38-2	Arsenic	µg/L	3	MW14-3	10-Apr-14	1	8	15	1900	No
7440-39-3	Barium	µg/L	135	MW14-2	11-Apr-14	1	8	15	29000	No
7440-41-7	Beryllium	µg/L	(0.5)	n/a	n/a	0.5	8	15	67	No
7440-42-8	Boron	µg/L	331	MW14-3	10-Apr-14	10	8	15	45000	No
7440-43-9	Cadmium	µg/L	(0.1)	n/a	n/a	0.1	8	15	2.7	No
7440-47-3	Chromium	µg/L	22	MW14-3	10-Apr-14	1	8	15	810	No
18540-29-9	Chromium (Hexavalent)	µg/L	(10)	n/a	n/a	10	8	15	140	No
7440-48-4	Cobalt	µg/L	5.4	MW14-2	11-Apr-14	0.5	8	15	66	No
7440-50-8	Copper	µg/L	11.9	MW14-3	10-Apr-14	0.5	8	15	87	No
7439-92-1	Lead	µg/L	0.5	MW13-13	24-Apr-14	0.1	8	15	25	No
7439-97-6	Mercury	µg/L	(0.1)	n/a	n/a	0.1	8	15	0.29	No
7439-98-7	Molybdenum	µg/L	12.3	MW14-3	10-Apr-14	0.5	8	15	9200	No
7440-02-0	Nickel	µg/L	15	MW13-11	31-Jul-13	1	8	15	490	No
7782-49-2	Selenium	µg/L	19	MW14-2	11-Apr-14	1	8	15	63	No
7440-22-4	Silver	µg/L	(0.1)	n/a	n/a	0.1	8	15	1.5	No
7440-23-5	Sodium	µg/L	2420000	MW14-3	10-Apr-14	200000	8	15	2300000	Yes
7440-28-0	Thallium	µg/L	0.2	MW14-2	11-Apr-14	0.1	8	15	510	No
7440-61-1	Uranium	µg/L	16.3	MW14-3	10-Apr-14	0.1	8	15	420	No
7440-62-2	Vanadium	µg/L	23.7	MW14-3	10-Apr-14	0.5	8	15	250	No
7440-66-6	Zinc	µg/L	25	MW13-11	31-Jul-13	5	8	15	1100	No
<b>Polycyclic Aromatic Hydrocarbons - Filtered</b>										
83-32-9	Acenaphthene	µg/L	(0.25)	n/a	n/a	0.25	3	3	600	No
208-96-8	Acenaphthylene	µg/L	(0.25)	n/a	n/a	0.25	3	3	1.8	No
120-12-7	Anthracene	µg/L	0.03 (<0.05)	MW14-3	24-Apr-14	0.05	3	3	2.4	No
56-55-3	Benzo(a)anthracene	µg/L	(0.05)	n/a	n/a	0.05	3	3	4.7	No
50-32-8	Benzo(a)pyrene	µg/L	(0.05)	n/a	n/a	0.05	3	3	0.81	No
205-99-2	Benzo(b)fluoranthene	µg/L	(0.25)	n/a	n/a	0.25	3	3	0.75	No
191-24-2	Benzo(g,h,i)perylene	µg/L	(0.25)	n/a	n/a	0.25	3	3	0.2	No
207-08-9	Benzo(k)fluoranthene	µg/L	(0.25)	n/a	n/a	0.25	3	3	0.4	No
92-52-4	Biphenyl	µg/L	(0.25)	n/a	n/a	0.25	3	3	1000	No
218-01-9	Chrysene	µg/L	(0.25)	n/a	n/a	0.25	3	3	1	No
53-70-3	Dibenzo(a,h)anthracene	µg/L	(0.25)	n/a	n/a	0.25	3	3	0.52	No
206-44-0	Fluoranthene	µg/L	0.04 (<0.05)	MW14-3	24-Apr-14	0.05	3	3	130	No
86-73-7	Fluorene	µg/L	(0.25)	n/a	n/a	0.25	3	3	400	No
193-39-5	Indeno(1,2,3-cd)pyrene	µg/L	(0.25)	n/a	n/a	0.25	3	3	0.2	No
90120/91576	Methylnaphthalene (Total)	µg/L	(0.50)	n/a	n/a	0.50	3	3	1800	No
90-12-0	Methylnaphthalene, 1-	µg/L	(0.25)	n/a	n/a	0.25	3	3	n/v	No
91-57-6	Methylnaphthalene, 2-	µg/L	(0.25)	n/a	n/a	0.25	3	3	n/v	No
91-20-3	Naphthalene	µg/L	(0.25)	n/a	n/a	0.25	3	3	1400	No
85-01-8	Phenanthrene	µg/L	(0.25)	n/a	n/a	0.25	3	3	580	No
129-00-0	Pyrene	µg/L	0.04 (<0.05)	MW14-3	24-Apr-14	0.05	3	3	68	No
<b>Polycyclic Aromatic Hydrocarbons</b>										
83-32-9	Acenaphthene	µg/L	1.05	MW14-1	10-Apr-14	0.05	9	18	600	No
208-96-8	Acenaphthylene	µg/L	2.88	MW14-1	10-Apr-14	0.05	9	18	1.8	Yes
120-12-7	Anthracene	µg/L	5.43	MW14-1	10-Apr-14	0.01	9	18	2.4	Yes
56-55-3	Benzo(a)anthracene	µg/L	18.1	MW14-1	10-Apr-14	0.01	9	18	4.7	Yes
50-32-8	Benzo(a)pyrene	µg/L	17.3	MW14-1	10-Apr-14	0.01	9	18	0.81	Yes
205-99-2	Benzo(b)fluoranthene	µg/L	31.0	MW14-1	10-Apr-14	0.05	9	18	0.75	Yes
191-24-2	Benzo(g,h,i)perylene	µg/L	11.9	MW14-1	10-Apr-14	0.05	9	18	0.2	Yes
207-08-9	Benzo(k)fluoranthene	µg/L	12.3	MW14-1	10-Apr-14	0.05	9	18	0.4	Yes
92-52-4	Biphenyl	µg/L	0.42	MW13-10	11-Apr-14	0.05	9	18	1000	No
218-01-9	Chrysene	µg/L	21.9	MW14-1	10-Apr-14	0.05	9	18	1	Yes
53-70-3	Dibenzo(a,h)anthracene	µg/L	3.42	MW14-1	10-Apr-14	0.05	9	18	0.52	Yes
206-44-0	Fluoranthene	µg/L	44.0	MW14-1	10-Apr-14	0.01	9	18	130	No
86-73-7	Fluorene	µg/L	1.49	MW14-1	10-Apr-14	0.05	9	18	400	No
193-39-5	Indeno(1,2,3-cd)pyrene	µg/L	10.4	MW14-1	10-Apr-14	0.05	9	18	0.2	Yes
90120/91576	Methylnaphthalene (Total)	µg/L	0.53	MW14-1	10-Apr-14	0.10	9	18	1800	No
90-12-0	Methylnaphthalene, 1-	µg/L	0.27	MW14-1	10-Apr-14	0.05	9	18	n/v	No
91-57-6	Methylnaphthalene, 2-	µg/L	0.26	MW14-1	10-Apr-14	0.05	9	18	n/v	No
91-20-3	Naphthalene	µg/L	0.49	MW14-1	10-Apr-14	0.05	9	18	1400	No
85-01-8	Phenanthrene	µg/L	18.8	MW14-1	10-Apr-14	0.05	9	18	580	No
129-00-0	Pyrene	µg/L	38.4	MW14-1	10-Apr-14	0.01	9	18	68	No
<b>Polychlorinated Biphenyls</b>										
1336-36-3	Polychlorinated Biphenyls (PCBs)	µg/L	(0.05)	n/a	n/a	0.05	2	2	7.8	No
<b>Volatile Organic Compounds</b>										
67-64-1	Acetone	µg/L	(5.0)	n/a	n/a	5.0	8	15	130000	No
71-43-2	Benzene	µg/L	(0.5)	n/a	n/a	0.5	8	15	44	No
108-86-1	Bromobenzene	µg/L	(0.5)	n/a	n/a	0.5	4	6	n/v	No
75-27-4	Bromodichloromethane	µg/L	(0.5)	n/a	n/a	0.5	8	15	85000	No
75-25-2	Bromoform (Tribromomethane)	µg/L	(0.5)	n/a	n/a	0.5	8	15	380	No
74-83-9	Bromomethane (Methyl bromide)	µg/L	(0.5)	n/a	n/a	0.5	8	9	5.6	No
56-23-5	Carbon Tetrachloride (Tetrachloromethane)	µg/L	(0.2)	n/a	n/a	0.2	8	15	0.79	No
108-90-7	Chlorobenzene (Monochlorobenzene)	µg/L	(0.5)	n/a	n/a	0.5	8	15	630	No
75-00-3	Chloroethane (Ethyl Chloride)	µg/L	(1.0)	n/a	n/a	1.0	8	15	n/v	No
67-66-3	Chloroform (Trichloromethane)	µg/L	1.2	MW14-2	11-Apr-14	0.5	8	15	2.4	No
74-87-3	Chloromethane	µg/L	(3.0)	n/a	n/a	3.0	8	15	n/v	No
124-48-1	Dibromochloromethane	µg/L	(0.5)	n/a	n/a	0.5	8	15	82000	No
95-50-1	Dichlorobenzene, 1,2-	µg/L	(0.5)	n/a	n/a	0.5	8	15	4600	No
541-73-1	Dichlorobenzene, 1,3-	µg/L	(0.5)	n/a	n/a	0.5	8	15	9600	No
106-46-7	Dichlorobenzene, 1,4-	µg/L	(0.5)	n/a	n/a	0.5	8	15	8	No
75-71-8	Dichlorodifluoromethane (Freon 12)	µg/L	(1.0)	n/a	n/a	1.0	8	15	4400	No
75-34-3	Dichloroethane, 1,1-	µg/L	(0.5)	n/a	n/a	0.5	8	15	320	No
107-06-2	Dichloroethane, 1,2-	µg/L	(0.5)	n/a	n/a	0.5	8	15	1.6	No
75-35-4	Dichloroethane, 1,1-	µg/L	(0.5)	n/a	n/a	0.5	8	15	1.6	No
156592/156605	Dichloroethane, cis + trans-1,2- (sum)	µg/L	(0.5)	n/a	n/a	0.5	8	9	n/v	No
156-59-2	Dichloroethane, cis-1,2-	µg/L	(0.5)	n/a	n/a	0.5	8	15	1.6	No
156-60-5	Dichloroethane, trans-1,2-	µg/L	(0.5)	n/a	n/a	0.5	8	15	1.6	No
540-59-0	Dichloroethane-1,2- (sum)	µg/L	(0.5)	n/a	n/a	0.5	4	6	n/v	No
78-87-5	Dichloropropane, 1,2-	µg/L	(0.5)	n/a	n/a	0.5	8	15	16	No
542-75-6	Dichloropropene, 1,3- (sum of isomers cis + trans)	µg/L	(0.5)	n/a	n/a	0.5	8	15	5.2	No
10061-01-5	Dichloropropene, cis-1,3-	µg/L	(0.5)	n/a	n/a	0.5	8	15	n/v	No
10061-02-6	Dichloropropene, trans-1,3-	µg/L	(0.5)	n/a	n/a	0.5	8	15	n/v	No
100-41-4	Ethylbenzene	µg/L	(0.5)	n/a	n/a	0.5	8	15	2300	No
106-93-4	Ethylene Dibromide (Dibromoethane, 1,2-)	µg/L	(0.2)	n/a	n/a	0.2	8	15	0.25	No
110-54-3	Hexane (n-Hexane)	µg/L	(1.0)	n/a	n/a	1.0	8	15	51	No
591-78-6	Hexanone, 2- (Methyl Butyl Ketone)	µg/L	(10.0)	n/a	n/a	10.0	8	15	n/v	No
78-93-3	Methyl Ethyl Ketone (MEK) (2-Butanone)	µg/L	(5.0)	n/a	n/a	5.0	8	15	47000	No
108-10-1	Methyl Isobutyl Ketone (MIBK)	µg/L	(5.0)	n/a	n/a	5.0	8	15	140000	No
1634-04-4	Methyl tert-butyl ether (MTBE)	µg/L	(2.0)	n/a	n/a	2.0	8	15	190	No
75-09-2	Methylene Chloride (Dichloromethane)	µg/L	(5.0)	n/a	n/a	5.0	8	15	610	No
100-42-5	Styrene	µg/L	(0.5)	n/a	n/a	0.5	8	15	1300	No
630-20-6	Tetrachloroethane, 1,1,1,2-	µg/L	(0.5)	n/a	n/a	0.5	8	15	3.3	No
79-34-5	Tetrachloroethane, 1,1,2,2-	µg/L	(0.5)	n/a	n/a	0.5	8	15	3.2	No
127-18-4										

**PHASE TWO ENVIRONMENTAL SITE ASSESSMENT – 187 BOTELER STREET, OTTAWA,  
ONTARIO**

Appendix B Figures

**APPENDIX B            FIGURES**



## APPENDIX C SAMPLING AND ANALYSIS PLAN

The Phase Two Environmental Site Assessment (ESA) Update was conducted with the following objective:

- To identify the presence, location, and concentration of contaminants of concern (COCs) in soil and groundwater that could potentially be associated with areas of potential environmental concern (APECs) identified in the Phase One ESA (Stantec, 2023).

To meet the objective outlined above, the following sampling and analysis plan was developed. The sampling and analysis plan was originally developed (and implemented) to investigate APECs identified in the original Phase One ESA (Stantec, 2014); however, was repurposed/reorganized and updated for the current Phase Two ESA Update based on the current APECs.

- Clear underground services at the Phase Two Property using private and public utility locators prior to starting intrusive investigations.
- Excavate approximately 30 test pits at the approximate locations shown in **Table C-1**. Test pit locations may be adjusted based on the locations of underground utilities.
- Advance 17 boreholes to inferred bedrock, and complete 12 of the boreholes as groundwater monitoring wells in bedrock, at the approximate locations shown in **Table C-1**. Borehole/groundwater monitoring well locations may be adjusted based on the locations of underground utilities.
- Complete field observations of visual and olfactory evidence of impacts for collected soil samples. Measure soil headspace combustible gas concentrations for soil samples.
- Submit selected soil samples for analysis of the parameters indicated in **Table C-1**. Samples submitted for laboratory analysis will be based on sample location and depth, site stratigraphy, the results of visual and olfactory observations and combustible gas concentrations, program objectives, and known information about the potential contaminant distribution at the Phase Two Property.
- Monitor available groundwater monitoring wells for combustible gas concentration, depth to water, and presence/absence of light non-aqueous phase liquid (LNAPL).
- Sample available groundwater monitoring wells with sufficient groundwater volume using low flow techniques (where possible). Monitor physical parameters of temperature, pH, dissolved oxygen, turbidity, oxidation-reduction potential (ORP), and specific conductance during sampling. Submit groundwater samples for laboratory analysis of the parameters indicated in **Table C-1**.
- Survey all newly installed test pits and boreholes/groundwater monitoring wells for accurate placement on site plans and obtain vertical elevations of groundwater monitoring wells.



**PHASE TWO ENVIRONMENTAL SITE ASSESSMENT – 187 BOTELER STREET, OTTAWA, ONTARIO**

Appendix C Sampling and Analysis Plan

- Implement the following quality assurance/quality control (QA/QC) measures:
  - For QA/QC purposes, analyze field duplicate soil and groundwater samples on an approximate one in 10 basis.
  - Use clean and new dedicated sampling equipment at each sampling location, where possible.
  - Clean all non-dedicated sampling equipment prior to use and between sampling locations.
  - Calibrate combustible gas meter on a daily basis, at the beginning of each day of sampling.
- Complete the above tasks in general accordance with Stantec’s standard operating procedures.

**Table C-1: 2013-2014 Sampling and Analysis Plan (Original Phase Two ESA)**

Location ID	Location	Rationale	Parameters to be Analyzed (Soil and/or Groundwater)
<ul style="list-style-type: none"> <li>• MW13-12</li> <li>• MW14-2</li> <li>• TP21 and TP22</li> <li>• TP30</li> </ul>	Eastern third of the Phase Two Property, along the north property line	Investigate soil and groundwater quality at an area of fill deposition and a former coal storage area	<ul style="list-style-type: none"> <li>• All Locations: Metals, PHCs, PAHs, and VOCs</li> <li>• Select Locations: pH, EC, chloride, SAR, and PCBs</li> </ul>
<ul style="list-style-type: none"> <li>• MW13-1 through MW13-3</li> <li>• MW13-7</li> <li>• BH13-8 and BH13-9</li> <li>• MW13-10 and MW13-11</li> <li>• MW13-13 and MW13-14</li> <li>• MW14-1</li> <li>• MW14-3</li> <li>• BH14-4 through BH14-6</li> <li>• TP1 through TP20</li> <li>• TP23 through TP29</li> </ul>	Remaining portions of the Phase Two Property	Investigate soil and groundwater quality at an area of fill deposition	<ul style="list-style-type: none"> <li>• All Locations: Metals, PHCs, PAHs, and VOCs</li> <li>• Select Locations: pH, EC, chloride, SAR, and PCBs</li> </ul>

**Notes:**

- EC: electrical conductivity  
 PAHs: polycyclic aromatic hydrocarbons  
 PCBs: polychlorinated biphenyls  
 PHCs: petroleum hydrocarbons  
 SAR: sodium adsorption ratio  
 VOCs: volatile organic compounds

Additionally, 10 boreholes completed as groundwater monitoring wells, are to be advanced to replace their decommissioned/destroyed counterparts. Soil and groundwater sampling is to be completed similarly as their original counterparts, as indicated in **Table C-2**. The purpose of these boreholes/groundwater monitoring wells is to provide more recent soil and groundwater quality data.





**PHASE TWO ENVIRONMENTAL SITE ASSESSMENT – 187 BOTELER STREET, OTTAWA, ONTARIO**

Appendix C Sampling and Analysis Plan

**Table C-2: 2023 Sampling and Analysis Plan (Phase Two ESA Update)**

Location ID	Location	Rationale	Parameters to be Analyzed (Soil and/or Groundwater)
<ul style="list-style-type: none"> <li>• MW13-12A</li> <li>• MW14-2A</li> </ul>	Eastern third of the Phase Two Property, along the north property line	Investigate soil and groundwater quality at an area of fill deposition and a former coal storage area	<ul style="list-style-type: none"> <li>• All Locations: Metals and Inorganics (pH, free cyanide, EC, chloride, SAR), PHCs, PAHs, and VOCs</li> </ul>
<ul style="list-style-type: none"> <li>• MW13-1A and MW13-2A</li> <li>• MW13-10A and MW13-11A</li> <li>• MW13-13A and MW13-14A</li> <li>• MW14-1A</li> <li>• MW14-3A</li> </ul>	Remaining portions of the Phase Two Property	Investigate soil and groundwater quality at an area of fill deposition	<ul style="list-style-type: none"> <li>• All Locations: Metals and Inorganics (pH, free cyanide, EC, chloride SAR), PHCs, PAHs, and VOCs</li> </ul>



**PHASE TWO ENVIRONMENTAL SITE ASSESSMENT – 187 BOTELER STREET, OTTAWA,  
ONTARIO**

Appendix D Finalized Field Logs

**APPENDIX D FINALIZED FIELD LOGS**





# MONITORING WELL RECORD

CLIENT City of Ottawa PROJECT No. 122510670 ORIGINATED BY J.U.  
 LOCATION Boteler Street DATUM NAD 83 COMPILED BY B.C.  
 DATES: BORING April 12, 2013 WATER LEVEL April 24, 2014 TPC ELEV. 56.42 CHECKED BY J.P.D.

DEPTH (m)	ELEVATION (m)	STRATA DESCRIPTION	STRATA PLOT	WATER LEVEL	DEPTH (ft)	VAPOUR CONCENTRATIONS				SAMPLES			WELL CONSTRUCTION
						● %LEL	▲ ppmv	TYPE	NUMBER	N-VALUE			
0	56.53					● 20	▲ 100	40	60	80			
	56.2	Black/brown, dry TOPSOIL with trace organics.			2							SS 1	
1		Dark brown, dry, sand with minor silt, FILL.			4							SS 2	
	55.0												
2	54.9	Crushed rock, FILL.			6							SS 3	
	54.9	Light grey, dry, medium sand, FILL.			8							SS 4	
3	53.3	Dark brown sand with minor silt, FILL.			10							SS 5	
4		Limestone BEDROCK.			12								
5					14								
6	50.1	Borehole terminated at 6.4 m bgs. Monitoring well installed.			16								
7					18								
8					20								
9					22								
10					24								
11					26								
12					28								
13					30								
14					32								
15					34								
16					36								
					38								
					40								
					42								
					44								
					46								
					48								
					50								
					52								

Bentonite Seal

31 mm, PVC Casing, with Sandpack  
31mm, Slotted PVC Screen, with Sandpack

LABORATORY ANALYSES: MW13-1 SS3 submitted for laboratory analysis of VOCs, PAHs, PHC F1 -F4, PCBs, inorganics and metals.

∇ Groundwater Level



# MONITORING WELL RECORD

CLIENT City of Ottawa PROJECT No. 122510670 ORIGINATED BY J.U.  
 LOCATION Boteler Street DATUM NAD 83 COMPILED BY B.C.  
 DATES: BORING April 15, 2013 WATER LEVEL April 24, 2014 TPC ELEV. 56.877 CHECKED BY J.P.D.

DEPTH (m)	ELEVATION (m)	STRATA DESCRIPTION	STRATA PLOT	WATER LEVEL	DEPTH (ft)	VAPOUR CONCENTRATIONS				SAMPLES			WELL CONSTRUCTION
						● %LEL	▲ ppmv	TYPE	NUMBER	N-VALUE			
0	56.95					● 20	▲ 100	40	60	80			
0.2	56.8	Black, dry, topsoil FILL, with trace organics.			2							SS 1	
1.0	55.4	Light brown, dry, silty sand with trace clay, FILL.			4							SS 2	
2.0	55.1	Red/grey, dry, coarse sand with trace silt, FILL. Large rock fragments and clay brick fragments.			6							SS 3	
3.0	53.8	Brown, dry silty clay, FILL. Limestone BEDROCK.			8							SS 4	
4.0					10							SS 5	
6.4	50.6	Borehole terminated at 6.4 m bgs. Monitoring well installed.			20								31 mm, PVC Casing, with Sandpack 31mm, Slotted PVC Screen, with Sandpack
7.0					22								
8.0					24								
9.0					26								
10.0					28								
11.0					30								
12.0					32								
13.0					34								
14.0					36								
15.0					38								
16.0					40								
					42								
					44								
					46								
					48								
					50								
					52								

LABORATORY ANALYSES: MW13-2 SS3 submitted for laboratory analysis of VOCs, PAHs, PHC F1-F4, PCBs, inorganics, and metals.

Groundwater Level

CLIENT City of Ottawa PROJECT No. 122510670 ORIGINATED BY J.U.  
 LOCATION Boteler Street DATUM NAD 83 COMPILED BY B.C.  
 DATES: BORING April 15, 2013 WATER LEVEL April 22, 2013 TPC ELEV. 61.18 CHECKED BY J.P-D.

DEPTH (m)	ELEVATION (m)	STRATA DESCRIPTION	STRATA PLOT	WATER LEVEL	DEPTH (ft)	VAPOUR CONCENTRATIONS				SAMPLES			WELL CONSTRUCTION
						● %LEL	▲ ppmv	TYPE	NUMBER	N-VALUE			
0	60.22	Well decommissioned on June 13, 2013				● 20 ▲ 100	40 200	60 300	80 400				
0	59.3	Brown, dry, silty sand with clay FILL.			2	▲					SS 1		Bentonite Seal
1		FILL material			4								
2		-could not be sampled by direct push techniques			6								
3		-air hammered			8								
4	56.0				10								
5	55.5	Dark brown, dry, silty sand with coarse light brown sand, FILL.			14	▲					SS 2		
5	55.0				16	▲					SS 3		
6	54.1	Creosote odour			18								
7		Light brown, dry, clayey silt, FILL.			20								
8		FILL material and fractured bedrock.			22								
8		Limestone BEDROCK.			24								
9					26								
10					28								
11					30								
12					32								
13	47.4	Borehole terminated at 12.8 m. Monitoring well installed.			34								
14					36								
15					38								
16					40								
					42								
					44								
					46								
					48								
					50								
					52								

31 mm, PVC Casing, with Sandpack  
31mm, Slotted PVC Screen, with Sandpack

LABORATORY ANALYSES: MW13-3 SS1 and SS3 were submitted for laboratory analysis of PHC F1 to F4, VOCs, PAH, and metals. MW13-3 SS3 was also submitted for laboratory analysis of pH.



# MONITORING WELL RECORD

CLIENT City of Ottawa PROJECT No. 122510670 ORIGINATED BY J.U.  
 LOCATION Boteler Street DATUM NAD 83 COMPILED BY B.C.  
 DATES: BORING April 17, 2013 WATER LEVEL April 22, 2013 TPC ELEV. 56.96 CHECKED BY J.P.D.

DEPTH (m)	ELEVATION (m)	STRATA DESCRIPTION	STRATA PLOT	WATER LEVEL	DEPTH (ft)	VAPOUR CONCENTRATIONS				SAMPLES			WELL CONSTRUCTION
						● %LEL	▲ ppmv	TYPE	NUMBER	N-VALUE			
0	57.07	Well decommissioned on June 13, 2013				● 20	▲ 100	40	60	80			
0	56.9	Black, dry TOPSOIL, with trace organics.			2							SS 1	Bentonite Seal
1		Dark brown, dry, sandy silt, FILL, with trace clay.			4							SS 2	
2					8							SS 3	
3	54.0	Limestone BEDROCK.			10								31 mm, PVC Casing, with Sandpack 31mm, Slotted PVC Screen, with Sandpack
4					12								
5					14								
6					16								
7					18								
8					20								
9					22								
10	47.3	Borehole terminated at 9.75 m bgs. Monitoring well installed.			24								
11					26								
12					28								
13					30								
14					32								
15					34								
16					36								
					38								
					40								
					42								
					44								
					46								
					48								
					50								
					52								

LABORATORY ANALYSES: MW13-7 SS2 was submitted for laboratory analysis of PHC F1 to F4, VOCs, PAH, and metals.

STAN-MW 122510670 - BOTELER ST - PARCELS 1&2.GPJ SMART.GDT 4/28/14



# BOREHOLE RECORD

BH13-8

CLIENT City of Ottawa PROJECT No. 122510670 ORIGINATED BY J.U.  
 LOCATION Boteler Street DATUM NAD 83 COMPILED BY B.C.  
 DATES: BORING July 25, 2013 WATER LEVEL \_\_\_\_\_ TPC ELEV. \_\_\_\_\_ CHECKED BY J.P.D.

DEPTH (m)	ELEVATION (m)	STRATA DESCRIPTION	STRATA PLOT	WATER LEVEL	DEPTH (ft)	VAPOUR CONCENTRATIONS				SAMPLES			
						● %LEL	▲ ppmv	TYPE	NUMBER	N-VALUE			
0	58.03	No vapour readings due to limited soil recovery in borehole.				● 20	▲ 100	40	60	80			
		Gravel, boulders and cobble, FILL. Very low recovery.			2							SS 1	
					4							SS 2	
					6							SS 3	
					8							SS 4	
	55.0	Dark brown SAND with gravel, trace silty clay, FILL. Low recovery			10							SS 5	
	53.8				12							SS 6	
		End of borehole at 4.3 mbgs			14								
					16								
					18								
					20								
					22								
					24								
					26								
					28								
					30								
					32								
					34								
					36								
					38								
					40								
					42								
					44								
					46								
					48								
					50								
					52								

LABORATORY ANALYSES: BH13-8 SS6 was submitted for laboratory analysis of PHCs, BTEX, VOCs, metals, PAH, EC/SAR, PCBs. A composite of SS5 and SS6 was submitted for laboratory analysis of FOC.

STAN-MW 122510670 - BOTELER ST - PARCELS 1&2.GPJ SMART.GDT 4/28/14



# BOREHOLE RECORD

BH13-9

CLIENT City of Ottawa PROJECT No. 122510670 ORIGINATED BY J.U.  
 LOCATION Boteler Street DATUM NAD 83 COMPILED BY B.C.  
 DATES: BORING July 25, 2013 WATER LEVEL \_\_\_\_\_ TPC ELEV. \_\_\_\_\_ CHECKED BY J.P.D.

DEPTH (m)	ELEVATION (m)	STRATA DESCRIPTION	STRATA PLOT	WATER LEVEL	DEPTH (ft)	VAPOUR CONCENTRATIONS				SAMPLES			
						● %LEL	▲ ppmv	TYPE	NUMBER	N-VALUE			
0	57.87					● 20	▲ 100	40	60	80			
0		Medium brown sand with gravel, cobbles and boulders, FILL. Some concrete debris. Low recovery.			2		▲					SS	1
1	56.4				4							SS	2
2		Gravel with medium brown sand. Some coal pieces, glass fragments, and wood debris, FILL. Low recovery.			6							SS	3
3	54.8				8		▲					SS	4
4	53.8	Coarse brown sand with gravel, FILL. Some silty clay above bedrock. Sample refusal.			10							SS	5
4		End of borehole at 4.1 mbgs.			12		▲					SS	6
5					14								
6					16								
7					18								
8					20								
9					22								
10					24								
11					26								
12					28								
13					30								
14					32								
15					34								
16					36								
					38								
					40								
					42								
					44								
					46								
					48								
					50								
					52								

LABORATORY ANALYSES: BH13-9 SS5 was submitted for laboratory analysis of PHCs, BTEX, VOCs, metals, PAH, PCBs, EC/SAR. A composite of SS5 and SS6 was submitted for laboratory analysis of FOC. SS3 was submitted for laboratory analysis of FOC.

STAN-MW 122510670 - BOTELER ST - PARCELS 1&2.GPJ SMART.GDT 4/28/14



CLIENT City of Ottawa PROJECT No. 122510670 ORIGINATED BY J.U.  
 LOCATION Boteler Street DATUM NAD 83 COMPILED BY B.C.  
 DATES: BORING July 18, 2013 WATER LEVEL April 24, 2014 TPC ELEV. 58.27 CHECKED BY J.P.D.

DEPTH (m)	ELEVATION (m)	STRATA DESCRIPTION	STRATA PLOT	WATER LEVEL	DEPTH (ft)	VAPOUR CONCENTRATIONS				SAMPLES			WELL CONSTRUCTION
						● %LEL	▲ ppmv	TYPE	NUMBER	N-VALUE			
0	58.28					● 20	▲ 100	40	60	80			
0		Gravel, boulders and concrete debris. Some coarse brown sand, FILL. Low recovery			2							SS 1	Protective Casing and Bentonite Seal
1	56.8				4							SS 2	
2		Gravel with medium brown sand. Some silt and clay, FILL.			6							SS 3	
3	55.2				8							SS 4	
4		Brown SILT with medium sand and gravel, FILL. Damp.			10							SS 5	
4					12	▲						SS 6	
5	53.4				14	▲						SS 7	
5		Limestone BEDROCK.			16								51 mm, Schedule 40, PVC Casing, with Sandpack
6					18								
7					20								
8					22								
9					24								
10					26								
11					28								
11	46.7			▽	30								
12		End of borehole at 11.6 mbgs. Well was dry during the July 31, 2013 sampling event.			32								
13					34								
14					36								
15					38								
16					40								
					42								
					44								
					46								
					48								
					50								
					52								

LABORATORY ANALYSES: MW13-10 SS7 submitted for laboratory analysis of VOCs, BTEX, PHCs, metals, PAH, EC/SAR

▽ Groundwater Level

CLIENT City of Ottawa PROJECT No. 122510670 ORIGINATED BY J.U.  
 LOCATION Boteler Street DATUM NAD 83 COMPILED BY B.C.  
 DATES: BORING July 18, 2013 WATER LEVEL April 24, 2014 TPC ELEV. 58.05 CHECKED BY J.P.D.

DEPTH (m)	ELEVATION (m)	STRATA DESCRIPTION	STRATA PLOT	WATER LEVEL	DEPTH (ft)	VAPOUR CONCENTRATIONS				SAMPLES			WELL CONSTRUCTION
						● %LEL	▲ ppmv	TYPE	NUMBER	N-VALUE			
0	58.22					● 20	▲ 100	40	60	80			
0		Coarse gravel and cobbles with concrete debris. Some medium brown sand, FILL.			2								Protective Casing and Bentonite Seal
1	56.7				4							SS 1	
2	55.9	Red brick debris, FILL.			6							SS 2	
3	55.2	Brown silty sand. Damp. Some gravel, FILL.			8							SS 3	
4	54.4	Grey SILTY CLAY with dark brown silt seams. Some gravel. FILL. Damp.			10							SS 4	
4	54.0				12							SS 5	
5		Brown fine SILTY SAND. Grey silty clay above bedrock. Damp.			14							SS 6	51 mm, Schedule 40, PVC Casing, with Sandpack 51 mm, Schedule 40, slot #10, PVC Screen with Sandpack
6		Limestone BEDROCK.			16								
7					18								
8					20								
9					22								
10					24								
11	47.6				26								
11		End of borehole at 10.7 mbgs.			28								
12					30								
13					32								
14					34								
15					36								
16					38								
					40								
					42								
					44								
					46								
					48								
					50								
					52								

LABORATORY ANALYSES: MW13-11 SS6 was submitted for laboratory analysis of BTEX, PHCs, VOCs, metals, PAH, EC/SAR. A composite of SS5 and SS6 was submitted for laboratory analysis of FOC.

Groundwater Level

STAN-MW 122510670 - BOTELER ST - PARCELS 1&2.GPJ SMART.GDT 4/28/14



# MONITORING WELL RECORD

CLIENT City of Ottawa PROJECT No. 122510670 ORIGINATED BY J.U.  
 LOCATION Boteler Street DATUM NAD 83 COMPILED BY B.C.  
 DATES: BORING July 25, 2013 WATER LEVEL April 24, 2014 TPC ELEV. 57.877 CHECKED BY J.P.D.

DEPTH (m)	ELEVATION (m)	STRATA DESCRIPTION	STRATA PLOT	WATER LEVEL	DEPTH (ft)	VAPOUR CONCENTRATIONS				SAMPLES			WELL CONSTRUCTION
						● %LEL	▲ ppmv	TYPE	NUMBER	N-VALUE			
0		<b>Could not locate well on April 24, 2014.</b>				● 20 ▲ 100	40 200	60 300	80 400				
0		Gravel, boulders, and concrete debris, FILL. Some medium brown sand. Low recovery			2						SS 1		Protective Casing and Bentonite Seal
1		Light brown silty sand with gravel, FILL. Damp.			4						SS 2		
2		Brown silty sand with gravel, FILL. Damp.			6	▲					SS 3		
3		Light brown/grey SILTY CLAY. Wet.			8	▲					SS 4		
4		Limestone BEDROCK.			10						SS 5		
5					12	▲					SS 6		
6					14								51 mm, Schedule 40, PVC Casing, with Sandpack  51 mm, Schedule 40, slot #10, PVC Screen with Sandpack
7					16								
8					18								
9					20								
10					22								
11					24								
12					26								
13					28								
14					30								
15					32								
16					34								
11		End of borehole at 10.7 mbgs. Well was dry during the July 31, 2013 sampling event.			36								
12					38								
13					40								
14					42								
15					44								
16					46								
16					48								
16					50								
16					52								

LABORATORY ANALYSES: MW13-12 SS5 was submitted for laboratory analysis of PHCs, BTEX, VOCs, metals, PAH, PCB, EC/SAR, pH. A composite of SS5 and SS6 was submitted for laboratory analysis of FOC. SS1 was submitted for laboratory analysis of FOC and pH.

STAN-MW 122510670 - BOTELER ST - PARCELS 1&2.GPJ SMART.GDT 4/28/14



# MONITORING WELL RECORD

CLIENT City of Ottawa PROJECT No. 122510670 ORIGINATED BY J.U.  
 LOCATION Boteler Street DATUM NAD 83 COMPILED BY B.C.  
 DATES: BORING July 25, 2013 WATER LEVEL April 24, 2014 TPC ELEV. 57.205 CHECKED BY J.P.D.

DEPTH (m)	ELEVATION (m)	STRATA DESCRIPTION	STRATA PLOT	WATER LEVEL	DEPTH (ft)	VAPOUR CONCENTRATIONS				SAMPLES			WELL CONSTRUCTION
						● %LEL	▲ ppmv	TYPE	NUMBER	N-VALUE			
0	57.24					● 20 ▲ 100	40 200	60 300	80 400				
0		Medium brown sand with gravel and cobbles, FILL. Low recovery.			2						SS 1		Protective Casing and Bentonite Seal
1	55.7				4						SS 2		
2		Large boulders, concrete debris, gravel and brick debris, FILL. Very low recovery.			6						SS 3		
3	54.2				8						SS 4		
3	53.7	Light brown/grey SILTY SAND.			10						SS 5		
4		Limestone BEDROCK. Inferred fractures between 4.57 and 6.40 mbgs.		▽	12								51 mm, Schedule 40, PVC Casing, with Sandpack
5					14								
6					16								51 mm, Schedule 40, slot #10, PVC Screen with Sandpack
7					18								
8	49.6				20								
8		End of borehole at 7.6 mbgs. Well was dry during the July 31, 2013 sampling event.			22								
9					24								
10					26								
11					28								
12					30								
13					32								
14					34								
15					36								
16					38								
					40								
					42								
					44								
					46								
					48								
					50								
					52								

LABORATORY ANALYSES: MW13-13 SS5 was submitted for laboratory analysis of PHCs, BTEX, VOC, metals, PAH, EC/SAR. A composite of SS4 and SS5 was submitted for laboratory analysis of FOC. SS1 was submitted for laboratory analysis of FOC.

▽ Groundwater Level



# MONITORING WELL RECORD

CLIENT City of Ottawa PROJECT No. 122510670 ORIGINATED BY J.U.  
 LOCATION Boteler Street DATUM NAD 83 COMPILED BY B.C.  
 DATES: BORING July 25, 2013 WATER LEVEL April 24, 2014 TPC ELEV. 56.918 CHECKED BY J.P.D.

DEPTH (m)	ELEVATION (m)	STRATA DESCRIPTION	STRATA PLOT	WATER LEVEL	DEPTH (ft)	VAPOUR CONCENTRATIONS				SAMPLES			WELL CONSTRUCTION
						● %LEL	▲ ppmv	TYPE	NUMBER	N-VALUE			
0	57.07					● 20 ▲ 100	40 200	60 300	80 400				
0-1		Light brown medium sand with gravel and boulders, FILL Low recovery.	[Cross-hatch pattern]		2	▲				SS 1		Protective Casing and Bentonite Seal	
1-2	55.5				4					SS 2			
2-3		Light brown SILTY SAND. Some silty clay above bedrock. Wet.	[Dotted pattern]		6	▲				SS 3			
3-4		- saturated from 2.29m to 3.048m.			8	▲				SS 4			
4-5	53.4				10	▲				SS 5			
4-8		Limestone BEDROCK. Inferred fractures between 4.88 and 6.71 mbgs.	[Brick pattern]	▽	12							51 mm, Schedule 40, PVC Casing, with Sandpack  51 mm, Schedule 40, slot #10, PVC Screen with Sandpack	
5-6					14								
6-7					16								
7-8	49.4				18								
8-9		End of borehole at 7.6 mbgs			20								
9-10					22								
10-11					24								
11-12					26								
12-13					28								
13-14					30								
14-15					32								
15-16					34								
					36								
					38								
					40								
					42								
					44								
					46								
					48								
					50								
					52								

LABORATORY ANALYSES: MW13-14 SS3 was submitted for laboratory analysis of PHCs, BTEX, VOCs, metals, PAH, EC/SAR, PCBs. A composite of SS4 and SS5 was submitted for laboratory analysis of FOC. SS1 was submitted for laboratory analysis of FOC.

▽ Groundwater Level

STAN-MW 122510670 - BOTELER ST - PARCELS 1&2.GPJ SMART.GDT 4/28/14



# MONITORING WELL RECORD

CLIENT City of Ottawa PROJECT No. 122510670 ORIGINATED BY J.U.  
 LOCATION Boteler Street DATUM NAD 83 COMPILED BY B.C.  
 DATES: BORING March 4, 2014 WATER LEVEL April 24, 2014 TPC ELEV. 57.934 CHECKED BY J.P.D.

DEPTH (m)	ELEVATION (m)	STRATA DESCRIPTION	STRATA PLOT	WATER LEVEL	DEPTH (ft)	VAPOUR CONCENTRATIONS				SAMPLES			WELL CONSTRUCTION
						● %LEL	▲ ppmv	TYPE	NUMBER	N-VALUE			
0	57.99					● 20	▲ 100	40	60	80			
0	57.4	Brown, SAND, silt, gravel, large rocks, FILL, dry.			2							SS 1	Protective Casing and Bentonite Seal, with packer installed at 7.62 metres below grade.
1	56.6	Large boulder.			4								
2	55.4	Dark brown, SILTY SAND, some rocks, FILL, moist. Direct push refusal, switch to air hammer until bedrock.			6							SS 2	
3	53.7	Dark brown, SILTY SAND, FILL, moist.			10							GS 3	
4	52.5	Light brown SANDY SILT, with gravel, moist, some rock fragments.			12							GS 4	
6		Limestone bedrock. Large void encountered at approximately 13.4 m to 14.3 m.			16								Open hole in limestone bedrock.
7					18								
8					20								
9					22								
10					24								
11					26								
12					28								
13					30								
14	43.5				32								
15					34								
16					36								
					38								
					40								
					42								
					44								
					46								
					48								
					50								
					52								

Groundwater Level

A-

CLIENT City of Ottawa PROJECT No. 122510670 ORIGINATED BY J.U.  
 LOCATION Boteler Street DATUM NAD 83 COMPILED BY B.C.  
 DATES: BORING March 5, 2014 WATER LEVEL April 24, 2014 TPC ELEV. 57.901 CHECKED BY J.P-D.

DEPTH (m)	ELEVATION (m)	STRATA DESCRIPTION	STRATA PLOT	WATER LEVEL	DEPTH (ft)	VAPOUR CONCENTRATIONS				SAMPLES			WELL CONSTRUCTION
						● %LEL	▲ ppmv	TYPE	NUMBER	N-VALUE			
0	58.01					● 20 ▲ 100	40 200	60 300	80 400				
1	56.5	Dark brown, SANDY SILT, with large rocks, some gravel, red staining, FILL, dry.	[Cross-hatch pattern]		2	▲					SS 1		Protective Casing and Bentonite Seal
2	55.0	Dark brown, SANDY SILT, with some medium rocks, FILL, moist.	[Cross-hatch pattern]		8	▲					SS 2		
3	54.2	Dark brown, SANDY SILT, large rocks, some black staining, FILL, moist.	[Cross-hatch pattern]		12	▲					SS 3		
4		Dark brown, SANDY SILT, with coarse grey gravel, some rocks, FILL, moist. Direct push refusal on inferred bedrock.	[Cross-hatch pattern]		14	▲					SS 4		
5	53.0	Limestone bedrock.	[Brick pattern]		16	▲					SS 5		
6			[Brick pattern]		18								51 mm, Schedule 40, PVC Casing, with Sandpack
7			[Brick pattern]		20								
8			[Brick pattern]		22								
9			[Brick pattern]		24								
10			[Brick pattern]		26								
11			[Brick pattern]		28								
12			[Brick pattern]		30								
13			[Brick pattern]		32								
14			[Brick pattern]		34								
15			[Brick pattern]		36								
16	42.3	End of borehole at 15.7 mbgs	[Brick pattern]		52								51 mm, Schedule 40, slot #10, PVC Screen with Sandpack

▽ Groundwater Level

A-

CLIENT City of Ottawa PROJECT No. 122510670 ORIGINATED BY J.U.  
 LOCATION Boteler Street DATUM NAD 83 COMPILED BY B.C.  
 DATES: BORING March 6, 2014 WATER LEVEL April 24, 2014 TPC ELEV. 57.802 CHECKED BY J.P.D.

DEPTH (m)	ELEVATION (m)	STRATA DESCRIPTION	STRATA PLOT	WATER LEVEL	DEPTH (ft)	VAPOUR CONCENTRATIONS				SAMPLES			WELL CONSTRUCTION
						● %LEL	▲ ppmv	TYPE	NUMBER	N-VALUE			
0	57.91					● 20	▲ 100	40	60	80			
0		Grey, SILTY SAND, grey gravel and large rocks, FILL, dry.			2								Protective Casing and Bentonite Seal
1	56.4				4								
2	55.8	Large boulder.			6								
3		Dark brown, SILTY SAND, some rocks, FILL, dry. Direct push refusal on inferred bedrock.			10								
4	54.1				12								
4		Limestone bedrock.			14								
5					16								
6					18								
7					20								
8					22								
9					24								
10					26								
11					28								
12					30								
13	44.9	End of borehole at 13 mbgs.			32								51 mm, Schedule 40, PVC Casing, with Sandpack
14					34								
15					36								
16					38								
					40								
					42								
					44								
					46								
					48								
					50								
					52								

STAN-MW 122510670 - BOTELER ST - PARCELS 1&2.GPJ SMART.GDT 4/28/14

Groundwater Level

A-





# BOREHOLE RECORD

BH14-4

CLIENT City of Ottawa PROJECT No. 122510670 ORIGINATED BY J.U.  
 LOCATION Boteler Street DATUM NAD 83 COMPILED BY B.C.  
 DATES: BORING March 5, 2014 WATER LEVEL \_\_\_\_\_ TPC ELEV. \_\_\_\_\_ CHECKED BY J.P.D.

DEPTH (m)	ELEVATION (m)	STRATA DESCRIPTION	STRATA PLOT	WATER LEVEL	DEPTH (ft)	VAPOUR CONCENTRATIONS				SAMPLES				
						● %LEL	▲ ppmv			TYPE	NUMBER	N-VALUE		
0		Dark brown, SILTY SAND, with large rocks, FILL, dry.	[Cross-hatched pattern]		2	▲					SS	1		
1					4									
2		Dark brown, SILTY SAND, black staining and coal fragments, FILL, dry. Direct push refusal on inferred boulders/bedrock.	[Cross-hatched pattern]		6	▲					SS	2		
3					8									
3		End of borehole at 2.59 mbgs.			10									
4					12									
5					14									
6					16									
7					18									
8					20									
9					22									
10					24									
11					26									
12					28									
13					30									
14					32									
15					34									
16		36												
		38												
		40												
		42												
		44												
		46												
		48												
		50												
		52												

LABORATORY ANALYSES: BH14-4 SS2 was submitted for laboratory analysis of bulk and leachable PAHs.

STAN-MW 122510670 - BOTELER ST - PARCELS 1&2.GPJ SMART.GDT 4/28/14



# BOREHOLE RECORD

BH14-5

CLIENT City of Ottawa PROJECT No. 122510670 ORIGINATED BY J.U.  
 LOCATION Boteler Street DATUM NAD 83 COMPILED BY B.C.  
 DATES: BORING March 5, 2014 WATER LEVEL \_\_\_\_\_ TPC ELEV. \_\_\_\_\_ CHECKED BY J.P.D.

DEPTH (m)	ELEVATION (m)	STRATA DESCRIPTION	STRATA PLOT	WATER LEVEL	DEPTH (ft)	VAPOUR CONCENTRATIONS				SAMPLES					
						● %LEL	▲ ppmv	TYPE	NUMBER	N-VALUE					
0		Brown, SILTY SAND, gravel, some rocks, FILL, dry.			2	▲					SS	1			
1					4										
2		Brown, SILTY SAND, gravel, FILL, dry. Direct push refusal on inferred boulder/bedrock.			6	▲					SS	2			
3		End of borehole at 2.13 mbgs.			8										
4					10										
5					12										
6					14										
7					16										
8					18										
9					20										
10					22										
11					24										
12					26										
13					28										
14					30										
15					32										
16		34													
		36													
		38													
		40													
		42													
		44													
		46													
		48													
		50													
		52													

LABORATORY ANALYSES: BH14-5 SS1 was submitted for laboratory analysis of bulk and leachable PAHs.

STAN-MW 122510670 - BOTELER ST - PARCELS 1&2.GPJ SMART.GDT 4/28/14

CLIENT City of Ottawa PROJECT No. 122510670 ORIGINATED BY J.U.  
 LOCATION Boteler Street DATUM NAD 83 COMPILED BY B.C.  
 DATES: BORING March 5, 2014 WATER LEVEL \_\_\_\_\_ TPC ELEV. \_\_\_\_\_ CHECKED BY J.P-D.

DEPTH (m)	ELEVATION (m)	STRATA DESCRIPTION	STRATA PLOT	WATER LEVEL	DEPTH (ft)	VAPOUR CONCENTRATIONS				SAMPLES							
						● %LEL	▲ ppmv			TYPE	NUMBER	N-VALUE					
0		Dark brown, SILTY SAND, with gravel, FILL, dry.				● 20	▲ 100	40	200	60	300	80	400				
1		Light brown, fine SAND, with silt, FILL, dry. Direct push refusal on inferred boulder/bedrock. - wet.			2										SS	1	
2					4												
3		End of borehole at 2.74 mbgs.			6										SS	2	
4					8												
5					10												
6					12												
7					14												
8					16												
9					18												
10					20												
11					22												
12					24												
13					26												
14					28												
15					30												
16					32												
					34												
					36												
					38												
					40												
					42												
					44												
					46												
					48												
					50												
					52												

LABORATORY ANALYSES: BH14-6 SS1 was submitted for laboratory analysis of bulk and leachable PAHs.

STAN-MW 122510670 - BOTELER ST - PARCELS 1&amp;2.GPJ SMART.GDT 4/28/14

CLIENT City of Ottawa PROJECT No. 122510670 ORIGINATED BY J.U.  
 LOCATION Boteler Street DATUM NAD 83 COMPILED BY B.C.  
 DATES: BORING July 23, 2013 WATER LEVEL \_\_\_\_\_ TPC ELEV. \_\_\_\_\_ CHECKED BY J.P-D.

DEPTH (m)	ELEVATION (m)	STRATA DESCRIPTION	STRATA PLOT	WATER LEVEL	DEPTH (ft)	VAPOUR CONCENTRATIONS				SAMPLES						
						● %LEL	▲ ppmv	TYPE	NUMBER	N-VALUE						
0	58.07					● 20	▲ 100	40	200	60	300	80	400			
0		Brown sand with coarse gravel and concrete debris, FILL.			2										SA 1	
1					4										SA 2	
2	56.1	Silt with fine SAND, trace clay.			6										SA 3	
2	55.6				8										SA 4	
3		Inferred BEDROCK at 2.5 mbgs.			8										SA 5	
3					10											
4					12											
4					14											
5					16											
5					18											
6					20											
6					22											
7					24											
7					26											
8					28											
8					30											
9					32											
9					34											
10					36											
11																

LABORATORY ANALYSES: TP2-1 and TP2-5 were submitted for laboratory analysis of PHCs, VOCs, PAH, and metals.

CLIENT City of Ottawa PROJECT No. 122510670 ORIGINATED BY J.U.  
 LOCATION Boteler Street DATUM NAD 83 COMPILED BY B.C.  
 DATES: BORING July 23, 2013 WATER LEVEL \_\_\_\_\_ TPC ELEV. \_\_\_\_\_ CHECKED BY J.P-D.

DEPTH (m)	ELEVATION (m)	STRATA DESCRIPTION	STRATA PLOT	WATER LEVEL	DEPTH (ft)	VAPOUR CONCENTRATIONS				SAMPLES												
						● %LEL	▲ ppmv	20	40	60	80	100	200	300	400	TYPE	NUMBER	N-VALUE				
0	58.35	Brown sand with gravel and concrete debris, some cobbles, FILL.			0																	
					2	▲																SA 1
1					4	▲																SA 2
2	56.3				6	▲																SA 3
		Inferred BEDROCK at 2.0 mbgs.			8																	
					10																	
					12																	
					14																	
					16																	
					18																	
					20																	
					22																	
					24																	
					26																	
					28																	
		30																				
		32																				
		34																				
		36																				

LABORATORY ANALYSES: TP3-1 and TP3-3 were submitted for laboratory analysis of PHCs, VOCs, PAH, and metals.

STAN-MW 122510670 - BOTELER ST - PARCELS 1&amp;2.GPJ SMART.GDT 9/12/13

CLIENT City of Ottawa PROJECT No. 122510670 ORIGINATED BY J.U.  
 LOCATION Boteler Street DATUM NAD 83 COMPILED BY B.C.  
 DATES: BORING July 23, 2013 WATER LEVEL \_\_\_\_\_ TPC ELEV. \_\_\_\_\_ CHECKED BY J.P.D.

DEPTH (m)	ELEVATION (m)	STRATA DESCRIPTION	STRATA PLOT	WATER LEVEL	DEPTH (ft)	VAPOUR CONCENTRATIONS				SAMPLES				
						● %LEL	▲ ppmv	TYPE	NUMBER	N-VALUE				
0	58.10					● 20	▲ 100	40	60	80				
		Brown sand with gravel and some cobbles, FILL.										SA 1		
1					2							SA 2		
					4							SA 3		
2	56.1	Some wood debris, concrete debris, FILL. Some dark staining with heavy creosote odour. -Light creosote odour.			6							SA 4		
					8								SA 5	
3	55.0				10								SA 6	
		Inferred BEDROCK at 3.0 mbgs.			12									
					14									
					16									
					18									
					20									
					22									
					24									
					26									
					28									
					30									
					32									
					34									
11					36									

LABORATORY ANALYSES: TP4-1 and TP4-5 were submitted for laboratory analysis of PHCs, VOCs, PAH, and metals.

CLIENT City of Ottawa PROJECT No. 122510670 ORIGINATED BY J.U.  
 LOCATION Boteler Street DATUM NAD 83 COMPILED BY B.C.  
 DATES: BORING July 23, 2013 WATER LEVEL \_\_\_\_\_ TPC ELEV. \_\_\_\_\_ CHECKED BY J.P.D.

DEPTH (m)	ELEVATION (m)	STRATA DESCRIPTION	STRATA PLOT	WATER LEVEL	DEPTH (ft)	VAPOUR CONCENTRATIONS				SAMPLES											
						● %LEL	▲ ppmv	20	40	60	80	100	200	300	400	TYPE	NUMBER	N-VALUE			
0	57.22	Brown sand with gravel, some cobbles, FILL.			0																
					2	▲														SA 1	
1					4	▲														SA 2	
					6	▲															SA 3
2	55.2				Light brown SANDY SILT, trace clay. Damp.			8	▲												SA 4
								10	▲												
3	54.2	12	▲																	SA 6	
		Inferred BEDROCK at 3.0 mbgs.			14																
4					16																
					18																
5					20																
					22																
6					24																
					26																
7					28																
					30																
8					32																
9		34																			
10		36																			

LABORATORY ANALYSES: TP5-1 and TP5-6 were submitted for laboratory analysis of PHCs, VOCs, PAH, and metals.

CLIENT City of Ottawa PROJECT No. 122510670 ORIGINATED BY J.U.  
 LOCATION Boteler Street DATUM NAD 83 COMPILED BY B.C.  
 DATES: BORING July 23, 2013 WATER LEVEL \_\_\_\_\_ TPC ELEV. \_\_\_\_\_ CHECKED BY J.P-D.

DEPTH (m)	ELEVATION (m)	STRATA DESCRIPTION	STRATA PLOT	WATER LEVEL	DEPTH (ft)	VAPOUR CONCENTRATIONS				SAMPLES		
						● %LEL	▲ ppmv	TYPE	NUMBER	N-VALUE		
0	57.06	Brown loam, some gravel, TOPSOIL.			0	20	40	60	80			
					1						SA	1
1	56.1	Light brown SILTY SAND. Damp.			2						SA	2
					4						SA	3
2	55.1	Moist, trace clay.			6						SA	4
					8						SA	5
3		Inferred BEDROCK at 2.5 mbgs.			10							
4					12							
5					14							
6					16							
7					18							
8					20							
9					22							
10					24							
11					26							
					28							
					30							
					32							
					34							
					36							

LABORATORY ANALYSES: TP7-1 and TP7-3 were submitted for laboratory analysis of PHCs, VOCs, PAH, and metals.



CLIENT City of Ottawa PROJECT No. 122510670 ORIGINATED BY J.U.  
 LOCATION Boteler Street DATUM NAD 83 COMPILED BY B.C.  
 DATES: BORING July 23, 2013 WATER LEVEL \_\_\_\_\_ TPC ELEV. \_\_\_\_\_ CHECKED BY J.P.-D.

DEPTH (m)	ELEVATION (m)	STRATA DESCRIPTION	STRATA PLOT	WATER LEVEL	DEPTH (ft)	VAPOUR CONCENTRATIONS				SAMPLES											
						● %LEL	▲ ppmv	20	40	60	80	100	200	300	400	TYPE	NUMBER	N-VALUE			
0	57.88	Large boulders, cobbles, gravel, and limestone slabs, FILL.			0																
1	56.9	Medium grey sand with gravel. Cobbles, metal, wood and glass debris present, FILL.			2														SA 1		
	56.4				4																SA 2
2	55.4	Grey/brown silty sand with gravel and trace clay. Metal, wood and glass debris present, FILL.			6														SA 3		
		Inferred BEDROCK at 2.5 mbgs			8														SA 4		
3					10																SA 5
4					12																
5					14																
6					16																
7		18																			
8		20																			
9		22																			
10		24																			
		26																			
		28																			
		30																			
		32																			
		34																			
11		36																			

LABORATORY ANALYSES: TP8-1 and TP8-4 were submitted for laboratory analysis of PHCs, VOCs, PAH, and metals.

CLIENT City of Ottawa PROJECT No. 122510670 ORIGINATED BY J.U.  
 LOCATION Boteler Street DATUM NAD 83 COMPILED BY B.C.  
 DATES: BORING July 23, 2013 WATER LEVEL \_\_\_\_\_ TPC ELEV. \_\_\_\_\_ CHECKED BY J.P-D.

DEPTH (m)	ELEVATION (m)	STRATA DESCRIPTION	STRATA PLOT	WATER LEVEL	DEPTH (ft)	VAPOUR CONCENTRATIONS				SAMPLES									
						● %LEL	▲ ppmv	20	40	60	80	100	200	300	400	TYPE	NUMBER	N-VALUE	
0	58.63	Brown sand with gravel with some cobbles, FILL.	[Cross-hatch pattern]		0														
1	57.1	SILTY SAND with trace clay. Wet.	[Vertical lines pattern]		2														SA 1
					4														SA 2
					6														SA 3
2	56.6	Inferred BEDROCK at 2.0 mbgs.	[Dotted pattern]		6														SA 4
					8														
					10														
					12														
					14														
					16														
					18														
					20														
					22														
					24														
					26														
					28														
					30														
					32														
					34														
					36														

LABORATORY ANALYSES: TP9-1 and TP9-4 were submitted for laboratory analysis of PHCs, VOCs, PAH, and metals.

STAN-MW 122510670 - BOTELER ST - PARCELS 1&amp;2.GPJ SMART.GDT 9/12/13

CLIENT City of Ottawa PROJECT No. 122510670 ORIGINATED BY J.U.  
 LOCATION Boteler Street DATUM NAD 83 COMPILED BY B.C.  
 DATES: BORING July 23, 2013 WATER LEVEL \_\_\_\_\_ TPC ELEV. 57.874 CHECKED BY J.P.D.

DEPTH (m)	ELEVATION (m)	STRATA DESCRIPTION	STRATA PLOT	WATER LEVEL	DEPTH (ft)	VAPOUR CONCENTRATIONS				SAMPLES		
						● %LEL	▲ ppmv	TYPE	NUMBER	N-VALUE		
0		Coarse gravel, concrete and boulders, FILL.				● 20 ▲ 100	40 200	60 300	80 400			
0.5												SA 1
1.0		Brown sand with gravel, FILL.										SA 2
1.5												SA 3
2.0		Some silty sand and trace clay above bedrock. -0.2m grey/black seam of sandy fill										SA 4
2.5											SA 5	
3.0		Inferred BEDROCK at 2.5 mbgs.										
4.0												
5.0												
6.0												
7.0												
8.0												
9.0												
10.0												
11.0												

LABORATORY ANALYSES: TP10-1 and TP10-3 were submitted for laboratory analysis of PHCs, VOCs, PAH, and metals.

STAN-MW 122510670 - BOTELER ST - PARCELS 1&amp;2.GPJ SMART.GDT 9/12/13

CLIENT City of Ottawa PROJECT No. 122510670 ORIGINATED BY J.U.  
 LOCATION Boteler Street DATUM NAD 83 COMPILED BY B.C.  
 DATES: BORING July 23, 2013 WATER LEVEL \_\_\_\_\_ TPC ELEV. \_\_\_\_\_ CHECKED BY J.P.-D.

DEPTH (m)	ELEVATION (m)	STRATA DESCRIPTION	STRATA PLOT	WATER LEVEL	DEPTH (ft)	VAPOUR CONCENTRATIONS					SAMPLES						
						● %LEL	▲ ppmv	20	40	60	80	100	200	300	400	TYPE	NUMBER
0	58.00					● 20	▲ 100	40	60	80							
		Gravel with some brown sand, boulders and cobbles, FILL.			2		▲										SA 1
1	57.0	Silty sand with silty clay. Red brick debris. Some pieces of broken ceramic plates and tiles, FILL. -Some silty sand.			4		▲										SA 2
2	56.0				6		▲										
		Inferred BEDROCK at 2.0 mbgs.			8												SA 4
3					10												
4					12												
5					14												
6					16												
7					18												
8					20												
9					22												
10					24												
11					26												
					28												
					30												
					32												
					34												
					36												

LABORATORY ANALYSES: TP11-1 and TP11-3 were submitted for laboratory analysis of PHCs, VOCs, PAH, and metals.

STAN-MW 122510670 - BOTELER ST - PARCELS 1&amp;2.GPJ SMART.GDT 9/12/13

CLIENT City of Ottawa PROJECT No. 122510670 ORIGINATED BY J.U.  
 LOCATION Boteler Street DATUM NAD 83 COMPILED BY B.C.  
 DATES: BORING July 23, 2013 WATER LEVEL \_\_\_\_\_ TPC ELEV. \_\_\_\_\_ CHECKED BY J.P.D.

DEPTH (m)	ELEVATION (m)	STRATA DESCRIPTION	STRATA PLOT	WATER LEVEL	DEPTH (ft)	VAPOUR CONCENTRATIONS					SAMPLES						
						● %LEL	▲ ppmv	20	40	60	80	100	200	300	400	TYPE	NUMBER
0	57.04					● 20	▲ 100	40	60	80							
		Brown sand with gravel and boulders, FILL.															SA 1
1	56.0				2												SA 2
		Red brick debris, and areas of inferred coal debris. Patches of black debris, FILL.			4												SA 3
	55.5																
2	55.0	Brown sand with gravel. Areas with black/grey sand, brick debris, metal cables, metal and wood debris, FILL.			6												SA 4
		Inferred BEDROCK at 2.0 mbgs.			8												
3					10												
4					12												
5					14												
6					16												
7					18												
8					20												
9					22												
10					24												
11					26												
					28												
					30												
					32												
					34												
					36												

LABORATORY ANALYSES: TP12-1 and TP12-3 were submitted for laboratory analysis of PHCs, VOCs, PAH, and metals.

STAN-MW 122510670 - BOTELER ST - PARCELS 1&amp;2.GPJ SMART.GDT 9/12/13

CLIENT City of Ottawa PROJECT No. 122510670 ORIGINATED BY J.U.  
 LOCATION Boteler Street DATUM NAD 83 COMPILED BY B.C.  
 DATES: BORING July 24, 2013 WATER LEVEL \_\_\_\_\_ TPC ELEV. \_\_\_\_\_ CHECKED BY J.P.-D.

DEPTH (m)	ELEVATION (m)	STRATA DESCRIPTION	STRATA PLOT	WATER LEVEL	DEPTH (ft)	VAPOUR CONCENTRATIONS				SAMPLES						
						● %LEL	▲ ppmv	20	40	60	80	TYPE	NUMBER	N-VALUE		
0	56.79					● 20	▲ 100	40	200	60	300	80	400			
0		Brown sand with gravel, some cobbles, FILL.			2	▲									SA	1
1					4	▲									SA	2
1	55.3				6	▲									SA	3
2	54.8	Some metal and wood debris. Grey road base material, possible ash material, FILL.			8	▲									SA	4
2		Medium brown sand with gravel, FILL.			10	▲									SA	5
3					12	▲									SA	6
3	53.3				14	▲									SA	7
4	52.8	Light brown SILTY SAND.			16	▲									SA	8
4		Inferred BEDROCK at 4.0 mbgs.			18											
5					20											
6					22											
7					24											
8					26											
9					28											
10					30											
11					32											
					34											
					36											

LABORATORY ANALYSES: TP13-1 and TP13-4 were submitted for laboratory analysis of PHCs, VOCs, PAH, and metals.

STAN-MW 122510670 - BOTELER ST - PARCELS 1&amp;2.GPJ SMART.GDT 9/12/13

CLIENT City of Ottawa PROJECT No. 122510670 ORIGINATED BY J.U.  
 LOCATION Boteler Street DATUM NAD 83 COMPILED BY B.C.  
 DATES: BORING July 24, 2013 WATER LEVEL \_\_\_\_\_ TPC ELEV. \_\_\_\_\_ CHECKED BY J.P.D.

DEPTH (m)	ELEVATION (m)	STRATA DESCRIPTION	STRATA PLOT	WATER LEVEL	DEPTH (ft)	VAPOUR CONCENTRATIONS				SAMPLES			
						● %LEL	▲ ppmv			TYPE	NUMBER	N-VALUE	
0	57.93	Concrete blocks, cobbles, boulders, with some brown sand and gravel. Trace silty clay, FILL.  Rocky material causing caving, FILL.			0	● 20	▲ 100	40	60	80			
				2								SA 1	
				4								SA 2	
				6								SA 3	
				8								SA 4	
2	55.9												
	55.4												
		End of testpit at 2.5 mbgs due to caving issues.											
3													
4													
5													
6													
7													
8													
9													
10													
11													

**LABORATORY ANALYSES:** TP14-1 was submitted for laboratory analysis of PHCs, VOCs, PAH, and metals. No other samples were submitted due to low soil quantity and many boulders.

CLIENT City of Ottawa PROJECT No. 122510670 ORIGINATED BY J.U.  
 LOCATION Boteler Street DATUM NAD 83 COMPILED BY B.C.  
 DATES: BORING July 24, 2013 WATER LEVEL \_\_\_\_\_ TPC ELEV. \_\_\_\_\_ CHECKED BY J.P.-D.

DEPTH (m)	ELEVATION (m)	STRATA DESCRIPTION	STRATA PLOT	WATER LEVEL	DEPTH (ft)	VAPOUR CONCENTRATIONS				SAMPLES						
						● %LEL	▲ ppmv	20	40	60	80	TYPE	NUMBER	N-VALUE		
0	58.18					● 20	▲ 100	40	200	60	300	80	400			
		Brown sand with gravel. Some clay, FILL.			2	▲									SA 1	
1	57.2				4	▲									SA 2	
		Some black staining in areas. Red brick debris, FILL.			6	▲									SA 3	
2	56.2				8	▲									SA 4	
	55.7	Light brown SILT with fine sand.			10	▲									SA 5	
3		Inferred BEDROCK at 2.5 mbgs.			12											
4					14											
5					16											
6					18											
7					20											
8					22											
9					24											
10					26											
11					28											
					30											
					32											
					34											
					36											

LABORATORY ANALYSES: TP15-1 and TP15-2 were submitted for laboratory analysis of PHCs, VOCs, PAH, and metals.



CLIENT City of Ottawa PROJECT No. 122510670 ORIGINATED BY J.U.  
 LOCATION Boteler Street DATUM NAD 83 COMPILED BY B.C.  
 DATES: BORING July 24, 2013 WATER LEVEL \_\_\_\_\_ TPC ELEV. \_\_\_\_\_ CHECKED BY J.P-D.

DEPTH (m)	ELEVATION (m)	STRATA DESCRIPTION	STRATA PLOT	WATER LEVEL	DEPTH (ft)	VAPOUR CONCENTRATIONS				SAMPLES											
						● %LEL	▲ ppmv	20	40	60	80	100	200	300	400	TYPE	NUMBER	N-VALUE			
0	58.08	Brown sand with gravel. Trace clay. Some red brick debris, concrete, and boulders, FILL.			0																
					2	▲														SA 1	
1					4	▲														SA 2	
					6	▲														SA 3	
2	56.1				Grey/blue silty clay with debris, bricks and gravel, FILL.			8	▲												SA 4
								10	▲												
3	55.1	12	▲																	SA 6	
		Inferred BEDROCK at 3.0 mbgs.			14																
					16																
					18																
					20																
					22																
					24																
					26																
					28																
					30																
					32																
					34																
					36																

LABORATORY ANALYSES: TP16-1 and TP16-5 were submitted for laboratory analysis of PHCs, VOCs, PAH, and metals.

STAN-MW 122510670 - BOTELER ST - PARCELS 1&amp;2.GPJ SMART.GDT 9/12/13



# TEST PIT RECORD

TP17

CLIENT City of Ottawa PROJECT No. 122510670 ORIGINATED BY J.U.  
 LOCATION Boteler Street DATUM NAD 83 COMPILED BY B.C.  
 DATES: BORING July 24, 2013 WATER LEVEL \_\_\_\_\_ TPC ELEV. \_\_\_\_\_ CHECKED BY J.P-D.

DEPTH (m)	ELEVATION (m)	STRATA DESCRIPTION	STRATA PLOT	WATER LEVEL	DEPTH (ft)	VAPOUR CONCENTRATIONS				SAMPLES					
						● %LEL	▲ ppmv	TYPE	NUMBER	N-VALUE					
0	57.88	Coarse gravel with boulders and cobbles, low soil/sand content, FILL.			0	● 20	▲ 100	40	60	80					
					2	▲							SA 1		
1	56.4	Light brown SILT with fine sand.			4	▲						SA 2			
2					6	▲							SA 3		
	55.4				8	▲							SA 4		
3		Inferred BEDROCK at 2.5 mbgs.			10										
4					12										
5					14										
6					16										
7					18										
8					20										
9					22										
10					24										
					26										
					28										
		30													
		32													
		34													
11		36													

LABORATORY ANALYSES: TP17-1 and TP17-4 were submitted for laboratory analysis of PHCs, VOCs, PAH, and metals.

STAN-MW 122510670 - BOTELER ST - PARCELS 1&2.GPJ SMART.GDT 9/12/13

CLIENT City of Ottawa PROJECT No. 122510670 ORIGINATED BY J.U.  
 LOCATION Boteler Street DATUM NAD 83 COMPILED BY B.C.  
 DATES: BORING July 24, 2013 WATER LEVEL \_\_\_\_\_ TPC ELEV. \_\_\_\_\_ CHECKED BY J.P-D.

DEPTH (m)	ELEVATION (m)	STRATA DESCRIPTION	STRATA PLOT	WATER LEVEL	DEPTH (ft)	VAPOUR CONCENTRATIONS				SAMPLES							
						● %LEL	▲ ppmv	20	40	60	80	100	200	300	400	TYPE	NUMBER
0	57.17					● 20	▲ 100	40	60	80							
		Fine brown sand with some gravel, trace silt, FILL.				▲											SA 1
1	56.2				2												SA 2
		Red brick debris with concrete. Old electrical wires, FILL.			4	▲											SA 3
	55.7																
2	55.2	Concrete debris, FILL.			6	▲											SA 4
		Light brown silt with fine sand. Traces of red brick debris, FILL.			8	▲											SA 5
3	54.2				10	▲											SA 6
		Inferred BEDROCK at 3.0 mbgs.			12												
4					14												
5					16												
6					18												
7					20												
8					22												
9					24												
10					26												
11					28												
					30												
					32												
					34												
					36												

LABORATORY ANALYSES: TP18-1 and 18-6 were submitted for laboratory analysis of PHCs, VOCs, PAH, and metals.

STAN-MW 122510670 - BOTELER ST - PARCELS 1&amp;2.GPJ SMART.GDT 9/12/13

CLIENT City of Ottawa PROJECT No. 122510670 ORIGINATED BY J.U.  
 LOCATION Boteler Street DATUM NAD 83 COMPILED BY B.C.  
 DATES: BORING July 24, 2013 WATER LEVEL \_\_\_\_\_ TPC ELEV. \_\_\_\_\_ CHECKED BY J.P-D.

DEPTH (m)	ELEVATION (m)	STRATA DESCRIPTION	STRATA PLOT	WATER LEVEL	DEPTH (ft)	VAPOUR CONCENTRATIONS				SAMPLES					
						● %LEL	▲ ppmv	20	40	60	80	TYPE	NUMBER	N-VALUE	
0	57.41	Concrete debris, boulders, red bricks. Some metal debris. FILL.	[Cross-hatch pattern]		0	● 20	▲ 100	40	60	80					
1	56.4	Debris and brick. light brown silty sand with grey/black staining in areas, FILL. PHC/creosote odour.	[Cross-hatch pattern]		2	▲							SA 1		
	55.9				4	▲									SA 2
2	55.4	Light brown SILTY SAND. Staining in areas.	[Dotted pattern]		6	▲							SA 3		
		Inferred BEDROCK at 2.0 mbgs.			8								SA 4		
					10										
					12										
					14										
					16										
					18										
					20										
					22										
					24										
					26										
		28													
		30													
		32													
		34													
		36													

LABORATORY ANALYSES: TP19-1 and 19-3 were submitted for laboratory analysis of PHCs, VOCs, PAH, and metals.

CLIENT City of Ottawa PROJECT No. 122510670 ORIGINATED BY J.U.  
 LOCATION Boteler Street DATUM NAD 83 COMPILED BY B.C.  
 DATES: BORING July 24, 2013 WATER LEVEL \_\_\_\_\_ TPC ELEV. \_\_\_\_\_ CHECKED BY J.P-D.

DEPTH (m)	ELEVATION (m)	STRATA DESCRIPTION	STRATA PLOT	WATER LEVEL	DEPTH (ft)	VAPOUR CONCENTRATIONS				SAMPLES								
						● %LEL	▲ ppmv	20	40	60	80	100	200	300	400	TYPE	NUMBER	N-VALUE
0	57.94					● 20	▲ 100	40	60	80								
	57.4	Concrete boulders, medium brown sand and gravel, FILL.			▲												SA 1	
	56.9	Fine grey sand and some concrete debris, FILL.			▲													SA 2
1		Medium brown sand with red brick debris. Some inferred coal debris, FILL.			▲													SA 3
2	55.9				▲													SA 4
	55.4	Light brown silty sand with debris. Trace clay. Pieces of ceramic plates found, FILL.			▲													SA 5
3		Inferred BEDROCK at 2.5 mbgs.																
4																		
5																		
6																		
7																		
8																		
9																		
10																		
11																		

LABORATORY ANALYSES: TP20-1 and 20-4 were submitted for laboratory analysis of PHCs, VOCs, PAH, and metals.

STAN-MW 122510670 - BOTELER ST - PARCELS 1&amp;2.GPJ SMART.GDT 9/12/13

CLIENT City of Ottawa PROJECT No. 122510670 ORIGINATED BY J.U.  
 LOCATION Boteler Street DATUM NAD 83 COMPILED BY B.C.  
 DATES: BORING July 24, 2013 WATER LEVEL \_\_\_\_\_ TPC ELEV. \_\_\_\_\_ CHECKED BY J.P.-D.

DEPTH (m)	ELEVATION (m)	STRATA DESCRIPTION	STRATA PLOT	WATER LEVEL	DEPTH (ft)	VAPOUR CONCENTRATIONS				SAMPLES							
						● %LEL	▲ ppmv	20	40	60	80	100	200	300	400	TYPE	NUMBER
0	57.97																
	57.5	Concrete boulders, coarse gravel, red bricks, and medium brown sand with gravel, FILL.	[Cross-hatch pattern]														SA 1
1	57.0	Medium brown sand with gravel, FILL. Fine grey sand layer with staining in areas.	[Cross-hatch pattern]		2												SA 2
	56.5	Medium black SAND. Staining heavy in areas with creosote odour. Creosote debris found, possible building materials.	[Cross-hatch pattern]		4												SA 3
2	56.0	Concrete and brick debris with some sand, FILL.	[Cross-hatch pattern]		6	▲											SA 4
	55.5	Light brown SANDY SILT.	[Vertical lines pattern]		8	▲											SA 5
3		Inferred BEDROCK at 2.5 mbgs.			10												
4					12												
5					14												
6					16												
7					18												
8					20												
9					22												
10					24												
					26												
					28												
					30												
					32												
					34												
11					36												

LABORATORY ANALYSES: TP21-1 and 21-3 were submitted for laboratory analysis of PHCs, VOCs, PAH, and metals.

CLIENT City of Ottawa PROJECT No. 122510670 ORIGINATED BY J.U.  
 LOCATION Boteler Street DATUM NAD 83 COMPILED BY B.C.  
 DATES: BORING July 24, 2013 WATER LEVEL \_\_\_\_\_ TPC ELEV. \_\_\_\_\_ CHECKED BY J.P-D.

DEPTH (m)	ELEVATION (m)	STRATA DESCRIPTION	STRATA PLOT	WATER LEVEL	DEPTH (ft)	VAPOUR CONCENTRATIONS					SAMPLES					
						● %LEL	▲ ppmv	20	40	60	80	100	200	300	400	TYPE
0	58.05					● 20	▲ 100	40	60	80						
		Cobbles, concrete debris, sand and gravel, FILL.					▲								SA	1
1	57.0				2		▲								SA	2
		Metal and wood debris, FILL.			4		▲								SA	3
	56.5															
		Light brown SILTY SAND with trace clay.			6		▲								SA	4
2	56.0															
		Inferred BEDROCK at 2.0 mbgs.			8											
3					10											
4					12											
5					14											
6					16											
7					18											
8					20											
9					22											
10					24											
11					26											
					28											
					30											
					32											
					34											
					36											

LABORATORY ANALYSES: TP23-1 and 23-3 were submitted for laboratory analysis of PHCs, VOCs, PAH, and metals.

STAN-MW 122510670 - BOTELER ST - PARCELS 1&amp;2.GPJ SMART.GDT 9/12/13

CLIENT City of Ottawa PROJECT No. 122510670 ORIGINATED BY J.U.  
 LOCATION Boteler Street DATUM NAD 83 COMPILED BY B.C.  
 DATES: BORING July 24, 2013 WATER LEVEL \_\_\_\_\_ TPC ELEV. \_\_\_\_\_ CHECKED BY J.P-D.

DEPTH (m)	ELEVATION (m)	STRATA DESCRIPTION	STRATA PLOT	WATER LEVEL	DEPTH (ft)	VAPOUR CONCENTRATIONS				SAMPLES					
						● %LEL	▲ ppmv	20	40	60	80	TYPE	NUMBER	N-VALUE	
0	57.56	Brown medium sand with gravel and cobbles. Some red brick debris, metal and wood debris, FILL.			0	●	▲								
1					2									SA 1	
2	55.6				4									SA 2	
3	54.6				6									SA 3	
4					8									SA 4	
5					10									SA 5	
6		Inferred BEDROCK at 3.0 mbgs.			10										
7					12										
8					14										
9					16										
10					18										
11					20										
					22										
					24										
					26										
					28										
					30										
		32													
		34													
		36													

LABORATORY ANALYSES: TP24-1 and 24-6 were submitted for laboratory analysis of PHCs, VOCs, PAH, and metals

STAN-MW 122510670 - BOTELER ST - PARCELS 1&amp;2.GPJ SMART.GDT 9/12/13



CLIENT City of Ottawa PROJECT No. 122510670 ORIGINATED BY J.U.  
 LOCATION Boteler Street DATUM NAD 83 COMPILED BY B.C.  
 DATES: BORING July 24, 2013 WATER LEVEL \_\_\_\_\_ TPC ELEV. \_\_\_\_\_ CHECKED BY J.P-D.

DEPTH (m)	ELEVATION (m)	STRATA DESCRIPTION	STRATA PLOT	WATER LEVEL	DEPTH (ft)	VAPOUR CONCENTRATIONS				SAMPLES						
						● %LEL	▲ ppmv	20	40	60	80	TYPE	NUMBER	N-VALUE		
0	57.58					● 20	▲ 100	40	200	60	300	80	400			
		Medium brown sand with gravel, FILL.				▲									SA 1	
1	56.6	Electrical wires and concrete conduit debris, FILL.			2	▲									SA 2	
	56.1	Medium brown sand with gravel, FILL.			4	▲									SA 3	
2	55.6	Light brown/grey fine SAND with silt. Trace clay.			6	▲									SA 4	
	55.1	Inferred BEDROCK at 2.5 mbgs.			8	▲									SA 5	
3					10											
4					12											
5					14											
6					16											
7					18											
8					20											
9					22											
10					24											
11					26											
					28											
					30											
					32											
					34											
					36											

LABORATORY ANALYSES: TP25-1 and 25-3 were submitted for laboratory analysis of PHCs, VOCs, PAH, and metals.

STAN-MW 122510670 - BOTELER ST - PARCELS 1&amp;2.GPJ SMART.GDT 9/12/13

CLIENT City of Ottawa PROJECT No. 122510670 ORIGINATED BY J.U.  
 LOCATION Boteler Street DATUM NAD 83 COMPILED BY B.C.  
 DATES: BORING July 24, 2013 WATER LEVEL \_\_\_\_\_ TPC ELEV. \_\_\_\_\_ CHECKED BY J.P-D.

DEPTH (m)	ELEVATION (m)	STRATA DESCRIPTION	STRATA PLOT	WATER LEVEL	DEPTH (ft)	VAPOUR CONCENTRATIONS				SAMPLES				
						● %LEL	▲ ppmv	20	40	60	80	TYPE	NUMBER	N-VALUE
0	57.99	Coarse grey/brown sand with gravel. Some metal debris, FILL.			0	● 20	▲ 100	40	60	80				
					2	▲							SA 1	
1	56.5				4	▲							SA 3	
2	56.0				6	▲							SA 4	
		Light brown medium SAND.			8									
		Inferred BEDROCK at 2.0 mbgs.			10									
					12									
					14									
					16									
					18									
					20									
					22									
					24									
					26									
					28									
					30									
		32												
		34												
		36												

LABORATORY ANALYSES: TP26-1 and 26-2 were submitted for laboratory analysis of PHCs, VOCs, PAH, and metals.

STAN-MW 122510670 - BOTELER ST - PARCELS 1&amp;2.GPJ SMART.GDT 9/12/13

CLIENT City of Ottawa PROJECT No. 122510670 ORIGINATED BY J.U.  
 LOCATION Boteler Street DATUM NAD 83 COMPILED BY B.C.  
 DATES: BORING July 24, 2013 WATER LEVEL \_\_\_\_\_ TPC ELEV. \_\_\_\_\_ CHECKED BY J.P-D.

DEPTH (m)	ELEVATION (m)	STRATA DESCRIPTION	STRATA PLOT	WATER LEVEL	DEPTH (ft)	VAPOUR CONCENTRATIONS				SAMPLES			
						● %LEL	▲ ppmv	20	40	60	80	TYPE	NUMBER
0	57.40	Medium brown sand, some gravel, concrete debris and cobble, FILL. Plastic electrical conduits near surface.			0	● 20	▲ 100	40	60	80			
1					2		▲					SA 1	
1					4		▲					SA 2	
1	55.9	Light brown SILTY SAND.			4		▲					SA 3	
2					6		▲					SA 4	
2	54.9				8		▲					SA 5	
3		Inferred BEDROCK at 2.5 mbgs.			10								
4					12								
5					14								
6					16								
7					18								
8					20								
9					22								
10					24								
11					26								
					28								
					30								
					32								
					34								
					36								

LABORATORY ANALYSES: TP27-1 and 27-5 were submitted for laboratory analysis of PHCs, VOCs, PAH, and metals.

STAN-MW 122510670 - BOTELER ST - PARCELS 1&amp;2.GPJ SMART.GDT 9/12/13



# TEST PIT RECORD

TP28

CLIENT City of Ottawa PROJECT No. 122510670 ORIGINATED BY J.U.  
 LOCATION Boteler Street DATUM NAD 83 COMPILED BY B.C.  
 DATES: BORING July 24, 2013 WATER LEVEL \_\_\_\_\_ TPC ELEV. \_\_\_\_\_ CHECKED BY J.P-D.

DEPTH (m)	ELEVATION (m)	STRATA DESCRIPTION	STRATA PLOT	WATER LEVEL	DEPTH (ft)	VAPOUR CONCENTRATIONS				SAMPLES				
						● %LEL	▲ ppmv	TYPE	NUMBER	N-VALUE				
0	57.38	Coarse brown sand with some gravel, FILL. Electrical wire debris.			0	● 20	▲ 100	40	60	80				
					2	▲							SA 1	
					4	▲							SA 2	
1	55.9				Light brown fine SILTY SAND with trace clay.			6	▲					SA 3
								8	▲					
2	54.9												SA 5	
3		Inferred BEDROCK at 2.5 mbgs			10									
					12									
					14									
					16									
					18									
					20									
					22									
					24									
					26									
					28									
					30									
					32									
					34									
11					36									

LABORATORY ANALYSES: TP28-1 and 28-3 were submitted for laboratory analysis of PHCs, VOCs, PAH, and metals.

STAN-MW 122510670 - BOTELER ST - PARCELS 1&2.GPJ SMART.GDT 9/12/13

CLIENT City of Ottawa PROJECT No. 122510670 ORIGINATED BY J.U.  
 LOCATION Boteler Street DATUM NAD 83 COMPILED BY B.C.  
 DATES: BORING July 24, 2013 WATER LEVEL \_\_\_\_\_ TPC ELEV. \_\_\_\_\_ CHECKED BY J.P-D.

DEPTH (m)	ELEVATION (m)	STRATA DESCRIPTION	STRATA PLOT	WATER LEVEL	DEPTH (ft)	VAPOUR CONCENTRATIONS				SAMPLES					
						● %LEL	▲ ppmv	20	40	60	80	TYPE	NUMBER	N-VALUE	
0	58.05	Coarse brown sand with coarse gravel. Some cobbles, concrete and debris, FILL.			0	●	▲								
					2	▲								SA 1	
1	56.6				4	▲								SA 2	
					6	▲								SA 3	
2	55.6				8	▲								SA 4	
		Inferred BEDROCK at 2.5 mbgs.			10										
3					12										
4					14										
5					16										
6					18										
7					20										
8					22										
9					24										
10					26										
					28										
11					30										

LABORATORY ANALYSES: TP29-1 and 29-4 were submitted for laboratory analysis of PHCs, VOCs, PAH, and metals.



# Log of Borehole MW13-1A



Project No: OTT-22029003-A0

Figure No. 8

Project: Monitoring Well Decommissioning and Re-Installation

Page. 1 of 2

Location: 187 Boteler Street, Ottawa, Ontario

Date Drilled: January 30th, 2023

Split Spoon Sample

Combustible Vapour Reading

Drill Type: GM100GT trackmount

Auger Sample

Natural Moisture Content

SPT (N) Value

Atterberg Limits

Datum: Geodetic Elevation

Dynamic Cone Test

Undrained Triaxial at

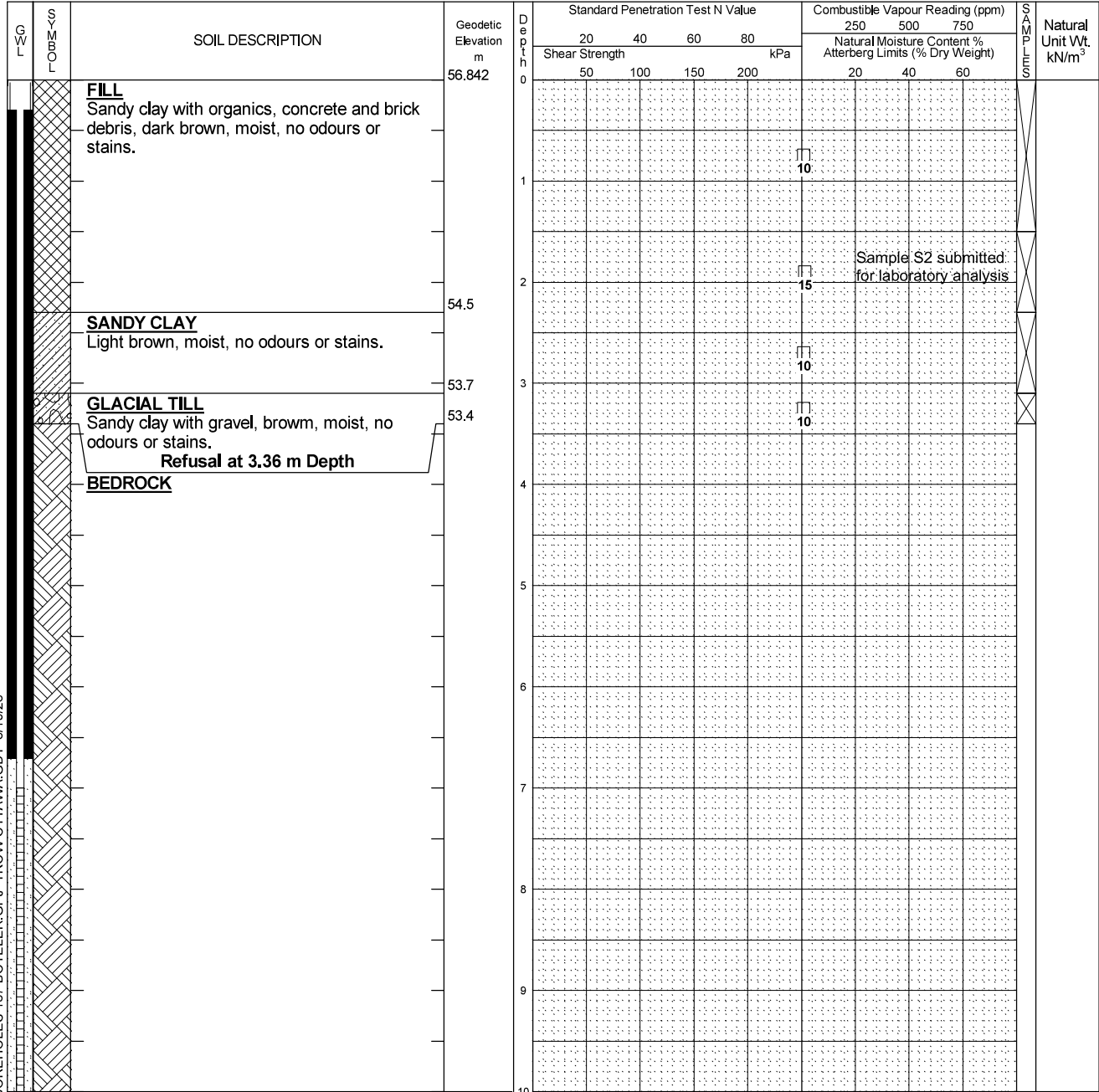
Shelby Tube

% Strain at Failure

Logged by: P.O. Checked by: M.M.

Shear Strength by Vane Test

Shear Strength by Penetrometer Test



Continued Next Page

**NOTES:**

- Borehole data requires interpretation by EXP before use by others
- The borehole was instrumented with a 51 mm diameter PVC monitoring well upon completion.
- Field work was supervised by an EXP representative.
- See Notes on Sample Descriptions
- Log to be read with EXP Report No. OTT-22029003-A0

**WATER LEVEL RECORDS**

Date	Water Level (m)	Hole Open To (m)
Feb 22, 2023	5.6	

**CORE DRILLING RECORD**

Run No.	Depth (m)	% Rec.	RQD %

LOG OF BOREHOLE LOGS OF BOREHOLES 187 BOTELER, GPJ, TROW OTTAWA, GDT, 3/10/23

# Log of Borehole MW13-1A



Project No: OTT-22029003-A0

Figure No. 8

Project: Monitoring Well Decommissioning and Re-Installation

Page. 2 of 2

L V G	L O B S E S	SOIL DESCRIPTION	Geodetic Elevation m	D e p t h	Standard Penetration Test N Value				Combustible Vapour Reading (ppm)			N a t u r a l U n i t W t. kN/m <sup>3</sup>
					20	40	60	80	250	500	750	
					Shear Strength kPa				Natural Moisture Content % Atterberg Limits (% Dry Weight)			
			46.842	10								
		<b>Borehole Terminated at 10.7 m Depth, monitoring well installed with above ground casing</b>	46.7									

LOG OF BOREHOLE LOGS OF BOREHOLES 187 BOTELER.GPJ TROW OTTAWA.GDT 3/10/23

**NOTES:**

- Borehole data requires interpretation by EXP before use by others
- The borehole was instrumented with a 51 mm diameter PVC monitoring well upon completion.
- Field work was supervised by an EXP representative.
- See Notes on Sample Descriptions
- Log to be read with EXP Report No. OTT-22029003-A0

**WATER LEVEL RECORDS**

Date	Water Level (m)	Hole Open To (m)
Feb 22, 2023	5.6	

**CORE DRILLING RECORD**

Run No.	Depth (m)	% Rec.	RQD %



# Log of Borehole MW13-2A



Project No: OTT-22029003-A0

Figure No. 9

Project: Monitoring Well Decommissioning and Re-Installation

Page. 1 of 2

Location: 187 Boteler Street, Ottawa, Ontario

Date Drilled: January 30th, 2023

Split Spoon Sample

Combustible Vapour Reading

Drill Type: GM100GT trackmount

Auger Sample

Natural Moisture Content

SPT (N) Value

Atterberg Limits

Datum: Geodetic Elevation

Dynamic Cone Test

Undrained Triaxial at

Shelby Tube

% Strain at Failure

Logged by: P.O. Checked by: M.M.

Shear Strength by

Shear Strength by

Vane Test

Penetrometer Test

L W G	SOIL DESCRIPTION	Geodetic Elevation m	Depth m	Standard Penetration Test N Value				Combustible Vapour Reading (ppm)			Natural Unit Wt. kN/m <sup>3</sup>
				Shear Strength kPa				250	500	750	
				20	40	60	80	Natural Moisture Content % Atterberg Limits (% Dry Weight)			
50	100	150	200	20	40	60					
	<b>FILL</b> Silty clay with concrete debris, grey, moist, no odours or stains.	57.027	0								
			1								
			2								
		54.2	3								
	<b>BEDROCK</b>		4								
			5								
			6								
			7								
			8								
			9								
			10								

LOG OF BOREHOLE 187 BOTELER, GPJ, TROW OTTAWA, GDT 3/10/23

Refusal at 2.75 m Depth

Continued Next Page

**NOTES:**

- Borehole data requires interpretation by EXP before use by others
- The borehole was instrumented with a 51 mm diameter PVC monitoring well upon completion.
- Field work was supervised by an EXP representative.
- See Notes on Sample Descriptions
- Log to be read with EXP Report No. OTT-22029003-A0

**WATER LEVEL RECORDS**

Date	Water Level (m)	Hole Open To (m)
Feb 22, 2023	Dry	

**CORE DRILLING RECORD**

Run No.	Depth (m)	% Rec.	RQD %

# Log of Borehole MW13-2A



Project No: OTT-22029003-A0

Figure No. 9

Project: Monitoring Well Decommissioning and Re-Installation

Page. 2 of 2

L V G	L O B S E R V E D	SOIL DESCRIPTION	Geodetic Elevation m	D e p t h	Standard Penetration Test N Value				Combustible Vapour Reading (ppm)			Natural Unit Wt. kN/m <sup>3</sup>
					20	40	60	80	250	500	750	
					Shear Strength kPa				Natural Moisture Content % Atterberg Limits (% Dry Weight)			
			47.027	10	50	100	150	200	20	40	60	
		<b>Borehole Terminated at 10.7 m Depth, monitoring well installed with above ground casing</b>	46.9									

LOG OF BOREHOLE LOGS OF BOREHOLES 187 BOTELER.GPJ TROW OTTAWA.GDT 3/10/23

- NOTES:
- Borehole data requires interpretation by EXP before use by others
  - The borehole was instrumented with a 51 mm diameter PVC monitoring well upon completion.
  - Field work was supervised by an EXP representative.
  - See Notes on Sample Descriptions
  - Log to be read with EXP Report No. OTT-22029003-A0

WATER LEVEL RECORDS		
Date	Water Level (m)	Hole Open To (m)
Feb 22, 2023	Dry	

CORE DRILLING RECORD			
Run No.	Depth (m)	% Rec.	RQD %

# Log of Borehole MW13-10A



Project No: OTT-22029003-A0  
 Project: Monitoring Well Decommissioning and Re-Installation  
 Location: 187 Boteler Street, Ottawa, Ontario  
 Date Drilled: February 2nd, 2023  
 Drill Type: GM100GT trackmount  
 Datum: Geodetic Elevation  
 Logged by: P.O. Checked by: M.M.

Figure No. 3  
 Page. 1 of 2

- |                             |                                     |   |                                     |
|-----------------------------|-------------------------------------|---|-------------------------------------|
| Split Spoon Sample          | <input checked="" type="checkbox"/> | Combustible Vapour Reading                | <input type="checkbox"/>            |
| Auger Sample                | <input type="checkbox"/>            | Natural Moisture Content                  | <input checked="" type="checkbox"/> |
| SPT (N) Value               | <input type="checkbox"/>            | Atterberg Limits                          | <input type="checkbox"/>            |
| Dynamic Cone Test           | <input type="checkbox"/>            | Undrained Triaxial at % Strain at Failure | <input type="checkbox"/>            |
| Shelby Tube                 | <input type="checkbox"/>            | Shear Strength by Penetrometer Test       | <input type="checkbox"/>            |
| Shear Strength by Vane Test | <input type="checkbox"/>            |   |                                     |

G L W	L O M S	SOIL DESCRIPTION	Geodetic Elevation m	D e p t h	Standard Penetration Test N Value				Combustible Vapour Reading (ppm)			S a m p l e	N a t u r a l U n i t W t. k N /m <sup>3</sup>			
									250	500	750			Natural Moisture Content %		
					Shear Strength kPa				Atterberg Limits (% Dry Weight)							
		<b>FILL</b> Sand, brown, moist, no odours or stains.	58.335	0												
		<b>FILL</b> Silty clay turning to gravel with silty clay	58.0	0												
				1												
				2												
		<b>Refusal at 2.44 m Depth</b>		2												
		<b>BEDROCK</b>	55.9	2												
				3												
				4												
				5												
				6												
				7												
				8												
				9												
				10												

LOG OF BOREHOLE 187 BOTELER.GPJ TROW OTTAWA.GDT 3/10/23

*Continued Next Page*

- NOTES:**
- Borehole data requires interpretation by EXP before use by others
  - The borehole was instrumented with a 51 mm diameter PVC monitoring well upon completion.
  - Field work was supervised by an EXP representative.
  - See Notes on Sample Descriptions
  - Log to be read with EXP Report No. OTT-22029003-A0

WATER LEVEL RECORDS		
Date	Water Level (m)	Hole Open To (m)
Feb 22, 2023	15.5	

CORE DRILLING RECORD			
Run No.	Depth (m)	% Rec.	RQD %

# Log of Borehole MW13-10A



Project No: OTT-22029003-A0

Figure No. 3

Project: Monitoring Well Decommissioning and Re-Installation

Page. 2 of 2

L O G	L O G S	SOIL DESCRIPTION	Geodetic Elevation m	D e p t h	Standard Penetration Test N Value				Combustible Vapour Reading (ppm)			N a t u r a l  U n i t W t.  kN/m <sup>3</sup>
					Shear Strength				Natural Moisture Content % Atterberg Limits (% Dry Weight)			
					20	40	60	80	250	500	750	
		<b>BEDROCK</b> (continued)	48.335	10	50	100	150	200	20	40	60	
				11								
				12								
				13								
				14								
			43.0	15								
		<b>Borehole Terminated at 15.25 m Depth, monitoring well installed with above ground casing</b>										

LOG OF BOREHOLE LOGS OF BOREHOLES 187 BOTELER.GPJ TROW OTTAWA.GDT 3/10/23

- NOTES:**
1. Borehole data requires interpretation by EXP before use by others
  2. The borehole was instrumented with a 51 mm diameter PVC monitoring well upon completion.
  3. Field work was supervised by an EXP representative.
  4. See Notes on Sample Descriptions
  5. Log to be read with EXP Report No. OTT-22029003-A0

WATER LEVEL RECORDS		
Date	Water Level (m)	Hole Open To (m)
Feb 22, 2023	15.5	

CORE DRILLING RECORD			
Run No.	Depth (m)	% Rec.	RQD %

# Log of Borehole MW13-11A



Project No: OTT-22029003-A0

Figure No. 4

Project: Monitoring Well Decommissioning and Re-Installation

Page. 1 of 2

Location: 187 Boteler Street, Ottawa, Ontario

Date Drilled: February 1st, 2023

Split Spoon Sample

Combustible Vapour Reading

Drill Type: GM100GT trackmount

Auger Sample

Natural Moisture Content

SPT (N) Value

Atterberg Limits

Datum: Geodetic Elevation

Dynamic Cone Test

Undrained Triaxial at

Shelby Tube

% Strain at Failure

Logged by: P.O. Checked by: M.M.

Shear Strength by Vane Test

Shear Strength by Penetrometer Test

G W L	L O M S	SOIL DESCRIPTION	Geodetic Elevation m	D e p t h	Standard Penetration Test N Value				Combustible Vapour Reading (ppm)			S a m p l e T e s t R e c o r d	Natural Unit Wt. kN/m <sup>3</sup>	
					Shear Strength kPa				250	500	750			
					20	40	60	80	Natural Moisture Content % Atterberg Limits (% Dry Weight)					
50	100	150	200	20	40	60								
		<b>SILTY SAND WITH CLAY</b> Light brown, moist, no odours or stains.	58.357	0										
		<b>GRAVEL</b> poor sample recovery.	57.6	1										
		<b>SILTY CLAY</b> Brown, wet, no odours or stains.	54.7	3										
		<b>BEDROCK</b>	54.3	4										
				5										
				6										
				7										
				8										
				9										
				10										

Continued Next Page

**NOTES:**

- Borehole data requires interpretation by EXP before use by others
- The borehole was instrumented with a 51 mm diameter PVC monitoring well upon completion.
- Field work was supervised by an EXP representative.
- See Notes on Sample Descriptions
- Log to be read with EXP Report No. OTT-22029003-A0

**WATER LEVEL RECORDS**

Date	Water Level (m)	Hole Open To (m)
Feb 22, 2023	7.1	

**CORE DRILLING RECORD**

Run No.	Depth (m)	% Rec.	RQD %

LOG OF BOREHOLE LOGS OF BOREHOLES 187 BOTELER.GPJ TROW OTTAWA.GDT 3/10/23

# Log of Borehole MW13-11A



Project No: OTT-22029003-A0

Figure No. 4

Project: Monitoring Well Decommissioning and Re-Installation

Page. 2 of 2

L G	L O B S E R V E D	SOIL DESCRIPTION	Geodetic Elevation m	D e p t h	Standard Penetration Test N Value				Combustible Vapour Reading (ppm)			C O M P L E T E D	Natural Unit Wt. kN/m <sup>3</sup>
					Shear Strength kPa				Natural Moisture Content % Atterberg Limits (% Dry Weight)				
					20	40	60	80	250	500	750		
		<b>BEDROCK</b> (continued)	48.357	10	50	100	150	200	20	40	60		
				11									
				12									
				13									
				14									
				15									
		<b>Borehole Terminated at 15.25 m Depth, monitoring well installed with above ground casing</b>	43.1										

LOG OF BOREHOLE LOGS OF BOREHOLES 187 BOTELER.GPJ TROW OTTAWA.GDT 3/10/23

- NOTES:
1. Borehole data requires interpretation by EXP before use by others
  2. The borehole was instrumented with a 51 mm diameter PVC monitoring well upon completion.
  3. Field work was supervised by an EXP representative.
  4. See Notes on Sample Descriptions
  5. Log to be read with EXP Report No. OTT-22029003-A0

WATER LEVEL RECORDS		
Date	Water Level (m)	Hole Open To (m)
Feb 22, 2023	7.1	

CORE DRILLING RECORD			
Run No.	Depth (m)	% Rec.	RQD %

# Log of Borehole MW13-12A



Project No: OTT-22029003-A0

Figure No. 5

Project: Monitoring Well Decommissioning and Re-Installation

Page. 1 of 2

Location: 187 Boteler Street, Ottawa, Ontario

Date Drilled: January 31st, 2023

Split Spoon Sample

Combustible Vapour Reading

Drill Type: GM100GT trackmount

Auger Sample

Natural Moisture Content

SPT (N) Value

Atterberg Limits

Datum: Geodetic Elevation

Dynamic Cone Test

Undrained Triaxial at

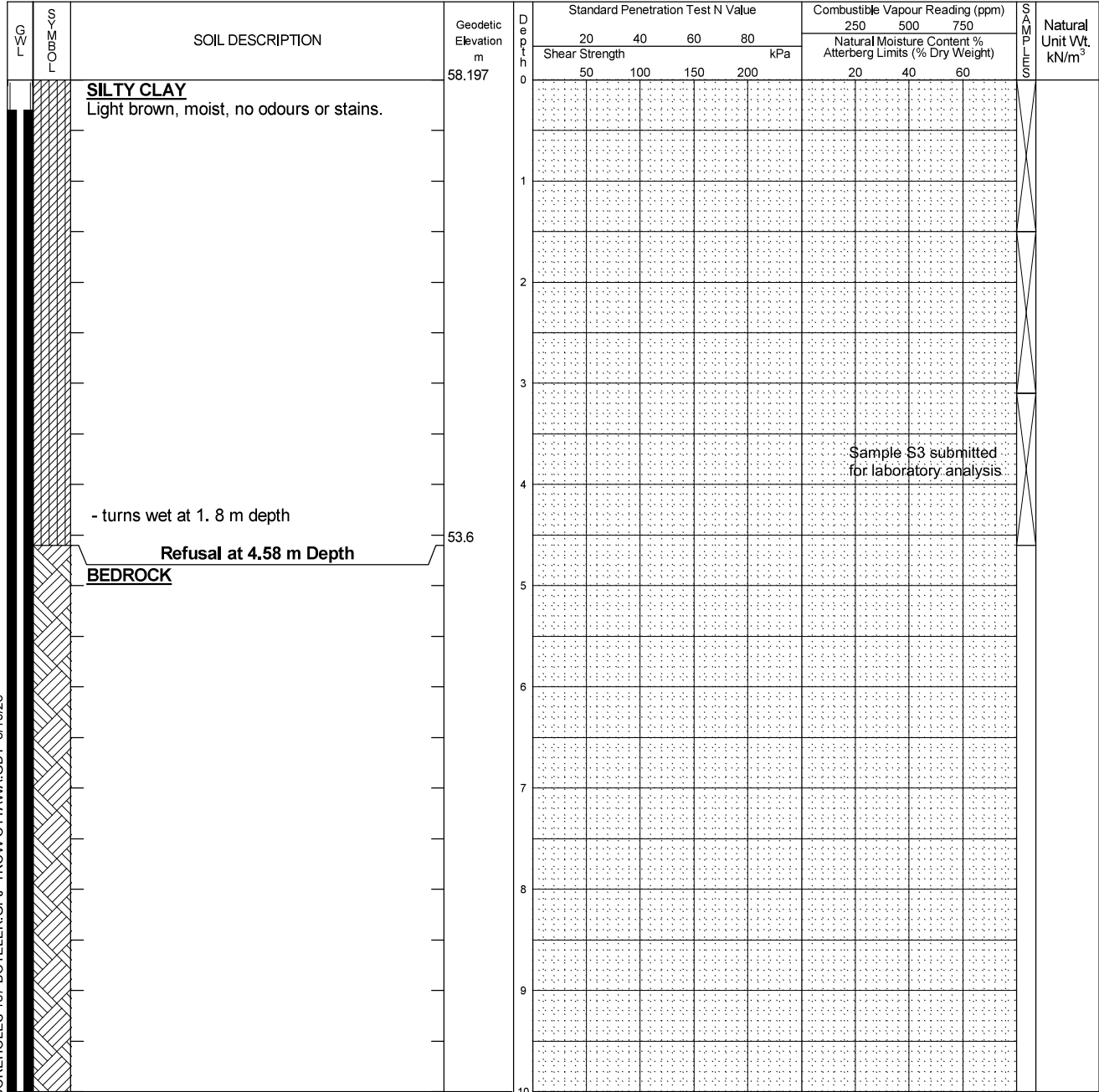
Shelby Tube

% Strain at Failure

Logged by: P.O. Checked by: M.M.

Shear Strength by Vane Test

Shear Strength by Penetrometer Test



LOG OF BOREHOLE LOGS OF BOREHOLES 187 BOTELER.GPJ TROW OTTAWA.GDT 3/10/23

Continued Next Page

- NOTES:
- Borehole data requires interpretation by EXP before use by others
  - The borehole was instrumented with a 51 mm diameter PVC monitoring well upon completion.
  - Field work was supervised by an EXP representative.
  - See Notes on Sample Descriptions
  - Log to be read with EXP Report No. OTT-22029003-A0

WATER LEVEL RECORDS		
Date	Water Level (m)	Hole Open To (m)
Feb 22, 2023	Dry	

CORE DRILLING RECORD			
Run No.	Depth (m)	% Rec.	RQD %

# Log of Borehole MW13-12A



Project No: OTT-22029003-A0

Figure No. 5

Project: Monitoring Well Decommissioning and Re-Installation

Page. 2 of 2

LOG	SOIL DESCRIPTION	Geodetic Elevation m	Depth	Standard Penetration Test N Value				Combustible Vapour Reading (ppm)			Natural Unit Wt. kN/m <sup>3</sup>
				Shear Strength kPa				Natural Moisture Content % Atterberg Limits (% Dry Weight)			
				20	40	60	80	250	500	750	
L O B E S	<b>BEDROCK (continued)</b>	48.197	10	50	100	150	200	20	40	60	
			11								
			12								
			13								
			14								
		42.9	15								
	<b>Borehole Terminated at 15.25 m Depth, monitoring well installed with above ground casing</b>										

LOG OF BOREHOLE LOGS OF BOREHOLES 187 BOTELER.GPJ TROW OTTAWA.GDT 3/10/23

- NOTES:**
1. Borehole data requires interpretation by EXP before use by others
  2. The borehole was instrumented with a 51 mm diameter PVC monitoring well upon completion.
  3. Field work was supervised by an EXP representative.
  4. See Notes on Sample Descriptions
  5. Log to be read with EXP Report No. OTT-22029003-A0

WATER LEVEL RECORDS		
Date	Water Level (m)	Hole Open To (m)
Feb 22, 2023	Dry	

CORE DRILLING RECORD			
Run No.	Depth (m)	% Rec.	RQD %



# Log of Borehole MW13-13A



Project No: OTT-22029003-A0

Figure No. 6

Project: Monitoring Well Decommissioning and Re-Installation

Page. 1 of 2

Location: 187 Boteler Street, Ottawa, Ontario

Date Drilled: January 30th, 2023

Split Spoon Sample

Combustible Vapour Reading

Drill Type: GM100GT trackmount

Auger Sample

Natural Moisture Content

SPT (N) Value

Atterberg Limits

Datum: Geodetic Elevation

Dynamic Cone Test

Undrained Triaxial at

Shelby Tube

% Strain at Failure

Logged by: P.O. Checked by: M.M.

Shear Strength by Vane Test

Shear Strength by Penetrometer Test

L O G O F B O R E H O L E S	SOIL DESCRIPTION	Geodetic Elevation m	D e p t h m	Standard Penetration Test N Value				Combustible Vapour Reading (ppm)			S a m p l e T e s t R e c o r d	Natural Unit Wt. kN/m <sup>3</sup>
				Shear Strength kPa				250	500	750		
				20	40	60	80	Natural Moisture Content % Atterberg Limits (% Dry Weight)				
	<b>FILL</b> Silty clay with gravel, some brick debris, brown with black staining, moist, no odours.	57.36	0									
			1									
	<b>SILTY CLAY</b> Light brown, moist, no odours or stains.	55.9	2									
			3									
	<b>GLACIAL TILL</b> Sandy clay with gravel, brown, moist, no odours or stains.	54.9	4									
	<b>Refusal at 3.20 m Depth</b>		5									
	<b>BEDROCK</b>	54.2	6									
			7									
			8									
			9									
			10									

LOG OF BOREHOLE LOGS OF BOREHOLES 187 BOTELER.GPJ TROW OTTAWA.GDT 3/10/23

Continued Next Page

- NOTES:
- Borehole data requires interpretation by EXP before use by others
  - The borehole was instrumented with a 51 mm diameter PVC monitoring well upon completion.
  - Field work was supervised by an EXP representative.
  - See Notes on Sample Descriptions
  - Log to be read with EXP Report No. OTT-22029003-A0

WATER LEVEL RECORDS		
Date	Water Level (m)	Hole Open To (m)
Feb 22, 2023	Dry	

CORE DRILLING RECORD			
Run No.	Depth (m)	% Rec.	RQD %

# Log of Borehole MW13-13A



Project No: OTT-22029003-A0

Figure No. 6

Project: Monitoring Well Decommissioning and Re-Installation

Page. 2 of 2

SOIL DESCRIPTION	Geodetic Elevation m	Depth	Standard Penetration Test N Value				Combustible Vapour Reading (ppm)			Natural Unit Wt. kN/m <sup>3</sup>
			20	40	60	80	250	500	750	
			Shear Strength kPa				Natural Moisture Content % Atterberg Limits (% Dry Weight)			
			50	100	150	200	20	40	60	
<b>BEDROCK</b> (continued)	47.36	10								
		11								
		12								
<b>Borehole Terminated at 12.20 m Depth, monitoring well installed with above ground casing</b>	45.2									

LOG OF BOREHOLE LOGS OF BOREHOLES 187 BOTELER.GPJ TROW OTTAWA.GDT 3/10/23

- NOTES:
- Borehole data requires interpretation by EXP before use by others
  - The borehole was instrumented with a 51 mm diameter PVC monitoring well upon completion.
  - Field work was supervised by an EXP representative.
  - See Notes on Sample Descriptions
  - Log to be read with EXP Report No. OTT-22029003-A0

WATER LEVEL RECORDS		
Date	Water Level (m)	Hole Open To (m)
Feb 22, 2023	Dry	

CORE DRILLING RECORD			
Run No.	Depth (m)	% Rec.	RQD %

# Log of Borehole MW13-14A



Project No: OTT-22029003-A0

Figure No. 7

Project: Monitoring Well Decommissioning and Re-Installation

Page. 1 of 2

Location: 187 Boteler Street, Ottawa, Ontario

Date Drilled: January 31st, 2023

Split Spoon Sample

Combustible Vapour Reading

Drill Type: GM100GT trackmount

Auger Sample

Natural Moisture Content

SPT (N) Value

Atterberg Limits

Datum: Geodetic Elevation

Dynamic Cone Test

Undrained Triaxial at % Strain at Failure

Shelby Tube

Shear Strength by Vane Test

Shear Strength by Penetrometer Test

Logged by: P.O. Checked by: M.M.

L O G L E G E N D	SOIL DESCRIPTION	Geodetic Elevation m	D e p t h m	Standard Penetration Test N Value				Combustible Vapour Reading (ppm)			S a m p l e T e s t R e c o r d	Natural Unit Wt. kN/m <sup>3</sup>
				Shear Strength kPa				250	500	750		
				20	40	60	80	Natural Moisture Content % Atterberg Limits (% Dry Weight)				
	<b>FILL</b> Silty clay with gravel, moist, no odours or stains.	57.265	0									
	<b>SANDY CLAY</b> Light brown turning grey, moist turnig wet, no odours or stains.	56.5	1									
			2									
	- turns wet at 1.8 m depth - turns grey at 3.4 m dpeth <b>Refusal at 3.20 m Depth</b>		3									
	<b>BEDROCK</b>	53.6	4									
			5									
			6									
			7									
			8									
			9									
			10									

Continued Next Page

**NOTES:**

- Borehole data requires interpretation by EXP before use by others
- The borehole was instrumented with a 51 mm diameter PVC monitoring well upon completion.
- Field work was supervised by an EXP representative.
- See Notes on Sample Descriptions
- Log to be read with EXP Report No. OTT-22029003-A0

**WATER LEVEL RECORDS**

Date	Water Level (m)	Hole Open To (m)
Feb 22, 2023	4.3	

**CORE DRILLING RECORD**

Run No.	Depth (m)	% Rec.	RQD %

LOG OF BOREHOLE LOGS OF BOREHOLES 187 BOTELER.GPJ TROW OTTAWA.GDT 3/10/23

# Log of Borehole MW13-14A



Project No: OTT-22029003-A0

Figure No. 7

Project: Monitoring Well Decommissioning and Re-Installation

Page. 2 of 2

L O G	S O I L	SOIL DESCRIPTION	Geodetic Elevation m	D e p t h	Standard Penetration Test N Value				Combustible Vapour Reading (ppm)			N a t u r a l U n i t W t. kN/m <sup>3</sup>
					Shear Strength kPa				Natural Moisture Content % Atterberg Limits (% Dry Weight)			
					20	40	60	80	250	500	750	
		<b>BEDROCK</b> (continued)	47.265	10	50	100	150	200	20	40	60	
				11								
				12								
		<b>Borehole Terminated at 12.20 m Depth, monitoring well installed with above ground casing</b>	45.1									

LOG OF BOREHOLE LOGS OF BOREHOLES 187 BOTELER.GPJ TROW OTTAWA.GDT 3/10/23

- NOTES:**
1. Borehole data requires interpretation by EXP before use by others
  2. The borehole was instrumented with a 51 mm diameter PVC monitoring well upon completion.
  3. Field work was supervised by an EXP representative.
  4. See Notes on Sample Descriptions
  5. Log to be read with EXP Report No. OTT-22029003-A0

WATER LEVEL RECORDS		
Date	Water Level (m)	Hole Open To (m)
Feb 22, 2023	4.3	

CORE DRILLING RECORD			
Run No.	Depth (m)	% Rec.	RQD %

# Log of Borehole MW14-1A



Project No: OTT-22029003-A0

Figure No. 10

Project: Monitoring Well Decommissioning and Re-Installation

Page. 1 of 2

Location: 187 Boteler Street, Ottawa, Ontario

Date Drilled: February 2nd, 2023

Split Spoon Sample

Combustible Vapour Reading

Drill Type: GM100GT trackmount

Auger Sample

Natural Moisture Content

SPT (N) Value

Atterberg Limits

Datum: Geodetic Elevation

Dynamic Cone Test

Undrained Triaxial at

Shelby Tube

% Strain at Failure

Logged by: P.O. Checked by: M.M.

Shear Strength by Vane Test

Shear Strength by Penetrometer Test

G W L	L O M S	SOIL DESCRIPTION	Geodetic Elevation m	D e p t h	Standard Penetration Test N Value				Combustible Vapour Reading (ppm)			S a m p l e T e s t S i z e	Natural Unit Wt. kN/m <sup>3</sup>
					Shear Strength kPa				250	500	750		
					20	40	60	80	Natural Moisture Content % Atterberg Limits (% Dry Weight)				
50	100	150	200	20	40	60							
		<b>FILL</b> Sand, brown, moist, no odours or stains.	58.002	0									
		<b>FILL</b> Gravel with occasional boulder and cobble, brown, moist, no odours or stains.	57.7	0									
				1									
				2									
				3									
				4									
		<b>Refusal at 4.58 m Depth</b>	53.4	4									
		<b>BEDROCK</b>		5									
				6									
				7									
				8									
				9									
				10									

Continued Next Page

**NOTES:**

- Borehole data requires interpretation by EXP before use by others
- The borehole was instrumented with a 51 mm diameter PVC monitoring well upon completion.
- Field work was supervised by an EXP representative.
- See Notes on Sample Descriptions
- Log to be read with EXP Report No. OTT-22029003-A0

**WATER LEVEL RECORDS**

Date	Water Level (m)	Hole Open To (m)
Feb 22, 2023	Dry	

**CORE DRILLING RECORD**

Run No.	Depth (m)	% Rec.	RQD %

LOG OF BOREHOLE LOGS OF BOREHOLES 187 BOTELER.GPJ TROW OTTAWA.GDT 3/10/23

# Log of Borehole MW14-1A



Project No: OTT-22029003-A0

Figure No. 10

Project: Monitoring Well Decommissioning and Re-Installation

Page. 2 of 2

L V G	L O B E S	SOIL DESCRIPTION	Geodetic Elevation m	D e p t h	Standard Penetration Test N Value				Combustible Vapour Reading (ppm)			Natural Unit Wt. kN/m <sup>3</sup>	
					20	40	60	80	250	500	750		
					Shear Strength kPa				Natural Moisture Content % Atterberg Limits (% Dry Weight)				
					50	100	150	200	20	40	60		
		<b>BEDROCK (continued)</b>	48.002	10									
				11									
				12									
				13									
				14									
				15									
				16									
				17									
				18									
		<b>Borehole Terminated at 18.30 m Depth, monitoring well installed with above ground casing</b>	39.7										

LOG OF BOREHOLE LOGS OF BOREHOLES 187 BOTELER.GPJ TROW OTTAWA.GDT 3/10/23

- NOTES:
- Borehole data requires interpretation by EXP before use by others
  - The borehole was instrumented with a 51 mm diameter PVC monitoring well upon completion.
  - Field work was supervised by an EXP representative.
  - See Notes on Sample Descriptions
  - Log to be read with EXP Report No. OTT-22029003-A0

WATER LEVEL RECORDS		
Date	Water Level (m)	Hole Open To (m)
Feb 22, 2023	Dry	

CORE DRILLING RECORD			
Run No.	Depth (m)	% Rec.	RQD %

# Log of Borehole MW14-2A



Project No: OTT-22029003-A0

Figure No. 11

Project: Monitoring Well Decommissioning and Re-Installation

Page. 1 of 2

Location: 187 Boteler Street, Ottawa, Ontario

Date Drilled: January 31st, 2023

Split Spoon Sample

Combustible Vapour Reading

Drill Type: GM100GT trackmount

Auger Sample

Natural Moisture Content

SPT (N) Value

Atterberg Limits

Datum: Geodetic Elevation

Dynamic Cone Test

Undrained Triaxial at

Shelby Tube

% Strain at Failure

Logged by: P.O. Checked by: M.M.

Shear Strength by Vane Test

Shear Strength by Penetrometer Test

G L L O M S	SOIL DESCRIPTION	Geodetic Elevation m	Depth m	Standard Penetration Test N Value				Combustible Vapour Reading (ppm)			Natural Unit Wt. kN/m <sup>3</sup>
				Shear Strength				250	500	750	
				20	40	60	80	Natural Moisture Content % Atterberg Limits (% Dry Weight)			
	<b>TOPSOIL</b> ~75 mm thick	58.236	0								
	<b>FILL</b> Silty clay with gravel, brick, concrete and burnt wood debris, brown, grey and black, moist, no odours or stains.	58.1	0								
			1								
			2								
			3								
	<b>SILTY CLAY</b> Light brown, wet, no odours or stains.	55.1	3								
	<b>Refusal at 3.97 m Depth</b>		4								
	<b>BEDROCK</b>	54.2	4								
			5								
			6								
			7								
			8								
			9								
			10								

Continued Next Page

**NOTES:**

- Borehole data requires interpretation by EXP before use by others
- The borehole was instrumented with a 51 mm diameter PVC monitoring well upon completion.
- Field work was supervised by an EXP representative.
- See Notes on Sample Descriptions
- Log to be read with EXP Report No. OTT-22029003-A0

**WATER LEVEL RECORDS**

Date	Water Level (m)	Hole Open To (m)
Feb 22, 2023	Dry	

**CORE DRILLING RECORD**

Run No.	Depth (m)	% Rec.	RQD %

LOG OF BOREHOLE LOGS OF BOREHOLES 187 BOTELER.GPJ TROW OTTAWA.GDT 3/10/23

# Log of Borehole MW14-2A



Project No: OTT-22029003-A0

Figure No. 11

Project: Monitoring Well Decommissioning and Re-Installation

Page. 2 of 2

L V G	L O B S E R V E D	SOIL DESCRIPTION	Geodetic Elevation m	D e p t h	Standard Penetration Test N Value				Combustible Vapour Reading (ppm)			C o m p l e t e d	Natural Unit Wt. kN/m <sup>3</sup>
					20	40	60	80	250	500	750		
					Shear Strength kPa				Natural Moisture Content % Atterberg Limits (% Dry Weight)				
					50	100	150	200	20	40	60		
		<b>BEDROCK (continued)</b>	48.236	10									
				11									
				12									
				13									
				14									
				15									
				16									
				17									
				18									
				19									
		<b>Borehole Terminated at 19.83 m Depth, monitoring well installed with above ground casing</b>	38.4										

LOG OF BOREHOLE LOGS OF BOREHOLES 187 BOTELER.GPJ TROW OTTAWA.GDT 3/10/23

- NOTES:**
1. Borehole data requires interpretation by EXP before use by others
  2. The borehole was instrumented with a 51 mm diameter PVC monitoring well upon completion.
  3. Field work was supervised by an EXP representative.
  4. See Notes on Sample Descriptions
  5. Log to be read with EXP Report No. OTT-22029003-A0

WATER LEVEL RECORDS		
Date	Water Level (m)	Hole Open To (m)
Feb 22, 2023	Dry	

CORE DRILLING RECORD			
Run No.	Depth (m)	% Rec.	RQD %



# Log of Borehole MW14-3A



Project No: OTT-22029003-A0  
 Project: Monitoring Well Decommissioning and Re-Installation  
 Location: 187 Boteler Street, Ottawa, Ontario  
 Date Drilled: February 6th, 2023  
 Drill Type: GM100GT trackmount  
 Datum: Geodetic Elevation  
 Logged by: P.O. Checked by: M.M.

Figure No. 12  
 Page. 1 of 2

- Split Spoon Sample
- Auger Sample
- SPT (N) Value
- Dynamic Cone Test
- Shelby Tube
- Shear Strength by Vane Test
- Combustible Vapour Reading
- Natural Moisture Content
- Atterberg Limits
- Undrained Triaxial at % Strain at Failure
- Shear Strength by Penetrometer Test

G L L O M S	SOIL DESCRIPTION	Geodetic Elevation m	D e p t h	Standard Penetration Test N Value				Combustible Vapour Reading (ppm)			S a m p l e T e s t S i z e	Natural Unit Wt. kN/m <sup>3</sup>
				Shear Strength kPa				250	500	750		
				20	40	60	80	Natural Moisture Content % Atterberg Limits (% Dry Weight)				
50	100	150	200	20	40	60						
	<b>FILL</b> Silty clay with gravel, trace brick debris, occasional boulder or cobble, light brown, moist, no odours or stains.	58.122	0									
			1									
			2									
			3									
	<b>Refusal at 3.97 m Depth</b>		4									
	<b>BEDROCK</b>	54.1	4									
			5									
			6									
			7									
			8									
			9									
			10									

Continued Next Page

**NOTES:**

- Borehole data requires interpretation by EXP before use by others
- The borehole was instrumented with a 51 mm diameter PVC monitoring well upon completion.
- Field work was supervised by an EXP representative.
- See Notes on Sample Descriptions
- Log to be read with EXP Report No. OTT-22029003-A0

**WATER LEVEL RECORDS**

Date	Water Level (m)	Hole Open To (m)
Feb 22, 2023	Dry	

**CORE DRILLING RECORD**

Run No.	Depth (m)	% Rec.	RQD %

LOG OF BOREHOLE LOGS OF BOREHOLES 187 BOTELER.GPJ TROW OTTAWA.GDT 3/10/23

# Log of Borehole MW14-3A



Project No: OTT-22029003-A0

Figure No. 12

Project: Monitoring Well Decommissioning and Re-Installation

Page. 2 of 2

L V G	L O B E S	SOIL DESCRIPTION	Geodetic Elevation m	D e p t h	Standard Penetration Test N Value				Combustible Vapour Reading (ppm)			Natural Unit Wt. kN/m <sup>3</sup>
					20	40	60	80	250	500	750	
					Shear Strength kPa				Natural Moisture Content % Atterberg Limits (% Dry Weight)			
					50	100	150	200	20	40	60	
		<b>BEDROCK (continued)</b>	48.122	10								
				11								
				12								
				13								
				14								
				15								
				16								
				17								
				18								
		<b>Borehole Terminated at 18.30 m Depth, monitoring well installed with above ground casing</b>	39.8									

LOG OF BOREHOLE LOGS OF BOREHOLES 187 BOTELER.GPJ TROW OTTAWA.GDT 3/10/23

- NOTES:
- Borehole data requires interpretation by EXP before use by others
  - The borehole was instrumented with a 51 mm diameter PVC monitoring well upon completion.
  - Field work was supervised by an EXP representative.
  - See Notes on Sample Descriptions
  - Log to be read with EXP Report No. OTT-22029003-A0

WATER LEVEL RECORDS		
Date	Water Level (m)	Hole Open To (m)
Feb 22, 2023	Dry	

CORE DRILLING RECORD			
Run No.	Depth (m)	% Rec.	RQD %

**PHASE TWO ENVIRONMENTAL SITE ASSESSMENT – 187 BOTELER STREET, OTTAWA,  
ONTARIO**

Appendix E Certificates of Analysis or Analytical Reports from laboratories

**APPENDIX E CERTIFICATES OF ANALYSIS OR ANALYTICAL  
REPORTS FROM LABORATORIES**



## Certificate of Analysis

### Stantec Consulting Ltd. (Ottawa)

200-2781 Lancaster Rd.

Ottawa, ON K1B 1A7

Attn: Jill Peters-Dechman

Client PO: 45064625

Project: 122510670.210/ Boteler Berm

Custody: 9585

Phone: (613) 738-0708

Fax: (613) 738-0721

Report Date: 24-Apr-2013

Order Date: 18-Apr-2013

**Order #: 1316202**

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

Parcel ID	Client ID
1316202-01	MW13-1 SS3
1316202-02	MW13-2 SS3
1316202-03	MW13-3 SS1
1316202-04	MW13-3 SS3
1316202-05	MW13-4 SS1
1316202-06	BH13-5 SS1
1316202-07	BH99 SS1
1316202-08	BH13-6 SS1
1316202-09	MW13-7 SS2

Approved By:



Mark Foto, M.Sc. For Dale Robertson, BSc  
Laboratory Director

**Certificate of Analysis**

Report Date: 24-Apr-2013

 Client: **Stantec Consulting Ltd. (Ottawa)**

Order Date: 18-Apr-2013

Client PO: 45064625

Project Description: 122510670.210/ Boteler Berm

**Analysis Summary Table**

Analysis	Method Reference/Description	Extraction Date	Analysis Date
Boron, available	MOE (HWE), EPA 200.7 - ICP-MS	19-Apr-13	19-Apr-13
Chromium, hexavalent	MOE E3056 - Extraction, colourimetric	19-Apr-13	24-Apr-13
Conductivity	MOE E3138 - probe @25 °C, water ext	19-Apr-13	19-Apr-13
Cyanide, free	MOE E3015 - Auto Colour, water extraction	19-Apr-13	23-Apr-13
Mercury	EPA 7471A - CVAA, digestion	22-Apr-13	22-Apr-13
MOE Metals by ICP-OES, soil Reg 153	based on MOE E3470, ICP-OES	19-Apr-13	19-Apr-13
PAHs by GC-MS	EPA 8270 - GC-MS, extraction	19-Apr-13	20-Apr-13
PCBs, total	SW846 8082A - GC-ECD	19-Apr-13	19-Apr-13
pH	EPA 150.1 - pH probe @ 25 °C, CaCl buffered ext.	22-Apr-13	22-Apr-13
PHC F1	CWS Tier 1 - P&T GC-FID	19-Apr-13	21-Apr-13
PHC F2 - F4	CWS Tier 1 - GC-FID, extraction	22-Apr-13	23-Apr-13
SAR	Calculation	19-Apr-13	23-Apr-13
Solids, %	Gravimetric, calculation	19-Apr-13	19-Apr-13
VOCs by P&T GC-MS	EPA 8260 - P&T GC-MS	19-Apr-13	21-Apr-13

**Certificate of Analysis**

Report Date: 24-Apr-2013

 Client: **Stantec Consulting Ltd. (Ottawa)**

Order Date: 18-Apr-2013

Client PO: 45064625

Project Description: 122510670.210/ Boteler Berm

Client ID:	MW13-1 SS3	MW13-2 SS3	MW13-3 SS1	MW13-3 SS3
Sample Date:	12-Apr-13	15-Apr-13	15-Apr-13	15-Apr-13
Sample ID:	1316202-01	1316202-02	1316202-03	1316202-04
MDL/Units	Soil	Soil	Soil	Soil

**Physical Characteristics**

% Solids	0.1 % by Wt.	87.1	83.8	92.0	90.5
----------	--------------	------	------	------	------

**General Inorganics**

SAR	0.01 N/A	6.03	4.52	-	-
Conductivity	5 uS/cm	375	301	-	-
Cyanide, free	0.03 ug/g dry	<0.03	<0.03	-	-
pH	0.05 pH Units	7.95	7.73	-	7.83

**Metals**

Antimony	1.0 ug/g dry	<1.0	<1.0	<1.0	<1.0
Arsenic	1.0 ug/g dry	1.2	1.8	<1.0	1.4
Barium	1.0 ug/g dry	133	90.9	47.7	80.3
Beryllium	1.0 ug/g dry	<1.0	<1.0	<1.0	<1.0
Boron	1.0 ug/g dry	3.7	1.9	2.9	4.1
Boron, available	0.5 ug/g dry	<0.5	<0.5	<0.5	<0.5
Cadmium	0.5 ug/g dry	<0.5	<0.5	<0.5	<0.5
Chromium	1.0 ug/g dry	11.9	14.3	8.3	15.9
Chromium (VI)	0.2 ug/g dry	<0.2	<0.2	<0.2	<0.2
Cobalt	1.0 ug/g dry	3.0	2.9	2.4	4.5
Copper	1.0 ug/g dry	12.4	7.3	7.3	8.5
Lead	1.0 ug/g dry	290	56.4	15.1	5.6
Mercury	0.1 ug/g dry	0.4	0.2	<0.1	<0.1
Molybdenum	1.0 ug/g dry	<1.0	<1.0	<1.0	<1.0
Nickel	1.0 ug/g dry	6.3	6.6	5.5	8.2
Selenium	1.0 ug/g dry	<1.0	<1.0	<1.0	<1.0
Silver	0.5 ug/g dry	<0.5	<0.5	<0.5	<0.5
Thallium	1.0 ug/g dry	<1.0	<1.0	<1.0	<1.0
Uranium	1.0 ug/g dry	<1.0	<1.0	<1.0	<1.0
Vanadium	1.0 ug/g dry	14.6	20.4	13.1	22.0
Zinc	1.0 ug/g dry	94.5	55.7	19.9	20.5

**Volatiles**

Acetone	0.50 ug/g dry	<0.50	<0.50	<0.50	<0.50
Benzene	0.02 ug/g dry	<0.02	<0.02	<0.02	<0.02
Bromodichloromethane	0.05 ug/g dry	<0.05	<0.05	<0.05	<0.05
Bromoform	0.05 ug/g dry	<0.05	<0.05	<0.05	<0.05
Bromomethane	0.05 ug/g dry	<0.05	<0.05	<0.05	<0.05

**Certificate of Analysis**

Report Date: 24-Apr-2013

 Client: **Stantec Consulting Ltd. (Ottawa)**

Order Date: 18-Apr-2013

Client PO: 45064625

Project Description: 122510670.210/ Boteler Berm

	Client ID:	MW13-1 SS3	MW13-2 SS3	MW13-3 SS1	MW13-3 SS3
	Sample Date:	12-Apr-13	15-Apr-13	15-Apr-13	15-Apr-13
	Sample ID:	1316202-01	1316202-02	1316202-03	1316202-04
	MDL/Units	Soil	Soil	Soil	Soil
Carbon Tetrachloride	0.05 ug/g dry	<0.05	<0.05	<0.05	<0.05
Chlorobenzene	0.05 ug/g dry	<0.05	<0.05	<0.05	<0.05
Chloroethane	0.05 ug/g dry	<0.05	<0.05	<0.05	<0.05
Chloroform	0.05 ug/g dry	<0.05	<0.05	<0.05	<0.05
Chloromethane	0.20 ug/g dry	<0.20	<0.20	<0.20	<0.20
Dibromochloromethane	0.05 ug/g dry	<0.05	<0.05	<0.05	<0.05
Dichlorodifluoromethane	0.05 ug/g dry	<0.05	<0.05	<0.05	<0.05
1,2-Dibromoethane	0.05 ug/g dry	<0.05	<0.05	<0.05	<0.05
1,2-Dichlorobenzene	0.05 ug/g dry	<0.05	<0.05	<0.05	<0.05
1,3-Dichlorobenzene	0.05 ug/g dry	<0.05	<0.05	<0.05	<0.05
1,4-Dichlorobenzene	0.05 ug/g dry	<0.05	<0.05	<0.05	<0.05
1,1-Dichloroethane	0.05 ug/g dry	<0.05	<0.05	<0.05	<0.05
1,2-Dichloroethane	0.05 ug/g dry	<0.05	<0.05	<0.05	<0.05
1,1-Dichloroethylene	0.05 ug/g dry	<0.05	<0.05	<0.05	<0.05
cis-1,2-Dichloroethylene	0.05 ug/g dry	<0.05	<0.05	<0.05	<0.05
trans-1,2-Dichloroethylene	0.05 ug/g dry	<0.05	<0.05	<0.05	<0.05
1,2-Dichloroethylene, total	0.05 ug/g dry	<0.05	<0.05	<0.05	<0.05
1,2-Dichloropropane	0.05 ug/g dry	<0.05	<0.05	<0.05	<0.05
cis-1,3-Dichloropropylene	0.05 ug/g dry	<0.05	<0.05	<0.05	<0.05
trans-1,3-Dichloropropylene	0.05 ug/g dry	<0.05	<0.05	<0.05	<0.05
1,3-Dichloropropene, total	0.05 ug/g dry	<0.05	<0.05	<0.05	<0.05
Ethylbenzene	0.05 ug/g dry	<0.05	<0.05	<0.05	<0.05
Hexane	0.05 ug/g dry	<0.05	<0.05	<0.05	<0.05
Methyl Ethyl Ketone (2-Butanone)	0.50 ug/g dry	<0.50	<0.50	<0.50	<0.50
Methyl Butyl Ketone (2-Hexanone)	2.00 ug/g dry	<2.00	<2.00	<2.00	<2.00
Methyl Isobutyl Ketone	0.50 ug/g dry	<0.50	<0.50	<0.50	<0.50
Methyl tert-butyl ether	0.05 ug/g dry	<0.05	<0.05	<0.05	<0.05
Methylene Chloride	0.05 ug/g dry	<0.05	<0.05	<0.05	<0.05
Styrene	0.05 ug/g dry	<0.05	<0.05	<0.05	<0.05
1,1,1,2-Tetrachloroethane	0.05 ug/g dry	<0.05	<0.05	<0.05	<0.05
1,1,1,2,2-Tetrachloroethane	0.05 ug/g dry	<0.05	<0.05	<0.05	<0.05
Tetrachloroethylene	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
1,2,4-Trichlorobenzene	0.05 ug/g dry	<0.05	<0.05	<0.05	<0.05

**Certificate of Analysis**

Report Date: 24-Apr-2013

Client: **Stantec Consulting Ltd. (Ottawa)**

Order Date: 18-Apr-2013

Client PO: 45064625

Project Description: 122510670.210/ Boteler Berm

	Client ID:	MW13-1 SS3	MW13-2 SS3	MW13-3 SS1	MW13-3 SS3
	Sample Date:	12-Apr-13	15-Apr-13	15-Apr-13	15-Apr-13
	Sample ID:	1316202-01	1316202-02	1316202-03	1316202-04
	MDL/Units	Soil	Soil	Soil	Soil
1,1,1-Trichloroethane	0.05 ug/g dry	<0.05	<0.05	<0.05	<0.05
1,1,2-Trichloroethane	0.05 ug/g dry	<0.05	<0.05	<0.05	<0.05
Trichloroethylene	0.05 ug/g dry	<0.05	<0.05	<0.05	<0.05
Trichlorofluoromethane	0.05 ug/g dry	<0.05	<0.05	<0.05	<0.05
1,3,5-Trimethylbenzene	0.05 ug/g dry	<0.05	<0.05	<0.05	<0.05
Vinyl chloride	0.02 ug/g dry	<0.02	<0.02	<0.02	<0.02
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
4-Bromofluorobenzene	Surrogate	124%	125%	124%	123%
Dibromofluoromethane	Surrogate	89.7%	90.7%	90.2%	91.8%
Toluene-d8	Surrogate	109%	112%	111%	110%

**Hydrocarbons**

F1 PHCs (C6-C10)	7 ug/g dry	<7	<7	<7	<7
F2 PHCs (C10-C16)	4 ug/g dry	<4	5	<4	<4
F3 PHCs (C16-C34)	8 ug/g dry	85	60	35	21
F4 PHCs (C34-C50)	6 ug/g dry	50	80	52	40

**Semi-Volatiles**

Acenaphthene	0.02 ug/g dry	0.09	<0.02	<0.02	<0.02
Acenaphthylene	0.02 ug/g dry	0.81	0.02	0.08	<0.02
Anthracene	0.02 ug/g dry	0.67	<0.02	0.07	<0.02
Benzo [a] anthracene	0.02 ug/g dry	1.51	0.03	0.19	<0.02
Benzo [a] pyrene	0.02 ug/g dry	1.50	0.03	0.13	<0.02
Benzo [b] fluoranthene	0.02 ug/g dry	1.50	0.03	0.16	<0.02
Benzo [g,h,i] perylene	0.02 ug/g dry	0.67	0.08	0.10	<0.02
Benzo [k] fluoranthene	0.02 ug/g dry	0.55	<0.02	0.06	<0.02
Biphenyl	0.02 ug/g dry	<0.02	<0.02	<0.02	<0.02
Chrysene	0.02 ug/g dry	1.93	0.04	0.21	<0.02
Dibenzo [a,h] anthracene	0.02 ug/g dry	0.18	<0.02	<0.02	<0.02
Fluoranthene	0.02 ug/g dry	4.16	0.07	0.31	<0.02
Fluorene	0.02 ug/g dry	0.20	<0.02	<0.02	<0.02
Indeno [1,2,3-cd] pyrene	0.02 ug/g dry	0.69	<0.02	0.09	<0.02
1-Methylnaphthalene	0.02 ug/g dry	0.04	<0.02	0.03	<0.02
2-Methylnaphthalene	0.02 ug/g dry	0.03	<0.02	0.03	<0.02
Methylnaphthalene (1&2)	0.04 ug/g dry	0.07	<0.04	0.06	<0.04



**Certificate of Analysis**

Report Date: 24-Apr-2013

 Client: **Stantec Consulting Ltd. (Ottawa)**

Order Date: 18-Apr-2013

Client PO: 45064625

Project Description: 122510670.210/ Boteler Berm

	Client ID:	MW13-1 SS3	MW13-2 SS3	MW13-3 SS1	MW13-3 SS3
	Sample Date:	12-Apr-13	15-Apr-13	15-Apr-13	15-Apr-13
	Sample ID:	1316202-01	1316202-02	1316202-03	1316202-04
	MDL/Units	Soil	Soil	Soil	Soil
Naphthalene	0.01 ug/g dry	0.05	<0.01	0.03	<0.01
Phenanthrene	0.02 ug/g dry	2.00	0.04	0.15	0.04
Pyrene	0.02 ug/g dry	3.52	0.06	0.29	0.02
2-Fluorobiphenyl	Surrogate	84.8%	90.3%	90.8%	79.2%
Terphenyl-d14	Surrogate	64.8%	77.4%	76.8%	66.2%

**PCBs**

PCBs, total	0.05 ug/g dry	<0.05	<0.05	-	-
Decachlorobiphenyl	Surrogate	49.7% [4]	110%	-	-

**Certificate of Analysis**

Report Date: 24-Apr-2013

 Client: **Stantec Consulting Ltd. (Ottawa)**

Order Date: 18-Apr-2013

Client PO: 45064625

Project Description: 122510670.210/ Boteler Berm

Client ID:	MW13-4 SS1	BH13-5 SS1	BH99 SS1	BH13-6 SS1
Sample Date:	17-Apr-13	17-Apr-13	17-Apr-13	17-Apr-13
Sample ID:	1316202-05	1316202-06	1316202-07	1316202-08
MDL/Units	Soil	Soil	Soil	Soil

**Physical Characteristics**

% Solids	0.1 % by Wt.	87.6	84.1	84.4	94.7
----------	--------------	------	------	------	------

**Metals**

Antimony	1.0 ug/g dry	<1.0	<1.0	<1.0	<1.0
Arsenic	1.0 ug/g dry	2.8	1.0	2.0	<1.0
Barium	1.0 ug/g dry	93.9	40.3	42.4	105
Beryllium	1.0 ug/g dry	<1.0	<1.0	<1.0	<1.0
Boron	1.0 ug/g dry	4.0	2.5	2.5	4.7
Boron, available	0.5 ug/g dry	<0.5	<0.5	<0.5	<0.5
Cadmium	0.5 ug/g dry	<0.5	<0.5	<0.5	<0.5
Chromium	1.0 ug/g dry	11.3	12.3	11.2	6.8
Chromium (VI)	0.2 ug/g dry	<0.2	1.0	<0.2	0.4
Cobalt	1.0 ug/g dry	3.3	2.7	2.5	2.5
Copper	1.0 ug/g dry	11.0	8.6	7.4	6.3
Lead	1.0 ug/g dry	157	27.2	25.3	16.8
Mercury	0.1 ug/g dry	0.3	0.1	0.1	<0.1
Molybdenum	1.0 ug/g dry	<1.0	<1.0	<1.0	<1.0
Nickel	1.0 ug/g dry	6.1	6.5	5.5	5.3
Selenium	1.0 ug/g dry	<1.0	<1.0	<1.0	<1.0
Silver	0.5 ug/g dry	<0.5	<0.5	<0.5	<0.5
Thallium	1.0 ug/g dry	<1.0	<1.0	<1.0	<1.0
Uranium	1.0 ug/g dry	<1.0	<1.0	<1.0	<1.0
Vanadium	1.0 ug/g dry	16.1	17.1	15.4	11.4
Zinc	1.0 ug/g dry	85.4	30.9	27.6	20.9

**Volatiles**

Acetone	0.50 ug/g dry	<0.50	<0.50	<0.50	<0.50
Benzene	0.02 ug/g dry	<0.02	<0.02	<0.02	<0.02
Bromodichloromethane	0.05 ug/g dry	<0.05	<0.05	<0.05	<0.05
Bromoform	0.05 ug/g dry	<0.05	<0.05	<0.05	<0.05
Bromomethane	0.05 ug/g dry	<0.05	<0.05	<0.05	<0.05
Carbon Tetrachloride	0.05 ug/g dry	<0.05	<0.05	<0.05	<0.05
Chlorobenzene	0.05 ug/g dry	<0.05	<0.05	<0.05	<0.05
Chloroethane	0.05 ug/g dry	<0.05	<0.05	<0.05	<0.05
Chloroform	0.05 ug/g dry	<0.05	<0.05	<0.05	<0.05

**Certificate of Analysis**

Report Date: 24-Apr-2013

 Client: **Stantec Consulting Ltd. (Ottawa)**

Order Date: 18-Apr-2013

Client PO: 45064625

Project Description: 122510670.210/ Boteler Berm

	Client ID:	MW13-4 SS1	BH13-5 SS1	BH99 SS1	BH13-6 SS1
	Sample Date:	17-Apr-13	17-Apr-13	17-Apr-13	17-Apr-13
	Sample ID:	1316202-05	1316202-06	1316202-07	1316202-08
	MDL/Units	Soil	Soil	Soil	Soil
Chloromethane	0.20 ug/g dry	<0.20	<0.20	<0.20	<0.20
Dibromochloromethane	0.05 ug/g dry	<0.05	<0.05	<0.05	<0.05
Dichlorodifluoromethane	0.05 ug/g dry	<0.05	<0.05	<0.05	<0.05
1,2-Dibromoethane	0.05 ug/g dry	<0.05	<0.05	<0.05	<0.05
1,2-Dichlorobenzene	0.05 ug/g dry	<0.05	<0.05	<0.05	<0.05
1,3-Dichlorobenzene	0.05 ug/g dry	<0.05	<0.05	<0.05	<0.05
1,4-Dichlorobenzene	0.05 ug/g dry	<0.05	<0.05	<0.05	<0.05
1,1-Dichloroethane	0.05 ug/g dry	<0.05	<0.05	<0.05	<0.05
1,2-Dichloroethane	0.05 ug/g dry	<0.05	<0.05	<0.05	<0.05
1,1-Dichloroethylene	0.05 ug/g dry	<0.05	<0.05	<0.05	<0.05
cis-1,2-Dichloroethylene	0.05 ug/g dry	<0.05	<0.05	<0.05	<0.05
trans-1,2-Dichloroethylene	0.05 ug/g dry	<0.05	<0.05	<0.05	<0.05
1,2-Dichloroethylene, total	0.05 ug/g dry	<0.05	<0.05	<0.05	<0.05
1,2-Dichloropropane	0.05 ug/g dry	<0.05	<0.05	<0.05	<0.05
cis-1,3-Dichloropropylene	0.05 ug/g dry	<0.05	<0.05	<0.05	<0.05
trans-1,3-Dichloropropylene	0.05 ug/g dry	<0.05	<0.05	<0.05	<0.05
1,3-Dichloropropene, total	0.05 ug/g dry	<0.05	<0.05	<0.05	<0.05
Ethylbenzene	0.05 ug/g dry	<0.05	<0.05	<0.05	<0.05
Hexane	0.05 ug/g dry	<0.05	<0.05	<0.05	<0.05
Methyl Ethyl Ketone (2-Butanone)	0.50 ug/g dry	<0.50	<0.50	<0.50	<0.50
Methyl Butyl Ketone (2-Hexanone)	2.00 ug/g dry	<2.00	<2.00	<2.00	<2.00
Methyl Isobutyl Ketone	0.50 ug/g dry	<0.50	<0.50	<0.50	<0.50
Methyl tert-butyl ether	0.05 ug/g dry	<0.05	<0.05	<0.05	<0.05
Methylene Chloride	0.05 ug/g dry	<0.05	<0.05	<0.05	<0.05
Styrene	0.05 ug/g dry	<0.05	<0.05	<0.05	<0.05
1,1,1,2-Tetrachloroethane	0.05 ug/g dry	<0.05	<0.05	<0.05	<0.05
1,1,2,2-Tetrachloroethane	0.05 ug/g dry	<0.05	<0.05	<0.05	<0.05
Tetrachloroethylene	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
1,2,4-Trichlorobenzene	0.05 ug/g dry	<0.05	<0.05	<0.05	<0.05
1,1,1-Trichloroethane	0.05 ug/g dry	<0.05	<0.05	<0.05	<0.05
1,1,2-Trichloroethane	0.05 ug/g dry	<0.05	<0.05	<0.05	<0.05
Trichloroethylene	0.05 ug/g dry	<0.05	<0.05	<0.05	<0.05

**Certificate of Analysis**

Report Date: 24-Apr-2013

Client: **Stantec Consulting Ltd. (Ottawa)**

Order Date: 18-Apr-2013

Client PO: 45064625

Project Description: 122510670.210/ Boteler Berm

	Client ID:	MW13-4 SS1	BH13-5 SS1	BH99 SS1	BH13-6 SS1
	Sample Date:	17-Apr-13	17-Apr-13	17-Apr-13	17-Apr-13
	Sample ID:	1316202-05	1316202-06	1316202-07	1316202-08
	MDL/Units	Soil	Soil	Soil	Soil
Trichlorofluoromethane	0.05 ug/g dry	<0.05	<0.05	<0.05	<0.05
1,3,5-Trimethylbenzene	0.05 ug/g dry	<0.05	<0.05	<0.05	<0.05
Vinyl chloride	0.02 ug/g dry	<0.02	<0.02	<0.02	<0.02
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
4-Bromofluorobenzene	Surrogate	124%	122%	124%	122%
Dibromofluoromethane	Surrogate	91.4%	91.7%	96.2%	92.3%
Toluene-d8	Surrogate	113%	113%	115%	111%

**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	27	31	18	61
F4 PHCs (C34-C50)	6 ug/g dry	30	21	12	241

**Semi-Volatiles**

Acenaphthene	0.02 ug/g dry	0.24	0.03	0.13	<0.02
Acenaphthylene	0.02 ug/g dry	0.35	0.52	0.60	0.07
Anthracene	0.02 ug/g dry	0.67	0.37	0.62	0.06
Benzo [a] anthracene	0.02 ug/g dry	1.41	0.95	1.37	0.19
Benzo [a] pyrene	0.02 ug/g dry	0.94	0.73	1.10	0.13
Benzo [b] fluoranthene	0.02 ug/g dry	0.96	0.90	1.13	0.17
Benzo [g,h,i] perylene	0.02 ug/g dry	0.49	0.51	0.79	0.10
Benzo [k] fluoranthene	0.02 ug/g dry	0.37	0.33	0.45	0.07
Biphenyl	0.02 ug/g dry	0.02	<0.02	<0.02	<0.02
Chrysene	0.02 ug/g dry	1.40	0.98	1.48	0.22
Dibenzo [a,h] anthracene	0.02 ug/g dry	0.13	0.13	0.20	<0.02
Fluoranthene	0.02 ug/g dry	3.42	2.06	3.31	0.34
Fluorene	0.02 ug/g dry	0.39	0.10	0.25	0.02
Indeno [1,2,3-cd] pyrene	0.02 ug/g dry	0.45	0.50	0.81	0.09
1-Methylnaphthalene	0.02 ug/g dry	0.09	0.03	0.03	0.02
2-Methylnaphthalene	0.02 ug/g dry	0.10	0.03	0.04	0.03
Methylnaphthalene (1&2)	0.04 ug/g dry	0.19	0.05	0.08	0.05
Naphthalene	0.01 ug/g dry	0.16	0.04	0.08	0.02
Phenanthrene	0.02 ug/g dry	2.43	0.83	1.84	0.15

**Certificate of Analysis**

Report Date: 24-Apr-2013

Order Date: 18-Apr-2013

Client: **Stantec Consulting Ltd. (Ottawa)**

Project Description: 122510670.210/ Boteler Berm

Client PO: 45064625

	Client ID:	MW13-4 SS1	BH13-5 SS1	BH99 SS1	BH13-6 SS1
	Sample Date:	17-Apr-13	17-Apr-13	17-Apr-13	17-Apr-13
	Sample ID:	1316202-05	1316202-06	1316202-07	1316202-08
	MDL/Units	Soil	Soil	Soil	Soil
Pyrene	0.02 ug/g dry	2.99	1.83	2.83	0.31
2-Fluorobiphenyl	Surrogate	93.2%	87.3%	94.8%	66.4%
Terphenyl-d14	Surrogate	70.8%	70.1%	68.3%	56.0%

**Certificate of Analysis**

Report Date: 24-Apr-2013

 Client: **Stantec Consulting Ltd. (Ottawa)**

Order Date: 18-Apr-2013

Client PO: 45064625

Project Description: 122510670.210/ Boteler Berm

<b>Client ID:</b>	MW13-7 SS2	-	-	-
<b>Sample Date:</b>	17-Apr-13	-	-	-
<b>Sample ID:</b>	1316202-09	-	-	-
<b>MDL/Units</b>	Soil	-	-	-

**Physical Characteristics**

% Solids	0.1 % by Wt.	85.5	-	-	-
----------	--------------	------	---	---	---

**Metals**

Antimony	1.0 ug/g dry	<1.0	-	-	-
Arsenic	1.0 ug/g dry	3.5	-	-	-
Barium	1.0 ug/g dry	198	-	-	-
Beryllium	1.0 ug/g dry	<1.0	-	-	-
Boron	1.0 ug/g dry	4.8	-	-	-
Boron, available	0.5 ug/g dry	<0.5	-	-	-
Cadmium	0.5 ug/g dry	<0.5	-	-	-
Chromium	1.0 ug/g dry	19.7	-	-	-
Chromium (VI)	0.2 ug/g dry	<0.2	-	-	-
Cobalt	1.0 ug/g dry	5.4	-	-	-
Copper	1.0 ug/g dry	97.9	-	-	-
Lead	1.0 ug/g dry	278	-	-	-
Mercury	0.1 ug/g dry	0.7	-	-	-
Molybdenum	1.0 ug/g dry	<1.0	-	-	-
Nickel	1.0 ug/g dry	11.2	-	-	-
Selenium	1.0 ug/g dry	<1.0	-	-	-
Silver	0.5 ug/g dry	<0.5	-	-	-
Thallium	1.0 ug/g dry	<1.0	-	-	-
Uranium	1.0 ug/g dry	<1.0	-	-	-
Vanadium	1.0 ug/g dry	27.9	-	-	-
Zinc	1.0 ug/g dry	177	-	-	-

**Volatiles**

Acetone	0.50 ug/g dry	<0.50	-	-	-
Benzene	0.02 ug/g dry	<0.02	-	-	-
Bromodichloromethane	0.05 ug/g dry	<0.05	-	-	-
Bromoform	0.05 ug/g dry	<0.05	-	-	-
Bromomethane	0.05 ug/g dry	<0.05	-	-	-
Carbon Tetrachloride	0.05 ug/g dry	<0.05	-	-	-
Chlorobenzene	0.05 ug/g dry	<0.05	-	-	-
Chloroethane	0.05 ug/g dry	<0.05	-	-	-
Chloroform	0.05 ug/g dry	<0.05	-	-	-

**Certificate of Analysis**

Report Date: 24-Apr-2013

 Client: **Stantec Consulting Ltd. (Ottawa)**

Order Date: 18-Apr-2013

Client PO: 45064625

Project Description: 122510670.210/ Boteler Berm

	MDL/Units	Client ID: Sample Date: Sample ID: Soil	-	-	-
Chloromethane	0.20 ug/g dry	MW13-7 SS2 17-Apr-13 1316202-09 Soil	-	-	-
Dibromochloromethane	0.05 ug/g dry	<0.05	-	-	-
Dichlorodifluoromethane	0.05 ug/g dry	<0.05	-	-	-
1,2-Dibromoethane	0.05 ug/g dry	<0.05	-	-	-
1,2-Dichlorobenzene	0.05 ug/g dry	<0.05	-	-	-
1,3-Dichlorobenzene	0.05 ug/g dry	<0.05	-	-	-
1,4-Dichlorobenzene	0.05 ug/g dry	<0.05	-	-	-
1,1-Dichloroethane	0.05 ug/g dry	<0.05	-	-	-
1,2-Dichloroethane	0.05 ug/g dry	<0.05	-	-	-
1,1-Dichloroethylene	0.05 ug/g dry	<0.05	-	-	-
cis-1,2-Dichloroethylene	0.05 ug/g dry	<0.05	-	-	-
trans-1,2-Dichloroethylene	0.05 ug/g dry	<0.05	-	-	-
1,2-Dichloroethylene, total	0.05 ug/g dry	<0.05	-	-	-
1,2-Dichloropropane	0.05 ug/g dry	<0.05	-	-	-
cis-1,3-Dichloropropylene	0.05 ug/g dry	<0.05	-	-	-
trans-1,3-Dichloropropylene	0.05 ug/g dry	<0.05	-	-	-
1,3-Dichloropropene, total	0.05 ug/g dry	<0.05	-	-	-
Ethylbenzene	0.05 ug/g dry	<0.05	-	-	-
Hexane	0.05 ug/g dry	<0.05	-	-	-
Methyl Ethyl Ketone (2-Butanone)	0.50 ug/g dry	<0.50	-	-	-
Methyl Butyl Ketone (2-Hexanone)	2.00 ug/g dry	<2.00	-	-	-
Methyl Isobutyl Ketone	0.50 ug/g dry	<0.50	-	-	-
Methyl tert-butyl ether	0.05 ug/g dry	<0.05	-	-	-
Methylene Chloride	0.05 ug/g dry	<0.05	-	-	-
Styrene	0.05 ug/g dry	<0.05	-	-	-
1,1,1,2-Tetrachloroethane	0.05 ug/g dry	<0.05	-	-	-
1,1,2,2-Tetrachloroethane	0.05 ug/g dry	<0.05	-	-	-
Tetrachloroethylene	0.05 ug/g dry	<0.05	-	-	-
Toluene	0.05 ug/g dry	<0.05	-	-	-
1,2,4-Trichlorobenzene	0.05 ug/g dry	<0.05	-	-	-
1,1,1-Trichloroethane	0.05 ug/g dry	<0.05	-	-	-
1,1,2-Trichloroethane	0.05 ug/g dry	<0.05	-	-	-
Trichloroethylene	0.05 ug/g dry	<0.05	-	-	-
Trichlorofluoromethane	0.05 ug/g dry	<0.05	-	-	-

**Certificate of Analysis**

Report Date: 24-Apr-2013

 Client: **Stantec Consulting Ltd. (Ottawa)**

Order Date: 18-Apr-2013

Client PO: 45064625

Project Description: 122510670.210/ Boteler Berm

	Client ID:	MW13-7 SS2	-	-	-
	Sample Date:	17-Apr-13	-	-	-
	Sample ID:	1316202-09	-	-	-
	MDL/Units	Soil	-	-	-
1,3,5-Trimethylbenzene	0.05 ug/g dry	<0.05	-	-	-
Vinyl chloride	0.02 ug/g dry	<0.02	-	-	-
m,p-Xylenes	0.05 ug/g dry	<0.05	-	-	-
o-Xylene	0.05 ug/g dry	<0.05	-	-	-
Xylenes, total	0.05 ug/g dry	<0.05	-	-	-
4-Bromofluorobenzene	Surrogate	130%	-	-	-
Dibromofluoromethane	Surrogate	89.7%	-	-	-
Toluene-d8	Surrogate	105%	-	-	-

**Hydrocarbons**

F1 PHCs (C6-C10)	7 ug/g dry	<7	-	-	-
F2 PHCs (C10-C16)	4 ug/g dry	18	-	-	-
F3 PHCs (C16-C34)	8 ug/g dry	82	-	-	-
F4 PHCs (C34-C50)	6 ug/g dry	100	-	-	-

**Semi-Volatiles**

Acenaphthene	0.02 ug/g dry	0.23	-	-	-
Acenaphthylene	0.02 ug/g dry	1.16	-	-	-
Anthracene	0.02 ug/g dry	1.74	-	-	-
Benzo [a] anthracene	0.02 ug/g dry	3.39	-	-	-
Benzo [a] pyrene	0.02 ug/g dry	2.30	-	-	-
Benzo [b] fluoranthene	0.02 ug/g dry	3.45	-	-	-
Benzo [g,h,i] perylene	0.02 ug/g dry	1.33	-	-	-
Benzo [k] fluoranthene	0.02 ug/g dry	1.36	-	-	-
Biphenyl	0.02 ug/g dry	0.02	-	-	-
Chrysene	0.02 ug/g dry	3.28	-	-	-
Dibenzo [a,h] anthracene	0.02 ug/g dry	0.37	-	-	-
Fluoranthene	0.02 ug/g dry	8.23	-	-	-
Fluorene	0.02 ug/g dry	0.74	-	-	-
Indeno [1,2,3-cd] pyrene	0.02 ug/g dry	1.35	-	-	-
1-Methylnaphthalene	0.02 ug/g dry	0.10	-	-	-
2-Methylnaphthalene	0.02 ug/g dry	0.09	-	-	-
Methylnaphthalene (1&2)	0.04 ug/g dry	0.19	-	-	-
Naphthalene	0.01 ug/g dry	0.13	-	-	-
Phenanthrene	0.02 ug/g dry	4.75	-	-	-
Pyrene	0.02 ug/g dry	7.29	-	-	-



**Certificate of Analysis**

Report Date: 24-Apr-2013

Order Date: 18-Apr-2013

Client: **Stantec Consulting Ltd. (Ottawa)**

Project Description: 122510670.210/ Boteler Berm

Client PO: 45064625

	<b>Client ID:</b>	MW13-7 SS2	-	-	-
	<b>Sample Date:</b>	17-Apr-13	-	-	-
	<b>Sample ID:</b>	1316202-09	-	-	-
	<b>MDL/Units</b>	Soil	-	-	-
2-Fluorobiphenyl	Surrogate	103%	-	-	-
Terphenyl-d14	Surrogate	85.1%	-	-	-

**Certificate of Analysis**

Report Date: 24-Apr-2013

Client: **Stantec Consulting Ltd. (Ottawa)**

Order Date: 18-Apr-2013

Client PO: 45064625

Project Description: 122510670.210/ Boteler Berm

**Method Quality Control: Blank**

Analyte	Result	Reporting Limit	Units	Source Result	%REC	%REC Limit	RPD	RPD Limit	Notes
<b>General Inorganics</b>									
Conductivity	ND	5	uS/cm						
Cyanide, free	ND	0.03	ug/g						
<b>Hydrocarbons</b>									
F1 PHCs (C6-C10)	ND	7	ug/g						
F2 PHCs (C10-C16)	ND	4	ug/g						
F3 PHCs (C16-C34)	ND	8	ug/g						
F4 PHCs (C34-C50)	ND	6	ug/g						
<b>Metals</b>									
Antimony	ND	1.0	ug/g						
Arsenic	ND	1.0	ug/g						
Barium	ND	1.0	ug/g						
Beryllium	ND	1.0	ug/g						
Boron, available	ND	0.5	ug/g						
Boron	ND	1.0	ug/g						
Cadmium	ND	0.5	ug/g						
Chromium (VI)	ND	0.2	ug/g						
Chromium	ND	1.0	ug/g						
Cobalt	ND	1.0	ug/g						
Copper	ND	1.0	ug/g						
Lead	ND	1.0	ug/g						
Mercury	ND	0.1	ug/g						
Molybdenum	ND	1.0	ug/g						
Nickel	ND	1.0	ug/g						
Selenium	ND	1.0	ug/g						
Silver	ND	0.5	ug/g						
Thallium	ND	1.0	ug/g						
Uranium	ND	1.0	ug/g						
Vanadium	ND	1.0	ug/g						
Zinc	ND	1.0	ug/g						
<b>PCBs</b>									
PCBs, total	ND	0.05	ug/g						
Surrogate: Decachlorobiphenyl	0.0848		ug/g		84.8	60-140			
<b>Semi-Volatiles</b>									
Acenaphthene	ND	0.02	ug/g						
Acenaphthylene	ND	0.02	ug/g						
Anthracene	ND	0.02	ug/g						
Benzo [a] anthracene	ND	0.02	ug/g						
Benzo [a] pyrene	ND	0.02	ug/g						
Benzo [b] fluoranthene	ND	0.02	ug/g						
Benzo [g,h,i] perylene	ND	0.02	ug/g						
Benzo [k] fluoranthene	ND	0.02	ug/g						
Biphenyl	ND	0.02	ug/g						
Chrysene	ND	0.02	ug/g						
Dibenzo [a,h] anthracene	ND	0.02	ug/g						
Fluoranthene	ND	0.02	ug/g						
Fluorene	ND	0.02	ug/g						
Indeno [1,2,3-cd] pyrene	ND	0.02	ug/g						
1-Methylnaphthalene	ND	0.02	ug/g						
2-Methylnaphthalene	ND	0.02	ug/g						
Methylnaphthalene (1&2)	ND	0.04	ug/g						
Naphthalene	ND	0.01	ug/g						
Phenanthrene	ND	0.02	ug/g						
Pyrene	ND	0.02	ug/g						
Surrogate: 2-Fluorobiphenyl	1.41		ug/g		105	50-140			
Surrogate: Terphenyl-d14	1.26		ug/g		94.6	50-140			

**Certificate of Analysis**

Report Date: 24-Apr-2013

Client: **Stantec Consulting Ltd. (Ottawa)**

Order Date: 18-Apr-2013

Client PO: 45064625

Project Description: 122510670.210/ Boteler Berm

**Method Quality Control: Blank**

Analyte	Result	Reporting Limit	Units	Source Result	%REC	%REC Limit	RPD	RPD Limit	Notes
<b>Volatiles</b>									
Acetone	ND	0.50	ug/g						
Benzene	ND	0.02	ug/g						
Bromodichloromethane	ND	0.05	ug/g						
Bromoform	ND	0.05	ug/g						
Bromomethane	ND	0.05	ug/g						
Carbon Tetrachloride	ND	0.05	ug/g						
Chlorobenzene	ND	0.05	ug/g						
Chloroethane	ND	0.05	ug/g						
Chloroform	ND	0.05	ug/g						
Chloromethane	ND	0.20	ug/g						
Dibromochloromethane	ND	0.05	ug/g						
Dichlorodifluoromethane	ND	0.05	ug/g						
1,2-Dibromoethane	ND	0.05	ug/g						
1,2-Dichlorobenzene	ND	0.05	ug/g						
1,3-Dichlorobenzene	ND	0.05	ug/g						
1,4-Dichlorobenzene	ND	0.05	ug/g						
1,1-Dichloroethane	ND	0.05	ug/g						
1,2-Dichloroethane	ND	0.05	ug/g						
1,1-Dichloroethylene	ND	0.05	ug/g						
cis-1,2-Dichloroethylene	ND	0.05	ug/g						
trans-1,2-Dichloroethylene	ND	0.05	ug/g						
1,2-Dichloroethylene, total	ND	0.05	ug/g						
1,2-Dichloropropane	ND	0.05	ug/g						
cis-1,3-Dichloropropylene	ND	0.05	ug/g						
trans-1,3-Dichloropropylene	ND	0.05	ug/g						
1,3-Dichloropropene, total	ND	0.05	ug/g						
Ethylbenzene	ND	0.05	ug/g						
Hexane	ND	0.05	ug/g						
Methyl Ethyl Ketone (2-Butanone)	ND	0.50	ug/g						
Methyl Butyl Ketone (2-Hexanone)	ND	2.00	ug/g						
Methyl Isobutyl Ketone	ND	0.50	ug/g						
Methyl tert-butyl ether	ND	0.05	ug/g						
Methylene Chloride	ND	0.05	ug/g						
Styrene	ND	0.05	ug/g						
1,1,1,2-Tetrachloroethane	ND	0.05	ug/g						
1,1,2,2-Tetrachloroethane	ND	0.05	ug/g						
Tetrachloroethylene	ND	0.05	ug/g						
Toluene	ND	0.05	ug/g						
1,2,4-Trichlorobenzene	ND	0.05	ug/g						
1,1,1-Trichloroethane	ND	0.05	ug/g						
1,1,2-Trichloroethane	ND	0.05	ug/g						
Trichloroethylene	ND	0.05	ug/g						
Trichlorofluoromethane	ND	0.05	ug/g						
1,3,5-Trimethylbenzene	ND	0.05	ug/g						
Vinyl chloride	ND	0.02	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: 4-Bromofluorobenzene	9.70		ug/g		121	50-140			
Surrogate: Dibromofluoromethane	7.92		ug/g		98.9	50-140			
Surrogate: Toluene-d8	8.39		ug/g		105	50-140			

**Certificate of Analysis**

Client: **Stantec Consulting Ltd. (Ottawa)**  
Client PO: 45064625

Report Date: 24-Apr-2013  
Order Date: 18-Apr-2013

Project Description: 122510670.210/ Boteler Berm

**Method Quality Control: Duplicate**

Analyte	Result	Reporting Limit	Units	Source Result	%REC	%REC Limit	RPD	RPD Limit	Notes
<b>General Inorganics</b>									
Conductivity	229	5	uS/cm	242			5.8	6.2	
Cyanide, free	ND	0.03	ug/g dry	ND				35	
pH	7.91	0.05	pH Units	7.96			0.6	10	
<b>Hydrocarbons</b>									
F1 PHCs (C6-C10)	ND	7	ug/g dry	ND				40	
F2 PHCs (C10-C16)	9	4	ug/g dry	ND			0.0	30	
F3 PHCs (C16-C34)	20	8	ug/g dry	ND			0.0	30	
F4 PHCs (C34-C50)	28	6	ug/g dry	ND			0.0	30	
<b>Metals</b>									
Antimony	1.22	1.0	ug/g dry	ND			0.0	30	
Arsenic	3.71	1.0	ug/g dry	3.73			0.6	30	
Barium	108	10.0	ug/g dry	107			0.7	30	
Beryllium	ND	1.0	ug/g dry	ND			0.0	30	
Boron, available	ND	0.5	ug/g dry	ND			0.0	35	
Boron	5.89	1.0	ug/g dry	5.66			4.1	30	
Cadmium	ND	0.5	ug/g dry	ND			0.0	30	
Chromium (VI)	ND	0.2	ug/g dry	ND				35	
Chromium	14.9	1.0	ug/g dry	15.4			2.7	30	
Cobalt	7.61	1.0	ug/g dry	7.79			2.3	30	
Copper	33.3	10.0	ug/g dry	34.1			2.2	30	
Lead	52.6	10.0	ug/g dry	55.1			4.7	30	
Mercury	ND	0.1	ug/g dry	ND			0.0	35	
Molybdenum	ND	1.0	ug/g dry	ND			0.0	30	
Nickel	17.1	1.0	ug/g dry	16.8			1.5	30	
Selenium	ND	1.0	ug/g dry	ND			0.0	30	
Silver	ND	0.5	ug/g dry	ND			0.0	30	
Thallium	ND	1.0	ug/g dry	ND			0.0	30	
Uranium	ND	1.0	ug/g dry	1.04			0.0	30	
Vanadium	21.2	1.0	ug/g dry	21.3			0.8	30	
Zinc	76.9	10.0	ug/g dry	77.5			0.8	30	
<b>PCBs</b>									
PCBs, total	ND	0.05	ug/g dry	ND				40	
Surrogate: Decachlorobiphenyl	0.0679		ug/g dry	ND	59.1	60-140			S-04
<b>Physical Characteristics</b>									
% Solids	91.8	0.1	% by Wt.	91.3			0.5	25	
<b>Semi-Volatiles</b>									
Acenaphthene	0.256	0.02	ug/g dry	0.091			95.5	40	QR-04
Acenaphthylene	0.869	0.02	ug/g dry	0.808			7.4	40	
Anthracene	1.35	0.02	ug/g dry	0.675			66.9	40	QR-04
Benzo [a] anthracene	2.50	0.02	ug/g dry	1.51			49.3	40	QR-04
Benzo [a] pyrene	2.01	0.02	ug/g dry	1.50			29.1	40	
Benzo [b] fluoranthene	1.89	0.02	ug/g dry	1.50			22.6	40	
Benzo [g,h,i] perylene	0.933	0.02	ug/g dry	0.667			33.3	40	
Benzo [k] fluoranthene	0.734	0.02	ug/g dry	0.553			28.2	40	
Biphenyl	ND	0.02	ug/g dry	ND			0.0	40	
Chrysene	2.64	0.02	ug/g dry	1.93			31.1	40	
Dibenzo [a,h] anthracene	0.255	0.02	ug/g dry	0.183			32.9	40	
Fluoranthene	6.43	0.02	ug/g dry	4.16			43.0	40	QR-04
Fluorene	0.471	0.02	ug/g dry	0.203			79.5	40	QR-04
Indeno [1,2,3-cd] pyrene	0.982	0.02	ug/g dry	0.691			34.8	40	
1-Methylnaphthalene	0.067	0.02	ug/g dry	0.037			57.6	40	QR-04
2-Methylnaphthalene	0.061	0.02	ug/g dry	0.033			57.9	40	QR-04
Naphthalene	0.108	0.01	ug/g dry	0.054			67.2	40	QR-04

**Certificate of Analysis**

Report Date: 24-Apr-2013

Client: **Stantec Consulting Ltd. (Ottawa)**

Order Date: 18-Apr-2013

Client PO: 45064625

Project Description: 122510670.210/ Boteler Berm

**Method Quality Control: Duplicate**

Analyte	Result	Reporting Limit	Units	Source Result	%REC	%REC Limit	RPD	RPD Limit	Notes
Phenanthrene	3.86	0.02	ug/g dry	2.00			63.5	40	QR-04
Pyrene	5.35	0.02	ug/g dry	3.52			41.1	40	QR-04
Surrogate: 2-Fluorobiphenyl	1.21		ug/g dry	ND	78.7	50-140			
Surrogate: Terphenyl-d14	0.865		ug/g dry	ND	56.5	50-140			
<b>Volatiles</b>									
Acetone	ND	0.50	ug/g dry	ND				50	
Benzene	ND	0.02	ug/g dry	ND				50	
Bromodichloromethane	ND	0.05	ug/g dry	ND				50	
Bromoform	ND	0.05	ug/g dry	ND				50	
Bromomethane	ND	0.05	ug/g dry	ND				50	
Carbon Tetrachloride	ND	0.05	ug/g dry	ND				50	
Chlorobenzene	ND	0.05	ug/g dry	ND				50	
Chloroethane	ND	0.05	ug/g dry	ND				50	
Chloroform	ND	0.05	ug/g dry	ND				50	
Chloromethane	ND	0.20	ug/g dry	ND				50	
Dibromochloromethane	ND	0.05	ug/g dry	ND				50	
Dichlorodifluoromethane	ND	0.05	ug/g dry	ND				50	
1,2-Dibromoethane	ND	0.05	ug/g dry	ND				50	
1,2-Dichlorobenzene	ND	0.05	ug/g dry	ND				50	
1,3-Dichlorobenzene	ND	0.05	ug/g dry	ND				50	
1,4-Dichlorobenzene	ND	0.05	ug/g dry	ND				50	
1,1-Dichloroethane	ND	0.05	ug/g dry	ND				50	
1,2-Dichloroethane	ND	0.05	ug/g dry	ND				50	
1,1-Dichloroethylene	ND	0.05	ug/g dry	ND				50	
cis-1,2-Dichloroethylene	ND	0.05	ug/g dry	ND				50	
trans-1,2-Dichloroethylene	ND	0.05	ug/g dry	ND				50	
1,2-Dichloropropane	ND	0.05	ug/g dry	ND				50	
cis-1,3-Dichloropropylene	ND	0.05	ug/g dry	ND				50	
trans-1,3-Dichloropropylene	ND	0.05	ug/g dry	ND				50	
Ethylbenzene	ND	0.05	ug/g dry	ND				50	
Hexane	ND	0.05	ug/g dry	ND				50	
Methyl Ethyl Ketone (2-Butanone)	ND	0.50	ug/g dry	ND				50	
Methyl Butyl Ketone (2-Hexanone)	ND	2.00	ug/g dry	ND				50	
Methyl Isobutyl Ketone	ND	0.50	ug/g dry	ND				50	
Methyl tert-butyl ether	ND	0.05	ug/g dry	ND				50	
Methylene Chloride	ND	0.05	ug/g dry	ND				50	
Styrene	ND	0.05	ug/g dry	ND				50	
1,1,1,2-Tetrachloroethane	ND	0.05	ug/g dry	ND				50	
1,1,2,2-Tetrachloroethane	ND	0.05	ug/g dry	ND				50	
Tetrachloroethylene	ND	0.05	ug/g dry	ND				50	
Toluene	ND	0.05	ug/g dry	ND				50	
1,2,4-Trichlorobenzene	ND	0.05	ug/g dry	ND				50	
1,1,1-Trichloroethane	ND	0.05	ug/g dry	ND				50	
1,1,2-Trichloroethane	ND	0.05	ug/g dry	ND				50	
Trichloroethylene	ND	0.05	ug/g dry	ND				50	
Trichlorofluoromethane	ND	0.05	ug/g dry	ND				50	
1,3,5-Trimethylbenzene	ND	0.05	ug/g dry	ND				50	
Vinyl chloride	ND	0.02	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: 4-Bromofluorobenzene	10.2		ug/g dry	ND	126	50-140			
Surrogate: Dibromofluoromethane	7.25		ug/g dry	ND	90.0	50-140			
Surrogate: Toluene-d8	9.13		ug/g dry	ND	113	50-140			

**Certificate of Analysis**

Report Date: 24-Apr-2013

Client: **Stantec Consulting Ltd. (Ottawa)**

Order Date: 18-Apr-2013

Client PO: 45064625

Project Description: 122510670.210/ Boteler Berm

**Method Quality Control: Spike**

Analyte	Result	Reporting Limit	Units	Source Result	%REC	%REC Limit	RPD	RPD Limit	Notes
<b>General Inorganics</b>									
Cyanide, free	0.217	0.03	ug/g	ND	72.4	70-130			
<b>Hydrocarbons</b>									
F1 PHCs (C6-C10)	204	7	ug/g	ND	102	80-120			
F2 PHCs (C10-C16)	72	4	ug/g	ND	71.1	60-140			
F3 PHCs (C16-C34)	203	8	ug/g	ND	97.0	60-140			
F4 PHCs (C34-C50)	144	6	ug/g	ND	103	60-140			
<b>Metals</b>									
Antimony	258		ug/L	ND	103	70-130			
Arsenic	291		ug/L	74.6	86.6	70-130			
Barium	268		ug/L	ND	107	70-130			
Beryllium	219		ug/L	3.36	86.1	70-130			
Boron, available	5.00	0.5	ug/g	ND	99.9	70-122			
Boron	323		ug/L	113	84.1	70-130			
Cadmium	224		ug/L	4.33	88.0	70-130			
Chromium (VI)	5.1	0.2	ug/g	ND	102	70-130			
Chromium	493		ug/L	307	74.3	70-130			
Cobalt	341		ug/L	156	74.0	70-130			
Copper	268		ug/L	ND	107	70-130			
Lead	272		ug/L	ND	109	70-130			
Mercury	1.71	0.1	ug/g	ND	114	72-128			
Molybdenum	203		ug/L	16.1	74.8	70-130			
Nickel	523		ug/L	337	74.2	70-130			
Selenium	180		ug/L	ND	81.4	70-130			
Silver	202		ug/L	1.36	80.2	70-130			
Thallium	208		ug/L	2.40	82.2	70-130			
Uranium	211		ug/L	20.9	75.9	70-130			
Vanadium	613		ug/L	427	74.3	70-130			
Zinc	260		ug/L	ND	104	70-130			
<b>PCBs</b>									
PCBs, total	0.309	0.05	ug/g	ND	67.2	60-140			
Surrogate: Decachlorobiphenyl	0.0751		ug/g		65.4	60-140			
<b>Semi-Volatiles</b>									
Acenaphthene	0.226	0.02	ug/g	ND	135	50-140			
Acenaphthylene	0.195	0.02	ug/g	ND	117	50-140			
Anthracene	0.172	0.02	ug/g	ND	103	50-140			
Benzo [a] anthracene	0.207	0.02	ug/g	ND	124	50-140			
Benzo [a] pyrene	0.171	0.02	ug/g	ND	102	50-140			
Benzo [b] fluoranthene	0.138	0.02	ug/g	ND	83.0	50-140			
Benzo [g,h,i] perylene	0.162	0.02	ug/g	ND	97.4	50-140			
Benzo [k] fluoranthene	0.140	0.02	ug/g	ND	83.8	50-140			
Biphenyl	0.164	0.02	ug/g	ND	98.5	50-140			
Chrysene	0.218	0.02	ug/g	ND	131	50-140			
Dibenzo [a,h] anthracene	0.145	0.02	ug/g	ND	86.8	50-140			
Fluoranthene	0.216	0.02	ug/g	ND	129	50-140			
Fluorene	0.226	0.02	ug/g	ND	136	50-140			
Indeno [1,2,3-cd] pyrene	0.164	0.02	ug/g	ND	98.1	50-140			
1-Methylnaphthalene	0.165	0.02	ug/g	ND	99.2	50-140			
2-Methylnaphthalene	0.165	0.02	ug/g	ND	99.1	50-140			



**Certificate of Analysis**

Report Date: 24-Apr-2013

Client: **Stantec Consulting Ltd. (Ottawa)**

Order Date: 18-Apr-2013

Client PO: 45064625

Project Description: 122510670.210/ Boteler Berm

**Method Quality Control: Spike**

Analyte	Result	Reporting Limit	Units	Source Result	%REC	%REC Limit	RPD	RPD Limit	Notes
Naphthalene	0.177	0.01	ug/g	ND	106	50-140			
Phenanthrene	0.200	0.02	ug/g	ND	120	50-140			
Pyrene	0.207	0.02	ug/g	ND	124	50-140			
<b>Volatiles</b>									
Acetone	8.54	0.50	ug/g	ND	85.4	50-140			
Benzene	3.35	0.02	ug/g	ND	83.8	60-130			
Bromodichloromethane	3.88	0.05	ug/g	ND	97.0	60-130			
Bromoform	4.72	0.05	ug/g	ND	118	60-130			
Bromomethane	5.20	0.05	ug/g	ND	130	50-140			
Carbon Tetrachloride	4.22	0.05	ug/g	ND	105	60-130			
Chlorobenzene	3.36	0.05	ug/g	ND	84.0	60-130			
Chloroethane	3.19	0.05	ug/g	ND	79.8	50-140			
Chloroform	3.34	0.05	ug/g	ND	83.6	60-130			
Chloromethane	4.81	0.20	ug/g	ND	120	50-140			
Dibromochloromethane	4.22	0.05	ug/g	ND	105	60-130			
Dichlorodifluoromethane	3.99	0.05	ug/g	ND	99.7	50-140			
1,2-Dibromoethane	3.43	0.05	ug/g	ND	85.8	60-130			
1,2-Dichlorobenzene	3.25	0.05	ug/g	ND	81.3	60-130			
1,3-Dichlorobenzene	3.50	0.05	ug/g	ND	87.5	60-130			
1,4-Dichlorobenzene	3.34	0.05	ug/g	ND	83.5	60-130			
1,1-Dichloroethane	2.78	0.05	ug/g	ND	69.6	60-130			
1,2-Dichloroethane	4.38	0.05	ug/g	ND	110	60-130			
1,1-Dichloroethylene	2.88	0.05	ug/g	ND	72.1	60-130			
cis-1,2-Dichloroethylene	3.19	0.05	ug/g	ND	79.6	60-130			
trans-1,2-Dichloroethylene	3.38	0.05	ug/g	ND	84.6	60-130			
1,2-Dichloropropane	2.75	0.05	ug/g	ND	68.7	60-130			
cis-1,3-Dichloropropylene	3.51	0.05	ug/g	ND	87.8	60-130			
trans-1,3-Dichloropropylene	3.91	0.05	ug/g	ND	97.8	60-130			
Ethylbenzene	3.25	0.05	ug/g	ND	81.3	60-130			
Hexane	3.05	0.05	ug/g	ND	76.3	60-130			
Methyl Ethyl Ketone (2-Butanone)	6.11	0.50	ug/g	ND	61.1	50-140			
Methyl Butyl Ketone (2-Hexanone)	6.01	2.00	ug/g	ND	60.1	50-140			
Methyl Isobutyl Ketone	5.98	0.50	ug/g	ND	59.8	50-140			
Methyl tert-butyl ether	8.48	0.05	ug/g	ND	84.8	50-140			
Methylene Chloride	2.80	0.05	ug/g	ND	70.1	60-130			
Styrene	3.01	0.05	ug/g	ND	75.1	60-130			
1,1,1,2-Tetrachloroethane	3.15	0.05	ug/g	ND	78.7	60-130			
1,1,2,2-Tetrachloroethane	2.96	0.05	ug/g	ND	73.9	60-130			
Tetrachloroethylene	3.82	0.05	ug/g	ND	95.6	60-130			
Toluene	2.88	0.05	ug/g	ND	72.0	60-130			
1,2,4-Trichlorobenzene	3.70	0.05	ug/g	ND	92.5	60-130			
1,1,1-Trichloroethane	3.92	0.05	ug/g	ND	98.1	60-130			
1,1,2-Trichloroethane	3.05	0.05	ug/g	ND	76.3	60-130			
Trichloroethylene	3.22	0.05	ug/g	ND	80.4	60-130			
Trichlorofluoromethane	3.67	0.05	ug/g	ND	91.8	50-140			
1,3,5-Trimethylbenzene	3.02	0.05	ug/g	ND	75.5	60-130			
Vinyl chloride	3.93	0.02	ug/g	ND	98.3	50-140			
m,p-Xylenes	5.46	0.05	ug/g	ND	68.3	60-130			
o-Xylene	3.14	0.05	ug/g	ND	78.4	60-130			

**Certificate of Analysis**

Client: **Stantec Consulting Ltd. (Ottawa)**  
Client PO: 45064625

Project Description: 122510670.210/ Boteler Berm

Report Date: 24-Apr-2013  
Order Date: 18-Apr-2013

**Qualifier Notes:**

**Sample Qualifiers :**

4 : The surrogate recovery for this sample is outside of established control limits due to a sample matrix effect.

**QC Qualifiers :**

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

S-04 : The surrogate recovery for this sample is outside of established control limits due to a sample matrix effect.

**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.



OTTAWA • KINGSTON • NIAGARA • MISSISSAUGA • SARNIA

Client Name: <u>Stanke Consulting Ltd.</u>	Project Reference: <u>Boteler Berm</u>	TAT: <input checked="" type="checkbox"/> Regular <input type="checkbox"/> 3 Day <input type="checkbox"/> 2 Day <input type="checkbox"/> 1 Day
Contact Name: <u>Jill Peters-Dechman / Jason Nagasawa</u>	Quote #: <u>City of Ottawa SA - 01910-91843-501</u>	
Address: <u>200-2701 Lancaster Rd Ottawa, ON K2B 2A7</u>	PO #: <u>12251070, 210</u>	Date Required: <u>Wed. Apr. 24/13</u>
Telephone: <u>613-730-0708</u>	Email Address: <u>jill.peters-dechman@stanke.ca jason.nagasawa@stanke.com</u>	per Jill. -m/c

Criteria:  O. Reg. 153/04 Table  O. Reg. 153/11 (Current) Table  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**

Sample ID/Location Name	Matrix	Air Volume	# of Containers	Sample Taken		PbCFE-FA	VOCs	PAH	metals	PH	Chromia (M)	BOD (that water washed)	PCBs	gen. inorganics	O. Reg 558 Necar unknown	Petroleum Hg.
				Date	Time											
1 MW13-1 SS3 BAH673	S	X	5	2013/04/12	11:00	✓	✓	✓	✓	✓	✓	✓	✓	✓		
2 MW13-2 SS3 BAH674	S	X	5	2013/04/15	9:20	✓	✓	✓	✓	✓	✓	✓	✓	✓		
3 MW13-3 SS1 BAH675	S	X	4	2013/04/15	12:00	✓	✓	✓	✓	✓	✓	✓	✓			
4 MW13-3 SS3 BAH676	S	X	4	2013/04/15	12:45	✓	✓	✓	✓	✓	✓	✓	✓			
5 MW13-4 SS1 BAH677	S	X	4	2013/04/17	8:50	✓	✓	✓	✓	✓	✓	✓	✓			
6 BH13-5 SS1 BAH678	S	X	4	2013/04/17	12:20	✓	✓	✓	✓	✓	✓	✓	✓			
7 BH13-5 SS1 BAH679	S	X	4	2013/04/17	12:20	✓	✓	✓	✓	✓	✓	✓	✓			
8 BH13-6 SS1 BAH680	S	X	4	2013/04/17	13:00	✓	✓	✓	✓	✓	✓	✓	✓			
9 MW13-7 SS2 BAH681	S	X	4	2013/04/17	13:30	✓	✓	✓	✓	✓	✓	✓	✓			
10 Reg. 3A7 BAH682	S	X	2	2013/04/17	16:00											✓ 200

Comments: \* Full MOE metals & gen. inorganics lists per Jill. -m/c

Method of Delivery: Walk-in

Relinquished By (Print & Sign): <u>J. Urban</u>	Received by Driver/Depot:	Received at Lab: <u>M/C</u>	Verified By: <u>M/C</u>
Date/Time: <u>2013/04/18 11:55</u>	Temperature: _____ °C	Date/Time: <u>Apr 18/13 12:00</u>	Date/Time: <u>Apr 18/13 14:20</u>
		Temperature: <u>5.4</u> °C	pH Verified   By: <u>N/A</u>

## Certificate of Analysis

### Stantec Consulting Ltd. (Ottawa)

200-2781 Lancaster Rd.

Ottawa, ON K1B 1A7

Attn: Jill Peters-Dechman

Client PO: 45064625

Project: 122510670.210/ Boteler Berm

Custody: 97432

Phone: (613) 738-0708

Fax: (613) 738-0721

Report Date: 23-Apr-2013

Order Date: 22-Apr-2013

**Order #: 1317058**

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

Parcel ID	Client ID
1317058-01	MW13-1
1317058-02	MW13-2
1317058-03	MW99

Approved By:



Mark Foto, M.Sc. For Dale Robertson, BSc  
Laboratory Director

**Certificate of Analysis**

Client: **Stantec Consulting Ltd. (Ottawa)**

Client PO: 45064625

Report Date: 23-Apr-2013

Order Date: 22-Apr-2013

Project Description: 122510670.210/ Boteler Berm

**Analysis Summary Table**

Analysis	Method Reference/Description	Extraction Date	Analysis Date
Anions	EPA 300.1 - IC	23-Apr-13	23-Apr-13
Chromium, hexavalent	MOE E3056 - colourimetric	23-Apr-13	23-Apr-13
Cyanide, free	MOE E3015 - Auto Colour	23-Apr-13	23-Apr-13
Mercury	EPA 245.1 - Cold Vapour AA	23-Apr-13	23-Apr-13
Metals, ICP-MS	EPA 200.8 - ICP-MS	23-Apr-13	23-Apr-13
PAHs by GC-MS	EPA 625 - GC-MS, extraction	23-Apr-13	23-Apr-13
PCBs, total	EPA 608 - GC-ECD	23-Apr-13	23-Apr-13
pH	EPA 150.1 - pH probe @25 °C	23-Apr-13	23-Apr-13
PHC F1	CWS Tier 1 - P&T GC-FID	23-Apr-13	23-Apr-13
PHC F2 - F4	CWS Tier 1 - GC-FID, extraction	23-Apr-13	23-Apr-13
VOCs by P&T GC-MS	EPA 624 - P&T GC-MS	23-Apr-13	23-Apr-13

**Certificate of Analysis**

Report Date: 23-Apr-2013

Order Date: 22-Apr-2013

 Client: **Stantec Consulting Ltd. (Ottawa)**

Client PO: 45064625

Project Description: 122510670.210/ Boteler Berm

Client ID:	MW13-1	MW13-2	MW99	-
Sample Date:	22-Apr-13	22-Apr-13	22-Apr-13	-
Sample ID:	1317058-01	1317058-02	1317058-03	-
MDL/Units	Water	Water	Water	-

**General Inorganics**

Cyanide, free	2 ug/L	<2	<2	-	-
pH	0.1 pH Units	7.2	7.3	-	-

**Anions**

Chloride	1 mg/L	572	39	-	-
----------	--------	-----	----	---	---

**Metals**

Mercury	0.1 ug/L	<0.1	<0.1	<0.1	-
Antimony	0.5 ug/L	0.5	0.5	0.5	-
Arsenic	1 ug/L	<1	1	1	-
Barium	1 ug/L	80	49	50	-
Beryllium	0.5 ug/L	<0.5	<0.5	<0.5	-
Boron	10 ug/L	63	77	79	-
Cadmium	0.1 ug/L	<0.1	<0.1	<0.1	-
Chromium	1 ug/L	8	6	5	-
Chromium (VI)	10 ug/L	<10	<10	<10	-
Cobalt	0.5 ug/L	0.6	1.3	1.0	-
Copper	0.5 ug/L	6.0	3.5	3.3	-
Lead	0.1 ug/L	<0.1	<0.1	<0.1	-
Molybdenum	0.5 ug/L	7.1	3.5	3.3	-
Nickel	1 ug/L	6	4	4	-
Selenium	1 ug/L	4	12	12	-
Silver	0.1 ug/L	<0.1	<0.1	<0.1	-
Sodium	200 ug/L	460000	86300	85600	-
Thallium	0.1 ug/L	<0.1	<0.1	<0.1	-
Uranium	0.1 ug/L	2.2	3.7	3.6	-
Vanadium	0.5 ug/L	7.4	10.3	10.1	-
Zinc	5 ug/L	<5	<5	<5	-

**Volatiles**

Acetone	5.0 ug/L	<5.0	<5.0	<5.0	-
Benzene	0.5 ug/L	<0.5	<0.5	<0.5	-
Bromodichloromethane	0.5 ug/L	<0.5	<0.5	<0.5	-
Bromoform	0.5 ug/L	<0.5	<0.5	<0.5	-
Bromomethane	0.5 ug/L	<0.5	<0.5	<0.5	-
Carbon Tetrachloride	0.2 ug/L	<0.2	<0.2	<0.2	-
Chlorobenzene	0.5 ug/L	<0.5	<0.5	<0.5	-

P: 1-800-749-1947  
 E: PARACEL@PARACELLABS.COM  
 WWW.PARACELLABS.COM

**OTTAWA**  
 300-2319 St. Laurent Blvd.  
 Ottawa, ON K1G 4J8

**MISSISSAUGA**  
 6845 Kitimat Rd. Unit #27  
 Mississauga, ON L5N 6J3

**NIAGARA FALLS**  
 5415 Morning Glory Cr.  
 Niagara Falls, ON L2J 0A3

**SARNIA**  
 123 Christina St. N.  
 Sarnia, ON N7T 5T7

**Certificate of Analysis**

Report Date: 23-Apr-2013

Order Date: 22-Apr-2013

 Client: **Stantec Consulting Ltd. (Ottawa)**

Client PO: 45064625

Project Description: 122510670.210/ Boteler Berm

	Client ID:	MW13-1	MW13-2	MW99	
	Sample Date:	22-Apr-13	22-Apr-13	22-Apr-13	
	Sample ID:	1317058-01	1317058-02	1317058-03	
	MDL/Units	Water	Water	Water	
Chloroethane	1.0 ug/L	<1.0	<1.0	<1.0	-
Chloroform	0.5 ug/L	<0.5	<0.5	<0.5	-
Chloromethane	3.0 ug/L	<3.0	<3.0	<3.0	-
Dibromochloromethane	0.5 ug/L	<0.5	<0.5	<0.5	-
Dichlorodifluoromethane	1.0 ug/L	<1.0	<1.0	<1.0	-
1,2-Dibromoethane	0.2 ug/L	<0.2	<0.2	<0.2	-
1,2-Dichlorobenzene	0.5 ug/L	<0.5	<0.5	<0.5	-
1,3-Dichlorobenzene	0.5 ug/L	<0.5	<0.5	<0.5	-
1,4-Dichlorobenzene	0.5 ug/L	<0.5	<0.5	<0.5	-
1,1-Dichloroethane	0.5 ug/L	<0.5	<0.5	<0.5	-
1,2-Dichloroethane	0.5 ug/L	<0.5	<0.5	<0.5	-
1,1-Dichloroethylene	0.5 ug/L	<0.5	<0.5	<0.5	-
cis-1,2-Dichloroethylene	0.5 ug/L	<0.5	<0.5	<0.5	-
trans-1,2-Dichloroethylene	0.5 ug/L	<0.5	<0.5	<0.5	-
1,2-Dichloroethylene, total	0.5 ug/L	<0.5	<0.5	<0.5	-
1,2-Dichloropropane	0.5 ug/L	<0.5	<0.5	<0.5	-
cis-1,3-Dichloropropylene	0.5 ug/L	<0.5	<0.5	<0.5	-
trans-1,3-Dichloropropylene	0.5 ug/L	<0.5	<0.5	<0.5	-
1,3-Dichloropropene, total	0.5 ug/L	<0.5	<0.5	<0.5	-
Ethylbenzene	0.5 ug/L	<0.5	<0.5	<0.5	-
Hexane	1.0 ug/L	<1.0	<1.0	<1.0	-
Methyl Ethyl Ketone (2-Butanone)	5.0 ug/L	<5.0	<5.0	<5.0	-
Methyl Butyl Ketone (2-Hexanone)	10.0 ug/L	<10.0	<10.0	<10.0	-
Methyl Isobutyl Ketone	5.0 ug/L	<5.0	<5.0	<5.0	-
Methyl tert-butyl ether	2.0 ug/L	<2.0	<2.0	<2.0	-
Methylene Chloride	5.0 ug/L	<5.0	<5.0	<5.0	-
Styrene	0.5 ug/L	<0.5	<0.5	<0.5	-
1,1,1,2-Tetrachloroethane	0.5 ug/L	<0.5	<0.5	<0.5	-
1,1,2,2-Tetrachloroethane	0.5 ug/L	<0.5	<0.5	<0.5	-
Tetrachloroethylene	0.5 ug/L	<0.5	<0.5	<0.5	-
Toluene	0.5 ug/L	<0.5	<0.5	<0.5	-
1,2,4-Trichlorobenzene	0.5 ug/L	<0.5	<0.5	<0.5	-
1,1,1-Trichloroethane	0.5 ug/L	<0.5	<0.5	<0.5	-
1,1,2-Trichloroethane	0.5 ug/L	<0.5	<0.5	<0.5	-

 P: 1-800-749-1947  
 E: PARACEL@PARACELLABS.COM

WWW.PARACELLABS.COM

**OTTAWA**  
 300-2319 St. Laurent Blvd.  
 Ottawa, ON K1G 4J8

**MISSISSAUGA**  
 6845 Kitchener Rd. Unit #27  
 Mississauga, ON L5N 6J3

**NIAGARA FALLS**  
 5415 Morning Glory Cr.  
 Niagara Falls, ON L2J 0A3

**SARNIA**  
 123 Christina St. N.  
 Sarnia, ON N7T 5T7

**Certificate of Analysis**

Report Date: 23-Apr-2013

 Client: **Stantec Consulting Ltd. (Ottawa)**

Order Date: 22-Apr-2013

Client PO: 45064625

Project Description: 122510670.210/ Boteler Berm

	Client ID: Sample Date: Sample ID:	MW13-1 22-Apr-13 1317058-01	MW13-2 22-Apr-13 1317058-02	MW99 22-Apr-13 1317058-03	-
	MDL/Units	Water	Water	Water	-
Trichloroethylene	0.5 ug/L	<0.5	<0.5	<0.5	-
Trichlorofluoromethane	1.0 ug/L	<1.0	<1.0	<1.0	-
1,3,5-Trimethylbenzene	0.5 ug/L	<0.5	<0.5	<0.5	-
Vinyl chloride	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	-
4-Bromofluorobenzene	Surrogate	116%	122%	116%	-
Dibromofluoromethane	Surrogate	98.8%	84.2%	101%	-
Toluene-d8	Surrogate	105%	114%	104%	-

**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	-

**Semi-Volatiles**

Acenaphthene	0.05 ug/L	<0.05	<0.05	<0.05	-
Acenaphthylene	0.05 ug/L	<0.05	<0.05	<0.05	-
Anthracene	0.01 ug/L	<0.01	<0.01	<0.01	-
Benzo [a] anthracene	0.01 ug/L	<0.01	<0.01	<0.01	-
Benzo [a] pyrene	0.01 ug/L	<0.01	<0.01	<0.01	-
Benzo [b] fluoranthene	0.05 ug/L	<0.05	<0.05	<0.05	-
Benzo [g,h,i] perylene	0.05 ug/L	<0.05	<0.05	<0.05	-
Benzo [k] fluoranthene	0.05 ug/L	<0.05	<0.05	<0.05	-
Biphenyl	0.05 ug/L	<0.05	<0.05	<0.05	-
Chrysene	0.05 ug/L	<0.05	<0.05	<0.05	-
Dibenzo [a,h] anthracene	0.05 ug/L	<0.05	<0.05	<0.05	-
Fluoranthene	0.01 ug/L	<0.01	<0.01	<0.01	-
Fluorene	0.05 ug/L	<0.05	<0.05	<0.05	-
Indeno [1,2,3-cd] pyrene	0.05 ug/L	<0.05	<0.05	<0.05	-
1-Methylnaphthalene	0.05 ug/L	<0.05	<0.05	<0.05	-
2-Methylnaphthalene	0.05 ug/L	<0.05	<0.05	<0.05	-
Methylnaphthalene (1&2)	0.10 ug/L	<0.10	<0.10	<0.10	-
Naphthalene	0.05 ug/L	<0.05	<0.05	<0.05	-
Phenanthrene	0.05 ug/L	<0.05	<0.05	<0.05	-

**Certificate of Analysis**

Report Date: 23-Apr-2013

Order Date: 22-Apr-2013

Client: **Stantec Consulting Ltd. (Ottawa)**

Client PO: 45064625

Project Description: 122510670.210/ Boteler Berm

	Client ID:	MW13-1	MW13-2	MW99	-
	Sample Date:	22-Apr-13	22-Apr-13	22-Apr-13	-
	Sample ID:	1317058-01	1317058-02	1317058-03	-
	MDL/Units	Water	Water	Water	-
Pyrene	0.01 ug/L	<0.01	<0.01	<0.01	-
Terphenyl-d14	Surrogate	81.1%	80.6%	78.3%	-

**PCBs**

PCBs, total	0.05 ug/L	<0.05	<0.05	-	-
Decachlorobiphenyl	Surrogate	85.1%	72.5%	-	-



**Certificate of Analysis**

Report Date: 23-Apr-2013

Client: **Stantec Consulting Ltd. (Ottawa)**

Order Date: 22-Apr-2013

Client PO: 45064625

Project Description: 122510670.210/ Boteler Berm

**Method Quality Control: Blank**

Analyte	Result	Reporting Limit	Units	Source Result	%REC	%REC Limit	RPD	RPD Limit	Notes
<b>Anions</b>									
Chloride	ND	1	mg/L						
<b>General Inorganics</b>									
Cyanide, free	ND	2	ug/L						
<b>Hydrocarbons</b>									
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						
<b>Metals</b>									
Mercury	ND	0.1	ug/L						
Antimony	ND	0.5	ug/L						
Arsenic	ND	1	ug/L						
Barium	ND	1	ug/L						
Beryllium	ND	0.5	ug/L						
Boron	ND	10	ug/L						
Cadmium	ND	0.1	ug/L						
Chromium (VI)	ND	10	ug/L						
Chromium	ND	1	ug/L						
Cobalt	ND	0.5	ug/L						
Copper	ND	0.5	ug/L						
Lead	ND	0.1	ug/L						
Molybdenum	ND	0.5	ug/L						
Nickel	ND	1	ug/L						
Selenium	ND	1	ug/L						
Silver	ND	0.1	ug/L						
Sodium	ND	200	ug/L						
Thallium	ND	0.1	ug/L						
Uranium	ND	0.1	ug/L						
Vanadium	ND	0.5	ug/L						
Zinc	ND	5	ug/L						
<b>PCBs</b>									
PCBs, total	ND	0.05	ug/L						
Surrogate: Decachlorobiphenyl	0.352		ug/L		70.4	60-140			
<b>Semi-Volatiles</b>									
Acenaphthene	ND	0.05	ug/L						
Acenaphthylene	ND	0.05	ug/L						
Anthracene	ND	0.01	ug/L						
Benzo [a] anthracene	ND	0.01	ug/L						
Benzo [a] pyrene	ND	0.01	ug/L						
Benzo [b] fluoranthene	ND	0.05	ug/L						
Benzo [g,h,i] perylene	ND	0.05	ug/L						
Benzo [k] fluoranthene	ND	0.05	ug/L						
Biphenyl	ND	0.05	ug/L						
Chrysene	ND	0.05	ug/L						
Dibenzo [a,h] anthracene	ND	0.05	ug/L						
Fluoranthene	ND	0.01	ug/L						
Fluorene	ND	0.05	ug/L						
Indeno [1,2,3-cd] pyrene	ND	0.05	ug/L						
1-Methylnaphthalene	ND	0.05	ug/L						
2-Methylnaphthalene	ND	0.05	ug/L						
Methylnaphthalene (1&2)	ND	0.10	ug/L						
Naphthalene	ND	0.05	ug/L						
Phenanthrene	ND	0.05	ug/L						
Pyrene	ND	0.01	ug/L						



**Certificate of Analysis**

Report Date: 23-Apr-2013

Client: **Stantec Consulting Ltd. (Ottawa)**

Order Date: 22-Apr-2013

Client PO: 45064625

Project Description: 122510670.210/ Boteler Berm

**Method Quality Control: Blank**

Analyte	Result	Reporting Limit	Units	Source Result	%REC	%REC Limit	RPD	RPD Limit	Notes
<i>Surrogate: Terphenyl-d14</i>	15.8		ug/L		79.1	50-140			
<b>Volatiles</b>									
Acetone	ND	5.0	ug/L						
Benzene	ND	0.5	ug/L						
Bromodichloromethane	ND	0.5	ug/L						
Bromoform	ND	0.5	ug/L						
Bromomethane	ND	0.5	ug/L						
Carbon Tetrachloride	ND	0.2	ug/L						
Chlorobenzene	ND	0.5	ug/L						
Chloroethane	ND	1.0	ug/L						
Chloroform	ND	0.5	ug/L						
Chloromethane	ND	3.0	ug/L						
Dibromochloromethane	ND	0.5	ug/L						
Dichlorodifluoromethane	ND	1.0	ug/L						
1,2-Dibromoethane	ND	0.2	ug/L						
1,2-Dichlorobenzene	ND	0.5	ug/L						
1,3-Dichlorobenzene	ND	0.5	ug/L						
1,4-Dichlorobenzene	ND	0.5	ug/L						
1,1-Dichloroethane	ND	0.5	ug/L						
1,2-Dichloroethane	ND	0.5	ug/L						
1,1-Dichloroethylene	ND	0.5	ug/L						
cis-1,2-Dichloroethylene	ND	0.5	ug/L						
trans-1,2-Dichloroethylene	ND	0.5	ug/L						
1,2-Dichloroethylene, total	ND	0.5	ug/L						
1,2-Dichloropropane	ND	0.5	ug/L						
cis-1,3-Dichloropropylene	ND	0.5	ug/L						
trans-1,3-Dichloropropylene	ND	0.5	ug/L						
1,3-Dichloropropene, total	ND	0.5	ug/L						
Ethylbenzene	ND	0.5	ug/L						
Hexane	ND	1.0	ug/L						
Methyl Ethyl Ketone (2-Butanone)	ND	5.0	ug/L						
Methyl Butyl Ketone (2-Hexanone)	ND	10.0	ug/L						
Methyl Isobutyl Ketone	ND	5.0	ug/L						
Methyl tert-butyl ether	ND	2.0	ug/L						
Methylene Chloride	ND	5.0	ug/L						
Styrene	ND	0.5	ug/L						
1,1,1,2-Tetrachloroethane	ND	0.5	ug/L						
1,1,2,2-Tetrachloroethane	ND	0.5	ug/L						
Tetrachloroethylene	ND	0.5	ug/L						
Toluene	ND	0.5	ug/L						
1,2,4-Trichlorobenzene	ND	0.5	ug/L						
1,1,1-Trichloroethane	ND	0.5	ug/L						
1,1,2-Trichloroethane	ND	0.5	ug/L						
Trichloroethylene	ND	0.5	ug/L						
Trichlorofluoromethane	ND	1.0	ug/L						
1,3,5-Trimethylbenzene	ND	0.5	ug/L						
Vinyl chloride	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						
<i>Surrogate: 4-Bromofluorobenzene</i>	37.4		ug/L		117	50-140			
<i>Surrogate: Dibromofluoromethane</i>	38.5		ug/L		120	50-140			
<i>Surrogate: Toluene-d8</i>	26.2		ug/L		81.8	50-140			

**Certificate of Analysis**

Report Date: 23-Apr-2013

Client: **Stantec Consulting Ltd. (Ottawa)**

Order Date: 22-Apr-2013

Client PO: 45064625

Project Description: 122510670.210/ Boteler Berm

**Method Quality Control: Duplicate**

Analyte	Result	Reporting Limit	Units	Source Result	%REC	%REC Limit	RPD	RPD Limit	Notes
<b>Anions</b>									
Chloride	577	5	mg/L	572			1.0	10	
<b>General Inorganics</b>									
Cyanide, free	ND	2	ug/L	ND				20	
pH	7.1	0.1	pH Units	7.2			1.0	10	
<b>Hydrocarbons</b>									
F1 PHCs (C6-C10)	862	25	ug/L	866			0.5	30	
<b>Metals</b>									
Mercury	ND	0.1	ug/L	ND				20	
Antimony	ND	0.5	ug/L	ND			0.0	20	
Arsenic	ND	1	ug/L	ND			0.0	20	
Barium	62.4	1	ug/L	61.6			1.4	20	
Beryllium	ND	0.5	ug/L	ND			0.0	20	
Boron	73	10	ug/L	69			6.8	20	
Cadmium	ND	0.1	ug/L	ND			0.0	20	
Chromium (VI)	ND	10	ug/L	ND				20	
Chromium	ND	1	ug/L	ND				20	
Cobalt	0.73	0.5	ug/L	0.68			8.4	20	
Copper	3.12	0.5	ug/L	3.10			0.7	20	
Lead	54.5	0.1	ug/L	54.9			0.8	20	
Molybdenum	3.18	0.5	ug/L	2.59			20.5	20	QR-01
Nickel	5.9	1	ug/L	5.8			3.2	20	
Selenium	1.1	1	ug/L	ND			0.0	20	
Silver	0.14	0.1	ug/L	ND			0.0	20	
Sodium	24600	20000	ug/L	24700			0.4	20	
Thallium	0.26	0.1	ug/L	ND			0.0	20	
Uranium	2.2	0.1	ug/L	2.0			5.1	20	
Vanadium	3.45	0.5	ug/L	3.17			8.6	20	
Zinc	27	5	ug/L	28			4.9	20	
<b>Volatiles</b>									
Acetone	36.9	5.0	ug/L	29.2			23.3	30	
Benzene	ND	0.5	ug/L	ND				30	
Bromodichloromethane	ND	0.5	ug/L	ND				30	
Bromoform	ND	0.5	ug/L	ND				30	
Bromomethane	ND	0.5	ug/L	ND				30	
Carbon Tetrachloride	ND	0.2	ug/L	ND				30	
Chlorobenzene	ND	0.5	ug/L	ND				30	
Chloroethane	ND	1.0	ug/L	ND				30	
Chloroform	ND	0.5	ug/L	ND				30	
Chloromethane	ND	3.0	ug/L	ND				30	
Dibromochloromethane	ND	0.5	ug/L	ND				30	
Dichlorodifluoromethane	ND	1.0	ug/L	ND				30	
1,2-Dibromoethane	ND	0.2	ug/L	ND				30	
1,2-Dichlorobenzene	ND	0.5	ug/L	ND				30	
1,3-Dichlorobenzene	ND	0.5	ug/L	ND				30	
1,4-Dichlorobenzene	ND	0.5	ug/L	ND				30	
1,1-Dichloroethane	ND	0.5	ug/L	ND				30	
1,2-Dichloroethane	ND	0.5	ug/L	ND				30	
1,1-Dichloroethylene	ND	0.5	ug/L	ND				30	
cis-1,2-Dichloroethylene	ND	0.5	ug/L	ND				30	
trans-1,2-Dichloroethylene	ND	0.5	ug/L	ND				30	
1,2-Dichloropropane	ND	0.5	ug/L	ND				30	
cis-1,3-Dichloropropylene	ND	0.5	ug/L	ND				30	
trans-1,3-Dichloropropylene	ND	0.5	ug/L	ND				30	
Ethylbenzene	ND	0.5	ug/L	ND				30	

P: 1-800-749-1947  
E: PARACEL@PARACELLABS.COM

WWW.PARACELLABS.COM

**OTTAWA**  
300-2319 St. Laurent Blvd.  
Ottawa, ON K1G 4J8

**MISSISSAUGA**  
6645 Kitchmat Rd. Unit #27  
Mississauga, ON L5N 6J3

**NIAGARA FALLS**  
5415 Morning Glory Cr.  
Niagara Falls, ON L2J 0A3

**SARNIA**  
123 Christina St. N.  
Sarnia, ON N7T 5T7

**Certificate of Analysis**

Report Date: 23-Apr-2013

Client: **Stantec Consulting Ltd. (Ottawa)**

Order Date: 22-Apr-2013

Client PO: 45064625

Project Description: 122510670.210/ Boteler Berm

**Method Quality Control: Duplicate**

Analyte	Result	Reporting Limit	Units	Source Result	%REC	%REC Limit	RPD	RPD Limit	Notes
Hexane	ND	1.0	ug/L	ND				30	
Methyl Ethyl Ketone (2-Butanone)	ND	5.0	ug/L	ND				30	
Methyl Butyl Ketone (2-Hexanone)	ND	10.0	ug/L	ND				30	
Methyl Isobutyl Ketone	ND	5.0	ug/L	ND				30	
Methyl tert-butyl ether	ND	2.0	ug/L	ND				30	
Methylene Chloride	ND	5.0	ug/L	ND				30	
Styrene	ND	0.5	ug/L	ND				30	
1,1,1,2-Tetrachloroethane	ND	0.5	ug/L	ND				30	
1,1,2,2-Tetrachloroethane	ND	0.5	ug/L	ND				30	
Tetrachloroethylene	ND	0.5	ug/L	ND				30	
Toluene	ND	0.5	ug/L	ND				30	
1,2,4-Trichlorobenzene	ND	0.5	ug/L	ND				30	
1,1,1-Trichloroethane	ND	0.5	ug/L	ND				30	
1,1,2-Trichloroethane	ND	0.5	ug/L	ND				30	
Trichloroethylene	ND	0.5	ug/L	ND				30	
Trichlorofluoromethane	ND	1.0	ug/L	ND				30	
1,3,5-Trimethylbenzene	4.76	0.5	ug/L	4.73			0.6	30	
Vinyl chloride	ND	0.5	ug/L	ND				30	
m,p-Xylenes	ND	0.5	ug/L	ND				30	
o-Xylene	2.51	0.5	ug/L	2.73			8.4	30	
Surrogate: 4-Bromofluorobenzene	28.4		ug/L	ND	88.7	50-140			
Surrogate: Dibromofluoromethane	30.3		ug/L	ND	94.8	50-140			
Surrogate: Toluene-d8	35.9		ug/L	ND	112	50-140			

**Certificate of Analysis**

Report Date: 23-Apr-2013

Client: **Stantec Consulting Ltd. (Ottawa)**

Order Date: 22-Apr-2013

Client PO: 45064625

Project Description: 122510670.210/ Boteler Berm

**Method Quality Control: Spike**

Analyte	Result	Reporting Limit	Units	Source Result	%REC	%REC Limit	RPD	RPD Limit	Notes
<b>Anions</b>									
Chloride	10.4		mg/L	ND	104	78-112			
<b>General Inorganics</b>									
Cyanide, free	25.4	2	ug/L	ND	84.6	70-130			
<b>Hydrocarbons</b>									
F1 PHCs (C6-C10)	1700	25	ug/L	ND	84.9	68-117			
F2 PHCs (C10-C16)	1700	100	ug/L	ND	94.7	60-140			
F3 PHCs (C16-C34)	3520	100	ug/L	ND	94.7	60-140			
F4 PHCs (C34-C50)	2150	100	ug/L	ND	86.6	60-140			
<b>Metals</b>									
Mercury	3.30	0.1	ug/L	ND	110	78-137			
Antimony	54.8		ug/L	0.14	109	80-120			
Arsenic	58.7		ug/L	0.3	117	80-120			
Barium	107		ug/L	61.6	91.2	80-120			
Beryllium	50.1		ug/L	ND	100	80-120			
Boron	113		ug/L	69	88.8	80-120			
Cadmium	46.8		ug/L	0.004	93.6	80-120			
Chromium (VI)	200	10	ug/L	ND	100	70-130			
Chromium	58.5		ug/L	ND	117	80-120			
Cobalt	49.7		ug/L	0.68	98.0	80-120			
Copper	49.1		ug/L	3.10	92.0	80-120			
Lead	99.7		ug/L	54.9	89.5	80-120			
Molybdenum	52.3		ug/L	2.59	99.5	80-120			
Nickel	52.6		ug/L	5.8	93.6	80-120			
Selenium	65.8		ug/L	0.2	131	80-120			QM-07
Silver	46.0		ug/L	ND	92.2	80-120			
Sodium	895		ug/L	ND	89.5	80-120			
Thallium	51.0		ug/L	0.008	102	80-120			
Uranium	53.8		ug/L	2.0	104	80-120			
Vanadium	52.8		ug/L	3.17	99.3	80-120			
Zinc	73		ug/L	28	89.9	80-120			
<b>PCBs</b>									
PCBs, total	0.795	0.05	ug/L	ND	79.5	60-140			
Surrogate: Decachlorobiphenyl	0.364		ug/L		72.8	60-140			
<b>Semi-Volatiles</b>									
Acenaphthene	6.32	0.05	ug/L	ND	126	50-140			
Acenaphthylene	4.79	0.05	ug/L	ND	95.9	50-140			
Anthracene	4.31	0.01	ug/L	ND	86.2	50-140			
Benzo [a] anthracene	5.06	0.01	ug/L	ND	101	50-140			
Benzo [a] pyrene	4.14	0.01	ug/L	ND	82.8	50-140			
Benzo [b] fluoranthene	3.14	0.05	ug/L	ND	62.7	50-140			
Benzo [g,h,i] perylene	3.62	0.05	ug/L	ND	72.4	50-140			
Benzo [k] fluoranthene	3.98	0.05	ug/L	ND	79.5	50-140			
Biphenyl	6.39	0.05	ug/L	ND	128	50-140			
Chrysene	5.15	0.05	ug/L	ND	103	50-140			
Dibenzo [a,h] anthracene	3.58	0.05	ug/L	ND	71.6	50-140			
Fluoranthene	5.90	0.01	ug/L	ND	118	50-140			
Indeno [1,2,3-cd] pyrene	4.06	0.05	ug/L	ND	81.1	50-140			

**Certificate of Analysis**

Report Date: 23-Apr-2013

Client: **Stantec Consulting Ltd. (Ottawa)**

Order Date: 22-Apr-2013

Client PO: 45064625

Project Description: 122510670.210/ Boteler Berm

**Method Quality Control: Spike**

Analyte	Result	Reporting Limit	Units	Source Result	%REC	%REC Limit	RPD	RPD Limit	Notes
1-Methylnaphthalene	6.22	0.05	ug/L	ND	124	50-140			
2-Methylnaphthalene	6.12	0.05	ug/L	ND	122	50-140			
Naphthalene	4.63	0.05	ug/L	ND	92.5	50-140			
Phenanthrene	4.70	0.05	ug/L	ND	93.9	50-140			
Pyrene	6.22	0.01	ug/L	ND	124	50-140			
<b>Volatiles</b>									
Acetone	82.9	5.0	ug/L	ND	82.9	50-140			
Benzene	40.0	0.5	ug/L	ND	99.9	50-140			
Bromodichloromethane	39.0	0.5	ug/L	ND	97.5	50-140			
Bromoform	33.9	0.5	ug/L	ND	84.6	50-140			
Bromomethane	29.9	0.5	ug/L	ND	74.8	50-140			
Carbon Tetrachloride	37.3	0.2	ug/L	ND	93.2	50-140			
Chlorobenzene	38.5	0.5	ug/L	ND	96.2	50-140			
Chloroethane	30.9	1.0	ug/L	ND	77.2	50-140			
Chloroform	36.3	0.5	ug/L	ND	90.8	50-140			
Chloromethane	31.7	3.0	ug/L	ND	79.2	50-140			
Dibromochloromethane	36.7	0.5	ug/L	ND	91.8	50-140			
Dichlorodifluoromethane	24.6	1.0	ug/L	ND	61.6	50-140			
1,2-Dibromoethane	39.2	0.2	ug/L	ND	98.0	50-140			
1,2-Dichlorobenzene	37.6	0.5	ug/L	ND	94.0	50-140			
1,3-Dichlorobenzene	37.8	0.5	ug/L	ND	94.4	50-140			
1,4-Dichlorobenzene	35.1	0.5	ug/L	ND	87.7	50-140			
1,1-Dichloroethane	37.8	0.5	ug/L	ND	94.5	50-140			
1,2-Dichloroethane	37.6	0.5	ug/L	ND	94.0	50-140			
1,1-Dichloroethylene	34.0	0.5	ug/L	ND	85.0	50-140			
cis-1,2-Dichloroethylene	35.4	0.5	ug/L	ND	88.4	50-140			
trans-1,2-Dichloroethylene	35.8	0.5	ug/L	ND	89.4	50-140			
1,2-Dichloropropane	37.8	0.5	ug/L	ND	94.4	50-140			
cis-1,3-Dichloropropylene	34.4	0.5	ug/L	ND	85.9	50-140			
trans-1,3-Dichloropropylene	36.9	0.5	ug/L	ND	92.2	50-140			
Ethylbenzene	35.8	0.5	ug/L	ND	89.6	50-140			
Hexane	23.2	1.0	ug/L	ND	58.1	50-140			
Methyl Ethyl Ketone (2-Butanone)	107	5.0	ug/L	ND	107	50-140			
Methyl Butyl Ketone (2-Hexanone)	110	10.0	ug/L	ND	110	50-140			
Methyl Isobutyl Ketone	101	5.0	ug/L	ND	101	50-140			
Methyl tert-butyl ether	90.5	2.0	ug/L	ND	90.5	50-140			
Methylene Chloride	33.7	5.0	ug/L	ND	84.3	50-140			
Styrene	39.1	0.5	ug/L	ND	97.8	50-140			
1,1,1,2-Tetrachloroethane	40.0	0.5	ug/L	ND	99.9	50-140			
1,1,2,2-Tetrachloroethane	36.7	0.5	ug/L	ND	91.8	50-140			
Tetrachloroethylene	33.6	0.5	ug/L	ND	84.0	50-140			
Toluene	40.1	0.5	ug/L	ND	100	50-140			
1,2,4-Trichlorobenzene	28.2	0.5	ug/L	ND	70.6	50-140			
1,1,1-Trichloroethane	38.7	0.5	ug/L	ND	96.8	50-140			
1,1,2-Trichloroethane	37.7	0.5	ug/L	ND	94.2	50-140			
Trichloroethylene	37.4	0.5	ug/L	ND	93.4	50-140			
Trichlorofluoromethane	30.0	1.0	ug/L	ND	75.0	50-140			
1,3,5-Trimethylbenzene	35.5	0.5	ug/L	ND	88.8	50-140			
Vinyl chloride	30.7	0.5	ug/L	ND	76.8	50-140			
m,p-Xylenes	84.5	0.5	ug/L	ND	106	50-140			

**Certificate of Analysis**

Client: **Stantec Consulting Ltd. (Ottawa)**  
Client PO: 45064625

Report Date: 23-Apr-2013  
Order Date: 22-Apr-2013

Project Description: 122510670.210/ Boteler Berm

**Method Quality Control: Spike**

Analyte	Result	Reporting Limit	Units	Source Result	%REC	%REC Limit	RPD	RPD Limit	Notes
o-Xylene	45.4	0.5	ug/L	ND	114	50-140			

**Certificate of Analysis**

Client: **Stantec Consulting Ltd. (Ottawa)**

Client PO: 45064625

Project Description: 122510670.210/ Boteler Berm

Report Date: 23-Apr-2013

Order Date: 22-Apr-2013

**Qualifier Notes:**

**QC Qualifiers :**

QM-07 : The spike recovery was outside acceptance limits for the MS and/or MSD. The batch was accepted based on other acceptable QC.

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

**Sample Data Revisions**

None

**Work Order Revisions / Comments:**

None

**Other Report Notes:**

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

**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.



OTTAWA • KINGSTON • NIAGARA • MISSISSAUGA • SARNIA

Client Name: <u>Stante Consulting Ltd.</u>	Project Reference: <u>Boteler Barn</u>	TAT:     Regular     3 Day     2 Day     1 Day
Contact Name: <u>Jill Peters-Dachman / Jason Nagasawa</u>	Quote # <u>City of Ottawa SPA - 01910-91843-501</u>	
Address: <u>200-2781 Lancaster Rd Ottawa ON K2B 1A7</u>	PO # <u>122510670, 210</u>	
Telephone: <u>617-738-5703</u>	Email Address: <u>jill.peters-dachman@stantec.com jason.nagasawa@stantec.com</u>	Date Required: <u>24 hr TAT</u>

Criteria: | | O. Reg. 153/04 Table \_\_\_ | | O. Reg. 153/11 (Current) Table \_\_\_ | | 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: <u>1317058</u>			Matrix	Air Volume	# of Containers	Sample Taken		PHCs FI-F4+BTEX	VOCs	PAHs	Metals by ICP/MS	Hg	CrVI	B (HWS)	PCBs	Inorganics
Sample ID/Location Name		Date				Time										
1	MW13-1 BAH 717	GW	X	10	2013/04/22	12:00	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓
2	MW13-2 BAH 718	GW	X	10	2013/04/22	13:00	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓
3	MW99 BAH 719	GW	X	7	2013/04/22	13:20	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓
4																
5																
6																
7																
8																
9																
10																

Comments: - Some samples may contain sediment >1cm; please analyze as requested if the case.

Method of Delivery:

Walk-in

Relinquished By (Print & Sign): <u>J. Urban</u>	Received by Driver/Depot:	Received at Lab: <u>M/C</u>	Verified By: <u>M/C</u>
Date/Time: <u>2013/04/22 17:44</u>	Temperature: _____ °C	Date/Time: <u>Apr 22/13 5:46</u>	Date/Time: <u>Apr 22/13 5:59</u>
		Temperature: <u>15.2</u> °C	pH Verified By: <u>M/C</u>



## Certificate of Analysis

### Stantec Consulting Ltd. (Ottawa)

1331 Clyde Avenue Suite 400  
Ottawa, ON K2C 3G4  
Attn: Jill Peters-Dechman

Phone: (613) 722-4420  
Fax: (613) 738-0721

Client PO: 45064625  
Project: 122510670/Boteler St  
Custody: 10421

Report Date: 29-Jul-2013  
Order Date: 18-Jul-2013

**Order #: 1329318**

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

Paracel ID	Client ID
1329318-01	MW13-10 SS7
1329318-02	MW13-11 SS6

Approved By:



Mark Foto, M.Sc. For Dale Robertson, BSc  
Laboratory Director

**Certificate of Analysis**

Report Date: 29-Jul-2013

Client: **Stantec Consulting Ltd. (Ottawa)**

Order Date: 18-Jul-2013

Client PO: 45064625

Project Description: 122510670/Boteler St

**Analysis Summary Table**

Analysis	Method Reference/Description	Extraction Date	Analysis Date
Conductivity	MOE E3138 - probe @25 °C, water ext	22-Jul-13	22-Jul-13
PAHs by GC-MS	EPA 8270 - GC-MS, extraction	19-Jul-13	23-Jul-13
PHC F1	CWS Tier 1 - P&T GC-FID	22-Jul-13	24-Jul-13
PHC F2 - F4	CWS Tier 1 - GC-FID, extraction	22-Jul-13	23-Jul-13
SAR	Calculation	24-Jul-13	25-Jul-13
Solids, %	Gravimetric, calculation	22-Jul-13	22-Jul-13
VOCs by P&T GC-MS	EPA 8260 - P&T GC-MS	22-Jul-13	24-Jul-13

**Certificate of Analysis**

Report Date: 29-Jul-2013

Client: **Stantec Consulting Ltd. (Ottawa)**

Order Date: 18-Jul-2013

Client PO: 45064625

Project Description: 122510670/Boteler St

<b>Client ID:</b>	MW13-10 SS7	MW13-11 SS6	-	-
<b>Sample Date:</b>	18-Jul-13	18-Jul-13	-	-
<b>Sample ID:</b>	1329318-01	1329318-02	-	-
<b>MDL/Units</b>	Soil	Soil	-	-

**Physical Characteristics**

% Solids	0.1 % by Wt.	89.3	82.9	-	-
----------	--------------	------	------	---	---

**General Inorganics**

SAR	0.01 N/A	0.23	0.59	-	-
Conductivity	5 uS/cm	294	2590	-	-

**Volatiles**

Acetone	0.50 ug/g dry	<0.50	<0.50	-	-
Benzene	0.02 ug/g dry	<0.02	<0.02	-	-
Bromodichloromethane	0.05 ug/g dry	<0.05	<0.05	-	-
Bromoform	0.05 ug/g dry	<0.05	<0.05	-	-
Bromomethane	0.05 ug/g dry	<0.05	<0.05	-	-
Carbon Tetrachloride	0.05 ug/g dry	<0.05	<0.05	-	-
Chlorobenzene	0.05 ug/g dry	<0.05	<0.05	-	-
Chloroethane	0.05 ug/g dry	<0.05	<0.05	-	-
Chloroform	0.05 ug/g dry	<0.05	<0.05	-	-
Chloromethane	0.20 ug/g dry	<0.20	<0.20	-	-
Dibromochloromethane	0.05 ug/g dry	<0.05	<0.05	-	-
Dichlorodifluoromethane	0.05 ug/g dry	<0.05	<0.05	-	-
1,2-Dibromoethane	0.05 ug/g dry	<0.05	<0.05	-	-
1,2-Dichlorobenzene	0.05 ug/g dry	<0.05	<0.05	-	-
1,3-Dichlorobenzene	0.05 ug/g dry	<0.05	<0.05	-	-
1,4-Dichlorobenzene	0.05 ug/g dry	<0.05	<0.05	-	-
1,1-Dichloroethane	0.05 ug/g dry	<0.05	<0.05	-	-
1,2-Dichloroethane	0.05 ug/g dry	<0.05	<0.05	-	-
1,1-Dichloroethylene	0.05 ug/g dry	<0.05	<0.05	-	-
cis-1,2-Dichloroethylene	0.05 ug/g dry	<0.05	<0.05	-	-
trans-1,2-Dichloroethylene	0.05 ug/g dry	<0.05	<0.05	-	-
1,2-Dichloroethylene, total	0.05 ug/g dry	<0.05	<0.05	-	-
1,2-Dichloropropane	0.05 ug/g dry	<0.05	<0.05	-	-
cis-1,3-Dichloropropylene	0.05 ug/g dry	<0.05	<0.05	-	-
trans-1,3-Dichloropropylene	0.05 ug/g dry	<0.05	<0.05	-	-
1,3-Dichloropropene, total	0.05 ug/g dry	<0.05	<0.05	-	-
Ethylbenzene	0.05 ug/g dry	<0.05	<0.05	-	-
Hexane	0.05 ug/g dry	<0.05	<0.05	-	-

**Certificate of Analysis**

Report Date: 29-Jul-2013

Order Date: 18-Jul-2013

 Client: **Stantec Consulting Ltd. (Ottawa)**

Client PO: 45064625

Project Description: 122510670/Boteler St

	Client ID: Sample Date: Sample ID:	MW13-10 SS7 18-Jul-13 1329318-01	MW13-11 SS6 18-Jul-13 1329318-02	-	-
	MDL/Units	Soil	Soil	-	-
Methyl Ethyl Ketone (2-Butanone)	0.50 ug/g dry	<0.50	<0.50	-	-
Methyl Butyl Ketone (2-Hexanone)	2.00 ug/g dry	<2.00	<2.00	-	-
Methyl Isobutyl Ketone	0.50 ug/g dry	<0.50	<0.50	-	-
Methyl tert-butyl ether	0.05 ug/g dry	<0.05	<0.05	-	-
Methylene Chloride	0.05 ug/g dry	<0.05	<0.05	-	-
Styrene	0.05 ug/g dry	<0.05	<0.05	-	-
1,1,1,2-Tetrachloroethane	0.05 ug/g dry	<0.05	<0.05	-	-
1,1,2,2-Tetrachloroethane	0.05 ug/g dry	<0.05	<0.05	-	-
Tetrachloroethylene	0.05 ug/g dry	<0.05	<0.05	-	-
Toluene	0.05 ug/g dry	<0.05	<0.05	-	-
1,2,4-Trichlorobenzene	0.05 ug/g dry	<0.05	<0.05	-	-
1,1,1-Trichloroethane	0.05 ug/g dry	<0.05	<0.05	-	-
1,1,2-Trichloroethane	0.05 ug/g dry	<0.05	<0.05	-	-
Trichloroethylene	0.05 ug/g dry	<0.05	<0.05	-	-
Trichlorofluoromethane	0.05 ug/g dry	<0.05	<0.05	-	-
1,3,5-Trimethylbenzene	0.05 ug/g dry	<0.05	<0.05	-	-
Vinyl chloride	0.02 ug/g dry	<0.02	<0.02	-	-
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	-	-
4-Bromofluorobenzene	Surrogate	104%	104%	-	-
Dibromofluoromethane	Surrogate	90.5%	90.7%	-	-
Toluene-d8	Surrogate	113%	112%	-	-

**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	-	-
F4 PHCs (C34-C50)	6 ug/g dry	<6	<6	-	-

**Semi-Volatiles**

Acenaphthene	0.02 ug/g dry	<0.02	0.19	-	-
Acenaphthylene	0.02 ug/g dry	<0.02	0.04	-	-
Anthracene	0.02 ug/g dry	<0.02	0.51	-	-
Benzo [a] anthracene	0.02 ug/g dry	<0.02	1.20	-	-
Benzo [a] pyrene	0.02 ug/g dry	<0.02	0.81	-	-
Benzo [b] fluoranthene	0.02 ug/g dry	<0.02	1.82	-	-

**Certificate of Analysis**

Report Date: 29-Jul-2013

 Client: **Stantec Consulting Ltd. (Ottawa)**

Order Date: 18-Jul-2013

Client PO: 45064625

Project Description: 122510670/Boteler St

	MDL/Units	Client ID:	MW13-10 SS7	MW13-11 SS6	-	-
		Sample Date:	18-Jul-13	18-Jul-13		
		Sample ID:	1329318-01	1329318-02	-	-
			Soil	Soil	-	-
Benzo [g,h,i] perylene	0.02 ug/g dry		<0.02	0.40	-	-
Benzo [k] fluoranthene	0.02 ug/g dry		<0.02	0.88	-	-
Biphenyl	0.02 ug/g dry		<0.02	<0.02	-	-
Chrysene	0.02 ug/g dry		<0.02	1.31	-	-
Dibenzo [a,h] anthracene	0.02 ug/g dry		<0.02	0.14	-	-
Fluoranthene	0.02 ug/g dry		<0.02	2.79	-	-
Fluorene	0.02 ug/g dry		<0.02	0.27	-	-
Indeno [1,2,3-cd] pyrene	0.02 ug/g dry		<0.02	0.42	-	-
1-Methylnaphthalene	0.02 ug/g dry		<0.02	0.04	-	-
2-Methylnaphthalene	0.02 ug/g dry		<0.02	0.06	-	-
Methylnaphthalene (1&2)	0.04 ug/g dry		<0.04	0.10	-	-
Naphthalene	0.01 ug/g dry		<0.01	0.12	-	-
Phenanthrene	0.02 ug/g dry		<0.02	2.68	-	-
Pyrene	0.02 ug/g dry		<0.02	2.06	-	-
2-Fluorobiphenyl	Surrogate		63.4%	56.0%	-	-
Terphenyl-d14	Surrogate		86.2%	73.8%	-	-

**Certificate of Analysis**

Report Date: 29-Jul-2013

Client: **Stantec Consulting Ltd. (Ottawa)**

Order Date: 18-Jul-2013

Client PO: 45064625

Project Description: 122510670/Boteler St

**Method Quality Control: Blank**

Analyte	Result	Reporting Limit	Units	Source Result	%REC	%REC Limit	RPD	RPD Limit	Notes
<b>General Inorganics</b>									
Conductivity	ND	5	uS/cm						
<b>Hydrocarbons</b>									
F1 PHCs (C6-C10)	ND	7	ug/g						
F2 PHCs (C10-C16)	ND	4	ug/g						
F3 PHCs (C16-C34)	ND	8	ug/g						
F4 PHCs (C34-C50)	ND	6	ug/g						
<b>Semi-Volatiles</b>									
Acenaphthene	ND	0.02	ug/g						
Acenaphthylene	ND	0.02	ug/g						
Anthracene	ND	0.02	ug/g						
Benzo [a] anthracene	ND	0.02	ug/g						
Benzo [a] pyrene	ND	0.02	ug/g						
Benzo [b] fluoranthene	ND	0.02	ug/g						
Benzo [g,h,i] perylene	ND	0.02	ug/g						
Benzo [k] fluoranthene	ND	0.02	ug/g						
Biphenyl	ND	0.02	ug/g						
Chrysene	ND	0.02	ug/g						
Dibenzo [a,h] anthracene	ND	0.02	ug/g						
Fluoranthene	ND	0.02	ug/g						
Fluorene	ND	0.02	ug/g						
Indeno [1,2,3-cd] pyrene	ND	0.02	ug/g						
1-Methylnaphthalene	ND	0.02	ug/g						
2-Methylnaphthalene	ND	0.02	ug/g						
Methylnaphthalene (1&2)	ND	0.04	ug/g						
Naphthalene	ND	0.01	ug/g						
Phenanthrene	ND	0.02	ug/g						
Pyrene	ND	0.02	ug/g						
Surrogate: 2-Fluorobiphenyl	1.06		ug/g		79.5	50-140			
Surrogate: Terphenyl-d14	1.36		ug/g		102	50-140			
<b>Volatiles</b>									
Acetone	ND	0.50	ug/g						
Benzene	ND	0.02	ug/g						
Bromodichloromethane	ND	0.05	ug/g						
Bromoform	ND	0.05	ug/g						
Bromomethane	ND	0.05	ug/g						
Carbon Tetrachloride	ND	0.05	ug/g						
Chlorobenzene	ND	0.05	ug/g						
Chloroethane	ND	0.05	ug/g						
Chloroform	ND	0.05	ug/g						
Chloromethane	ND	0.20	ug/g						
Dibromochloromethane	ND	0.05	ug/g						
Dichlorodifluoromethane	ND	0.05	ug/g						
1,2-Dibromoethane	ND	0.05	ug/g						
1,2-Dichlorobenzene	ND	0.05	ug/g						
1,3-Dichlorobenzene	ND	0.05	ug/g						
1,4-Dichlorobenzene	ND	0.05	ug/g						
1,1-Dichloroethane	ND	0.05	ug/g						
1,2-Dichloroethane	ND	0.05	ug/g						
1,1-Dichloroethylene	ND	0.05	ug/g						
cis-1,2-Dichloroethylene	ND	0.05	ug/g						
trans-1,2-Dichloroethylene	ND	0.05	ug/g						
1,2-Dichloroethylene, total	ND	0.05	ug/g						
1,2-Dichloropropane	ND	0.05	ug/g						
cis-1,3-Dichloropropylene	ND	0.05	ug/g						
trans-1,3-Dichloropropylene	ND	0.05	ug/g						

**Certificate of Analysis**

Report Date: 29-Jul-2013

Client: **Stantec Consulting Ltd. (Ottawa)**

Order Date: 18-Jul-2013

Client PO: 45064625

Project Description: 122510670/Boteler St

**Method Quality Control: Blank**

Analyte	Result	Reporting Limit	Units	Source Result	%REC	%REC Limit	RPD	RPD Limit	Notes
1,3-Dichloropropene, total	ND	0.05	ug/g						
Ethylbenzene	ND	0.05	ug/g						
Hexane	ND	0.05	ug/g						
Methyl Ethyl Ketone (2-Butanone)	ND	0.50	ug/g						
Methyl Butyl Ketone (2-Hexanone)	ND	2.00	ug/g						
Methyl Isobutyl Ketone	ND	0.50	ug/g						
Methyl tert-butyl ether	ND	0.05	ug/g						
Methylene Chloride	ND	0.05	ug/g						
Styrene	ND	0.05	ug/g						
1,1,1,2-Tetrachloroethane	ND	0.05	ug/g						
1,1,2,2-Tetrachloroethane	ND	0.05	ug/g						
Tetrachloroethylene	ND	0.05	ug/g						
Toluene	ND	0.05	ug/g						
1,2,4-Trichlorobenzene	ND	0.05	ug/g						
1,1,1-Trichloroethane	ND	0.05	ug/g						
1,1,2-Trichloroethane	ND	0.05	ug/g						
Trichloroethylene	ND	0.05	ug/g						
Trichlorofluoromethane	ND	0.05	ug/g						
1,3,5-Trimethylbenzene	ND	0.05	ug/g						
Vinyl chloride	ND	0.02	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: 4-Bromofluorobenzene	8.34		ug/g		104	50-140			
Surrogate: Dibromofluoromethane	7.10		ug/g		88.7	50-140			
Surrogate: Toluene-d8	9.11		ug/g		114	50-140			

**Certificate of Analysis**

Report Date: 29-Jul-2013

Client: **Stantec Consulting Ltd. (Ottawa)**

Order Date: 18-Jul-2013

Client PO: 45064625

Project Description: 122510670/Boteler St

**Method Quality Control: Duplicate**

Analyte	Result	Reporting Limit	Units	Source Result	%REC	%REC Limit	RPD	RPD Limit	Notes
<b>General Inorganics</b>									
Conductivity	307	5	uS/cm	294			4.5	6.2	
<b>Hydrocarbons</b>									
F1 PHCs (C6-C10)	ND	7	ug/g dry	ND				40	
F2 PHCs (C10-C16)	ND	4	ug/g dry	ND				30	
F3 PHCs (C16-C34)	ND	8	ug/g dry	ND				30	
F4 PHCs (C34-C50)	ND	6	ug/g dry	ND				30	
<b>Physical Characteristics</b>									
% Solids	82.5	0.1	% by Wt.	81.1			1.8	25	
<b>Semi-Volatiles</b>									
Acenaphthene	ND	0.02	ug/g dry	ND				40	
Acenaphthylene	ND	0.02	ug/g dry	ND				40	
Anthracene	ND	0.02	ug/g dry	ND				40	
Benzo [a] anthracene	ND	0.02	ug/g dry	ND				40	
Benzo [a] pyrene	ND	0.02	ug/g dry	ND				40	
Benzo [b] fluoranthene	ND	0.02	ug/g dry	ND				40	
Benzo [g,h,i] perylene	ND	0.02	ug/g dry	ND				40	
Benzo [k] fluoranthene	ND	0.02	ug/g dry	ND				40	
Biphenyl	ND	0.02	ug/g dry	ND				40	
Chrysene	ND	0.02	ug/g dry	ND				40	
Dibenzo [a,h] anthracene	ND	0.02	ug/g dry	ND				40	
Fluoranthene	ND	0.02	ug/g dry	ND				40	
Fluorene	ND	0.02	ug/g dry	ND				40	
Indeno [1,2,3-cd] pyrene	ND	0.02	ug/g dry	ND				40	
1-Methylnaphthalene	ND	0.02	ug/g dry	ND				40	
2-Methylnaphthalene	ND	0.02	ug/g dry	ND				40	
Naphthalene	ND	0.01	ug/g dry	ND				40	
Phenanthrene	ND	0.02	ug/g dry	ND				40	
Pyrene	ND	0.02	ug/g dry	ND				40	
Surrogate: 2-Fluorobiphenyl	0.905		ug/g dry	ND	59.3	50-140			
Surrogate: Terphenyl-d14	1.31		ug/g dry	ND	85.7	50-140			



**Certificate of Analysis**

Report Date: 29-Jul-2013

Client: **Stantec Consulting Ltd. (Ottawa)**

Order Date: 18-Jul-2013

Client PO: 45064625

Project Description: 122510670/Boteler St

**Method Quality Control: Spike**

Analyte	Result	Reporting Limit	Units	Source Result	%REC	%REC Limit	RPD	RPD Limit	Notes
<b>Hydrocarbons</b>									
F1 PHCs (C6-C10)	199	7	ug/g	ND	99.6	80-120			
F2 PHCs (C10-C16)	81	4	ug/g	ND	80.7	60-140			
F3 PHCs (C16-C34)	206	8	ug/g	ND	99.4	60-140			
F4 PHCs (C34-C50)	178	6	ug/g	ND	129	60-140			
<b>Semi-Volatiles</b>									
Acenaphthene	0.103	0.02	ug/g	ND	53.9	50-140			
Acenaphthylene	0.107	0.02	ug/g	ND	56.3	50-140			
Anthracene	0.144	0.02	ug/g	ND	75.6	50-140			
Benzo [a] anthracene	0.181	0.02	ug/g	ND	94.9	50-140			
Benzo [a] pyrene	0.166	0.02	ug/g	ND	87.0	50-140			
Benzo [b] fluoranthene	0.232	0.02	ug/g	ND	121	50-140			
Benzo [g,h,i] perylene	0.180	0.02	ug/g	ND	94.3	50-140			
Benzo [k] fluoranthene	0.250	0.02	ug/g	ND	131	50-140			
Biphenyl	0.105	0.02	ug/g	ND	55.1	50-140			
Chrysene	0.182	0.02	ug/g	ND	95.1	50-140			
Dibenzo [a,h] anthracene	0.175	0.02	ug/g	ND	91.6	50-140			
Fluoranthene	0.186	0.02	ug/g	ND	97.2	50-140			
Fluorene	0.119	0.02	ug/g	ND	62.2	50-140			
Indeno [1,2,3-cd] pyrene	0.181	0.02	ug/g	ND	95.0	50-140			
1-Methylnaphthalene	0.100	0.02	ug/g	ND	52.4	50-140			
2-Methylnaphthalene	0.124	0.02	ug/g	ND	64.8	50-140			
Naphthalene	0.111	0.01	ug/g	ND	58.2	50-140			
Phenanthrene	0.172	0.02	ug/g	ND	90.1	50-140			
Pyrene	0.195	0.02	ug/g	ND	102	50-140			
Surrogate: 2-Fluorobiphenyl	0.763		ug/g		50.0	50-140			
<b>Volatiles</b>									
Acetone	8.39	0.50	ug/g	ND	83.9	50-140			
Benzene	3.69	0.02	ug/g	ND	92.3	60-130			
Bromodichloromethane	3.56	0.05	ug/g	ND	89.1	60-130			
Bromoform	4.18	0.05	ug/g	ND	105	60-130			
Bromomethane	3.58	0.05	ug/g	ND	89.4	50-140			
Carbon Tetrachloride	3.53	0.05	ug/g	ND	88.2	60-130			
Chlorobenzene	3.79	0.05	ug/g	ND	94.7	60-130			
Chloroethane	3.55	0.05	ug/g	ND	88.7	50-140			
Chloroform	3.77	0.05	ug/g	ND	94.4	60-130			
Chloromethane	3.50	0.20	ug/g	ND	87.5	50-140			
Dibromochloromethane	3.95	0.05	ug/g	ND	98.8	60-130			
Dichlorodifluoromethane	2.37	0.05	ug/g	ND	59.3	50-140			
1,2-Dibromoethane	3.51	0.05	ug/g	ND	87.8	60-130			
1,2-Dichlorobenzene	4.19	0.05	ug/g	ND	105	60-130			
1,3-Dichlorobenzene	4.11	0.05	ug/g	ND	103	60-130			
1,4-Dichlorobenzene	3.66	0.05	ug/g	ND	91.4	60-130			
1,1-Dichloroethane	4.26	0.05	ug/g	ND	107	60-130			
1,2-Dichloroethane	4.26	0.05	ug/g	ND	106	60-130			
1,1-Dichloroethylene	3.37	0.05	ug/g	ND	84.1	60-130			
cis-1,2-Dichloroethylene	3.90	0.05	ug/g	ND	97.5	60-130			
trans-1,2-Dichloroethylene	3.79	0.05	ug/g	ND	94.7	60-130			
1,2-Dichloropropane	3.69	0.05	ug/g	ND	92.2	60-130			

**Certificate of Analysis**

Report Date: 29-Jul-2013

Client: **Stantec Consulting Ltd. (Ottawa)**

Order Date: 18-Jul-2013

Client PO: 45064625

Project Description: 122510670/Boteler St

**Method Quality Control: Spike**

Analyte	Result	Reporting Limit	Units	Source Result	%REC	%REC Limit	RPD	RPD Limit	Notes
cis-1,3-Dichloropropylene	3.70	0.05	ug/g	ND	92.6	60-130			
trans-1,3-Dichloropropylene	4.04	0.05	ug/g	ND	101	60-130			
Ethylbenzene	3.86	0.05	ug/g	ND	96.5	60-130			
Hexane	3.41	0.05	ug/g	ND	85.3	60-130			
Methyl Ethyl Ketone (2-Butanone)	10.7	0.50	ug/g	ND	107	50-140			
Methyl Butyl Ketone (2-Hexanone)	11.0	2.00	ug/g	ND	110	50-140			
Methyl Isobutyl Ketone	13.2	0.50	ug/g	ND	132	50-140			
Methyl tert-butyl ether	11.8	0.05	ug/g	ND	118	50-140			
Methylene Chloride	4.14	0.05	ug/g	ND	103	60-130			
Styrene	4.11	0.05	ug/g	ND	103	60-130			
1,1,1,2-Tetrachloroethane	3.64	0.05	ug/g	ND	91.1	60-130			
1,1,2,2-Tetrachloroethane	4.32	0.05	ug/g	ND	108	60-130			
Tetrachloroethylene	3.40	0.05	ug/g	ND	85.1	60-130			
Toluene	3.78	0.05	ug/g	ND	94.5	60-130			
1,2,4-Trichlorobenzene	4.70	0.05	ug/g	ND	117	60-130			
1,1,1-Trichloroethane	3.60	0.05	ug/g	ND	90.1	60-130			
1,1,2-Trichloroethane	3.42	0.05	ug/g	ND	85.5	60-130			
Trichloroethylene	3.37	0.05	ug/g	ND	84.2	60-130			
Trichlorofluoromethane	2.59	0.05	ug/g	ND	64.6	50-140			
1,3,5-Trimethylbenzene	4.04	0.05	ug/g	ND	101	60-130			
Vinyl chloride	2.99	0.02	ug/g	ND	74.8	50-140			
m,p-Xylenes	7.56	0.05	ug/g	ND	94.5	60-130			
o-Xylene	4.24	0.05	ug/g	ND	106	60-130			

**Certificate of Analysis**

Client: **Stantec Consulting Ltd. (Ottawa)**

Client PO: 45064625

Project Description: 122510670/Boteler St

Report Date: 29-Jul-2013

Order Date: 18-Jul-2013

**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.

OTTAWA • KINGSTON • NIAGARA • MISSISSAUGA • SARNIA

Page 1 of 1

Client Name: <i>Stantec</i>	Project Reference: <i>122510670</i>	TAT: <input checked="" type="checkbox"/> Regular <input type="checkbox"/> 3 Day
Contact Name: <i>Jill Petrus-Dechman</i>	Quote # <i>City of Ottawa "SOA" #</i>	<input type="checkbox"/> 2 Day <input checked="" type="checkbox"/> 1 Day
Address: <i>1331 Clyde Ave Suite 400</i>	PO #	Date Required: _____
Telephone:	Email Address:	

Criteria:  O. Reg. 153/04 (As Amended) Table 1  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

Paracel Order Number:		Matrix	Air Volume	# of Containers	Sample Taken		PHC/PI-PA	BTEX	VOC	PAH	EC/SAR	FOC				
1329318					Date	Time										
Sample ID/Location Name																
1	MW13-10 SS 7 BA1403	S	✓	4	July	Am	X	X	X	X	X					2x250+120+vial
2	MW13-11 SS 6 BA1403	S	✓	3	18/2013	Am	X	X	X	X	X					2x250+vial
3	MW13-11 BA1403	S	✓	1	↓	Pm						X				120mL
4																
5																
6																
7																
8																
9																
10																

Comments: <i>MW13-10 SS7 potentially add PCB analysis. Allison will call. If have not heard from Allison, dont process PCB's.</i>			Method of Delivery: <i>Wegelin</i>
Relinquished By (Sign): <i>A. Waldich</i>	Received by Driver/Depot:	Received at Lab: <i>1600m 21</i>	Verified By: <i>[Signature]</i>
Relinquished By (Print): <i>A. Waldich</i>	Date/Time: _____	Date/Time: <i>July 18/13</i>	Date/Time: <i>July 19/13</i>
Date/Time: <i>2013/07/13 / 17:20</i>	Temperature: _____ °C	Temperature: _____ °C	pH Verified [ ] By: <i>N/A</i>

11:15a

## Certificate of Analysis

### Stantec Consulting Ltd. (Ottawa)

1331 Clyde Avenue Suite 400  
Ottawa, ON K2C 3G4  
Attn: Jill Peters-Dechman

Phone: (613) 722-4420  
Fax: (613) 738-0721

Client PO: 45064625  
Project: 122510670.220/Boteler St  
Custody: 96640

Report Date: 31-Jul-2013  
Order Date: 23-Jul-2013

**Order #: 1330139**

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

Parcel ID	Client ID
1330139-01	TP2-1
1330139-02	TP3-1
1330139-03	TP5-1
1330139-04	TP4-1
1330139-05	TP8-1
1330139-06	TP9-1
1330139-07	TP12-1
1330139-08	TP11-1
1330139-09	TP10-1
1330139-10	TP7-1

Approved By:



Mark Foto, M.Sc. For Dale Robertson, BSc  
Laboratory Director

**Certificate of Analysis**

Report Date: 31-Jul-2013

 Client: **Stantec Consulting Ltd. (Ottawa)**

Order Date: 23-Jul-2013

Client PO: 45064625

Project Description: 122510670.220/Boteler St

**Analysis Summary Table**

Analysis	Method Reference/Description	Extraction Date	Analysis Date
Boron, available	MOE (HWE), EPA 200.7 - ICP-OES	25-Jul-13	30-Jul-13
Chromium, hexavalent	MOE E3056 - Extraction, colourimetric	24-Jul-13	26-Jul-13
Mercury	EPA 7471A - CVAA, digestion	29-Jul-13	29-Jul-13
MOE Metals by ICP-OES, soil Reg 153	based on MOE E3470, ICP-OES	29-Jul-13	29-Jul-13
PAHs by GC-MS	EPA 8270 - GC-MS, extraction	25-Jul-13	27-Jul-13
PHC F1	CWS Tier 1 - P&T GC-FID	24-Jul-13	29-Jul-13
PHC F2 - F4	CWS Tier 1 - GC-FID, extraction	25-Jul-13	27-Jul-13
Solids, %	Gravimetric, calculation	25-Jul-13	25-Jul-13
VOCs by P&T GC-MS	EPA 8260 - P&T GC-MS	24-Jul-13	29-Jul-13

**Certificate of Analysis**

Report Date: 31-Jul-2013

 Client: **Stantec Consulting Ltd. (Ottawa)**

Order Date: 23-Jul-2013

Client PO: 45064625

Project Description: 122510670.220/Boteler St

Client ID:	TP2-1	TP3-1	TP5-1	TP4-1
Sample Date:	23-Jul-13	23-Jul-13	23-Jul-13	23-Jul-13
Sample ID:	1330139-01	1330139-02	1330139-03	1330139-04
MDL/Units	Soil	Soil	Soil	Soil

**Physical Characteristics**

% Solids	0.1 % by Wt.	89.4	90.5	88.5	90.8
----------	--------------	------	------	------	------

**Metals**

Antimony	1.0 ug/g dry	<1.0	<1.0	2.9	<1.0
Arsenic	1.0 ug/g dry	3.0	2.3	5.9	2.3
Barium	1.0 ug/g dry	95.4	87.3	494	113
Beryllium	1.0 ug/g dry	<1.0	<1.0	<1.0	<1.0
Boron	1.0 ug/g dry	3.4	3.5	6.5	3.4
Boron, available	0.5 ug/g dry	<0.5	<0.5	<0.5	<0.5
Cadmium	0.5 ug/g dry	<0.5	<0.5	0.6	<0.5
Chromium	1.0 ug/g dry	14.1	14.0	19.4	13.1
Chromium (VI)	0.2 ug/g dry	<0.2	<0.2	0.3	<0.2
Cobalt	1.0 ug/g dry	4.4	4.3	5.2	4.9
Copper	1.0 ug/g dry	16.2	14.4	52.0	13.6
Lead	1.0 ug/g dry	51.9	50.0	903	22.8
Mercury	0.1 ug/g dry	0.2	0.2	0.8	<0.1
Molybdenum	1.0 ug/g dry	<1.0	<1.0	<1.0	<1.0
Nickel	1.0 ug/g dry	9.1	8.4	11.1	8.9
Selenium	1.0 ug/g dry	<1.0	<1.0	<1.0	<1.0
Silver	0.5 ug/g dry	<0.5	<0.5	0.5	<0.5
Thallium	1.0 ug/g dry	<1.0	<1.0	<1.0	<1.0
Uranium	1.0 ug/g dry	<1.0	<1.0	<1.0	<1.0
Vanadium	1.0 ug/g dry	20.7	20.0	23.3	21.4
Zinc	1.0 ug/g dry	52.7	47.0	482	42.7

**Volatiles**

Acetone	0.50 ug/g dry	<0.50	<0.50	<0.50	<0.50
Benzene	0.02 ug/g dry	<0.02	<0.02	<0.02	<0.02
Bromodichloromethane	0.05 ug/g dry	<0.05	<0.05	<0.05	<0.05
Bromoform	0.05 ug/g dry	<0.05	<0.05	<0.05	<0.05
Bromomethane	0.05 ug/g dry	<0.05	<0.05	<0.05	<0.05
Carbon Tetrachloride	0.05 ug/g dry	<0.05	<0.05	<0.05	<0.05
Chlorobenzene	0.05 ug/g dry	<0.05	<0.05	<0.05	<0.05
Chloroethane	0.05 ug/g dry	<0.05	<0.05	<0.05	<0.05
Chloroform	0.05 ug/g dry	<0.05	<0.05	<0.05	<0.05



**Certificate of Analysis**

Report Date: 31-Jul-2013

 Client: **Stantec Consulting Ltd. (Ottawa)**

Order Date: 23-Jul-2013

Client PO: 45064625

Project Description: 122510670.220/Boteler St

	Client ID:	TP2-1	TP3-1	TP5-1	TP4-1
	Sample Date:	23-Jul-13	23-Jul-13	23-Jul-13	23-Jul-13
	Sample ID:	1330139-01	1330139-02	1330139-03	1330139-04
	MDL/Units	Soil	Soil	Soil	Soil
Chloromethane	0.20 ug/g dry	<0.20	<0.20	<0.20	<0.20
Dibromochloromethane	0.05 ug/g dry	<0.05	<0.05	<0.05	<0.05
Dichlorodifluoromethane	0.05 ug/g dry	<0.05	<0.05	<0.05	<0.05
1,2-Dibromoethane	0.05 ug/g dry	<0.05	<0.05	<0.05	<0.05
1,2-Dichlorobenzene	0.05 ug/g dry	<0.05	<0.05	<0.05	<0.05
1,3-Dichlorobenzene	0.05 ug/g dry	<0.05	<0.05	<0.05	<0.05
1,4-Dichlorobenzene	0.05 ug/g dry	<0.05	<0.05	<0.05	<0.05
1,1-Dichloroethane	0.05 ug/g dry	<0.05	<0.05	<0.05	<0.05
1,2-Dichloroethane	0.05 ug/g dry	<0.05	<0.05	<0.05	<0.05
1,1-Dichloroethylene	0.05 ug/g dry	<0.05	<0.05	<0.05	<0.05
cis-1,2-Dichloroethylene	0.05 ug/g dry	<0.05	<0.05	<0.05	<0.05
trans-1,2-Dichloroethylene	0.05 ug/g dry	<0.05	<0.05	<0.05	<0.05
1,2-Dichloroethylene, total	0.05 ug/g dry	<0.05	<0.05	<0.05	<0.05
1,2-Dichloropropane	0.05 ug/g dry	<0.05	<0.05	<0.05	<0.05
cis-1,3-Dichloropropylene	0.05 ug/g dry	<0.05	<0.05	<0.05	<0.05
trans-1,3-Dichloropropylene	0.05 ug/g dry	<0.05	<0.05	<0.05	<0.05
1,3-Dichloropropene, total	0.05 ug/g dry	<0.05	<0.05	<0.05	<0.05
Ethylbenzene	0.05 ug/g dry	<0.05	<0.05	<0.05	<0.05
Hexane	0.05 ug/g dry	<0.05	<0.05	<0.05	<0.05
Methyl Ethyl Ketone (2-Butanone)	0.50 ug/g dry	<0.50	<0.50	<0.50	<0.50
Methyl Butyl Ketone (2-Hexanone)	2.00 ug/g dry	<2.00	<2.00	<2.00	<2.00
Methyl Isobutyl Ketone	0.50 ug/g dry	<0.50	<0.50	<0.50	<0.50
Methyl tert-butyl ether	0.05 ug/g dry	<0.05	<0.05	<0.05	<0.05
Methylene Chloride	0.05 ug/g dry	<0.05	<0.05	<0.05	<0.05
Styrene	0.05 ug/g dry	<0.05	<0.05	<0.05	<0.05
1,1,1,2-Tetrachloroethane	0.05 ug/g dry	<0.05	<0.05	<0.05	<0.05
1,1,1,2,2-Tetrachloroethane	0.05 ug/g dry	<0.05	<0.05	<0.05	<0.05
Tetrachloroethylene	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
1,2,4-Trichlorobenzene	0.05 ug/g dry	<0.05	<0.05	<0.05	<0.05
1,1,1-Trichloroethane	0.05 ug/g dry	<0.05	<0.05	<0.05	<0.05
1,1,2-Trichloroethane	0.05 ug/g dry	<0.05	<0.05	<0.05	<0.05
Trichloroethylene	0.05 ug/g dry	<0.05	<0.05	<0.05	<0.05
Trichlorofluoromethane	0.05 ug/g dry	<0.05	<0.05	<0.05	<0.05



**Certificate of Analysis**

Report Date: 31-Jul-2013

Client: **Stantec Consulting Ltd. (Ottawa)**

Order Date: 23-Jul-2013

Client PO: 45064625

Project Description: 122510670.220/Boteler St

	Client ID:	TP2-1	TP3-1	TP5-1	TP4-1
	Sample Date:	23-Jul-13	23-Jul-13	23-Jul-13	23-Jul-13
	Sample ID:	1330139-01	1330139-02	1330139-03	1330139-04
	MDL/Units	Soil	Soil	Soil	Soil
1,3,5-Trimethylbenzene	0.05 ug/g dry	<0.05	<0.05	<0.05	<0.05
Vinyl chloride	0.02 ug/g dry	<0.02	<0.02	<0.02	<0.02
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
4-Bromofluorobenzene	Surrogate	105%	105%	107%	102%
Dibromofluoromethane	Surrogate	74.1%	75.0%	73.6%	73.1%
Toluene-d8	Surrogate	110%	110%	107%	115%

**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	38	<8	47	<8
F4 PHCs (C34-C50)	6 ug/g dry	8	<6	55	<6

**Semi-Volatiles**

Acenaphthene	0.02 ug/g dry	0.03	<0.02	0.03	0.02
Acenaphthylene	0.02 ug/g dry	0.28	0.15	0.27	0.16
Anthracene	0.02 ug/g dry	0.29	0.16	0.31	0.20
Benzo [a] anthracene	0.02 ug/g dry	0.62	0.32	0.48	0.34
Benzo [a] pyrene	0.02 ug/g dry	0.56	0.28	0.40	0.28
Benzo [b] fluoranthene	0.02 ug/g dry	1.21	0.62	0.91	0.56
Benzo [g,h,i] perylene	0.02 ug/g dry	0.40	0.18	0.25	0.16
Benzo [k] fluoranthene	0.02 ug/g dry	0.46	0.23	0.34	0.23
Biphenyl	0.02 ug/g dry	<0.02	<0.02	<0.02	<0.02
Chrysene	0.02 ug/g dry	0.66	0.34	0.53	0.37
Dibenzo [a,h] anthracene	0.02 ug/g dry	0.11	0.05	0.09	0.05
Fluoranthene	0.02 ug/g dry	1.16	0.61	1.12	0.79
Fluorene	0.02 ug/g dry	0.04	0.02	0.05	0.04
Indeno [1,2,3-cd] pyrene	0.02 ug/g dry	0.38	0.17	0.25	0.16
1-Methylnaphthalene	0.02 ug/g dry	0.05	0.04	0.03	<0.02
2-Methylnaphthalene	0.02 ug/g dry	0.06	0.05	0.04	<0.02
Methylnaphthalene (1&2)	0.04 ug/g dry	0.11	0.08	0.07	<0.04
Naphthalene	0.01 ug/g dry	0.05	0.03	0.04	0.04
Phenanthrene	0.02 ug/g dry	0.52	0.27	0.65	0.53
Pyrene	0.02 ug/g dry	1.01	0.55	0.90	0.65
2-Fluorobiphenyl	Surrogate	53.4%	67.8%	54.3%	45.7% [3]

**Certificate of Analysis**

Report Date: 31-Jul-2013

Client: **Stantec Consulting Ltd. (Ottawa)**

Order Date: 23-Jul-2013

Client PO: 45064625

Project Description: 122510670.220/Boteler St

	Client ID:	TP2-1	TP3-1	TP5-1	TP4-1
	Sample Date:	23-Jul-13	23-Jul-13	23-Jul-13	23-Jul-13
	Sample ID:	1330139-01	1330139-02	1330139-03	1330139-04
	MDL/Units	Soil	Soil	Soil	Soil
Terphenyl-d14	Surrogate	88.8%	99.1%	77.9%	96.7%

**Certificate of Analysis**

Report Date: 31-Jul-2013

 Client: **Stantec Consulting Ltd. (Ottawa)**

Order Date: 23-Jul-2013

Client PO: 45064625

Project Description: 122510670.220/Boteler St

Client ID:	TP8-1	TP9-1	TP12-1	TP11-1
Sample Date:	23-Jul-13	23-Jul-13	23-Jul-13	23-Jul-13
Sample ID:	1330139-05	1330139-06	1330139-07	1330139-08
MDL/Units	Soil	Soil	Soil	Soil

**Physical Characteristics**

% Solids	0.1 % by Wt.	94.8	91.1	89.3	89.3
----------	--------------	------	------	------	------

**Metals**

Antimony	1.0 ug/g dry	<1.0	<1.0	<1.0	9.6
Arsenic	1.0 ug/g dry	3.5	4.5	1.9	8.9
Barium	1.0 ug/g dry	117	120	125	336
Beryllium	1.0 ug/g dry	<1.0	<1.0	<1.0	<1.0
Boron	1.0 ug/g dry	5.4	4.9	3.5	8.2
Boron, available	0.5 ug/g dry	<0.5	<0.5	<0.5	<0.5
Cadmium	0.5 ug/g dry	<0.5	<0.5	<0.5	<0.5
Chromium	1.0 ug/g dry	8.5	13.9	15.6	16.9
Chromium (VI)	0.2 ug/g dry	<0.2	<0.2	<0.2	0.3
Cobalt	1.0 ug/g dry	3.6	4.8	5.1	5.5
Copper	1.0 ug/g dry	9.8	24.8	13.9	41.9
Lead	1.0 ug/g dry	29.2	131	71.6	742
Mercury	0.1 ug/g dry	<0.1	0.4	0.1	1.9
Molybdenum	1.0 ug/g dry	<1.0	<1.0	<1.0	<1.0
Nickel	1.0 ug/g dry	7.8	9.9	9.8	10.6
Selenium	1.0 ug/g dry	<1.0	<1.0	<1.0	<1.0
Silver	0.5 ug/g dry	<0.5	<0.5	<0.5	0.6
Thallium	1.0 ug/g dry	<1.0	<1.0	<1.0	<1.0
Uranium	1.0 ug/g dry	<1.0	<1.0	<1.0	<1.0
Vanadium	1.0 ug/g dry	11.6	18.1	23.9	17.4
Zinc	1.0 ug/g dry	27.9	73.4	67.8	285

**Volatiles**

Acetone	0.50 ug/g dry	<0.50	<0.50	<0.50	<0.50
Benzene	0.02 ug/g dry	<0.02	<0.02	<0.02	<0.02
Bromodichloromethane	0.05 ug/g dry	<0.05	<0.05	<0.05	<0.05
Bromoform	0.05 ug/g dry	<0.05	<0.05	<0.05	<0.05
Bromomethane	0.05 ug/g dry	<0.05	<0.05	<0.05	<0.05
Carbon Tetrachloride	0.05 ug/g dry	<0.05	<0.05	<0.05	<0.05
Chlorobenzene	0.05 ug/g dry	<0.05	<0.05	<0.05	<0.05
Chloroethane	0.05 ug/g dry	<0.05	<0.05	<0.05	<0.05
Chloroform	0.05 ug/g dry	<0.05	<0.05	<0.05	<0.05

**Certificate of Analysis**

Report Date: 31-Jul-2013

 Client: **Stantec Consulting Ltd. (Ottawa)**

Order Date: 23-Jul-2013

Client PO: 45064625

Project Description: 122510670.220/Boteler St

	Client ID:	TP8-1	TP9-1	TP12-1	TP11-1
	Sample Date:	23-Jul-13	23-Jul-13	23-Jul-13	23-Jul-13
	Sample ID:	1330139-05	1330139-06	1330139-07	1330139-08
	MDL/Units	Soil	Soil	Soil	Soil
Chloromethane	0.20 ug/g dry	<0.20	<0.20	<0.20	<0.20
Dibromochloromethane	0.05 ug/g dry	<0.05	<0.05	<0.05	<0.05
Dichlorodifluoromethane	0.05 ug/g dry	<0.05	<0.05	<0.05	<0.05
1,2-Dibromoethane	0.05 ug/g dry	<0.05	<0.05	<0.05	<0.05
1,2-Dichlorobenzene	0.05 ug/g dry	<0.05	<0.05	<0.05	<0.05
1,3-Dichlorobenzene	0.05 ug/g dry	<0.05	<0.05	<0.05	<0.05
1,4-Dichlorobenzene	0.05 ug/g dry	<0.05	<0.05	<0.05	<0.05
1,1-Dichloroethane	0.05 ug/g dry	<0.05	<0.05	<0.05	<0.05
1,2-Dichloroethane	0.05 ug/g dry	<0.05	<0.05	<0.05	<0.05
1,1-Dichloroethylene	0.05 ug/g dry	<0.05	<0.05	<0.05	<0.05
cis-1,2-Dichloroethylene	0.05 ug/g dry	<0.05	<0.05	<0.05	<0.05
trans-1,2-Dichloroethylene	0.05 ug/g dry	<0.05	<0.05	<0.05	<0.05
1,2-Dichloroethylene, total	0.05 ug/g dry	<0.05	<0.05	<0.05	<0.05
1,2-Dichloropropane	0.05 ug/g dry	<0.05	<0.05	<0.05	<0.05
cis-1,3-Dichloropropylene	0.05 ug/g dry	<0.05	<0.05	<0.05	<0.05
trans-1,3-Dichloropropylene	0.05 ug/g dry	<0.05	<0.05	<0.05	<0.05
1,3-Dichloropropene, total	0.05 ug/g dry	<0.05	<0.05	<0.05	<0.05
Ethylbenzene	0.05 ug/g dry	<0.05	<0.05	<0.05	<0.05
Hexane	0.05 ug/g dry	<0.05	<0.05	<0.05	<0.05
Methyl Ethyl Ketone (2-Butanone)	0.50 ug/g dry	<0.50	<0.50	<0.50	<0.50
Methyl Butyl Ketone (2-Hexanone)	2.00 ug/g dry	<2.00	<2.00	<2.00	<2.00
Methyl Isobutyl Ketone	0.50 ug/g dry	<0.50	<0.50	<0.50	<0.50
Methyl tert-butyl ether	0.05 ug/g dry	<0.05	<0.05	<0.05	<0.05
Methylene Chloride	0.05 ug/g dry	<0.05	<0.05	<0.05	<0.05
Styrene	0.05 ug/g dry	<0.05	<0.05	<0.05	<0.05
1,1,1,2-Tetrachloroethane	0.05 ug/g dry	<0.05	<0.05	<0.05	<0.05
1,1,2,2-Tetrachloroethane	0.05 ug/g dry	<0.05	<0.05	<0.05	<0.05
Tetrachloroethylene	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
1,2,4-Trichlorobenzene	0.05 ug/g dry	<0.05	<0.05	<0.05	<0.05
1,1,1-Trichloroethane	0.05 ug/g dry	<0.05	<0.05	<0.05	<0.05
1,1,2-Trichloroethane	0.05 ug/g dry	<0.05	<0.05	<0.05	<0.05
Trichloroethylene	0.05 ug/g dry	<0.05	<0.05	<0.05	<0.05

**Certificate of Analysis**

Report Date: 31-Jul-2013

Client: **Stantec Consulting Ltd. (Ottawa)**

Order Date: 23-Jul-2013

Client PO: 45064625

Project Description: 122510670.220/Boteler St

	Client ID:	TP8-1	TP9-1	TP12-1	TP11-1
	Sample Date:	23-Jul-13	23-Jul-13	23-Jul-13	23-Jul-13
	Sample ID:	1330139-05	1330139-06	1330139-07	1330139-08
	MDL/Units	Soil	Soil	Soil	Soil
Trichlorofluoromethane	0.05 ug/g dry	<0.05	<0.05	<0.05	<0.05
1,3,5-Trimethylbenzene	0.05 ug/g dry	<0.05	<0.05	<0.05	<0.05
Vinyl chloride	0.02 ug/g dry	<0.02	<0.02	<0.02	<0.02
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
4-Bromofluorobenzene	Surrogate	106%	92.1%	86.8%	86.7%
Dibromofluoromethane	Surrogate	72.4%	91.5%	99.5%	101%
Toluene-d8	Surrogate	113%	90.7%	92.8%	90.2%

**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	126	89	<8
F4 PHCs (C34-C50)	6 ug/g dry	<6	50	19	<6

**Semi-Volatiles**

Acenaphthene	0.02 ug/g dry	<0.02	0.04	0.22	0.06
Acenaphthylene	0.02 ug/g dry	0.19	0.50	0.54	0.10
Anthracene	0.02 ug/g dry	0.23	0.67	1.18	0.27
Benzo [a] anthracene	0.02 ug/g dry	0.40	1.05	2.47	0.45
Benzo [a] pyrene	0.02 ug/g dry	0.33	0.78	1.94	0.35
Benzo [b] fluoranthene	0.02 ug/g dry	0.62	1.46	3.08	0.75
Benzo [g,h,i] perylene	0.02 ug/g dry	0.18	0.41	1.00	0.18
Benzo [k] fluoranthene	0.02 ug/g dry	0.23	0.57	1.38	0.29
Biphenyl	0.02 ug/g dry	<0.02	<0.02	0.02	<0.02
Chrysene	0.02 ug/g dry	0.42	0.96	2.26	0.47
Dibenzo [a,h] anthracene	0.02 ug/g dry	0.06	0.15	0.41	0.05
Fluoranthene	0.02 ug/g dry	0.80	2.68	5.77	1.00
Fluorene	0.02 ug/g dry	0.02	0.13	0.29	0.08
Indeno [1,2,3-cd] pyrene	0.02 ug/g dry	0.19	0.42	1.06	0.18
1-Methylnaphthalene	0.02 ug/g dry	0.02	0.04	0.09	0.05
2-Methylnaphthalene	0.02 ug/g dry	0.02	0.04	0.09	0.05
Methylnaphthalene (1&2)	0.04 ug/g dry	0.04	0.08	0.18	0.10
Naphthalene	0.01 ug/g dry	0.03	0.04	0.13	0.07
Phenanthrene	0.02 ug/g dry	0.38	1.71	3.18	0.85

**Certificate of Analysis**

Report Date: 31-Jul-2013

Client: **Stantec Consulting Ltd. (Ottawa)**

Order Date: 23-Jul-2013

Client PO: 45064625

Project Description: 122510670.220/Boteler St

	Client ID:	TP8-1	TP9-1	TP12-1	TP11-1
	Sample Date:	23-Jul-13	23-Jul-13	23-Jul-13	23-Jul-13
	Sample ID:	1330139-05	1330139-06	1330139-07	1330139-08
	MDL/Units	Soil	Soil	Soil	Soil
Pyrene	0.02 ug/g dry	0.73	2.16	4.81	0.82
2-Fluorobiphenyl	Surrogate	60.2%	56.5%	57.2%	55.5%
Terphenyl-d14	Surrogate	99.3%	96.7%	59.5%	85.7%

**Certificate of Analysis**

Report Date: 31-Jul-2013

 Client: **Stantec Consulting Ltd. (Ottawa)**

Order Date: 23-Jul-2013

Client PO: 45064625

Project Description: 122510670.220/Boteler St

<b>Client ID:</b>	TP10-1	TP7-1	-	-
<b>Sample Date:</b>	23-Jul-13	23-Jul-13	-	-
<b>Sample ID:</b>	1330139-09	1330139-10	-	-
<b>MDL/Units</b>	Soil	Soil	-	-

**Physical Characteristics**

% Solids	0.1 % by Wt.	90.9	83.8	-	-
----------	--------------	------	------	---	---

**Metals**

Antimony	1.0 ug/g dry	<1.0	<1.0	-	-
Arsenic	1.0 ug/g dry	3.2	2.6	-	-
Barium	1.0 ug/g dry	114	141	-	-
Beryllium	1.0 ug/g dry	<1.0	<1.0	-	-
Boron	1.0 ug/g dry	5.4	3.3	-	-
Boron, available	0.5 ug/g dry	<0.5	<0.5	-	-
Cadmium	0.5 ug/g dry	<0.5	<0.5	-	-
Chromium	1.0 ug/g dry	11.6	20.5	-	-
Chromium (VI)	0.2 ug/g dry	<0.2	0.5	-	-
Cobalt	1.0 ug/g dry	4.3	6.0	-	-
Copper	1.0 ug/g dry	22.8	13.9	-	-
Lead	1.0 ug/g dry	88.6	54.8	-	-
Mercury	0.1 ug/g dry	0.4	0.4	-	-
Molybdenum	1.0 ug/g dry	<1.0	<1.0	-	-
Nickel	1.0 ug/g dry	9.2	11.1	-	-
Selenium	1.0 ug/g dry	<1.0	<1.0	-	-
Silver	0.5 ug/g dry	<0.5	<0.5	-	-
Thallium	1.0 ug/g dry	<1.0	<1.0	-	-
Uranium	1.0 ug/g dry	<1.0	<1.0	-	-
Vanadium	1.0 ug/g dry	17.0	29.2	-	-
Zinc	1.0 ug/g dry	58.9	72.5	-	-

**Volatiles**

Acetone	0.50 ug/g dry	<0.50	<0.50	-	-
Benzene	0.02 ug/g dry	<0.02	<0.02	-	-
Bromodichloromethane	0.05 ug/g dry	<0.05	<0.05	-	-
Bromoform	0.05 ug/g dry	<0.05	<0.05	-	-
Bromomethane	0.05 ug/g dry	<0.05	<0.05	-	-
Carbon Tetrachloride	0.05 ug/g dry	<0.05	<0.05	-	-
Chlorobenzene	0.05 ug/g dry	<0.05	<0.05	-	-
Chloroethane	0.05 ug/g dry	<0.05	<0.05	-	-
Chloroform	0.05 ug/g dry	<0.05	<0.05	-	-

**Certificate of Analysis**

Report Date: 31-Jul-2013

Order Date: 23-Jul-2013

 Client: **Stantec Consulting Ltd. (Ottawa)**

Client PO: 45064625

Project Description: 122510670.220/Boteler St

	Client ID:	TP10-1	TP7-1		
	Sample Date:	23-Jul-13	23-Jul-13		
	Sample ID:	1330139-09	1330139-10		
	MDL/Units	Soil	Soil		
Chloromethane	0.20 ug/g dry	<0.20	<0.20	-	-
Dibromochloromethane	0.05 ug/g dry	<0.05	<0.05	-	-
Dichlorodifluoromethane	0.05 ug/g dry	<0.05	<0.05	-	-
1,2-Dibromoethane	0.05 ug/g dry	<0.05	<0.05	-	-
1,2-Dichlorobenzene	0.05 ug/g dry	<0.05	<0.05	-	-
1,3-Dichlorobenzene	0.05 ug/g dry	<0.05	<0.05	-	-
1,4-Dichlorobenzene	0.05 ug/g dry	<0.05	<0.05	-	-
1,1-Dichloroethane	0.05 ug/g dry	<0.05	<0.05	-	-
1,2-Dichloroethane	0.05 ug/g dry	<0.05	<0.05	-	-
1,1-Dichloroethylene	0.05 ug/g dry	<0.05	<0.05	-	-
cis-1,2-Dichloroethylene	0.05 ug/g dry	<0.05	<0.05	-	-
trans-1,2-Dichloroethylene	0.05 ug/g dry	<0.05	<0.05	-	-
1,2-Dichloroethylene, total	0.05 ug/g dry	<0.05	<0.05	-	-
1,2-Dichloropropane	0.05 ug/g dry	<0.05	<0.05	-	-
cis-1,3-Dichloropropylene	0.05 ug/g dry	<0.05	<0.05	-	-
trans-1,3-Dichloropropylene	0.05 ug/g dry	<0.05	<0.05	-	-
1,3-Dichloropropene, total	0.05 ug/g dry	<0.05	<0.05	-	-
Ethylbenzene	0.05 ug/g dry	<0.05	<0.05	-	-
Hexane	0.05 ug/g dry	<0.05	<0.05	-	-
Methyl Ethyl Ketone (2-Butanone)	0.50 ug/g dry	<0.50	<0.50	-	-
Methyl Butyl Ketone (2-Hexanone)	2.00 ug/g dry	<2.00	<2.00	-	-
Methyl Isobutyl Ketone	0.50 ug/g dry	<0.50	<0.50	-	-
Methyl tert-butyl ether	0.05 ug/g dry	<0.05	<0.05	-	-
Methylene Chloride	0.05 ug/g dry	<0.05	<0.05	-	-
Styrene	0.05 ug/g dry	<0.05	<0.05	-	-
1,1,1,2-Tetrachloroethane	0.05 ug/g dry	<0.05	<0.05	-	-
1,1,2,2-Tetrachloroethane	0.05 ug/g dry	<0.05	<0.05	-	-
Tetrachloroethylene	0.05 ug/g dry	<0.05	<0.05	-	-
Toluene	0.05 ug/g dry	<0.05	<0.05	-	-
1,2,4-Trichlorobenzene	0.05 ug/g dry	<0.05	<0.05	-	-
1,1,1-Trichloroethane	0.05 ug/g dry	<0.05	<0.05	-	-
1,1,2-Trichloroethane	0.05 ug/g dry	<0.05	<0.05	-	-
Trichloroethylene	0.05 ug/g dry	<0.05	<0.05	-	-
Trichlorofluoromethane	0.05 ug/g dry	<0.05	<0.05	-	-

 P: 1-800-749-1947  
 E: PARACEL@PARACELLABS.COM

WWW.PARACELLABS.COM

**OTTAWA**  
 300-2319 St. Laurent Blvd.  
 Ottawa, ON K1G 4J8

**MISSISSAUGA**  
 6845 Kitchener Rd. Unit #27  
 Mississauga, ON L5N 6J3

**NIAGARA FALLS**  
 5415 Morning Glory Cr.  
 Niagara Falls, ON L2J 0A3

**SARNIA**  
 123 Christina St. N.  
 Sarnia, ON N7T 5T7



**Certificate of Analysis**

Report Date: 31-Jul-2013

Order Date: 23-Jul-2013

 Client: **Stantec Consulting Ltd. (Ottawa)**

Client PO: 45064625

Project Description: 122510670.220/Boteler St

	MDL/Units	Client ID:	TP10-1	TP7-1		
		Sample Date:	23-Jul-13	23-Jul-13		
		Sample ID:	1330139-09	1330139-10		
			Soil	Soil	-	-
1,3,5-Trimethylbenzene	0.05 ug/g dry		<0.05	<0.05	-	-
Vinyl chloride	0.02 ug/g dry		<0.02	<0.02	-	-
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	-	-
4-Bromofluorobenzene	Surrogate		86.6%	87.3%	-	-
Dibromofluoromethane	Surrogate		101%	98.7%	-	-
Toluene-d8	Surrogate		91.9%	90.6%	-	-

**Hydrocarbons**

F1 PHCs (C6-C10)	7 ug/g dry	<7	<7	-	-
F2 PHCs (C10-C16)	4 ug/g dry	26	<4	-	-
F3 PHCs (C16-C34)	8 ug/g dry	184	51	-	-
F4 PHCs (C34-C50)	6 ug/g dry	55	19	-	-

**Semi-Volatiles**

Acenaphthene	0.02 ug/g dry	2.22 [2]	<0.02	-	-
Acenaphthylene	0.02 ug/g dry	11.3 [2]	0.25	-	-
Anthracene	0.02 ug/g dry	28.1 [2]	0.19	-	-
Benzo [a] anthracene	0.02 ug/g dry	44.4 [2]	0.39	-	-
Benzo [a] pyrene	0.02 ug/g dry	34.4 [2]	0.40	-	-
Benzo [b] fluoranthene	0.02 ug/g dry	67.5 [2]	0.77	-	-
Benzo [g,h,i] perylene	0.02 ug/g dry	21.4 [2]	0.24	-	-
Benzo [k] fluoranthene	0.02 ug/g dry	26.7 [2]	0.34	-	-
Biphenyl	0.02 ug/g dry	<0.80 [1] [2]	<0.02	-	-
Chrysene	0.02 ug/g dry	44.2 [2]	0.42	-	-
Dibenzo [a,h] anthracene	0.02 ug/g dry	5.85 [2]	0.06	-	-
Fluoranthene	0.02 ug/g dry	116 [2]	0.78	-	-
Fluorene	0.02 ug/g dry	7.52 [2]	0.02	-	-
Indeno [1,2,3-cd] pyrene	0.02 ug/g dry	20.8 [2]	0.25	-	-
1-Methylnaphthalene	0.02 ug/g dry	1.38 [2]	<0.02	-	-
2-Methylnaphthalene	0.02 ug/g dry	1.14 [2]	<0.02	-	-
Methylnaphthalene (1&2)	0.04 ug/g dry	2.52 [2]	<0.04	-	-
Naphthalene	0.01 ug/g dry	1.18 [2]	0.02	-	-
Phenanthrene	0.02 ug/g dry	69.0 [2]	0.27	-	-
Pyrene	0.02 ug/g dry	94.0 [2]	0.69	-	-

**Certificate of Analysis**

Report Date: 31-Jul-2013

Client: **Stantec Consulting Ltd. (Ottawa)**

Order Date: 23-Jul-2013

Client PO: 45064625

Project Description: 122510670.220/Boteler St

	Client ID:	TP10-1	TP7-1	-	-
	Sample Date:	23-Jul-13	23-Jul-13	-	-
	Sample ID:	1330139-09	1330139-10	-	-
	MDL/Units	Soil	Soil	-	-
2-Fluorobiphenyl	Surrogate	-	54.1%	-	-
Terphenyl-d14	Surrogate	-	85.3%	-	-

**Certificate of Analysis**

Report Date: 31-Jul-2013

Client: **Stantec Consulting Ltd. (Ottawa)**

Order Date: 23-Jul-2013

Client PO: 45064625

Project Description: 122510670.220/Boteler St

**Method Quality Control: Blank**

Analyte	Result	Reporting Limit	Units	Source Result	%REC	%REC Limit	RPD	RPD Limit	Notes
<b>Hydrocarbons</b>									
F1 PHCs (C6-C10)	ND	7	ug/g						
F2 PHCs (C10-C16)	ND	4	ug/g						
F3 PHCs (C16-C34)	ND	8	ug/g						
F4 PHCs (C34-C50)	ND	6	ug/g						
<b>Metals</b>									
Antimony	ND	1.0	ug/g						
Arsenic	ND	1.0	ug/g						
Barium	ND	1.0	ug/g						
Beryllium	ND	1.0	ug/g						
Boron, available	ND	0.5	ug/g						
Boron	ND	1.0	ug/g						
Cadmium	ND	0.5	ug/g						
Chromium (VI)	ND	0.2	ug/g						
Chromium	ND	1.0	ug/g						
Cobalt	ND	1.0	ug/g						
Copper	ND	1.0	ug/g						
Lead	ND	1.0	ug/g						
Mercury	ND	0.1	ug/g						
Molybdenum	ND	1.0	ug/g						
Nickel	ND	1.0	ug/g						
Selenium	ND	1.0	ug/g						
Silver	ND	0.5	ug/g						
Thallium	ND	1.0	ug/g						
Uranium	ND	1.0	ug/g						
Vanadium	ND	1.0	ug/g						
Zinc	ND	1.0	ug/g						
<b>Semi-Volatiles</b>									
Acenaphthene	ND	0.02	ug/g						
Acenaphthylene	ND	0.02	ug/g						
Anthracene	ND	0.02	ug/g						
Benzo [a] anthracene	ND	0.02	ug/g						
Benzo [a] pyrene	ND	0.02	ug/g						
Benzo [b] fluoranthene	ND	0.02	ug/g						
Benzo [g,h,i] perylene	ND	0.02	ug/g						
Benzo [k] fluoranthene	ND	0.02	ug/g						
Biphenyl	ND	0.02	ug/g						
Chrysene	ND	0.02	ug/g						
Dibenzo [a,h] anthracene	ND	0.02	ug/g						
Fluoranthene	ND	0.02	ug/g						
Fluorene	ND	0.02	ug/g						
Indeno [1,2,3-cd] pyrene	ND	0.02	ug/g						
1-Methylnaphthalene	ND	0.02	ug/g						
2-Methylnaphthalene	ND	0.02	ug/g						
Methylnaphthalene (1&2)	ND	0.04	ug/g						
Naphthalene	ND	0.01	ug/g						
Phenanthrene	ND	0.02	ug/g						
Pyrene	ND	0.02	ug/g						
Surrogate: 2-Fluorobiphenyl	0.729		ug/g		54.7	50-140			
Surrogate: Terphenyl-d14	1.46		ug/g		109	50-140			
<b>Volatiles</b>									
Acetone	ND	0.50	ug/g						
Benzene	ND	0.02	ug/g						
Bromodichloromethane	ND	0.05	ug/g						
Bromoform	ND	0.05	ug/g						
Bromomethane	ND	0.05	ug/g						

**Certificate of Analysis**

Report Date: 31-Jul-2013

Client: **Stantec Consulting Ltd. (Ottawa)**

Order Date: 23-Jul-2013

Client PO: 45064625

Project Description: 122510670.220/Boteler St

**Method Quality Control: Blank**

Analyte	Result	Reporting Limit	Units	Source Result	%REC	%REC Limit	RPD	RPD Limit	Notes
Carbon Tetrachloride	ND	0.05	ug/g						
Chlorobenzene	ND	0.05	ug/g						
Chloroethane	ND	0.05	ug/g						
Chloroform	ND	0.05	ug/g						
Chloromethane	ND	0.20	ug/g						
Dibromochloromethane	ND	0.05	ug/g						
Dichlorodifluoromethane	ND	0.05	ug/g						
1,2-Dibromoethane	ND	0.05	ug/g						
1,2-Dichlorobenzene	ND	0.05	ug/g						
1,3-Dichlorobenzene	ND	0.05	ug/g						
1,4-Dichlorobenzene	ND	0.05	ug/g						
1,1-Dichloroethane	ND	0.05	ug/g						
1,2-Dichloroethane	ND	0.05	ug/g						
1,1-Dichloroethylene	ND	0.05	ug/g						
cis-1,2-Dichloroethylene	ND	0.05	ug/g						
trans-1,2-Dichloroethylene	ND	0.05	ug/g						
1,2-Dichloroethylene, total	ND	0.05	ug/g						
1,2-Dichloropropane	ND	0.05	ug/g						
cis-1,3-Dichloropropylene	ND	0.05	ug/g						
trans-1,3-Dichloropropylene	ND	0.05	ug/g						
1,3-Dichloropropene, total	ND	0.05	ug/g						
Ethylbenzene	ND	0.05	ug/g						
Hexane	ND	0.05	ug/g						
Methyl Ethyl Ketone (2-Butanone)	ND	0.50	ug/g						
Methyl Butyl Ketone (2-Hexanone)	ND	2.00	ug/g						
Methyl Isobutyl Ketone	ND	0.50	ug/g						
Methyl tert-butyl ether	ND	0.05	ug/g						
Methylene Chloride	ND	0.05	ug/g						
Styrene	ND	0.05	ug/g						
1,1,1,2-Tetrachloroethane	ND	0.05	ug/g						
1,1,2,2-Tetrachloroethane	ND	0.05	ug/g						
Tetrachloroethylene	ND	0.05	ug/g						
Toluene	ND	0.05	ug/g						
1,2,4-Trichlorobenzene	ND	0.05	ug/g						
1,1,1-Trichloroethane	ND	0.05	ug/g						
1,1,2-Trichloroethane	ND	0.05	ug/g						
Trichloroethylene	ND	0.05	ug/g						
Trichlorofluoromethane	ND	0.05	ug/g						
1,3,5-Trimethylbenzene	ND	0.05	ug/g						
Vinyl chloride	ND	0.02	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: 4-Bromofluorobenzene	3.63		ug/g		114	50-140			
Surrogate: Dibromofluoromethane	2.28		ug/g		71.2	50-140			
Surrogate: Toluene-d8	3.72		ug/g		116	50-140			

**Certificate of Analysis**

Report Date: 31-Jul-2013

Client: **Stantec Consulting Ltd. (Ottawa)**

Order Date: 23-Jul-2013

Client PO: 45064625

Project Description: 122510670.220/Boteler St

**Method Quality Control: Duplicate**

Analyte	Result	Reporting Limit	Units	Source Result	%REC	%REC Limit	RPD	RPD Limit	Notes
<b>Hydrocarbons</b>									
F1 PHCs (C6-C10)	ND	7	ug/g dry	ND				40	
F2 PHCs (C10-C16)	ND	4	ug/g dry	ND				30	
F3 PHCs (C16-C34)	33	8	ug/g dry	26			20.8	30	
F4 PHCs (C34-C50)	9	6	ug/g dry	11			20.2	30	
<b>Metals</b>									
Antimony	ND	1.0	ug/g dry	ND			0.0	30	
Arsenic	2.44	1.0	ug/g dry	3.08			23.2	30	
Barium	160	10.0	ug/g dry	155			3.2	30	
Beryllium	ND	1.0	ug/g dry	ND			0.0	30	
Boron, available	ND	0.5	ug/g dry	ND			0.0	35	
Boron	12.8	1.0	ug/g dry	11.3			12.1	30	
Cadmium	ND	0.5	ug/g dry	ND			0.0	30	
Chromium (VI)	ND	0.2	ug/g dry	ND				35	
Chromium	13.8	1.0	ug/g dry	14.0			1.1	30	
Cobalt	7.44	1.0	ug/g dry	6.96			6.6	30	
Copper	18.3	1.0	ug/g dry	21.1			13.8	30	
Lead	25.9	1.0	ug/g dry	24.9			3.9	30	
Mercury	0.232	0.1	ug/g dry	0.194			18.1	35	
Molybdenum	ND	1.0	ug/g dry	ND			0.0	30	
Nickel	13.7	1.0	ug/g dry	14.0			2.1	30	
Selenium	ND	1.0	ug/g dry	ND			0.0	30	
Silver	ND	0.5	ug/g dry	ND			0.0	30	
Thallium	ND	1.0	ug/g dry	ND			0.0	30	
Uranium	5.13	1.0	ug/g dry	5.20			1.3	30	
Vanadium	11.3	1.0	ug/g dry	11.1			2.0	30	
Zinc	25.8	1.0	ug/g dry	26.3			2.1	30	
<b>Physical Characteristics</b>									
% Solids	84.3	0.1	% by Wt.	85.4			1.3	25	
<b>Semi-Volatiles</b>									
Acenaphthene	ND	0.02	ug/g dry	ND				40	
Acenaphthylene	0.188	0.02	ug/g dry	0.145			25.7	40	
Anthracene	0.183	0.02	ug/g dry	0.156			16.0	40	
Benzo [a] anthracene	0.311	0.02	ug/g dry	0.320			3.1	40	
Benzo [a] pyrene	0.343	0.02	ug/g dry	0.279			20.7	40	
Benzo [b] fluoranthene	0.707	0.02	ug/g dry	0.621			12.9	40	
Benzo [g,h,i] perylene	0.230	0.02	ug/g dry	0.184			21.9	40	
Benzo [k] fluoranthene	0.262	0.02	ug/g dry	0.230			13.2	40	
Biphenyl	ND	0.02	ug/g dry	ND				40	
Chrysene	0.328	0.02	ug/g dry	0.343			4.4	40	
Dibenzo [a,h] anthracene	0.067	0.02	ug/g dry	0.055			19.6	40	
Fluoranthene	0.710	0.02	ug/g dry	0.614			14.5	40	
Fluorene	0.021	0.02	ug/g dry	0.021			3.1	40	
Indeno [1,2,3-cd] pyrene	0.216	0.02	ug/g dry	0.172			22.8	40	
1-Methylnaphthalene	0.028	0.02	ug/g dry	0.038			30.6	40	
2-Methylnaphthalene	0.030	0.02	ug/g dry	0.046			41.7	40	QR-01
Naphthalene	0.028	0.01	ug/g dry	0.033			19.3	40	
Phenanthrene	0.269	0.02	ug/g dry	0.275			1.9	40	
Pyrene	0.648	0.02	ug/g dry	0.546			17.0	40	
Surrogate: 2-Fluorobiphenyl	0.931		ug/g dry	ND	63.2	50-140			
Surrogate: Terphenyl-d14	1.54		ug/g dry	ND	105	50-140			
<b>Volatiles</b>									
Acetone	ND	0.50	ug/g dry	ND				50	
Benzene	ND	0.02	ug/g dry	ND				50	

**Certificate of Analysis**

Report Date: 31-Jul-2013

Client: **Stantec Consulting Ltd. (Ottawa)**

Order Date: 23-Jul-2013

Client PO: 45064625

Project Description: 122510670.220/Boteler St

**Method Quality Control: Duplicate**

Analyte	Result	Reporting Limit	Units	Source Result	%REC	%REC Limit	RPD	RPD Limit	Notes
Bromodichloromethane	ND	0.05	ug/g dry	ND				50	
Bromoform	ND	0.05	ug/g dry	ND				50	
Bromomethane	ND	0.05	ug/g dry	ND				50	
Carbon Tetrachloride	ND	0.05	ug/g dry	ND				50	
Chlorobenzene	ND	0.05	ug/g dry	ND				50	
Chloroethane	ND	0.05	ug/g dry	ND				50	
Chloroform	ND	0.05	ug/g dry	ND				50	
Chloromethane	ND	0.20	ug/g dry	ND				50	
Dibromochloromethane	ND	0.05	ug/g dry	ND				50	
Dichlorodifluoromethane	ND	0.05	ug/g dry	ND				50	
1,2-Dibromoethane	ND	0.05	ug/g dry	ND				50	
1,2-Dichlorobenzene	ND	0.05	ug/g dry	ND				50	
1,3-Dichlorobenzene	ND	0.05	ug/g dry	ND				50	
1,4-Dichlorobenzene	ND	0.05	ug/g dry	ND				50	
1,1-Dichloroethane	ND	0.05	ug/g dry	ND				50	
1,2-Dichloroethane	ND	0.05	ug/g dry	ND				50	
1,1-Dichloroethylene	ND	0.05	ug/g dry	ND				50	
cis-1,2-Dichloroethylene	ND	0.05	ug/g dry	ND				50	
trans-1,2-Dichloroethylene	ND	0.05	ug/g dry	ND				50	
1,2-Dichloropropane	ND	0.05	ug/g dry	ND				50	
cis-1,3-Dichloropropylene	ND	0.05	ug/g dry	ND				50	
trans-1,3-Dichloropropylene	ND	0.05	ug/g dry	ND				50	
Ethylbenzene	ND	0.05	ug/g dry	ND				50	
Hexane	ND	0.05	ug/g dry	ND				50	
Methyl Ethyl Ketone (2-Butanone)	ND	0.50	ug/g dry	ND				50	
Methyl Butyl Ketone (2-Hexanone)	ND	2.00	ug/g dry	ND				50	
Methyl Isobutyl Ketone	ND	0.50	ug/g dry	ND				50	
Methyl tert-butyl ether	ND	0.05	ug/g dry	ND				50	
Methylene Chloride	ND	0.05	ug/g dry	ND				50	
Styrene	ND	0.05	ug/g dry	ND				50	
1,1,1,2-Tetrachloroethane	ND	0.05	ug/g dry	ND				50	
1,1,1,2-Tetrachloroethane	ND	0.05	ug/g dry	ND				50	
Tetrachloroethylene	ND	0.05	ug/g dry	ND				50	
Toluene	ND	0.05	ug/g dry	ND				50	
1,2,4-Trichlorobenzene	ND	0.05	ug/g dry	ND				50	
1,1,1-Trichloroethane	ND	0.05	ug/g dry	ND				50	
1,1,2-Trichloroethane	ND	0.05	ug/g dry	ND				50	
Trichloroethylene	ND	0.05	ug/g dry	ND				50	
Trichlorofluoromethane	ND	0.05	ug/g dry	ND				50	
1,3,5-Trimethylbenzene	ND	0.05	ug/g dry	ND				50	
Vinyl chloride	ND	0.02	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: 4-Bromofluorobenzene	4.93		ug/g dry	ND	102	50-140			
Surrogate: Dibromofluoromethane	3.98		ug/g dry	ND	82.1	50-140			
Surrogate: Toluene-d8	5.31		ug/g dry	ND	110	50-140			

**Certificate of Analysis**

Report Date: 31-Jul-2013

Client: **Stantec Consulting Ltd. (Ottawa)**

Order Date: 23-Jul-2013

Client PO: 45064625

Project Description: 122510670.220/Boteler St

**Method Quality Control: Spike**

Analyte	Result	Reporting Limit	Units	Source Result	%REC	%REC Limit	RPD	RPD Limit	Notes
<b>Hydrocarbons</b>									
F1 PHCs (C6-C10)	196	7	ug/g	ND	97.8	80-120			
F2 PHCs (C10-C16)	96	4	ug/g	ND	98.2	60-140			
F3 PHCs (C16-C34)	252	8	ug/g	26	112	60-140			
F4 PHCs (C34-C50)	171	6	ug/g	11	120	60-140			
<b>Metals</b>									
Antimony	226		ug/L	2.24	89.4	70-130			
Arsenic	250		ug/L	61.5	75.4	70-130			
Barium	458		ug/L	ND	91.6	70-130			
Beryllium	204		ug/L	6.96	78.9	70-130			
Boron, available	3.53	0.5	ug/g	ND	70.6	70-122			
Boron	450		ug/L	227	89.3	70-130			
Cadmium	192		ug/L	0.77	76.4	70-130			
Chromium (VI)	4.6	0.2	ug/g	ND	91.0	70-130			
Chromium	477		ug/L	280	78.7	70-130			
Cobalt	313		ug/L	139	69.3	70-130			QM-07
Copper	629		ug/L	421	82.9	70-130			
Lead	737		ug/L	499	95.4	70-130			
Mercury	1.84	0.1	ug/g	0.194	110	72-128			
Molybdenum	186		ug/L	6.03	72.1	70-130			
Nickel	458		ug/L	281	71.0	70-130			
Selenium	179		ug/L	ND	83.3	70-130			
Silver	177		ug/L	0.20	70.7	70-130			
Thallium	188		ug/L	11.6	70.7	70-130			
Uranium	285		ug/L	104	72.4	70-130			
Vanadium	419		ug/L	221	79.2	70-130			
Zinc	718		ug/L	526	76.6	70-130			
<b>Semi-Volatiles</b>									
Acenaphthene	0.069	0.02	ug/g	ND	37.6	50-140			QM-06
Acenaphthylene	0.187	0.02	ug/g	0.145	22.5	50-140			QM-06
Anthracene	0.205	0.02	ug/g	0.156	26.4	50-140			QM-06
Benzo [a] anthracene	0.335	0.02	ug/g	0.320	7.94	50-140			QM-06
Benzo [a] pyrene	0.315	0.02	ug/g	0.279	19.6	50-140			QM-06
Benzo [b] fluoranthene	0.592	0.02	ug/g	0.621	-16.2	50-140			QM-06
Benzo [g,h,i] perylene	0.252	0.02	ug/g	0.184	36.8	50-140			QM-06
Benzo [k] fluoranthene	0.336	0.02	ug/g	0.230	57.5	50-140			QM-06
Biphenyl	0.059	0.02	ug/g	ND	32.0	50-140			QM-06
Chrysene	0.355	0.02	ug/g	0.343	6.52	50-140			QM-06
Dibenzo [a,h] anthracene	0.133	0.02	ug/g	0.055	42.5	50-140			QM-06
Fluoranthene	0.522	0.02	ug/g	0.614	-49.6	50-140			QM-06
Fluorene	0.078	0.02	ug/g	0.021	31.1	50-140			QM-06
Indeno [1,2,3-cd] pyrene	0.256	0.02	ug/g	0.172	45.5	50-140			QM-06
1-Methylnaphthalene	0.108	0.02	ug/g	0.038	37.9	50-140			QM-06
2-Methylnaphthalene	0.107	0.02	ug/g	0.046	32.9	50-140			QM-06
Naphthalene	0.066	0.01	ug/g	0.033	17.6	50-140			QM-06
Phenanthrene	0.255	0.02	ug/g	0.275	-10.7	50-140			QM-06
Pyrene	0.490	0.02	ug/g	0.546	-30.5	50-140			QM-06
Surrogate: 2-Fluorobiphenyl	0.759		ug/g		51.5	50-140			

**Volatiles**

P: 1-800-749-1947  
E: PARACEL@PARACELLABS.COM

WWW.PARACELLABS.COM

**OTTAWA**  
300-2319 St. Laurent Blvd.  
Ottawa, ON K1G 4J8

**MISSISSAUGA**  
6845 Kismet Rd. Unit #27  
Mississauga, ON L5N 6J3

**NIAGARA FALLS**  
5415 Morning Glory Cr.  
Niagara Falls, ON L2J 0A3

**SARNIA**  
123 Christina St. N.  
Sarnia, ON N7T 5T7



**Certificate of Analysis**

Report Date: 31-Jul-2013

Client: **Stantec Consulting Ltd. (Ottawa)**

Order Date: 23-Jul-2013

Client PO: 45064625

Project Description: 122510670.220/Boteler St

**Method Quality Control: Spike**

Analyte	Result	Reporting Limit	Units	Source Result	%REC	%REC Limit	RPD	RPD Limit	Notes
Acetone	8.32	0.50	ug/g	ND	83.2	50-140			
Benzene	3.88	0.02	ug/g	ND	97.1	60-130			
Bromodichloromethane	3.83	0.05	ug/g	ND	95.7	60-130			
Bromoform	3.63	0.05	ug/g	ND	90.7	60-130			
Bromomethane	4.12	0.05	ug/g	ND	103	50-140			
Carbon Tetrachloride	3.35	0.05	ug/g	ND	83.8	60-130			
Chlorobenzene	4.22	0.05	ug/g	ND	106	60-130			
Chloroethane	3.64	0.05	ug/g	ND	91.1	50-140			
Chloroform	3.65	0.05	ug/g	ND	91.4	60-130			
Chloromethane	3.51	0.20	ug/g	ND	87.8	50-140			
Dibromochloromethane	4.05	0.05	ug/g	ND	101	60-130			
Dichlorodifluoromethane	4.07	0.05	ug/g	ND	102	50-140			
1,2-Dibromoethane	4.23	0.05	ug/g	ND	106	60-130			
1,2-Dichlorobenzene	4.38	0.05	ug/g	ND	109	60-130			
1,3-Dichlorobenzene	4.51	0.05	ug/g	ND	113	60-130			
1,4-Dichlorobenzene	3.90	0.05	ug/g	ND	97.5	60-130			
1,1-Dichloroethane	3.37	0.05	ug/g	ND	84.3	60-130			
1,2-Dichloroethane	3.60	0.05	ug/g	ND	90.0	60-130			
1,1-Dichloroethylene	3.32	0.05	ug/g	ND	83.0	60-130			
cis-1,2-Dichloroethylene	4.05	0.05	ug/g	ND	101	60-130			
trans-1,2-Dichloroethylene	3.45	0.05	ug/g	ND	86.3	60-130			
1,2-Dichloropropane	4.06	0.05	ug/g	ND	101	60-130			
cis-1,3-Dichloropropylene	4.53	0.05	ug/g	ND	113	60-130			
trans-1,3-Dichloropropylene	4.57	0.05	ug/g	ND	114	60-130			
Ethylbenzene	4.37	0.05	ug/g	ND	109	60-130			
Hexane	5.06	0.05	ug/g	ND	127	60-130			
Methyl Ethyl Ketone (2-Butanone)	11.3	0.50	ug/g	ND	113	50-140			
Methyl Butyl Ketone (2-Hexanone)	11.4	2.00	ug/g	ND	114	50-140			
Methyl Isobutyl Ketone	11.2	0.50	ug/g	ND	112	50-140			
Methyl tert-butyl ether	11.0	0.05	ug/g	ND	110	50-140			
Methylene Chloride	3.37	0.05	ug/g	ND	84.3	60-130			
Styrene	4.27	0.05	ug/g	ND	107	60-130			
1,1,1,2-Tetrachloroethane	3.97	0.05	ug/g	ND	99.2	60-130			
1,1,2,2-Tetrachloroethane	4.36	0.05	ug/g	ND	109	60-130			
Tetrachloroethylene	3.93	0.05	ug/g	ND	98.1	60-130			
Toluene	4.46	0.05	ug/g	ND	111	60-130			
1,2,4-Trichlorobenzene	4.16	0.05	ug/g	ND	104	60-130			
1,1,1-Trichloroethane	3.64	0.05	ug/g	ND	91.1	60-130			
1,1,2-Trichloroethane	3.60	0.05	ug/g	ND	90.0	60-130			
Trichloroethylene	3.15	0.05	ug/g	ND	78.7	60-130			
Trichlorofluoromethane	2.82	0.05	ug/g	ND	70.4	50-140			
1,3,5-Trimethylbenzene	4.79	0.05	ug/g	ND	120	60-130			
Vinyl chloride	2.60	0.02	ug/g	ND	65.0	50-140			
m,p-Xylenes	7.91	0.05	ug/g	ND	98.9	60-130			
o-Xylene	4.13	0.05	ug/g	ND	103	60-130			



**Certificate of Analysis**

Report Date: 31-Jul-2013

Client: **Stantec Consulting Ltd. (Ottawa)**

Order Date: 23-Jul-2013

Client PO: 45064625

Project Description: 122510670.220/Boteler St

**Qualifier Notes:**

**Sample Qualifiers :**

- 1 : Elevated detection limit due to dilution required because of high target analyte concentration.
- 2 : Surrogates not available due to extract dilution.
- 3 : PAH surrogate recovery (2-Fluorobiphenyl) lower than expected due to matrix interference.

**QC Qualifiers :**

- QM-06 : Due to noted non-homogeneity of the QC sample matrix, the spike recoveries were out side the accepted range. Batch data accepted based on other QC.
- QM-07 : The spike recovery was outside acceptance limits for the MS and/or MSD. The batch was accepted based on other acceptable QC.
- QR-01 : Duplicate RPD is high, however, the sample result is less than 10x the MDL.

**Sample Data Revisions**

None

**Work Order Revisions / Comments:**

None

**Other Report Notes:**

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

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

**CCME PHC additional information:**

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

OTTAWA • KINGSTON • NIAGARA • MISSISSAUGA • SARNIA

Client Name: <b>Stantec</b>	Project Reference: <b>122510670-220 task</b>	TAT: <input checked="" type="checkbox"/> Regular     3 Day
Contact Name: <b>Jill Peters-Dechman</b>	Quote # <b>SOA#01910-91843-S01</b>	2 Day     1 Day
Address: <b>1331 Clyde Ave</b>	PO #	Date Required: _____
Telephone: <b>613-722-4420</b>	Email Address: <b>jill.peters-dechman@stantec</b> <b>brenda-cooker@stantec</b>	

Criteria:  O. Reg. 153/04 Table 1 |  O. Reg. 153/11 (Current) Table \_\_\_\_\_ |  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

Paracel Order Number: <b>1330139</b>		Matrix	Air Volume	# of Containers	Sample Taken		PHCs F1-F4+BTEX	VOCs	PAHs	Metals by ICP/MS	Hg	CrVI	B (HWS)
Sample ID/Location Name					Date	Time							
1	TP 2-1 / <b>reads</b> <b>BAI 404</b>	S		2	↑	Am	X	X	X	X	X	X	
2	TP 3-1 <b>BAI 405</b>				July	Am	X	X	X	X	X	X	
3	TP 5-1 <b>BAI 406</b>				↓	Am	X	X	X	X	X	X	
4	TP 4-1 <b>BAI 407</b>				28	Am	X	X	X	X	X	X	
5	TP 8-1 <b>BAI 408</b>				28	Pm	X	X	X	X	X	X	
6	TP 9-1 <b>BAI 409</b>				↓	Pm	X	X	X	X	X	X	
7	TP 12-1 <b>BAI 410</b>				↓	Pm	X	X	X	X	X	X	
8	TP 11-1 <b>BAI 411</b>				↓	Pm	X	X	X	X	X	X	
9	TP 10-1 <b>BAI 412</b>				↓	Pm	X	X	X	X	X	X	
10	TP 7-1 <b>BAI 413</b>	↓		↓	↓	Am	X	X	X	X	X	X	

Comments: **See attached SSD Form. SC.** Method of Delivery: **Walk-in**

Relinquished By (Print & Sign): <b>A. Waldick</b>	Received by Driver/Depot:	Received at Lab: <b>SC</b>	Verified By: <b>SC</b>
Date/Time: <b>2013/07/23</b>	Date/Time: _____	Date/Time: <b>July 23/13</b>	Date/Time: <b>July 23/13</b>
Temperature: _____ °C	Temperature: _____ °C	Temperature: <b>12 °C</b>	pH Verified   By: <b>N/A</b>

5:45p

**Sample Submission Deficiency Form**

Client:	Stantec Consulting		Date:	July 23/13	
Contact:	Jill Peters-Dechman		COC #	96640	
Project:	122510670	REGULATED:	<input checked="" type="checkbox"/> YES <input type="checkbox"/> NO	CSR:	SCoZ
Issue:	<input type="checkbox"/> COC <input checked="" type="checkbox"/> SAMPLE <input type="checkbox"/> OTHER	REG:	153		

Client Sample ID	Problem	Resolution	Initial
TP 2-1	- Cap of jar reads TP1-1, label reads TP2-1.	- Sample should be 2-1 per jar label per Alison	SC
TP 1-2	- Extra sample not on COC	- Dispose-not needed per Alison	SC

Client Notified by Telephone (Date/Time): July 23/13 5:41p  
*email*

Comments: \_\_\_\_\_  
 \_\_\_\_\_  
 \_\_\_\_\_  
 \_\_\_\_\_  
 \_\_\_\_\_

Client must initial samples, sign and return form to lab prior to any work commencing on samples listed on this form.

Client Authorization Signature: \_\_\_\_\_ DATE: \_\_\_\_\_

## Certificate of Analysis

### Stantec Consulting Ltd. (Ottawa)

1331 Clyde Avenue Suite 400  
Ottawa, ON K2C 3G4  
Attn: Jill Peters-Dechman

Phone: (613) 722-4420  
Fax: (613) 738-0721

Client PO: 45064625  
Project: 122510670.215/Boteler St  
Custody: 96641

Report Date: 31-Jul-2013  
Order Date: 23-Jul-2013

**Order #: 1330140**

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

Parcel ID	Client ID
1330140-01	TP2-5
1330140-02	TP3-3
1330140-03	TP5-6
1330140-04	TP4-5
1330140-05	TP7-3
1330140-06	TP8-4
1330140-07	TP9-4
1330140-08	TP12-3
1330140-09	TP11-3
1330140-10	TP10-3

Approved By:



Mark Foto, M.Sc. For Dale Robertson, BSc  
Laboratory Director

**Certificate of Analysis**

Report Date: 31-Jul-2013

 Client: **Stantec Consulting Ltd. (Ottawa)**

Order Date: 23-Jul-2013

Client PO: 45064625

Project Description: 122510670.215/Boteler St

**Analysis Summary Table**

Analysis	Method Reference/Description	Extraction Date	Analysis Date
Boron, available	MOE (HWE), EPA 200.7 - ICP-OES	25-Jul-13	30-Jul-13
Chromium, hexavalent	MOE E3056 - Extraction, colourimetric	24-Jul-13	26-Jul-13
Mercury	EPA 7471A - CVAA, digestion	29-Jul-13	29-Jul-13
MOE Metals by ICP-OES, soil Reg 153	based on MOE E3470, ICP-OES	29-Jul-13	29-Jul-13
PAHs by GC-MS	EPA 8270 - GC-MS, extraction	25-Jul-13	27-Jul-13
PHC F1	CWS Tier 1 - P&T GC-FID	24-Jul-13	29-Jul-13
PHC F2 - F4	CWS Tier 1 - GC-FID, extraction	26-Jul-13	27-Jul-13
Solids, %	Gravimetric, calculation	25-Jul-13	25-Jul-13
VOCs by P&T GC-MS	EPA 8260 - P&T GC-MS	24-Jul-13	29-Jul-13

**Certificate of Analysis**

Report Date: 31-Jul-2013

 Client: **Stantec Consulting Ltd. (Ottawa)**

Order Date: 23-Jul-2013

Client PO: 45064625

Project Description: 122510670.215/Boteler St

Client ID:	TP2-5	TP3-3	TP5-6	TP4-5
Sample Date:	23-Jul-13	23-Jul-13	23-Jul-13	23-Jul-13
Sample ID:	1330140-01	1330140-02	1330140-03	1330140-04
MDL/Units	Soil	Soil	Soil	Soil

**Physical Characteristics**

% Solids	0.1 % by Wt.	82.3	90.0	85.4	87.4
----------	--------------	------	------	------	------

**Metals**

Antimony	1.0 ug/g dry	<1.0	<1.0	<1.0	<1.0
Arsenic	1.0 ug/g dry	1.9	2.9	1.8	2.2
Barium	1.0 ug/g dry	109	88.4	126	109
Beryllium	1.0 ug/g dry	<1.0	<1.0	<1.0	<1.0
Boron	1.0 ug/g dry	3.0	3.3	3.0	3.6
Boron, available	0.5 ug/g dry	<0.5	<0.5	<0.5	<0.5
Cadmium	0.5 ug/g dry	<0.5	<0.5	<0.5	<0.5
Chromium	1.0 ug/g dry	15.6	12.8	16.9	14.8
Chromium (VI)	0.2 ug/g dry	<0.2	0.5	<0.2	<0.2
Cobalt	1.0 ug/g dry	4.9	4.2	5.8	4.7
Copper	1.0 ug/g dry	14.1	15.9	12.1	10.4
Lead	1.0 ug/g dry	64.4	66.4	19.1	25.7
Mercury	0.1 ug/g dry	0.1	0.2	<0.1	0.2
Molybdenum	1.0 ug/g dry	<1.0	<1.0	<1.0	<1.0
Nickel	1.0 ug/g dry	9.4	8.5	10.5	9.1
Selenium	1.0 ug/g dry	<1.0	<1.0	<1.0	<1.0
Silver	0.5 ug/g dry	<0.5	<0.5	<0.5	<0.5
Thallium	1.0 ug/g dry	<1.0	<1.0	<1.0	<1.0
Uranium	1.0 ug/g dry	<1.0	<1.0	<1.0	<1.0
Vanadium	1.0 ug/g dry	25.0	18.3	26.9	24.3
Zinc	1.0 ug/g dry	56.4	53.0	39.7	38.6

**Volatiles**

Acetone	0.50 ug/g dry	<0.50	<0.50	<0.50	<0.50
Benzene	0.02 ug/g dry	<0.02	<0.02	<0.02	<0.02
Bromodichloromethane	0.05 ug/g dry	<0.05	<0.05	<0.05	<0.05
Bromoform	0.05 ug/g dry	<0.05	<0.05	<0.05	<0.05
Bromomethane	0.05 ug/g dry	<0.05	<0.05	<0.05	<0.05
Carbon Tetrachloride	0.05 ug/g dry	<0.05	<0.05	<0.05	<0.05
Chlorobenzene	0.05 ug/g dry	<0.05	<0.05	<0.05	<0.05
Chloroethane	0.05 ug/g dry	<0.05	<0.05	<0.05	<0.05
Chloroform	0.05 ug/g dry	<0.05	<0.05	<0.05	<0.05

**Certificate of Analysis**

Report Date: 31-Jul-2013

 Client: **Stantec Consulting Ltd. (Ottawa)**

Order Date: 23-Jul-2013

Client PO: 45064625

Project Description: 122510670.215/Boteler St

	Client ID:	TP2-5	TP3-3	TP5-6	TP4-5
	Sample Date:	23-Jul-13	23-Jul-13	23-Jul-13	23-Jul-13
	Sample ID:	1330140-01	1330140-02	1330140-03	1330140-04
	MDL/Units	Soil	Soil	Soil	Soil
Chloromethane	0.20 ug/g dry	<0.20	<0.20	<0.20	<0.20
Dibromochloromethane	0.05 ug/g dry	<0.05	<0.05	<0.05	<0.05
Dichlorodifluoromethane	0.05 ug/g dry	<0.05	<0.05	<0.05	<0.05
1,2-Dibromoethane	0.05 ug/g dry	<0.05	<0.05	<0.05	<0.05
1,2-Dichlorobenzene	0.05 ug/g dry	<0.05	<0.05	<0.05	<0.05
1,3-Dichlorobenzene	0.05 ug/g dry	<0.05	<0.05	<0.05	<0.05
1,4-Dichlorobenzene	0.05 ug/g dry	<0.05	<0.05	<0.05	<0.05
1,1-Dichloroethane	0.05 ug/g dry	<0.05	<0.05	<0.05	<0.05
1,2-Dichloroethane	0.05 ug/g dry	<0.05	<0.05	<0.05	<0.05
1,1-Dichloroethylene	0.05 ug/g dry	<0.05	<0.05	<0.05	<0.05
cis-1,2-Dichloroethylene	0.05 ug/g dry	<0.05	<0.05	<0.05	<0.05
trans-1,2-Dichloroethylene	0.05 ug/g dry	<0.05	<0.05	<0.05	<0.05
1,2-Dichloroethylene, total	0.05 ug/g dry	<0.05	<0.05	<0.05	<0.05
1,2-Dichloropropane	0.05 ug/g dry	<0.05	<0.05	<0.05	<0.05
cis-1,3-Dichloropropylene	0.05 ug/g dry	<0.05	<0.05	<0.05	<0.05
trans-1,3-Dichloropropylene	0.05 ug/g dry	<0.05	<0.05	<0.05	<0.05
1,3-Dichloropropene, total	0.05 ug/g dry	<0.05	<0.05	<0.05	<0.05
Ethylbenzene	0.05 ug/g dry	<0.05	<0.05	<0.05	<0.05
Hexane	0.05 ug/g dry	<0.05	<0.05	<0.05	<0.05
Methyl Ethyl Ketone (2-Butanone)	0.50 ug/g dry	<0.50	<0.50	<0.50	<0.50
Methyl Butyl Ketone (2-Hexanone)	2.00 ug/g dry	<2.00	<2.00	<2.00	<2.00
Methyl Isobutyl Ketone	0.50 ug/g dry	<0.50	<0.50	<0.50	<0.50
Methyl tert-butyl ether	0.05 ug/g dry	<0.05	<0.05	<0.05	<0.05
Methylene Chloride	0.05 ug/g dry	<0.05	<0.05	<0.05	<0.05
Styrene	0.05 ug/g dry	<0.05	<0.05	<0.05	<0.05
1,1,1,2-Tetrachloroethane	0.05 ug/g dry	<0.05	<0.05	<0.05	<0.05
1,1,1,2,2-Tetrachloroethane	0.05 ug/g dry	<0.05	<0.05	<0.05	<0.05
Tetrachloroethylene	0.05 ug/g dry	<0.05	<0.05	<0.05	<0.05
Toluene	0.05 ug/g dry	<0.05	0.12	<0.05	<0.05
1,2,4-Trichlorobenzene	0.05 ug/g dry	<0.05	<0.05	<0.05	<0.05
1,1,1-Trichloroethane	0.05 ug/g dry	<0.05	<0.05	<0.05	<0.05
1,1,2-Trichloroethane	0.05 ug/g dry	<0.05	<0.05	<0.05	<0.05
Trichloroethylene	0.05 ug/g dry	<0.05	<0.05	<0.05	<0.05
Trichlorofluoromethane	0.05 ug/g dry	<0.05	<0.05	<0.05	<0.05



**Certificate of Analysis**

Report Date: 31-Jul-2013

Client: **Stantec Consulting Ltd. (Ottawa)**

Order Date: 23-Jul-2013

Client PO: 45064625

Project Description: 122510670.215/Boteler St

	Client ID:	TP2-5	TP3-3	TP5-6	TP4-5
	Sample Date:	23-Jul-13	23-Jul-13	23-Jul-13	23-Jul-13
	Sample ID:	1330140-01	1330140-02	1330140-03	1330140-04
	MDL/Units	Soil	Soil	Soil	Soil
1,3,5-Trimethylbenzene	0.05 ug/g dry	<0.05	<0.05	<0.05	<0.05
Vinyl chloride	0.02 ug/g dry	<0.02	<0.02	<0.02	<0.02
m,p-Xylenes	0.05 ug/g dry	<0.05	0.25	<0.05	<0.05
o-Xylene	0.05 ug/g dry	<0.05	0.07	<0.05	<0.05
Xylenes, total	0.05 ug/g dry	<0.05	0.32	<0.05	<0.05
4-Bromofluorobenzene	Surrogate	86.7%	87.2%	93.5%	92.7%
Dibromofluoromethane	Surrogate	99.8%	83.2%	88.7%	90.9%
Toluene-d8	Surrogate	90.1%	112%	114%	112%

**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	58
F4 PHCs (C34-C50)	6 ug/g dry	<6	<6	<6	16

**Semi-Volatiles**

Acenaphthene	0.02 ug/g dry	<0.02	<0.02	<0.02	<0.02
Acenaphthylene	0.02 ug/g dry	0.06	0.22	0.05	0.02
Anthracene	0.02 ug/g dry	0.07	0.23	0.05	0.03
Benzo [a] anthracene	0.02 ug/g dry	0.15	0.48	0.10	0.04
Benzo [a] pyrene	0.02 ug/g dry	0.11	0.42	0.07	0.03
Benzo [b] fluoranthene	0.02 ug/g dry	0.25	0.89	0.14	0.07
Benzo [g,h,i] perylene	0.02 ug/g dry	0.06	0.24	0.03	0.02
Benzo [k] fluoranthene	0.02 ug/g dry	0.09	0.31	0.07	0.03
Biphenyl	0.02 ug/g dry	<0.02	<0.02	<0.02	<0.02
Chrysene	0.02 ug/g dry	0.16	0.49	0.09	0.04
Dibenzo [a,h] anthracene	0.02 ug/g dry	0.02	0.07	<0.02	<0.02
Fluoranthene	0.02 ug/g dry	0.32	0.88	0.24	0.08
Fluorene	0.02 ug/g dry	<0.02	0.02	<0.02	<0.02
Indeno [1,2,3-cd] pyrene	0.02 ug/g dry	0.06	0.24	0.04	<0.02
1-Methylnaphthalene	0.02 ug/g dry	<0.02	0.04	<0.02	<0.02
2-Methylnaphthalene	0.02 ug/g dry	<0.02	0.05	<0.02	<0.02
Methylnaphthalene (1&2)	0.04 ug/g dry	<0.04	0.10	<0.04	<0.04
Naphthalene	0.01 ug/g dry	0.02	0.04	<0.01	<0.01
Phenanthrene	0.02 ug/g dry	0.18	0.33	0.20	0.04
Pyrene	0.02 ug/g dry	0.27	0.78	0.19	0.07
2-Fluorobiphenyl	Surrogate	52.1%	51.2%	58.7%	51.3%



**Certificate of Analysis**

Report Date: 31-Jul-2013

Client: **Stantec Consulting Ltd. (Ottawa)**

Order Date: 23-Jul-2013

Client PO: 45064625

Project Description: 122510670.215/Boteler St

	Client ID:	TP2-5	TP3-3	TP5-6	TP4-5
	Sample Date:	23-Jul-13	23-Jul-13	23-Jul-13	23-Jul-13
	Sample ID:	1330140-01	1330140-02	1330140-03	1330140-04
	MDL/Units	Soil	Soil	Soil	Soil
Terphenyl-d14	Surrogate	80.1%	82.4%	75.6%	90.5%

**Certificate of Analysis**

Report Date: 31-Jul-2013

 Client: **Stantec Consulting Ltd. (Ottawa)**

Order Date: 23-Jul-2013

Client PO: 45064625

Project Description: 122510670.215/Boteler St

	Client ID:	TP7-3	TP8-4	TP9-4	TP12-3
	Sample Date:	23-Jul-13	23-Jul-13	23-Jul-13	23-Jul-13
	Sample ID:	1330140-05	1330140-06	1330140-07	1330140-08
	MDL/Units	Soil	Soil	Soil	Soil

**Physical Characteristics**

% Solids	0.1 % by Wt.	79.5	78.2	82.0	85.0
----------	--------------	------	------	------	------

**Metals**

Antimony	1.0 ug/g dry	<1.0	<1.0	<1.0	<1.0
Arsenic	1.0 ug/g dry	4.0	4.0	<1.0	6.1
Barium	1.0 ug/g dry	325	359	101	337
Beryllium	1.0 ug/g dry	<1.0	<1.0	<1.0	<1.0
Boron	1.0 ug/g dry	5.7	6.0	2.1	3.7
Boron, available	0.5 ug/g dry	<0.5	0.9	<0.5	<0.5
Cadmium	0.5 ug/g dry	<0.5	<0.5	<0.5	0.5
Chromium	1.0 ug/g dry	20.3	21.7	12.1	14.8
Chromium (VI)	0.2 ug/g dry	<0.2	0.6	<0.2	<0.2
Cobalt	1.0 ug/g dry	5.5	5.0	4.0	4.8
Copper	1.0 ug/g dry	506	91.3	9.6	57.4
Lead	1.0 ug/g dry	313	421	4.7	530
Mercury	0.1 ug/g dry	0.7	0.5	<0.1	0.5
Molybdenum	1.0 ug/g dry	<1.0	<1.0	<1.0	<1.0
Nickel	1.0 ug/g dry	11.9	10.4	7.2	10.0
Selenium	1.0 ug/g dry	<1.0	<1.0	<1.0	<1.0
Silver	0.5 ug/g dry	0.5	<0.5	<0.5	<0.5
Thallium	1.0 ug/g dry	<1.0	<1.0	<1.0	<1.0
Uranium	1.0 ug/g dry	<1.0	<1.0	<1.0	<1.0
Vanadium	1.0 ug/g dry	27.0	24.2	21.5	19.2
Zinc	1.0 ug/g dry	218	757	18.7	226

**Volatiles**

Acetone	0.50 ug/g dry	<0.50	<0.50	<0.50	<0.50
Benzene	0.02 ug/g dry	<0.02	<0.02	<0.02	0.05
Bromodichloromethane	0.05 ug/g dry	<0.05	<0.05	<0.05	<0.05
Bromoform	0.05 ug/g dry	<0.05	<0.05	<0.05	<0.05
Bromomethane	0.05 ug/g dry	<0.05	<0.05	<0.05	<0.05
Carbon Tetrachloride	0.05 ug/g dry	<0.05	<0.05	<0.05	<0.05
Chlorobenzene	0.05 ug/g dry	<0.05	<0.05	<0.05	<0.05
Chloroethane	0.05 ug/g dry	<0.05	<0.05	<0.05	<0.05
Chloroform	0.05 ug/g dry	<0.05	<0.05	<0.05	<0.05

**Certificate of Analysis**

Report Date: 31-Jul-2013

 Client: **Stantec Consulting Ltd. (Ottawa)**

Order Date: 23-Jul-2013

Client PO: 45064625

Project Description: 122510670.215/Boteler St

	Client ID:	TP7-3	TP8-4	TP9-4	TP12-3
	Sample Date:	23-Jul-13	23-Jul-13	23-Jul-13	23-Jul-13
	Sample ID:	1330140-05	1330140-06	1330140-07	1330140-08
	MDL/Units	Soil	Soil	Soil	Soil
Chloromethane	0.20 ug/g dry	<0.20	<0.20	<0.20	<0.20
Dibromochloromethane	0.05 ug/g dry	<0.05	<0.05	<0.05	<0.05
Dichlorodifluoromethane	0.05 ug/g dry	<0.05	<0.05	<0.05	<0.05
1,2-Dibromoethane	0.05 ug/g dry	<0.05	<0.05	<0.05	<0.05
1,2-Dichlorobenzene	0.05 ug/g dry	<0.05	<0.05	<0.05	<0.05
1,3-Dichlorobenzene	0.05 ug/g dry	<0.05	<0.05	<0.05	<0.05
1,4-Dichlorobenzene	0.05 ug/g dry	<0.05	<0.05	<0.05	<0.05
1,1-Dichloroethane	0.05 ug/g dry	<0.05	<0.05	<0.05	<0.05
1,2-Dichloroethane	0.05 ug/g dry	<0.05	<0.05	<0.05	<0.05
1,1-Dichloroethylene	0.05 ug/g dry	<0.05	<0.05	<0.05	<0.05
cis-1,2-Dichloroethylene	0.05 ug/g dry	<0.05	<0.05	<0.05	<0.05
trans-1,2-Dichloroethylene	0.05 ug/g dry	<0.05	<0.05	<0.05	<0.05
1,2-Dichloroethylene, total	0.05 ug/g dry	<0.05	<0.05	<0.05	<0.05
1,2-Dichloropropane	0.05 ug/g dry	<0.05	<0.05	<0.05	<0.05
cis-1,3-Dichloropropylene	0.05 ug/g dry	<0.05	<0.05	<0.05	<0.05
trans-1,3-Dichloropropylene	0.05 ug/g dry	<0.05	<0.05	<0.05	<0.05
1,3-Dichloropropene, total	0.05 ug/g dry	<0.05	<0.05	<0.05	<0.05
Ethylbenzene	0.05 ug/g dry	<0.05	<0.05	<0.05	0.27
Hexane	0.05 ug/g dry	<0.05	<0.05	<0.05	<0.05
Methyl Ethyl Ketone (2-Butanone)	0.50 ug/g dry	<0.50	<0.50	<0.50	<0.50
Methyl Butyl Ketone (2-Hexanone)	2.00 ug/g dry	<2.00	<2.00	<2.00	<2.00
Methyl Isobutyl Ketone	0.50 ug/g dry	<0.50	<0.50	<0.50	<0.50
Methyl tert-butyl ether	0.05 ug/g dry	<0.05	<0.05	<0.05	<0.05
Methylene Chloride	0.05 ug/g dry	<0.05	<0.05	<0.05	<0.05
Styrene	0.05 ug/g dry	<0.05	<0.05	<0.05	<0.05
1,1,1,2-Tetrachloroethane	0.05 ug/g dry	<0.05	<0.05	<0.05	<0.05
1,1,2,2-Tetrachloroethane	0.05 ug/g dry	<0.05	<0.05	<0.05	<0.05
Tetrachloroethylene	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	0.69
1,2,4-Trichlorobenzene	0.05 ug/g dry	<0.05	<0.05	<0.05	<0.05
1,1,1-Trichloroethane	0.05 ug/g dry	<0.05	<0.05	<0.05	<0.05
1,1,2-Trichloroethane	0.05 ug/g dry	<0.05	<0.05	<0.05	<0.05
Trichloroethylene	0.05 ug/g dry	<0.05	<0.05	<0.05	<0.05

**Certificate of Analysis**

Report Date: 31-Jul-2013

Client: **Stantec Consulting Ltd. (Ottawa)**

Order Date: 23-Jul-2013

Client PO: 45064625

Project Description: 122510670.215/Boteler St

	Client ID:	TP7-3	TP8-4	TP9-4	TP12-3
	Sample Date:	23-Jul-13	23-Jul-13	23-Jul-13	23-Jul-13
	Sample ID:	1330140-05	1330140-06	1330140-07	1330140-08
	MDL/Units	Soil	Soil	Soil	Soil
Trichlorofluoromethane	0.05 ug/g dry	<0.05	<0.05	<0.05	<0.05
1,3,5-Trimethylbenzene	0.05 ug/g dry	<0.05	<0.05	<0.05	<0.05
Vinyl chloride	0.02 ug/g dry	<0.02	<0.02	<0.02	<0.02
m,p-Xylenes	0.05 ug/g dry	<0.05	<0.05	<0.05	2.29
o-Xylene	0.05 ug/g dry	<0.05	<0.05	<0.05	0.29
Xylenes, total	0.05 ug/g dry	<0.05	<0.05	<0.05	2.57
4-Bromofluorobenzene	Surrogate	93.5%	93.0%	94.0%	93.1%
Dibromofluoromethane	Surrogate	89.9%	89.6%	91.0%	99.7%
Toluene-d8	Surrogate	110%	111%	110%	109%

**Hydrocarbons**

F1 PHCs (C6-C10)	7 ug/g dry	<7	<7	<7	<7
F2 PHCs (C10-C16)	4 ug/g dry	<4	<4	<4	111
F3 PHCs (C16-C34)	8 ug/g dry	49	92	<8	249
F4 PHCs (C34-C50)	6 ug/g dry	8	26	<6	<6

**Semi-Volatiles**

Acenaphthene	0.02 ug/g dry	<0.02	0.19	<0.02	0.12
Acenaphthylene	0.02 ug/g dry	0.63	1.17	<0.02	0.90
Anthracene	0.02 ug/g dry	0.62	1.81	<0.02	1.15
Benzo [a] anthracene	0.02 ug/g dry	1.08	2.58	<0.02	1.62
Benzo [a] pyrene	0.02 ug/g dry	0.94	2.20	<0.02	1.51
Benzo [b] fluoranthene	0.02 ug/g dry	1.86	4.39	<0.02	4.08
Benzo [g,h,i] perylene	0.02 ug/g dry	0.49	1.13	<0.02	1.23
Benzo [k] fluoranthene	0.02 ug/g dry	0.74	1.47	<0.02	1.32
Biphenyl	0.02 ug/g dry	<0.02	0.06	<0.02	0.11
Chrysene	0.02 ug/g dry	1.09	2.87	<0.02	1.93
Dibenzo [a,h] anthracene	0.02 ug/g dry	0.17	0.47	<0.02	0.47
Fluoranthene	0.02 ug/g dry	2.22	6.29	<0.02	3.08
Fluorene	0.02 ug/g dry	0.07	0.41	<0.02	0.22
Indeno [1,2,3-cd] pyrene	0.02 ug/g dry	0.53	1.23	<0.02	1.32
1-Methylnaphthalene	0.02 ug/g dry	0.07	0.21	<0.02	0.67
2-Methylnaphthalene	0.02 ug/g dry	0.09	0.23	<0.02	1.75
Methylnaphthalene (1&2)	0.04 ug/g dry	0.16	0.44	<0.04	2.42
Naphthalene	0.01 ug/g dry	0.09	0.35	<0.01	0.49
Phenanthrene	0.02 ug/g dry	1.03	4.53	<0.02	1.93

**Certificate of Analysis**

Report Date: 31-Jul-2013

Client: **Stantec Consulting Ltd. (Ottawa)**

Order Date: 23-Jul-2013

Client PO: 45064625

Project Description: 122510670.215/Boteler St

	Client ID:	TP7-3	TP8-4	TP9-4	TP12-3
	Sample Date:	23-Jul-13	23-Jul-13	23-Jul-13	23-Jul-13
	Sample ID:	1330140-05	1330140-06	1330140-07	1330140-08
	MDL/Units	Soil	Soil	Soil	Soil
Pyrene	0.02 ug/g dry	1.86	5.25	<0.02	2.92
2-Fluorobiphenyl	Surrogate	54.0%	54.1%	96.8%	71.9%
Terphenyl-d14	Surrogate	62.8%	83.9%	120%	105%

**Certificate of Analysis**

Report Date: 31-Jul-2013

 Client: **Stantec Consulting Ltd. (Ottawa)**

Order Date: 23-Jul-2013

Client PO: 45064625

Project Description: 122510670.215/Boteler St

<b>Client ID:</b>	TP11-3	TP10-3	-	-
<b>Sample Date:</b>	23-Jul-13	23-Jul-13	-	-
<b>Sample ID:</b>	1330140-09	1330140-10	-	-
<b>MDL/Units</b>	Soil	Soil	-	-

**Physical Characteristics**

% Solids	0.1 % by Wt.	80.2	91.4	-	-
----------	--------------	------	------	---	---

**Metals**

Antimony	1.0 ug/g dry	<1.0	<1.0	-	-
Arsenic	1.0 ug/g dry	5.4	3.4	-	-
Barium	1.0 ug/g dry	247	146	-	-
Beryllium	1.0 ug/g dry	<1.0	<1.0	-	-
Boron	1.0 ug/g dry	6.4	5.0	-	-
Boron, available	0.5 ug/g dry	1.2	<0.5	-	-
Cadmium	0.5 ug/g dry	<0.5	<0.5	-	-
Chromium	1.0 ug/g dry	20.2	14.6	-	-
Chromium (VI)	0.2 ug/g dry	<0.2	<0.2	-	-
Cobalt	1.0 ug/g dry	6.0	5.1	-	-
Copper	1.0 ug/g dry	31.6	22.2	-	-
Lead	1.0 ug/g dry	306	141	-	-
Mercury	0.1 ug/g dry	0.6	0.5	-	-
Molybdenum	1.0 ug/g dry	<1.0	<1.0	-	-
Nickel	1.0 ug/g dry	11.7	10.1	-	-
Selenium	1.0 ug/g dry	<1.0	<1.0	-	-
Silver	0.5 ug/g dry	0.5	<0.5	-	-
Thallium	1.0 ug/g dry	<1.0	<1.0	-	-
Uranium	1.0 ug/g dry	<1.0	<1.0	-	-
Vanadium	1.0 ug/g dry	27.1	21.1	-	-
Zinc	1.0 ug/g dry	198	97.9	-	-

**Volatiles**

Acetone	0.50 ug/g dry	<0.50	<0.50	-	-
Benzene	0.02 ug/g dry	<0.02	<0.02	-	-
Bromodichloromethane	0.05 ug/g dry	<0.05	<0.05	-	-
Bromoform	0.05 ug/g dry	<0.05	<0.05	-	-
Bromomethane	0.05 ug/g dry	<0.05	<0.05	-	-
Carbon Tetrachloride	0.05 ug/g dry	<0.05	<0.05	-	-
Chlorobenzene	0.05 ug/g dry	<0.05	<0.05	-	-
Chloroethane	0.05 ug/g dry	<0.05	<0.05	-	-
Chloroform	0.05 ug/g dry	<0.05	<0.05	-	-

**Certificate of Analysis**

Report Date: 31-Jul-2013

Order Date: 23-Jul-2013

 Client: **Stantec Consulting Ltd. (Ottawa)**

Client PO: 45064625

Project Description: 122510670.215/Boteler St

	Client ID:	TP11-3	TP10-3		
	Sample Date:	23-Jul-13	23-Jul-13		
	Sample ID:	1330140-09	1330140-10		
	MDL/Units	Soil	Soil		
Chloromethane	0.20 ug/g dry	<0.20	<0.20	-	-
Dibromochloromethane	0.05 ug/g dry	<0.05	<0.05	-	-
Dichlorodifluoromethane	0.05 ug/g dry	<0.05	<0.05	-	-
1,2-Dibromoethane	0.05 ug/g dry	<0.05	<0.05	-	-
1,2-Dichlorobenzene	0.05 ug/g dry	<0.05	<0.05	-	-
1,3-Dichlorobenzene	0.05 ug/g dry	<0.05	<0.05	-	-
1,4-Dichlorobenzene	0.05 ug/g dry	<0.05	<0.05	-	-
1,1-Dichloroethane	0.05 ug/g dry	<0.05	<0.05	-	-
1,2-Dichloroethane	0.05 ug/g dry	<0.05	<0.05	-	-
1,1-Dichloroethylene	0.05 ug/g dry	<0.05	<0.05	-	-
cis-1,2-Dichloroethylene	0.05 ug/g dry	<0.05	<0.05	-	-
trans-1,2-Dichloroethylene	0.05 ug/g dry	<0.05	<0.05	-	-
1,2-Dichloroethylene, total	0.05 ug/g dry	<0.05	<0.05	-	-
1,2-Dichloropropane	0.05 ug/g dry	<0.05	<0.05	-	-
cis-1,3-Dichloropropylene	0.05 ug/g dry	<0.05	<0.05	-	-
trans-1,3-Dichloropropylene	0.05 ug/g dry	<0.05	<0.05	-	-
1,3-Dichloropropene, total	0.05 ug/g dry	<0.05	<0.05	-	-
Ethylbenzene	0.05 ug/g dry	<0.05	<0.05	-	-
Hexane	0.05 ug/g dry	<0.05	<0.05	-	-
Methyl Ethyl Ketone (2-Butanone)	0.50 ug/g dry	<0.50	<0.50	-	-
Methyl Butyl Ketone (2-Hexanone)	2.00 ug/g dry	<2.00	<2.00	-	-
Methyl Isobutyl Ketone	0.50 ug/g dry	<0.50	<0.50	-	-
Methyl tert-butyl ether	0.05 ug/g dry	<0.05	<0.05	-	-
Methylene Chloride	0.05 ug/g dry	<0.05	<0.05	-	-
Styrene	0.05 ug/g dry	<0.05	<0.05	-	-
1,1,1,2-Tetrachloroethane	0.05 ug/g dry	<0.05	<0.05	-	-
1,1,2,2-Tetrachloroethane	0.05 ug/g dry	<0.05	<0.05	-	-
Tetrachloroethylene	0.05 ug/g dry	<0.05	<0.05	-	-
Toluene	0.05 ug/g dry	<0.05	<0.05	-	-
1,2,4-Trichlorobenzene	0.05 ug/g dry	<0.05	<0.05	-	-
1,1,1-Trichloroethane	0.05 ug/g dry	<0.05	<0.05	-	-
1,1,2-Trichloroethane	0.05 ug/g dry	<0.05	<0.05	-	-
Trichloroethylene	0.05 ug/g dry	<0.05	<0.05	-	-
Trichlorofluoromethane	0.05 ug/g dry	<0.05	<0.05	-	-

 P: 1-800-749-1947  
 E: PARACEL@PARACELLABS.COM

WWW.PARACELLABS.COM

**OTTAWA**  
 300-2319 St. Laurent Blvd.  
 Ottawa, ON K1G 4J8

**MISSISSAUGA**  
 6845 Kitchmat Rd. Unit #27  
 Mississauga, ON L5N 6J3

**NIAGARA FALLS**  
 5415 Morning Glory Cr.  
 Niagara Falls, ON L2J 0A3

**SARNIA**  
 123 Christina St. N.  
 Sarnia, ON N7T 5T7

**Certificate of Analysis**

Report Date: 31-Jul-2013

 Client: **Stantec Consulting Ltd. (Ottawa)**

Order Date: 23-Jul-2013

Client PO: 45064625

Project Description: 122510670.215/Boteler St

	MDL/Units	Client ID:	TP11-3	TP10-3		
		Sample Date:	23-Jul-13	23-Jul-13		
		Sample ID:	1330140-09	1330140-10		
			Soil	Soil		
1,3,5-Trimethylbenzene	0.05 ug/g dry		<0.05	<0.05	-	-
Vinyl chloride	0.02 ug/g dry		<0.02	<0.02	-	-
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	-	-
4-Bromofluorobenzene	Surrogate		93.8%	93.3%	-	-
Dibromofluoromethane	Surrogate		89.1%	88.3%	-	-
Toluene-d8	Surrogate		109%	112%	-	-

**Hydrocarbons**

F1 PHCs (C6-C10)	7 ug/g dry	<7	<7	-	-
F2 PHCs (C10-C16)	4 ug/g dry	<4	20	-	-
F3 PHCs (C16-C34)	8 ug/g dry	82	205	-	-
F4 PHCs (C34-C50)	6 ug/g dry	13	87	-	-

**Semi-Volatiles**

Acenaphthene	0.02 ug/g dry	<0.02	0.05	-	-
Acenaphthylene	0.02 ug/g dry	0.73	0.27	-	-
Anthracene	0.02 ug/g dry	0.61	0.36	-	-
Benzo [a] anthracene	0.02 ug/g dry	1.01	0.86	-	-
Benzo [a] pyrene	0.02 ug/g dry	0.95	0.77	-	-
Benzo [b] fluoranthene	0.02 ug/g dry	2.01	1.53	-	-
Benzo [g,h,i] perylene	0.02 ug/g dry	0.52	0.45	-	-
Benzo [k] fluoranthene	0.02 ug/g dry	0.79	0.62	-	-
Biphenyl	0.02 ug/g dry	<0.02	<0.02	-	-
Chrysene	0.02 ug/g dry	1.38	0.90	-	-
Dibenzo [a,h] anthracene	0.02 ug/g dry	0.15	0.13	-	-
Fluoranthene	0.02 ug/g dry	2.91	1.93	-	-
Fluorene	0.02 ug/g dry	0.08	0.09	-	-
Indeno [1,2,3-cd] pyrene	0.02 ug/g dry	0.55	0.45	-	-
1-Methylnaphthalene	0.02 ug/g dry	0.05	0.04	-	-
2-Methylnaphthalene	0.02 ug/g dry	0.04	0.04	-	-
Methylnaphthalene (1&2)	0.04 ug/g dry	0.09	0.09	-	-
Naphthalene	0.01 ug/g dry	0.06	0.06	-	-
Phenanthrene	0.02 ug/g dry	1.57	0.93	-	-
Pyrene	0.02 ug/g dry	2.35	1.67	-	-



**Certificate of Analysis**

Report Date: 31-Jul-2013

Client: **Stantec Consulting Ltd. (Ottawa)**

Order Date: 23-Jul-2013

Client PO: 45064625

Project Description: 122510670.215/Boteler St

		Client ID: Sample Date: Sample ID: MDL/Units	TP11-3 23-Jul-13 1330140-09 Soil	TP10-3 23-Jul-13 1330140-10 Soil	- - - -	- - - -
2-Fluorobiphenyl	Surrogate		53.8%	83.8%	-	-
Terphenyl-d14	Surrogate		82.2%	96.5%	-	-

**Certificate of Analysis**

Report Date: 31-Jul-2013

Client: **Stantec Consulting Ltd. (Ottawa)**

Order Date: 23-Jul-2013

Client PO: 45064625

Project Description: 122510670.215/Boteler St

**Method Quality Control: Blank**

Analyte	Result	Reporting Limit	Units	Source Result	%REC	%REC Limit	RPD	RPD Limit	Notes
<b>Hydrocarbons</b>									
F1 PHCs (C6-C10)	ND	7	ug/g						
F2 PHCs (C10-C16)	ND	4	ug/g						
F3 PHCs (C16-C34)	ND	8	ug/g						
F4 PHCs (C34-C50)	ND	6	ug/g						
<b>Metals</b>									
Antimony	ND	1.0	ug/g						
Arsenic	ND	1.0	ug/g						
Barium	ND	1.0	ug/g						
Beryllium	ND	1.0	ug/g						
Boron, available	ND	0.5	ug/g						
Boron	ND	1.0	ug/g						
Cadmium	ND	0.5	ug/g						
Chromium (VI)	ND	0.2	ug/g						
Chromium	ND	1.0	ug/g						
Cobalt	ND	1.0	ug/g						
Copper	ND	1.0	ug/g						
Lead	ND	1.0	ug/g						
Mercury	ND	0.1	ug/g						
Molybdenum	ND	1.0	ug/g						
Nickel	ND	1.0	ug/g						
Selenium	ND	1.0	ug/g						
Silver	ND	0.5	ug/g						
Thallium	ND	1.0	ug/g						
Uranium	ND	1.0	ug/g						
Vanadium	ND	1.0	ug/g						
Zinc	ND	1.0	ug/g						
<b>Semi-Volatiles</b>									
Acenaphthene	ND	0.02	ug/g						
Acenaphthylene	ND	0.02	ug/g						
Anthracene	ND	0.02	ug/g						
Benzo [a] anthracene	ND	0.02	ug/g						
Benzo [a] pyrene	ND	0.02	ug/g						
Benzo [b] fluoranthene	ND	0.02	ug/g						
Benzo [g,h,i] perylene	ND	0.02	ug/g						
Benzo [k] fluoranthene	ND	0.02	ug/g						
Biphenyl	ND	0.02	ug/g						
Chrysene	ND	0.02	ug/g						
Dibenzo [a,h] anthracene	ND	0.02	ug/g						
Fluoranthene	ND	0.02	ug/g						
Fluorene	ND	0.02	ug/g						
Indeno [1,2,3-cd] pyrene	ND	0.02	ug/g						
1-Methylnaphthalene	ND	0.02	ug/g						
2-Methylnaphthalene	ND	0.02	ug/g						
Methylnaphthalene (1&2)	ND	0.04	ug/g						
Naphthalene	ND	0.01	ug/g						
Phenanthrene	ND	0.02	ug/g						
Pyrene	ND	0.02	ug/g						
Surrogate: 2-Fluorobiphenyl	0.729		ug/g		54.7	50-140			
Surrogate: Terphenyl-d14	1.46		ug/g		109	50-140			
<b>Volatiles</b>									
Acetone	ND	0.50	ug/g						
Benzene	ND	0.02	ug/g						
Bromodichloromethane	ND	0.05	ug/g						
Bromoform	ND	0.05	ug/g						
Bromomethane	ND	0.05	ug/g						

**Certificate of Analysis**

Report Date: 31-Jul-2013

Client: **Stantec Consulting Ltd. (Ottawa)**

Order Date: 23-Jul-2013

Client PO: 45064625

Project Description: 122510670.215/Boteler St

**Method Quality Control: Blank**

Analyte	Result	Reporting Limit	Units	Source Result	%REC	%REC Limit	RPD	RPD Limit	Notes
Carbon Tetrachloride	ND	0.05	ug/g						
Chlorobenzene	ND	0.05	ug/g						
Chloroethane	ND	0.05	ug/g						
Chloroform	ND	0.05	ug/g						
Chloromethane	ND	0.20	ug/g						
Dibromochloromethane	ND	0.05	ug/g						
Dichlorodifluoromethane	ND	0.05	ug/g						
1,2-Dibromoethane	ND	0.05	ug/g						
1,2-Dichlorobenzene	ND	0.05	ug/g						
1,3-Dichlorobenzene	ND	0.05	ug/g						
1,4-Dichlorobenzene	ND	0.05	ug/g						
1,1-Dichloroethane	ND	0.05	ug/g						
1,2-Dichloroethane	ND	0.05	ug/g						
1,1-Dichloroethylene	ND	0.05	ug/g						
cis-1,2-Dichloroethylene	ND	0.05	ug/g						
trans-1,2-Dichloroethylene	ND	0.05	ug/g						
1,2-Dichloroethylene, total	ND	0.05	ug/g						
1,2-Dichloropropane	ND	0.05	ug/g						
cis-1,3-Dichloropropylene	ND	0.05	ug/g						
trans-1,3-Dichloropropylene	ND	0.05	ug/g						
1,3-Dichloropropene, total	ND	0.05	ug/g						
Ethylbenzene	ND	0.05	ug/g						
Hexane	ND	0.05	ug/g						
Methyl Ethyl Ketone (2-Butanone)	ND	0.50	ug/g						
Methyl Butyl Ketone (2-Hexanone)	ND	2.00	ug/g						
Methyl Isobutyl Ketone	ND	0.50	ug/g						
Methyl tert-butyl ether	ND	0.05	ug/g						
Methylene Chloride	ND	0.05	ug/g						
Styrene	ND	0.05	ug/g						
1,1,1,2-Tetrachloroethane	ND	0.05	ug/g						
1,1,2,2-Tetrachloroethane	ND	0.05	ug/g						
Tetrachloroethylene	ND	0.05	ug/g						
Toluene	ND	0.05	ug/g						
1,2,4-Trichlorobenzene	ND	0.05	ug/g						
1,1,1-Trichloroethane	ND	0.05	ug/g						
1,1,2-Trichloroethane	ND	0.05	ug/g						
Trichloroethylene	ND	0.05	ug/g						
Trichlorofluoromethane	ND	0.05	ug/g						
1,3,5-Trimethylbenzene	ND	0.05	ug/g						
Vinyl chloride	ND	0.02	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: 4-Bromofluorobenzene	7.59		ug/g		94.9	50-140			
Surrogate: Dibromofluoromethane	7.12		ug/g		89.0	50-140			
Surrogate: Toluene-d8	7.37		ug/g		92.1	50-140			

**Certificate of Analysis**

Report Date: 31-Jul-2013

Client: **Stantec Consulting Ltd. (Ottawa)**

Order Date: 23-Jul-2013

Client PO: 45064625

Project Description: 122510670.215/Boteler St

**Method Quality Control: Duplicate**

Analyte	Result	Reporting Limit	Units	Source Result	%REC	%REC Limit	RPD	RPD Limit	Notes
<b>Hydrocarbons</b>									
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	
<b>Metals</b>									
Antimony	ND	1.0	ug/g dry	ND			0.0	30	
Arsenic	2.44	1.0	ug/g dry	3.08			23.2	30	
Barium	160	10.0	ug/g dry	155			3.2	30	
Beryllium	ND	1.0	ug/g dry	ND			0.0	30	
Boron, available	ND	0.5	ug/g dry	ND			0.0	35	
Boron	12.8	1.0	ug/g dry	11.3			12.1	30	
Cadmium	ND	0.5	ug/g dry	ND			0.0	30	
Chromium (VI)	ND	0.2	ug/g dry	ND				35	
Chromium	13.8	1.0	ug/g dry	14.0			1.1	30	
Cobalt	7.44	1.0	ug/g dry	6.96			6.6	30	
Copper	18.3	1.0	ug/g dry	21.1			13.8	30	
Lead	25.9	1.0	ug/g dry	24.9			3.9	30	
Mercury	0.232	0.1	ug/g dry	0.194			18.1	35	
Molybdenum	ND	1.0	ug/g dry	ND			0.0	30	
Nickel	13.7	1.0	ug/g dry	14.0			2.1	30	
Selenium	ND	1.0	ug/g dry	ND			0.0	30	
Silver	ND	0.5	ug/g dry	ND			0.0	30	
Thallium	ND	1.0	ug/g dry	ND			0.0	30	
Uranium	5.13	1.0	ug/g dry	5.20			1.3	30	
Vanadium	11.3	1.0	ug/g dry	11.1			2.0	30	
Zinc	25.8	1.0	ug/g dry	26.3			2.1	30	
<b>Physical Characteristics</b>									
% Solids	84.3	0.1	% by Wt.	85.4			1.3	25	
<b>Semi-Volatiles</b>									
Acenaphthene	ND	0.02	ug/g dry	ND				40	
Acenaphthylene	0.188	0.02	ug/g dry	0.145			25.7	40	
Anthracene	0.183	0.02	ug/g dry	0.156			16.0	40	
Benzo [a] anthracene	0.311	0.02	ug/g dry	0.320			3.1	40	
Benzo [a] pyrene	0.343	0.02	ug/g dry	0.279			20.7	40	
Benzo [b] fluoranthene	0.707	0.02	ug/g dry	0.621			12.9	40	
Benzo [g,h,i] perylene	0.230	0.02	ug/g dry	0.184			21.9	40	
Benzo [k] fluoranthene	0.262	0.02	ug/g dry	0.230			13.2	40	
Biphenyl	ND	0.02	ug/g dry	ND				40	
Chrysene	0.328	0.02	ug/g dry	0.343			4.4	40	
Dibenzo [a,h] anthracene	0.067	0.02	ug/g dry	0.055			19.6	40	
Fluoranthene	0.710	0.02	ug/g dry	0.614			14.5	40	
Fluorene	0.021	0.02	ug/g dry	0.021			3.1	40	
Indeno [1,2,3-cd] pyrene	0.216	0.02	ug/g dry	0.172			22.8	40	
1-Methylnaphthalene	0.028	0.02	ug/g dry	0.038			30.6	40	
2-Methylnaphthalene	0.030	0.02	ug/g dry	0.046			41.7	40	QR-01
Naphthalene	0.028	0.01	ug/g dry	0.033			19.3	40	
Phenanthrene	0.269	0.02	ug/g dry	0.275			1.9	40	
Pyrene	0.648	0.02	ug/g dry	0.546			17.0	40	
Surrogate: 2-Fluorobiphenyl	0.931		ug/g dry	ND	63.2	50-140			
Surrogate: Terphenyl-d14	1.54		ug/g dry	ND	105	50-140			

**Certificate of Analysis**

Report Date: 31-Jul-2013

Client: **Stantec Consulting Ltd. (Ottawa)**

Order Date: 23-Jul-2013

Client PO: 45064625

Project Description: 122510670.215/Boteler St

**Method Quality Control: Spike**

Analyte	Result	Reporting Limit	Units	Source Result	%REC	%REC Limit	RPD	RPD Limit	Notes
<b>Hydrocarbons</b>									
F1 PHCs (C6-C10)	236	7	ug/g	ND	118	80-120			
F2 PHCs (C10-C16)	62	4	ug/g	ND	62.2	60-140			
F3 PHCs (C16-C34)	164	8	ug/g	ND	80.3	60-140			
F4 PHCs (C34-C50)	85	6	ug/g	ND	62.3	60-140			
<b>Metals</b>									
Antimony	226		ug/L	2.24	89.4	70-130			
Arsenic	250		ug/L	61.5	75.4	70-130			
Barium	458		ug/L	ND	91.6	70-130			
Beryllium	204		ug/L	6.96	78.9	70-130			
Boron, available	3.53	0.5	ug/g	ND	70.6	70-122			
Boron	450		ug/L	227	89.3	70-130			
Cadmium	192		ug/L	0.77	76.4	70-130			
Chromium (VI)	4.6	0.2	ug/g	ND	91.0	70-130			
Chromium	477		ug/L	280	78.7	70-130			
Cobalt	313		ug/L	139	69.3	70-130			QM-07
Copper	629		ug/L	421	82.9	70-130			
Lead	737		ug/L	499	95.4	70-130			
Mercury	1.84	0.1	ug/g	0.194	110	72-128			
Molybdenum	186		ug/L	6.03	72.1	70-130			
Nickel	458		ug/L	281	71.0	70-130			
Selenium	179		ug/L	ND	83.3	70-130			
Silver	177		ug/L	0.20	70.7	70-130			
Thallium	188		ug/L	11.6	70.7	70-130			
Uranium	285		ug/L	104	72.4	70-130			
Vanadium	419		ug/L	221	79.2	70-130			
Zinc	718		ug/L	526	76.6	70-130			
<b>Semi-Volatiles</b>									
Acenaphthene	0.069	0.02	ug/g	ND	37.6	50-140			QM-06
Acenaphthylene	0.187	0.02	ug/g	0.145	22.5	50-140			QM-06
Anthracene	0.205	0.02	ug/g	0.156	26.4	50-140			QM-06
Benzo [a] anthracene	0.335	0.02	ug/g	0.320	7.94	50-140			QM-06
Benzo [a] pyrene	0.315	0.02	ug/g	0.279	19.6	50-140			QM-06
Benzo [b] fluoranthene	0.592	0.02	ug/g	0.621	-16.2	50-140			QM-06
Benzo [g,h,i] perylene	0.252	0.02	ug/g	0.184	36.8	50-140			QM-06
Benzo [k] fluoranthene	0.336	0.02	ug/g	0.230	57.5	50-140			QM-06
Biphenyl	0.059	0.02	ug/g	ND	32.0	50-140			QM-06
Chrysene	0.355	0.02	ug/g	0.343	6.52	50-140			QM-06
Dibenzo [a,h] anthracene	0.133	0.02	ug/g	0.055	42.5	50-140			QM-06
Fluoranthene	0.522	0.02	ug/g	0.614	-49.6	50-140			QM-06
Fluorene	0.078	0.02	ug/g	0.021	31.1	50-140			QM-06
Indeno [1,2,3-cd] pyrene	0.256	0.02	ug/g	0.172	45.5	50-140			QM-06
1-Methylnaphthalene	0.108	0.02	ug/g	0.038	37.9	50-140			QM-06
2-Methylnaphthalene	0.107	0.02	ug/g	0.046	32.9	50-140			QM-06
Naphthalene	0.066	0.01	ug/g	0.033	17.6	50-140			QM-06
Phenanthrene	0.255	0.02	ug/g	0.275	-10.7	50-140			QM-06
Pyrene	0.490	0.02	ug/g	0.546	-30.5	50-140			QM-06
Surrogate: 2-Fluorobiphenyl	0.759		ug/g		51.5	50-140			

**Volatiles**

**Certificate of Analysis**

Report Date: 31-Jul-2013

Client: **Stantec Consulting Ltd. (Ottawa)**

Order Date: 23-Jul-2013

Client PO: 45064625

Project Description: 122510670.215/Boteler St

**Method Quality Control: Spike**

Analyte	Result	Reporting Limit	Units	Source Result	%REC	%REC Limit	RPD	RPD Limit	Notes
Acetone	12.1	0.50	ug/g	ND	121	50-140			
Benzene	3.30	0.02	ug/g	ND	82.5	60-130			
Bromodichloromethane	4.37	0.05	ug/g	ND	109	60-130			
Bromoform	2.44	0.05	ug/g	ND	61.0	60-130			
Bromomethane	2.62	0.05	ug/g	ND	65.6	50-140			
Carbon Tetrachloride	2.65	0.05	ug/g	ND	66.3	60-130			
Chlorobenzene	3.86	0.05	ug/g	ND	96.5	60-130			
Chloroethane	3.64	0.05	ug/g	ND	91.0	50-140			
Chloroform	3.93	0.05	ug/g	ND	98.3	60-130			
Chloromethane	3.88	0.20	ug/g	ND	96.9	50-140			
Dibromochloromethane	2.54	0.05	ug/g	ND	63.5	60-130			
Dichlorodifluoromethane	3.31	0.05	ug/g	ND	82.8	50-140			
1,2-Dibromoethane	5.03	0.05	ug/g	ND	126	60-130			
1,2-Dichlorobenzene	3.12	0.05	ug/g	ND	78.0	60-130			
1,3-Dichlorobenzene	3.16	0.05	ug/g	ND	78.9	60-130			
1,4-Dichlorobenzene	3.60	0.05	ug/g	ND	90.0	60-130			
1,1-Dichloroethane	3.66	0.05	ug/g	ND	91.6	60-130			
1,2-Dichloroethane	3.83	0.05	ug/g	ND	95.8	60-130			
1,1-Dichloroethylene	3.23	0.05	ug/g	ND	80.7	60-130			
cis-1,2-Dichloroethylene	3.65	0.05	ug/g	ND	91.3	60-130			
trans-1,2-Dichloroethylene	3.45	0.05	ug/g	ND	86.2	60-130			
1,2-Dichloropropane	4.30	0.05	ug/g	ND	107	60-130			
cis-1,3-Dichloropropylene	2.62	0.05	ug/g	ND	65.4	60-130			
trans-1,3-Dichloropropylene	4.56	0.05	ug/g	ND	114	60-130			
Ethylbenzene	4.36	0.05	ug/g	ND	109	60-130			
Hexane	3.35	0.05	ug/g	ND	83.9	60-130			
Methyl Ethyl Ketone (2-Butanone)	12.5	0.50	ug/g	ND	125	50-140			
Methyl Butyl Ketone (2-Hexanone)	14.0	2.00	ug/g	ND	140	50-140			
Methyl Isobutyl Ketone	6.97	0.50	ug/g	ND	69.7	50-140			
Methyl tert-butyl ether	12.3	0.05	ug/g	ND	123	50-140			
Methylene Chloride	3.83	0.05	ug/g	ND	95.8	60-130			
Styrene	3.50	0.05	ug/g	ND	87.5	60-130			
1,1,1,2-Tetrachloroethane	3.74	0.05	ug/g	ND	93.6	60-130			
1,1,2,2-Tetrachloroethane	3.00	0.05	ug/g	ND	75.0	60-130			
Tetrachloroethylene	3.95	0.05	ug/g	ND	98.8	60-130			
Toluene	4.00	0.05	ug/g	ND	99.9	60-130			
1,2,4-Trichlorobenzene	4.60	0.05	ug/g	ND	115	60-130			
1,1,1-Trichloroethane	3.77	0.05	ug/g	ND	94.2	60-130			
1,1,2-Trichloroethane	3.88	0.05	ug/g	ND	97.1	60-130			
Trichloroethylene	3.91	0.05	ug/g	ND	97.7	60-130			
Trichlorofluoromethane	3.69	0.05	ug/g	ND	92.2	50-140			
1,3,5-Trimethylbenzene	3.59	0.05	ug/g	ND	89.8	60-130			
Vinyl chloride	3.74	0.02	ug/g	ND	93.6	50-140			
m,p-Xylenes	6.27	0.05	ug/g	ND	78.4	60-130			
o-Xylene	3.24	0.05	ug/g	ND	81.0	60-130			

**Certificate of Analysis**

Report Date: 31-Jul-2013

Client: **Stantec Consulting Ltd. (Ottawa)**

Order Date: 23-Jul-2013

Client PO: 45064625

Project Description: 122510670.215/Boteler St

**Qualifier Notes:**

**QC Qualifiers :**

- QM-06 : Due to noted non-homogeneity of the QC sample matrix, the spike recoveries were out side the accepted range. Batch data accepted based on other QC.
- QM-07 : The spike recovery was outside acceptance limits for the MS and/or MSD. The batch was accepted based on other acceptable QC.
- QR-01 : Duplicate RPD is high, however, the sample result is less than 10x the MDL.
- QS-02 : Spike level outside of control limits. Analysis batch accepted based on other QC included in the batch.

**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.





TRUSTED .  
RESPONSIVE .  
RELIABLE .

Head Office  
300-2319 St. Laurent Blvd.  
Ottawa, Ontario K1G 4J8  
p: 1-800-749-1947  
e: paracel@paracellabs.com  
www.paracellabs.com

**Chain of Custody**  
(Lab Use Only)  
**Nº 96641**

OTTAWA • KINGSTON • NIAGARA • MISSISSAUGA • SARNIA

Client Name: <u>Stantec</u>	Project Reference: <u>122570670 (215) Task</u>	TAT: <input checked="" type="checkbox"/> Regular   3 Day
Contact Name: <u>Jill Petrus-beehman</u>	Quote # <u>SOA#01910-91848-501</u>	2 Day   1 Day
Address: <u>1331 Clyde Ave</u>	PO #	Date Required: _____
Telephone: <u>613-722-4420</u>	Email Address: <u>jill-petrus-beehman@stantec</u> <u>brenda-cooke@stantec</u>	

Criteria:  O. Reg. 153/04 Table 1 |  O. Reg. 153/11 (Current) Table 1 |  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: <u>1330140</u>		Matrix	Air Volume	# of Containers	Sample Taken		PHCs F1-F4+BTEX	VOCs	PAHs	Metals by ICP/MS	Hg	CrVI	B (HWS)	
Sample ID/Location Name					Date	Time								
1	TP 2-5 BAI 414	S		2	↑	AM	X	X	X	X	X	X	X	850ml + 1Vial ✓
2	TP 3-3 BAI 415				↓	AM								
3	TP 5-6 BAI 416				↓	AM								
4	TP 4-5 BAI 417				↓	AM								
5	TP 7-3 BAI 418				↓	AM								
6	TP 8-4 BAI 419				↓	PM								
7	TP 9-4 BAI 420				↓	PM								
8	TP 12-3 BAI 421				↓	PM								
9	TP 11-3 BAI 422	✓			↓	PM								
10	TP 10-3 BAI 423	✓			↓	PM								

Comments: \_\_\_\_\_ Method of Delivery: Walk-in

Relinquished By (Print & Sign): <u>A. Waldick / [Signature]</u>	Received by Driver/Depot:	Received at Lab: <u>[Signature]</u>	Verified By: <u>[Signature]</u>
Date/Time: <u>2013/07/23</u>	Temperature: _____ °C	Date/Time: <u>July 23/13</u>	Date/Time: <u>July 23/13</u>
		Temperature: <u>21.2 °C</u> <u>5:00p</u>	pH Verified   By: <u>N/A</u>

5:51p



## Certificate of Analysis

### Stantec Consulting Ltd. (Ottawa)

1331 Clyde Avenue Suite 400  
Ottawa, ON K2C 3G4  
Attn: Jill Peters-Dechman

Phone: (613) 722-4420  
Fax: (613) 738-0721

Client PO: 45064625  
Project: 122510670.215/ Boteler  
Custody:

Report Date: 1-Aug-2013  
Order Date: 24-Jul-2013

**Order #: 1330222**

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

Paracel ID	Client ID
1330222-01	TP13-4
1330222-02	TP15-2
1330222-03	TP18-6
1330222-04	TP17-4
1330222-05	TP16-5
1330222-06	TP19-3
1330222-07	TP20-4
1330222-08	TP21-3
1330222-09	TP24-6
1330222-10	TP30-3
1330222-11	TP26-2
1330222-12	TP25-3
1330222-13	TP27-5
1330222-14	TP29-4
1330222-15	TP23-3
1330222-16	TP28-3

Approved By:



Mark Foto, M.Sc. For Dale Robertson, BSc  
Laboratory Director

**Certificate of Analysis**

Report Date: 01-Aug-2013

 Client: **Stantec Consulting Ltd. (Ottawa)**

Order Date: 24-Jul-2013

Client PO: 45064625

Project Description: 122510670.215/ Boteler

**Analysis Summary Table**

Analysis	Method Reference/Description	Extraction Date	Analysis Date
Boron, available	MOE (HWE), EPA 200.7 - ICP-OES	26-Jul-13	30-Jul-13
Chromium, hexavalent	MOE E3056 - Extraction, colourimetric	25-Jul-13	30-Jul-13
Mercury	EPA 7471A - CVAA, digestion	29-Jul-13	29-Jul-13
MOE Metals by ICP-OES, soil Reg 153	based on MOE E3470, ICP-OES	31-Jul-13	31-Jul-13
PAHs by GC-MS	EPA 8270 - GC-MS, extraction	26-Jul-13	29-Jul-13
PHC F1	CWS Tier 1 - P&T GC-FID	25-Jul-13	28-Jul-13
PHC F2 - F4	CWS Tier 1 - GC-FID, extraction	29-Jul-13	30-Jul-13
Solids, %	Gravimetric, calculation	26-Jul-13	26-Jul-13
VOCs by P&T GC-MS	EPA 8260 - P&T GC-MS	25-Jul-13	28-Jul-13

**Certificate of Analysis**

Report Date: 01-Aug-2013

 Client: **Stantec Consulting Ltd. (Ottawa)**

Order Date: 24-Jul-2013

Client PO: 45064625

Project Description: 122510670.215/ Boteler

Client ID:	TP13-4	TP15-2	TP18-6	TP17-4
Sample Date:	24-Jul-13	24-Jul-13	24-Jul-13	24-Jul-13
Sample ID:	1330222-01	1330222-02	1330222-03	1330222-04
MDL/Units	Soil	Soil	Soil	Soil

**Physical Characteristics**

% Solids	0.1 % by Wt.	84.3	87.6	84.2	89.7
----------	--------------	------	------	------	------

**Metals**

	MDL/Units	TP13-4	TP15-2	TP18-6	TP17-4
Antimony	1.0 ug/g dry	1.5	<1.0	<1.0	<1.0
Arsenic	1.0 ug/g dry	4.9	3.7	<1.0	3.9
Barium	1.0 ug/g dry	120	138	63.5	164
Beryllium	1.0 ug/g dry	<1.0	<1.0	<1.0	<1.0
Boron	1.0 ug/g dry	3.5	4.5	2.2	4.8
Boron, available	0.5 ug/g dry	<0.5	<0.5	<0.5	<0.5
Cadmium	0.5 ug/g dry	<0.5	<0.5	<0.5	<0.5
Chromium	1.0 ug/g dry	13.7	17.2	11.7	13.8
Chromium (VI)	0.2 ug/g dry	<0.2	<0.2	<0.2	<0.2
Cobalt	1.0 ug/g dry	5.1	5.1	4.2	5.1
Copper	1.0 ug/g dry	44.7	22.0	10.3	19.0
Lead	1.0 ug/g dry	142	106	23.2	192
Mercury	0.1 ug/g dry	35.5	0.6	<0.1	3.9
Molybdenum	1.0 ug/g dry	<1.0	<1.0	<1.0	<1.0
Nickel	1.0 ug/g dry	10.8	10.7	7.5	9.9
Selenium	1.0 ug/g dry	<1.0	<1.0	<1.0	<1.0
Silver	0.5 ug/g dry	<0.5	<0.5	<0.5	<0.5
Thallium	1.0 ug/g dry	<1.0	<1.0	<1.0	<1.0
Uranium	1.0 ug/g dry	<1.0	<1.0	<1.0	<1.0
Vanadium	1.0 ug/g dry	23.8	25.1	23.0	21.7
Zinc	1.0 ug/g dry	114	76.8	24.1	217

**Volatiles**

	MDL/Units	TP13-4	TP15-2	TP18-6	TP17-4
Acetone	0.50 ug/g dry	<0.50	<0.50	<0.50	<0.50
Benzene	0.02 ug/g dry	<0.02	<0.02	<0.02	<0.02
Bromodichloromethane	0.05 ug/g dry	<0.05	<0.05	<0.05	<0.05
Bromoform	0.05 ug/g dry	<0.05	<0.05	<0.05	<0.05
Bromomethane	0.05 ug/g dry	<0.05	<0.05	<0.05	<0.05
Carbon Tetrachloride	0.05 ug/g dry	<0.05	<0.05	<0.05	<0.05
Chlorobenzene	0.05 ug/g dry	<0.05	<0.05	<0.05	<0.05
Chloroethane	0.05 ug/g dry	<0.05	<0.05	<0.05	<0.05
Chloroform	0.05 ug/g dry	<0.05	<0.05	<0.05	<0.05

**Certificate of Analysis**

Report Date: 01-Aug-2013

 Client: **Stantec Consulting Ltd. (Ottawa)**

Order Date: 24-Jul-2013

Client PO: 45064625

Project Description: 122510670.215/ Boteler

	Client ID:	TP13-4	TP15-2	TP18-6	TP17-4
	Sample Date:	24-Jul-13	24-Jul-13	24-Jul-13	24-Jul-13
	Sample ID:	1330222-01	1330222-02	1330222-03	1330222-04
	MDL/Units	Soil	Soil	Soil	Soil
Chloromethane	0.20 ug/g dry	<0.20	<0.20	<0.20	<0.20
Dibromochloromethane	0.05 ug/g dry	<0.05	<0.05	<0.05	<0.05
Dichlorodifluoromethane	0.05 ug/g dry	<0.05	<0.05	<0.05	<0.05
1,2-Dibromoethane	0.05 ug/g dry	<0.05	<0.05	<0.05	<0.05
1,2-Dichlorobenzene	0.05 ug/g dry	<0.05	<0.05	<0.05	<0.05
1,3-Dichlorobenzene	0.05 ug/g dry	<0.05	<0.05	<0.05	<0.05
1,4-Dichlorobenzene	0.05 ug/g dry	<0.05	<0.05	<0.05	<0.05
1,1-Dichloroethane	0.05 ug/g dry	<0.05	<0.05	<0.05	<0.05
1,2-Dichloroethane	0.05 ug/g dry	<0.05	<0.05	<0.05	<0.05
1,1-Dichloroethylene	0.05 ug/g dry	<0.05	<0.05	<0.05	<0.05
cis-1,2-Dichloroethylene	0.05 ug/g dry	<0.05	<0.05	<0.05	<0.05
trans-1,2-Dichloroethylene	0.05 ug/g dry	<0.05	<0.05	<0.05	<0.05
1,2-Dichloroethylene, total	0.05 ug/g dry	<0.05	<0.05	<0.05	<0.05
1,2-Dichloropropane	0.05 ug/g dry	<0.05	<0.05	<0.05	<0.05
cis-1,3-Dichloropropylene	0.05 ug/g dry	<0.05	<0.05	<0.05	<0.05
trans-1,3-Dichloropropylene	0.05 ug/g dry	<0.05	<0.05	<0.05	<0.05
1,3-Dichloropropene, total	0.05 ug/g dry	<0.05	<0.05	<0.05	<0.05
Ethylbenzene	0.05 ug/g dry	<0.05	<0.05	<0.05	<0.05
Hexane	0.05 ug/g dry	<0.05	<0.05	<0.05	<0.05
Methyl Ethyl Ketone (2-Butanone)	0.50 ug/g dry	<0.50	<0.50	<0.50	<0.50
Methyl Butyl Ketone (2-Hexanone)	2.00 ug/g dry	<2.00	<2.00	<2.00	<2.00
Methyl Isobutyl Ketone	0.50 ug/g dry	<0.50	<0.50	<0.50	<0.50
Methyl tert-butyl ether	0.05 ug/g dry	<0.05	<0.05	<0.05	<0.05
Methylene Chloride	0.05 ug/g dry	<0.05	<0.05	<0.05	<0.05
Styrene	0.05 ug/g dry	<0.05	<0.05	<0.05	<0.05
1,1,1,2-Tetrachloroethane	0.05 ug/g dry	<0.05	<0.05	<0.05	<0.05
1,1,1,2,2-Tetrachloroethane	0.05 ug/g dry	<0.05	<0.05	<0.05	<0.05
Tetrachloroethylene	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
1,2,4-Trichlorobenzene	0.05 ug/g dry	<0.05	<0.05	<0.05	<0.05
1,1,1-Trichloroethane	0.05 ug/g dry	<0.05	<0.05	<0.05	<0.05
1,1,2-Trichloroethane	0.05 ug/g dry	<0.05	<0.05	<0.05	<0.05
Trichloroethylene	0.05 ug/g dry	<0.05	<0.05	<0.05	<0.05
Trichlorofluoromethane	0.05 ug/g dry	<0.05	<0.05	<0.05	<0.05

**Certificate of Analysis**

Report Date: 01-Aug-2013

Order Date: 24-Jul-2013

 Client: **Stantec Consulting Ltd. (Ottawa)**

Client PO: 45064625

Project Description: 122510670.215/ Boteler

	Client ID:	TP13-4	TP15-2	TP18-6	TP17-4
	Sample Date:	24-Jul-13	24-Jul-13	24-Jul-13	24-Jul-13
	Sample ID:	1330222-01	1330222-02	1330222-03	1330222-04
	MDL/Units	Soil	Soil	Soil	Soil
1,3,5-Trimethylbenzene	0.05 ug/g dry	<0.05	<0.05	<0.05	<0.05
Vinyl chloride	0.02 ug/g dry	<0.02	<0.02	<0.02	<0.02
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
4-Bromofluorobenzene	Surrogate	93.3%	93.4%	94.5%	93.4%
Dibromofluoromethane	Surrogate	85.7%	87.9%	88.3%	87.8%
Toluene-d8	Surrogate	107%	110%	109%	111%

**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

**Semi-Volatiles**

Acenaphthene	0.02 ug/g dry	<0.02	0.07	<0.02	0.07
Acenaphthylene	0.02 ug/g dry	0.03	0.42	<0.02	0.58
Anthracene	0.02 ug/g dry	0.05	0.54	<0.02	0.57
Benzo [a] anthracene	0.02 ug/g dry	0.14	1.10	<0.02	1.15
Benzo [a] pyrene	0.02 ug/g dry	0.12	1.00	<0.02	1.16
Benzo [b] fluoranthene	0.02 ug/g dry	0.20	1.62	<0.02	1.73
Benzo [g,h,i] perylene	0.02 ug/g dry	0.07	0.63	<0.02	0.65
Benzo [k] fluoranthene	0.02 ug/g dry	0.07	0.63	0.04	0.84
Biphenyl	0.02 ug/g dry	0.12	<0.02	<0.02	<0.02
Chrysene	0.02 ug/g dry	0.15	1.09	<0.02	1.11
Dibenzo [a,h] anthracene	0.02 ug/g dry	<0.02	0.16	<0.02	0.18
Fluoranthene	0.02 ug/g dry	0.19	2.26	0.04	2.19
Fluorene	0.02 ug/g dry	<0.02	0.11	<0.02	0.10
Indeno [1,2,3-cd] pyrene	0.02 ug/g dry	0.06	0.62	<0.02	0.58
1-Methylnaphthalene	0.02 ug/g dry	0.56	<0.02	<0.02	0.04
2-Methylnaphthalene	0.02 ug/g dry	0.92	<0.02	<0.02	0.05
Methylnaphthalene (1&2)	0.04 ug/g dry	1.48	<0.04	<0.04	0.09
Naphthalene	0.01 ug/g dry	0.83	0.06	<0.01	0.07
Phenanthrene	0.02 ug/g dry	0.25	1.16	<0.02	1.13
Pyrene	0.02 ug/g dry	0.20	1.97	0.03	2.09
2-Fluorobiphenyl	Surrogate	53.3%	72.0%	45.5% [2]	78.9%

**Certificate of Analysis**

Report Date: 01-Aug-2013

Client: **Stantec Consulting Ltd. (Ottawa)**

Order Date: 24-Jul-2013

Client PO: 45064625

Project Description: 122510670.215/ Boteler

	Client ID:	TP13-4	TP15-2	TP18-6	TP17-4
	Sample Date:	24-Jul-13	24-Jul-13	24-Jul-13	24-Jul-13
	Sample ID:	1330222-01	1330222-02	1330222-03	1330222-04
	MDL/Units	Soil	Soil	Soil	Soil
Terphenyl-d14	Surrogate	54.5%	64.8%	66.2%	96.3%

**Certificate of Analysis**

Report Date: 01-Aug-2013

 Client: **Stantec Consulting Ltd. (Ottawa)**

Order Date: 24-Jul-2013

Client PO: 45064625

Project Description: 122510670.215/ Boteler

Client ID:	TP16-5	TP19-3	TP20-4	TP21-3
Sample Date:	24-Jul-13	24-Jul-13	24-Jul-13	24-Jul-13
Sample ID:	1330222-05	1330222-06	1330222-07	1330222-08
MDL/Units	Soil	Soil	Soil	Soil

**Physical Characteristics**

% Solids	0.1 % by Wt.	82.0	85.5	95.0	85.6
----------	--------------	------	------	------	------

**Metals**

Antimony	1.0 ug/g dry	<1.0	<1.0	<1.0	<1.0
Arsenic	1.0 ug/g dry	2.6	2.8	1.5	31.7
Barium	1.0 ug/g dry	272	178	85.9	170
Beryllium	1.0 ug/g dry	<1.0	<1.0	<1.0	<1.0
Boron	1.0 ug/g dry	3.8	4.6	3.2	6.4
Boron, available	0.5 ug/g dry	<0.5	<0.5	<0.5	<0.5
Cadmium	0.5 ug/g dry	<0.5	<0.5	<0.5	<0.5
Chromium	1.0 ug/g dry	37.4	18.9	18.2	14.9
Chromium (VI)	0.2 ug/g dry	<0.2	<0.2	<0.2	<0.2
Cobalt	1.0 ug/g dry	9.6	5.6	5.1	8.8
Copper	1.0 ug/g dry	25.0	20.7	9.0	39.8
Lead	1.0 ug/g dry	51.7	421	57.0	148
Mercury	0.1 ug/g dry	0.2	0.3	0.1	0.3
Molybdenum	1.0 ug/g dry	<1.0	<1.0	<1.0	5.2
Nickel	1.0 ug/g dry	21.5	12.4	10.5	26.1
Selenium	1.0 ug/g dry	<1.0	<1.0	<1.0	<1.0
Silver	0.5 ug/g dry	<0.5	<0.5	<0.5	<0.5
Thallium	1.0 ug/g dry	<1.0	<1.0	<1.0	1.1
Uranium	1.0 ug/g dry	<1.0	<1.0	<1.0	<1.0
Vanadium	1.0 ug/g dry	42.1	30.2	32.7	27.1
Zinc	1.0 ug/g dry	88.2	146	47.3	102

**Volatiles**

Acetone	0.50 ug/g dry	<0.50	<0.50	<0.50	<0.50
Benzene	0.02 ug/g dry	<0.02	<0.02	<0.02	<0.02
Bromodichloromethane	0.05 ug/g dry	<0.05	<0.05	<0.05	<0.05
Bromoform	0.05 ug/g dry	<0.05	<0.05	<0.05	<0.05
Bromomethane	0.05 ug/g dry	<0.05	<0.05	<0.05	<0.05
Carbon Tetrachloride	0.05 ug/g dry	<0.05	<0.05	<0.05	<0.05
Chlorobenzene	0.05 ug/g dry	<0.05	<0.05	<0.05	<0.05
Chloroethane	0.05 ug/g dry	<0.05	<0.05	<0.05	<0.05
Chloroform	0.05 ug/g dry	<0.05	<0.05	<0.05	<0.05



**Certificate of Analysis**

Report Date: 01-Aug-2013

 Client: **Stantec Consulting Ltd. (Ottawa)**

Order Date: 24-Jul-2013

Client PO: 45064625

Project Description: 122510670.215/ Boteler

	Client ID:	TP16-5	TP19-3	TP20-4	TP21-3
	Sample Date:	24-Jul-13	24-Jul-13	24-Jul-13	24-Jul-13
	Sample ID:	1330222-05	1330222-06	1330222-07	1330222-08
	MDL/Units	Soil	Soil	Soil	Soil
Chloromethane	0.20 ug/g dry	<0.20	<0.20	<0.20	<0.20
Dibromochloromethane	0.05 ug/g dry	<0.05	<0.05	<0.05	<0.05
Dichlorodifluoromethane	0.05 ug/g dry	<0.05	<0.05	<0.05	<0.05
1,2-Dibromoethane	0.05 ug/g dry	<0.05	<0.05	<0.05	<0.05
1,2-Dichlorobenzene	0.05 ug/g dry	<0.05	<0.05	<0.05	<0.05
1,3-Dichlorobenzene	0.05 ug/g dry	<0.05	<0.05	<0.05	<0.05
1,4-Dichlorobenzene	0.05 ug/g dry	<0.05	<0.05	<0.05	<0.05
1,1-Dichloroethane	0.05 ug/g dry	<0.05	<0.05	<0.05	<0.05
1,2-Dichloroethane	0.05 ug/g dry	<0.05	<0.05	<0.05	<0.05
1,1-Dichloroethylene	0.05 ug/g dry	<0.05	<0.05	<0.05	<0.05
cis-1,2-Dichloroethylene	0.05 ug/g dry	<0.05	<0.05	<0.05	<0.05
trans-1,2-Dichloroethylene	0.05 ug/g dry	<0.05	<0.05	<0.05	<0.05
1,2-Dichloroethylene, total	0.05 ug/g dry	<0.05	<0.05	<0.05	<0.05
1,2-Dichloropropane	0.05 ug/g dry	<0.05	<0.05	<0.05	<0.05
cis-1,3-Dichloropropylene	0.05 ug/g dry	<0.05	<0.05	<0.05	<0.05
trans-1,3-Dichloropropylene	0.05 ug/g dry	<0.05	<0.05	<0.05	<0.05
1,3-Dichloropropene, total	0.05 ug/g dry	<0.05	<0.05	<0.05	<0.05
Ethylbenzene	0.05 ug/g dry	<0.05	<0.05	<0.05	<0.05
Hexane	0.05 ug/g dry	<0.05	<0.05	<0.05	<0.05
Methyl Ethyl Ketone (2-Butanone)	0.50 ug/g dry	<0.50	<0.50	<0.50	<0.50
Methyl Butyl Ketone (2-Hexanone)	2.00 ug/g dry	<2.00	<2.00	<2.00	<2.00
Methyl Isobutyl Ketone	0.50 ug/g dry	<0.50	<0.50	<0.50	<0.50
Methyl tert-butyl ether	0.05 ug/g dry	<0.05	<0.05	<0.05	<0.05
Methylene Chloride	0.05 ug/g dry	<0.05	<0.05	<0.05	<0.05
Styrene	0.05 ug/g dry	<0.05	<0.05	<0.05	<0.05
1,1,1,2-Tetrachloroethane	0.05 ug/g dry	<0.05	<0.05	<0.05	<0.05
1,1,2,2-Tetrachloroethane	0.05 ug/g dry	<0.05	<0.05	<0.05	<0.05
Tetrachloroethylene	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
1,2,4-Trichlorobenzene	0.05 ug/g dry	<0.05	<0.05	<0.05	<0.05
1,1,1-Trichloroethane	0.05 ug/g dry	<0.05	<0.05	<0.05	<0.05
1,1,2-Trichloroethane	0.05 ug/g dry	<0.05	<0.05	<0.05	<0.05
Trichloroethylene	0.05 ug/g dry	<0.05	<0.05	<0.05	<0.05



**Certificate of Analysis**

Report Date: 01-Aug-2013

 Client: **Stantec Consulting Ltd. (Ottawa)**

Order Date: 24-Jul-2013

Client PO: 45064625

Project Description: 122510670.215/ Boteler

	Client ID:	TP16-5	TP19-3	TP20-4	TP21-3
	Sample Date:	24-Jul-13	24-Jul-13	24-Jul-13	24-Jul-13
	Sample ID:	1330222-05	1330222-06	1330222-07	1330222-08
	MDL/Units	Soil	Soil	Soil	Soil
Trichlorofluoromethane	0.05 ug/g dry	<0.05	<0.05	<0.05	<0.05
1,3,5-Trimethylbenzene	0.05 ug/g dry	<0.05	<0.05	<0.05	<0.05
Vinyl chloride	0.02 ug/g dry	<0.02	<0.02	<0.02	<0.02
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
4-Bromofluorobenzene	Surrogate	92.2%	325% [4]	94.0%	93.0%
Dibromofluoromethane	Surrogate	89.9%	98.1%	87.2%	86.2%
Toluene-d8	Surrogate	113%	108%	104%	108%

**Hydrocarbons**

F1 PHCs (C6-C10)	7 ug/g dry	<7	99	<7	<7
F2 PHCs (C10-C16)	4 ug/g dry	<4	59	<4	<4
F3 PHCs (C16-C34)	8 ug/g dry	<8	72	<8	69
F4 PHCs (C34-C50)	6 ug/g dry	<6	16	<6	<6

**Semi-Volatiles**

Acenaphthene	0.02 ug/g dry	0.03	0.07	<0.02	0.52
Acenaphthylene	0.02 ug/g dry	0.17	0.50	0.08	7.46
Anthracene	0.02 ug/g dry	0.18	0.55	0.18	9.31
Benzo [a] anthracene	0.02 ug/g dry	0.39	1.16	0.37	20.8
Benzo [a] pyrene	0.02 ug/g dry	0.34	1.09	0.30	18.2
Benzo [b] fluoranthene	0.02 ug/g dry	0.56	2.02	0.47	16.9
Benzo [g,h,i] perylene	0.02 ug/g dry	0.19	0.63	0.17	7.72
Benzo [k] fluoranthene	0.02 ug/g dry	0.23	0.78	0.20	7.90
Biphenyl	0.02 ug/g dry	<0.02	<0.02	<0.02	<0.40 [1]
Chrysene	0.02 ug/g dry	0.40	1.26	0.33	19.5
Dibenzo [a,h] anthracene	0.02 ug/g dry	0.07	0.17	<0.02	1.91
Fluoranthene	0.02 ug/g dry	0.84	2.47	0.74	51.5
Fluorene	0.02 ug/g dry	0.05	0.09	0.04	2.09
Indeno [1,2,3-cd] pyrene	0.02 ug/g dry	0.19	0.64	0.15	7.83
1-Methylnaphthalene	0.02 ug/g dry	<0.02	0.06	<0.02	<0.40 [1]
2-Methylnaphthalene	0.02 ug/g dry	<0.02	0.04	<0.02	<0.40 [1]
Methylnaphthalene (1&2)	0.04 ug/g dry	<0.04	0.10	<0.04	<0.80 [1]
Naphthalene	0.01 ug/g dry	0.03	0.07	0.01	0.91
Phenanthrene	0.02 ug/g dry	0.46	1.16	0.45	21.7

**Certificate of Analysis**

Report Date: 01-Aug-2013

Client: **Stantec Consulting Ltd. (Ottawa)**

Order Date: 24-Jul-2013

Client PO: 45064625

Project Description: 122510670.215/ Boteler

	Client ID:	TP16-5	TP19-3	TP20-4	TP21-3
	Sample Date:	24-Jul-13	24-Jul-13	24-Jul-13	24-Jul-13
	Sample ID:	1330222-05	1330222-06	1330222-07	1330222-08
	MDL/Units	Soil	Soil	Soil	Soil
Pyrene	0.02 ug/g dry	0.72	2.10	0.64	38.5
2-Fluorobiphenyl	Surrogate	77.5%	76.9%	74.7%	120%
Terphenyl-d14	Surrogate	77.5%	86.4%	64.5%	79.4%

**Certificate of Analysis**

Report Date: 01-Aug-2013

 Client: **Stantec Consulting Ltd. (Ottawa)**

Order Date: 24-Jul-2013

Client PO: 45064625

Project Description: 122510670.215/ Boteler

Client ID:	TP24-6	TP30-3	TP26-2	TP25-3
Sample Date:	24-Jul-13	24-Jul-13	24-Jul-13	24-Jul-13
Sample ID:	1330222-09	1330222-10	1330222-11	1330222-12
MDL/Units	Soil	Soil	Soil	Soil

**Physical Characteristics**

% Solids	0.1 % by Wt.	82.7	89.2	93.1	78.9
----------	--------------	------	------	------	------

**Metals**

Antimony	1.0 ug/g dry	<1.0	1.9	<1.0	<1.0
Arsenic	1.0 ug/g dry	<1.0	2.6	2.9	2.3
Barium	1.0 ug/g dry	58.3	182	114	214
Beryllium	1.0 ug/g dry	<1.0	<1.0	<1.0	<1.0
Boron	1.0 ug/g dry	2.4	4.4	5.7	2.8
Boron, available	0.5 ug/g dry	<0.5	<0.5	<0.5	<0.5
Cadmium	0.5 ug/g dry	<0.5	<0.5	<0.5	<0.5
Chromium	1.0 ug/g dry	10.5	16.1	8.5	15.2
Chromium (VI)	0.2 ug/g dry	<0.2	<0.2	<0.2	<0.2
Cobalt	1.0 ug/g dry	3.8	4.4	3.5	3.7
Copper	1.0 ug/g dry	8.5	25.1	11.5	15.8
Lead	1.0 ug/g dry	7.2	257	43.3	591
Mercury	0.1 ug/g dry	<0.1	<0.1	<0.1	0.3
Molybdenum	1.0 ug/g dry	<1.0	<1.0	<1.0	<1.0
Nickel	1.0 ug/g dry	6.1	9.1	7.3	8.0
Selenium	1.0 ug/g dry	<1.0	<1.0	<1.0	<1.0
Silver	0.5 ug/g dry	<0.5	<0.5	<0.5	<0.5
Thallium	1.0 ug/g dry	<1.0	<1.0	<1.0	<1.0
Uranium	1.0 ug/g dry	<1.0	<1.0	<1.0	<1.0
Vanadium	1.0 ug/g dry	20.1	20.9	10.3	19.8
Zinc	1.0 ug/g dry	17.1	205	35.1	149

**Volatiles**

Acetone	0.50 ug/g dry	<0.50	<0.50	<0.50	<0.50
Benzene	0.02 ug/g dry	<0.02	<0.02	<0.02	<0.02
Bromodichloromethane	0.05 ug/g dry	<0.05	<0.05	<0.05	<0.05
Bromoform	0.05 ug/g dry	<0.05	<0.05	<0.05	<0.05
Bromomethane	0.05 ug/g dry	<0.05	<0.05	<0.05	<0.05
Carbon Tetrachloride	0.05 ug/g dry	<0.05	<0.05	<0.05	<0.05
Chlorobenzene	0.05 ug/g dry	<0.05	<0.05	<0.05	<0.05
Chloroethane	0.05 ug/g dry	<0.05	<0.05	<0.05	<0.05
Chloroform	0.05 ug/g dry	<0.05	<0.05	<0.05	<0.05

**Certificate of Analysis**

Report Date: 01-Aug-2013

Client: **Stantec Consulting Ltd. (Ottawa)**

Order Date: 24-Jul-2013

Client PO: 45064625

Project Description: 122510670.215/ Boteler

	Client ID:	TP24-6	TP30-3	TP26-2	TP25-3
	Sample Date:	24-Jul-13	24-Jul-13	24-Jul-13	24-Jul-13
	Sample ID:	1330222-09	1330222-10	1330222-11	1330222-12
	MDL/Units	Soil	Soil	Soil	Soil
Chloromethane	0.20 ug/g dry	<0.20	<0.20	<0.20	<0.20
Dibromochloromethane	0.05 ug/g dry	<0.05	<0.05	<0.05	<0.05
Dichlorodifluoromethane	0.05 ug/g dry	<0.05	<0.05	<0.05	<0.05
1,2-Dibromoethane	0.05 ug/g dry	<0.05	<0.05	<0.05	<0.05
1,2-Dichlorobenzene	0.05 ug/g dry	<0.05	<0.05	<0.05	<0.05
1,3-Dichlorobenzene	0.05 ug/g dry	<0.05	<0.05	<0.05	<0.05
1,4-Dichlorobenzene	0.05 ug/g dry	<0.05	<0.05	<0.05	<0.05
1,1-Dichloroethane	0.05 ug/g dry	<0.05	<0.05	<0.05	<0.05
1,2-Dichloroethane	0.05 ug/g dry	<0.05	<0.05	<0.05	<0.05
1,1-Dichloroethylene	0.05 ug/g dry	<0.05	<0.05	<0.05	<0.05
cis-1,2-Dichloroethylene	0.05 ug/g dry	<0.05	<0.05	<0.05	<0.05
trans-1,2-Dichloroethylene	0.05 ug/g dry	<0.05	<0.05	<0.05	<0.05
1,2-Dichloroethylene, total	0.05 ug/g dry	<0.05	<0.05	<0.05	<0.05
1,2-Dichloropropane	0.05 ug/g dry	<0.05	<0.05	<0.05	<0.05
cis-1,3-Dichloropropylene	0.05 ug/g dry	<0.05	<0.05	<0.05	<0.05
trans-1,3-Dichloropropylene	0.05 ug/g dry	<0.05	<0.05	<0.05	<0.05
1,3-Dichloropropene, total	0.05 ug/g dry	<0.05	<0.05	<0.05	<0.05
Ethylbenzene	0.05 ug/g dry	<0.05	<0.05	<0.05	<0.05
Hexane	0.05 ug/g dry	<0.05	<0.05	<0.05	<0.05
Methyl Ethyl Ketone (2-Butanone)	0.50 ug/g dry	<0.50	<0.50	<0.50	<0.50
Methyl Butyl Ketone (2-Hexanone)	2.00 ug/g dry	<2.00	<2.00	<2.00	<2.00
Methyl Isobutyl Ketone	0.50 ug/g dry	<0.50	<0.50	<0.50	<0.50
Methyl tert-butyl ether	0.05 ug/g dry	<0.05	<0.05	<0.05	<0.05
Methylene Chloride	0.05 ug/g dry	<0.05	<0.05	<0.05	<0.05
Styrene	0.05 ug/g dry	<0.05	<0.05	<0.05	<0.05
1,1,1,2-Tetrachloroethane	0.05 ug/g dry	<0.05	<0.05	<0.05	<0.05
1,1,2,2-Tetrachloroethane	0.05 ug/g dry	<0.05	<0.05	<0.05	<0.05
Tetrachloroethylene	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
1,2,4-Trichlorobenzene	0.05 ug/g dry	<0.05	<0.05	<0.05	<0.05
1,1,1-Trichloroethane	0.05 ug/g dry	<0.05	<0.05	<0.05	<0.05
1,1,2-Trichloroethane	0.05 ug/g dry	<0.05	<0.05	<0.05	<0.05
Trichloroethylene	0.05 ug/g dry	<0.05	<0.05	<0.05	<0.05
Trichlorofluoromethane	0.05 ug/g dry	<0.05	<0.05	<0.05	<0.05

**Certificate of Analysis**

Report Date: 01-Aug-2013

Client: **Stantec Consulting Ltd. (Ottawa)**

Order Date: 24-Jul-2013

Client PO: 45064625

Project Description: 122510670.215/ Boteler

	Client ID:	TP24-6	TP30-3	TP26-2	TP25-3
	Sample Date:	24-Jul-13	24-Jul-13	24-Jul-13	24-Jul-13
	Sample ID:	1330222-09	1330222-10	1330222-11	1330222-12
	MDL/Units	Soil	Soil	Soil	Soil
1,3,5-Trimethylbenzene	0.05 ug/g dry	<0.05	<0.05	<0.05	<0.05
Vinyl chloride	0.02 ug/g dry	<0.02	<0.02	<0.02	<0.02
m,p-Xylenes	0.05 ug/g dry	<0.05	0.13	0.11	<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	0.16	0.14	<0.05
4-Bromofluorobenzene	Surrogate	91.5%	93.1%	92.7%	92.8%
Dibromofluoromethane	Surrogate	85.7%	86.0%	85.5%	86.5%
Toluene-d8	Surrogate	108%	106%	108%	109%

**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	43
F4 PHCs (C34-C50)	6 ug/g dry	<6	<6	<6	18

**Semi-Volatiles**

Acenaphthene	0.02 ug/g dry	<0.02	<0.02	<0.02	0.07
Acenaphthylene	0.02 ug/g dry	<0.02	1.80	0.15	0.30
Anthracene	0.02 ug/g dry	<0.02	1.96	0.17	0.57
Benzo [a] anthracene	0.02 ug/g dry	0.03	2.89	0.26	1.09
Benzo [a] pyrene	0.02 ug/g dry	0.03	2.58	0.19	0.87
Benzo [b] fluoranthene	0.02 ug/g dry	0.05	4.17	0.34	1.44
Benzo [g,h,i] perylene	0.02 ug/g dry	<0.02	1.36	0.10	0.46
Benzo [k] fluoranthene	0.02 ug/g dry	0.03	2.11	0.15	0.55
Biphenyl	0.02 ug/g dry	<0.02	0.03	<0.02	<0.02
Chrysene	0.02 ug/g dry	0.04	2.76	0.27	0.99
Dibenzo [a,h] anthracene	0.02 ug/g dry	<0.02	0.50	0.04	0.14
Fluoranthene	0.02 ug/g dry	0.06	6.93	0.58	2.17
Fluorene	0.02 ug/g dry	<0.02	0.44	0.08	0.08
Indeno [1,2,3-cd] pyrene	0.02 ug/g dry	<0.02	1.43	0.10	0.47
1-Methylnaphthalene	0.02 ug/g dry	<0.02	0.11	0.04	<0.02
2-Methylnaphthalene	0.02 ug/g dry	<0.02	0.11	0.03	0.03
Methylnaphthalene (1&2)	0.04 ug/g dry	<0.04	0.21	0.08	<0.04
Naphthalene	0.01 ug/g dry	<0.01	0.18	0.03	0.06
Phenanthrene	0.02 ug/g dry	0.03	5.06	0.55	1.18
Pyrene	0.02 ug/g dry	0.05	5.56	0.47	1.92

**Certificate of Analysis**

Report Date: 01-Aug-2013

Order Date: 24-Jul-2013

Client: **Stantec Consulting Ltd. (Ottawa)**

Project Description: 122510670.215/ Boteler

Client PO: 45064625

		Client ID: Sample Date: Sample ID:	TP24-6 24-Jul-13 1330222-09	TP30-3 24-Jul-13 1330222-10	TP26-2 24-Jul-13 1330222-11	TP25-3 24-Jul-13 1330222-12
	MDL/Units		Soil	Soil	Soil	Soil
2-Fluorobiphenyl	Surrogate		54.8%	84.0%	78.6%	57.1%
Terphenyl-d14	Surrogate		67.2%	73.2%	67.7%	52.0%

P: 1-800-749-1947  
E: PARACEL@PARACELLABS.COM

WWW.PARACELLABS.COM

**OTTAWA**  
300-2319 St. Laurent Blvd.  
Ottawa, ON K1G 4J8

**MISSISSAUGA**  
6845 Kitimat Rd. Unit #27  
Mississauga, ON L5N 6J3

**NIAGARA FALLS**  
5415 Morning Glory Cr.  
Niagara Falls, ON L2J 0A3

**SARNIA**  
123 Christina St. N.  
Sarnia, ON N7T 5T7

**Certificate of Analysis**

Report Date: 01-Aug-2013

 Client: **Stantec Consulting Ltd. (Ottawa)**

Order Date: 24-Jul-2013

Client PO: 45064625

Project Description: 122510670.215/ Boteler

	Client ID:	TP27-5	TP29-4	TP23-3	TP28-3
	Sample Date:	24-Jul-13	24-Jul-13	24-Jul-13	24-Jul-13
	Sample ID:	1330222-13	1330222-14	1330222-15	1330222-16
	MDL/Units	Soil	Soil	Soil	Soil
<b>Physical Characteristics</b>					
% Solids	0.1 % by Wt.	80.7	81.6	87.8	73.4
<b>Metals</b>					
Antimony	1.0 ug/g dry	<1.0	<1.0	<1.0	<1.0
Arsenic	1.0 ug/g dry	<1.0	<1.0	1.0	1.8
Barium	1.0 ug/g dry	76.0	67.1	76.8	186
Beryllium	1.0 ug/g dry	<1.0	<1.0	<1.0	<1.0
Boron	1.0 ug/g dry	2.7	2.6	3.0	3.6
Boron, available	0.5 ug/g dry	<0.5	<0.5	<0.5	<0.5
Cadmium	0.5 ug/g dry	<0.5	<0.5	<0.5	<0.5
Chromium	1.0 ug/g dry	12.5	12.4	12.4	18.9
Chromium (VI)	0.2 ug/g dry	<0.2	<0.2	<0.2	<0.2
Cobalt	1.0 ug/g dry	4.3	4.3	5.4	6.0
Copper	1.0 ug/g dry	10.6	10.6	9.5	19.3
Lead	1.0 ug/g dry	47.0	3.5	4.7	68.5
Mercury	0.1 ug/g dry	<0.1	<0.1	<0.1	0.1
Molybdenum	1.0 ug/g dry	<1.0	<1.0	<1.0	<1.0
Nickel	1.0 ug/g dry	7.2	7.9	7.9	11.2
Selenium	1.0 ug/g dry	<1.0	<1.0	<1.0	<1.0
Silver	0.5 ug/g dry	<0.5	<0.5	<0.5	<0.5
Thallium	1.0 ug/g dry	<1.0	<1.0	<1.0	<1.0
Uranium	1.0 ug/g dry	<1.0	<1.0	<1.0	<1.0
Vanadium	1.0 ug/g dry	23.0	23.0	21.6	30.5
Zinc	1.0 ug/g dry	26.2	17.8	18.3	112
<b>Volatiles</b>					
Acetone	0.50 ug/g dry	<0.50	<0.50	<0.50	<0.50
Benzene	0.02 ug/g dry	<0.02	<0.02	<0.02	<0.02
Bromodichloromethane	0.05 ug/g dry	<0.05	<0.05	<0.05	<0.05
Bromoform	0.05 ug/g dry	<0.05	<0.05	<0.05	<0.05
Bromomethane	0.05 ug/g dry	<0.05	<0.05	<0.05	<0.05
Carbon Tetrachloride	0.05 ug/g dry	<0.05	<0.05	<0.05	<0.05
Chlorobenzene	0.05 ug/g dry	<0.05	<0.05	<0.05	<0.05
Chloroethane	0.05 ug/g dry	<0.05	<0.05	<0.05	<0.05
Chloroform	0.05 ug/g dry	<0.05	<0.05	<0.05	<0.05



**Certificate of Analysis**

Report Date: 01-Aug-2013

 Client: **Stantec Consulting Ltd. (Ottawa)**

Order Date: 24-Jul-2013

Client PO: 45064625

Project Description: 122510670.215/ Boteler

	Client ID:	TP27-5	TP29-4	TP23-3	TP28-3
	Sample Date:	24-Jul-13	24-Jul-13	24-Jul-13	24-Jul-13
	Sample ID:	1330222-13	1330222-14	1330222-15	1330222-16
	MDL/Units	Soil	Soil	Soil	Soil
Chloromethane	0.20 ug/g dry	<0.20	<0.20	<0.20	<0.20
Dibromochloromethane	0.05 ug/g dry	<0.05	<0.05	<0.05	<0.05
Dichlorodifluoromethane	0.05 ug/g dry	<0.05	<0.05	<0.05	<0.05
1,2-Dibromoethane	0.05 ug/g dry	<0.05	<0.05	<0.05	<0.05
1,2-Dichlorobenzene	0.05 ug/g dry	<0.05	<0.05	<0.05	<0.05
1,3-Dichlorobenzene	0.05 ug/g dry	<0.05	<0.05	<0.05	<0.05
1,4-Dichlorobenzene	0.05 ug/g dry	<0.05	<0.05	<0.05	<0.05
1,1-Dichloroethane	0.05 ug/g dry	<0.05	<0.05	<0.05	<0.05
1,2-Dichloroethane	0.05 ug/g dry	<0.05	<0.05	<0.05	<0.05
1,1-Dichloroethylene	0.05 ug/g dry	<0.05	<0.05	<0.05	<0.05
cis-1,2-Dichloroethylene	0.05 ug/g dry	<0.05	<0.05	<0.05	<0.05
trans-1,2-Dichloroethylene	0.05 ug/g dry	<0.05	<0.05	<0.05	<0.05
1,2-Dichloroethylene, total	0.05 ug/g dry	<0.05	<0.05	<0.05	<0.05
1,2-Dichloropropane	0.05 ug/g dry	<0.05	<0.05	<0.05	<0.05
cis-1,3-Dichloropropylene	0.05 ug/g dry	<0.05	<0.05	<0.05	<0.05
trans-1,3-Dichloropropylene	0.05 ug/g dry	<0.05	<0.05	<0.05	<0.05
1,3-Dichloropropene, total	0.05 ug/g dry	<0.05	<0.05	<0.05	<0.05
Ethylbenzene	0.05 ug/g dry	<0.05	<0.05	<0.05	<0.05
Hexane	0.05 ug/g dry	<0.05	<0.05	<0.05	<0.05
Methyl Ethyl Ketone (2-Butanone)	0.50 ug/g dry	<0.50	<0.50	<0.50	<0.50
Methyl Butyl Ketone (2-Hexanone)	2.00 ug/g dry	<2.00	<2.00	<2.00	<2.00
Methyl Isobutyl Ketone	0.50 ug/g dry	<0.50	<0.50	<0.50	<0.50
Methyl tert-butyl ether	0.05 ug/g dry	<0.05	<0.05	<0.05	<0.05
Methylene Chloride	0.05 ug/g dry	<0.05	<0.05	<0.05	<0.05
Styrene	0.05 ug/g dry	<0.05	<0.05	<0.05	<0.05
1,1,1,2-Tetrachloroethane	0.05 ug/g dry	<0.05	<0.05	<0.05	<0.05
1,1,1,2-Tetrachloroethane	0.05 ug/g dry	<0.05	<0.05	<0.05	<0.05
Tetrachloroethylene	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
1,2,4-Trichlorobenzene	0.05 ug/g dry	<0.05	<0.05	<0.05	<0.05
1,1,1-Trichloroethane	0.05 ug/g dry	<0.05	<0.05	<0.05	<0.05
1,1,2-Trichloroethane	0.05 ug/g dry	<0.05	<0.05	<0.05	<0.05
Trichloroethylene	0.05 ug/g dry	<0.05	<0.05	<0.05	<0.05



**Certificate of Analysis**

Report Date: 01-Aug-2013

Client: **Stantec Consulting Ltd. (Ottawa)**

Order Date: 24-Jul-2013

Client PO: 45064625

Project Description: 122510670.215/ Boteler

	Client ID:	TP27-5	TP29-4	TP23-3	TP28-3
	Sample Date:	24-Jul-13	24-Jul-13	24-Jul-13	24-Jul-13
	Sample ID:	1330222-13	1330222-14	1330222-15	1330222-16
	MDL/Units	Soil	Soil	Soil	Soil
Trichlorofluoromethane	0.05 ug/g dry	<0.05	<0.05	<0.05	<0.05
1,3,5-Trimethylbenzene	0.05 ug/g dry	<0.05	<0.05	<0.05	<0.05
Vinyl chloride	0.02 ug/g dry	<0.02	<0.02	<0.02	<0.02
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
4-Bromofluorobenzene	Surrogate	92.2%	93.9%	92.8%	92.7%
Dibromofluoromethane	Surrogate	86.5%	88.0%	87.0%	87.3%
Toluene-d8	Surrogate	108%	111%	108%	109%

**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

**Semi-Volatiles**

Acenaphthene	0.02 ug/g dry	<0.02	<0.02	<0.02	4.22
Acenaphthylene	0.02 ug/g dry	0.06	<0.02	<0.02	0.70
Anthracene	0.02 ug/g dry	0.10	<0.02	<0.02	12.7
Benzo [a] anthracene	0.02 ug/g dry	0.21	<0.02	<0.02	24.2
Benzo [a] pyrene	0.02 ug/g dry	0.17	<0.02	<0.02	18.5
Benzo [b] fluoranthene	0.02 ug/g dry	0.29	<0.02	<0.02	23.5
Benzo [g,h,i] perylene	0.02 ug/g dry	0.09	<0.02	<0.02	8.56
Benzo [k] fluoranthene	0.02 ug/g dry	0.12	<0.02	<0.02	7.16
Biphenyl	0.02 ug/g dry	<0.02	<0.02	<0.02	0.76
Chrysene	0.02 ug/g dry	0.18	<0.02	<0.02	23.7
Dibenzo [a,h] anthracene	0.02 ug/g dry	<0.02	<0.02	<0.02	2.96
Fluoranthene	0.02 ug/g dry	0.41	<0.02	<0.02	52.2
Fluorene	0.02 ug/g dry	0.03	<0.02	<0.02	6.92
Indeno [1,2,3-cd] pyrene	0.02 ug/g dry	0.09	<0.02	<0.02	8.45
1-Methylnaphthalene	0.02 ug/g dry	<0.02	<0.02	<0.02	1.22
2-Methylnaphthalene	0.02 ug/g dry	<0.02	<0.02	<0.02	1.97
Methylnaphthalene (1&2)	0.04 ug/g dry	<0.04	<0.04	<0.04	3.18
Naphthalene	0.01 ug/g dry	0.02	<0.01	<0.01	8.89
Phenanthrene	0.02 ug/g dry	0.25	<0.02	<0.02	49.2

**Certificate of Analysis**

Report Date: 01-Aug-2013

Order Date: 24-Jul-2013

 Client: **Stantec Consulting Ltd. (Ottawa)**

Client PO: 45064625

Project Description: 122510670.215/ Boteler

	Client ID:	TP27-5	TP29-4	TP23-3	TP28-3
	Sample Date:	24-Jul-13	24-Jul-13	24-Jul-13	24-Jul-13
	Sample ID:	1330222-13	1330222-14	1330222-15	1330222-16
	MDL/Units	Soil	Soil	Soil	Soil
Pyrene	0.02 ug/g dry	0.37	<0.02	<0.02	40.6
2-Fluorobiphenyl	Surrogate	80.6%	61.9%	54.1%	113%
Terphenyl-d14	Surrogate	66.1%	79.9%	68.2%	77.8%

**Certificate of Analysis**

Report Date: 01-Aug-2013

Client: **Stantec Consulting Ltd. (Ottawa)**

Order Date: 24-Jul-2013

Client PO: 45064625

Project Description: 122510670.215/ Boteler

**Method Quality Control: Blank**

Analyte	Result	Reporting Limit	Units	Source Result	%REC	%REC Limit	RPD	RPD Limit	Notes
<b>Hydrocarbons</b>									
F1 PHCs (C6-C10)	ND	7	ug/g						
F2 PHCs (C10-C16)	ND	4	ug/g						
F3 PHCs (C16-C34)	ND	8	ug/g						
F4 PHCs (C34-C50)	ND	6	ug/g						
<b>Metals</b>									
Antimony	ND	1.0	ug/g						
Arsenic	ND	1.0	ug/g						
Barium	ND	1.0	ug/g						
Beryllium	ND	1.0	ug/g						
Boron, available	ND	0.5	ug/g						
Boron	ND	1.0	ug/g						
Cadmium	ND	0.5	ug/g						
Chromium (VI)	ND	0.2	ug/g						
Chromium	ND	1.0	ug/g						
Cobalt	ND	1.0	ug/g						
Copper	ND	1.0	ug/g						
Lead	ND	1.0	ug/g						
Mercury	ND	0.1	ug/g						
Molybdenum	ND	1.0	ug/g						
Nickel	ND	1.0	ug/g						
Selenium	ND	1.0	ug/g						
Silver	ND	0.5	ug/g						
Thallium	ND	1.0	ug/g						
Uranium	ND	1.0	ug/g						
Vanadium	ND	1.0	ug/g						
Zinc	ND	1.0	ug/g						
<b>Semi-Volatiles</b>									
Acenaphthene	ND	0.02	ug/g						
Acenaphthylene	ND	0.02	ug/g						
Anthracene	ND	0.02	ug/g						
Benzo [a] anthracene	ND	0.02	ug/g						
Benzo [a] pyrene	ND	0.02	ug/g						
Benzo [b] fluoranthene	ND	0.02	ug/g						
Benzo [g,h,i] perylene	ND	0.02	ug/g						
Benzo [k] fluoranthene	ND	0.02	ug/g						
Biphenyl	ND	0.02	ug/g						
Chrysene	ND	0.02	ug/g						
Dibenzo [a,h] anthracene	ND	0.02	ug/g						
Fluoranthene	ND	0.02	ug/g						
Fluorene	ND	0.02	ug/g						
Indeno [1,2,3-cd] pyrene	ND	0.02	ug/g						
1-Methylnaphthalene	ND	0.02	ug/g						
2-Methylnaphthalene	ND	0.02	ug/g						
Methylnaphthalene (1&2)	ND	0.04	ug/g						
Naphthalene	ND	0.01	ug/g						
Phenanthrene	ND	0.02	ug/g						
Pyrene	ND	0.02	ug/g						
Surrogate: 2-Fluorobiphenyl	0.859		ug/g		64.4	50-140			
Surrogate: Terphenyl-d14	1.01		ug/g		75.5	50-140			
<b>Volatiles</b>									
Acetone	ND	0.50	ug/g						
Benzene	ND	0.02	ug/g						
Bromodichloromethane	ND	0.05	ug/g						
Bromoform	ND	0.05	ug/g						
Bromomethane	ND	0.05	ug/g						

**Certificate of Analysis**

Report Date: 01-Aug-2013

Client: **Stantec Consulting Ltd. (Ottawa)**

Order Date: 24-Jul-2013

Client PO: 45064625

Project Description: 122510670.215/ Boteler

**Method Quality Control: Blank**

Analyte	Result	Reporting Limit	Units	Source Result	%REC	%REC Limit	RPD	RPD Limit	Notes
Carbon Tetrachloride	ND	0.05	ug/g						
Chlorobenzene	ND	0.05	ug/g						
Chloroethane	ND	0.05	ug/g						
Chloroform	ND	0.05	ug/g						
Chloromethane	ND	0.20	ug/g						
Dibromochloromethane	ND	0.05	ug/g						
Dichlorodifluoromethane	ND	0.05	ug/g						
1,2-Dibromoethane	ND	0.05	ug/g						
1,2-Dichlorobenzene	ND	0.05	ug/g						
1,3-Dichlorobenzene	ND	0.05	ug/g						
1,4-Dichlorobenzene	ND	0.05	ug/g						
1,1-Dichloroethane	ND	0.05	ug/g						
1,2-Dichloroethane	ND	0.05	ug/g						
1,1-Dichloroethylene	ND	0.05	ug/g						
cis-1,2-Dichloroethylene	ND	0.05	ug/g						
trans-1,2-Dichloroethylene	ND	0.05	ug/g						
1,2-Dichloroethylene, total	ND	0.05	ug/g						
1,2-Dichloropropane	ND	0.05	ug/g						
cis-1,3-Dichloropropylene	ND	0.05	ug/g						
trans-1,3-Dichloropropylene	ND	0.05	ug/g						
1,3-Dichloropropene, total	ND	0.05	ug/g						
Ethylbenzene	ND	0.05	ug/g						
Hexane	ND	0.05	ug/g						
Methyl Ethyl Ketone (2-Butanone)	ND	0.50	ug/g						
Methyl Butyl Ketone (2-Hexanone)	ND	2.00	ug/g						
Methyl Isobutyl Ketone	ND	0.50	ug/g						
Methyl tert-butyl ether	ND	0.05	ug/g						
Methylene Chloride	ND	0.05	ug/g						
Styrene	ND	0.05	ug/g						
1,1,1,2-Tetrachloroethane	ND	0.05	ug/g						
1,1,2,2-Tetrachloroethane	ND	0.05	ug/g						
Tetrachloroethylene	ND	0.05	ug/g						
Toluene	ND	0.05	ug/g						
1,2,4-Trichlorobenzene	ND	0.05	ug/g						
1,1,1-Trichloroethane	ND	0.05	ug/g						
1,1,2-Trichloroethane	ND	0.05	ug/g						
Trichloroethylene	ND	0.05	ug/g						
Trichlorofluoromethane	ND	0.05	ug/g						
1,3,5-Trimethylbenzene	ND	0.05	ug/g						
Vinyl chloride	ND	0.02	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: 4-Bromofluorobenzene	7.59		ug/g		94.9	50-140			
Surrogate: Dibromofluoromethane	5.12		ug/g		64.0	50-140			
Surrogate: Toluene-d8	7.37		ug/g		92.1	50-140			

**Certificate of Analysis**

Report Date: 01-Aug-2013

Client: **Stantec Consulting Ltd. (Ottawa)**

Order Date: 24-Jul-2013

Client PO: 45064625

Project Description: 122510670.215/ Boteler

**Method Quality Control: Duplicate**

Analyte	Result	Reporting Limit	Units	Source Result	%REC	%REC Limit	RPD	RPD Limit	Notes
<b>Hydrocarbons</b>									
F1 PHCs (C6-C10)	ND	7	ug/g dry	ND				40	
F2 PHCs (C10-C16)	ND	4	ug/g dry	ND				30	
F3 PHCs (C16-C34)	ND	8	ug/g dry	ND				30	
F4 PHCs (C34-C50)	ND	6	ug/g dry	ND				30	
<b>Metals</b>									
Antimony	ND	1.0	ug/g dry	ND			0.0	30	
Arsenic	ND	1.0	ug/g dry	1.06			0.0	30	
Barium	64.9	1.0	ug/g dry	84.6			26.4	30	
Beryllium	ND	1.0	ug/g dry	ND			0.0	30	
Boron, available	ND	0.5	ug/g dry	ND			0.0	35	
Boron	2.62	1.0	ug/g dry	3.01			13.8	30	
Cadmium	ND	0.5	ug/g dry	ND			0.0	30	
Chromium (VI)	ND	0.2	ug/g dry	ND				35	
Chromium	13.0	1.0	ug/g dry	14.2			8.7	30	
Cobalt	4.26	1.0	ug/g dry	4.65			8.7	30	
Copper	10.0	1.0	ug/g dry	10.5			4.7	30	
Lead	18.4	1.0	ug/g dry	14.4			24.8	30	
Mercury	4.50	0.1	ug/g dry	4.08			9.6	35	
Molybdenum	ND	1.0	ug/g dry	ND			0.0	30	
Nickel	7.63	1.0	ug/g dry	7.93			3.8	30	
Selenium	ND	1.0	ug/g dry	ND			0.0	30	
Silver	ND	0.5	ug/g dry	ND			0.0	30	
Thallium	1.30	1.0	ug/g dry	ND			0.0	30	
Uranium	ND	1.0	ug/g dry	ND				30	
Vanadium	19.3	1.0	ug/g dry	21.0			8.5	30	
Zinc	26.6	1.0	ug/g dry	25.1			6.1	30	
<b>Physical Characteristics</b>									
% Solids	93.1	0.1	% by Wt.	93.0			0.2	25	
<b>Semi-Volatiles</b>									
Acenaphthene	0.061	0.02	ug/g dry	0.068			11.5	40	
Acenaphthylene	0.123	0.02	ug/g dry	0.578			130.0	40	QR-04
Anthracene	0.317	0.02	ug/g dry	0.568			56.7	40	QR-04
Benzo [a] anthracene	0.498	0.02	ug/g dry	1.15			78.9	40	QR-04
Benzo [a] pyrene	0.439	0.02	ug/g dry	1.16			89.9	40	QR-04
Benzo [b] fluoranthene	0.651	0.02	ug/g dry	1.73			90.8	40	QR-04
Benzo [g,h,i] perylene	0.248	0.02	ug/g dry	0.649			89.4	40	QR-04
Benzo [k] fluoranthene	0.257	0.02	ug/g dry	0.842			106.0	40	QR-04
Biphenyl	ND	0.02	ug/g dry	ND				40	
Chrysene	0.479	0.02	ug/g dry	1.11			79.4	40	QR-04
Dibenzo [a,h] anthracene	ND	0.02	ug/g dry	0.177			0.0	40	
Fluoranthene	1.05	0.02	ug/g dry	2.19			70.3	40	QR-04
Fluorene	0.080	0.02	ug/g dry	0.098			20.4	40	
Indeno [1,2,3-cd] pyrene	0.242	0.02	ug/g dry	0.584			82.9	40	QR-04
1-Methylnaphthalene	ND	0.02	ug/g dry	0.041			0.0	40	
2-Methylnaphthalene	ND	0.02	ug/g dry	0.046			0.0	40	
Naphthalene	0.080	0.01	ug/g dry	0.071			10.8	40	
Phenanthrene	0.889	0.02	ug/g dry	1.13			23.9	40	
Pyrene	0.900	0.02	ug/g dry	2.09			79.6	40	QR-04
Surrogate: 2-Fluorobiphenyl	0.903		ug/g dry	ND	60.7	50-140			
Surrogate: Terphenyl-d14	1.23		ug/g dry	ND	83.0	50-140			
<b>Volatiles</b>									
Acetone	ND	0.50	ug/g dry	ND				50	
Benzene	ND	0.02	ug/g dry	ND				50	

**Certificate of Analysis**

Report Date: 01-Aug-2013

Client: **Stantec Consulting Ltd. (Ottawa)**

Order Date: 24-Jul-2013

Client PO: 45064625

Project Description: 122510670.215/ Boteler

**Method Quality Control: Duplicate**

Analyte	Result	Reporting Limit	Units	Source Result	%REC	%REC Limit	RPD	RPD Limit	Notes
Bromodichloromethane	ND	0.05	ug/g dry	ND				50	
Bromoform	ND	0.05	ug/g dry	ND				50	
Bromomethane	ND	0.05	ug/g dry	ND				50	
Carbon Tetrachloride	ND	0.05	ug/g dry	ND				50	
Chlorobenzene	ND	0.05	ug/g dry	ND				50	
Chloroethane	ND	0.05	ug/g dry	ND				50	
Chloroform	ND	0.05	ug/g dry	ND				50	
Chloromethane	ND	0.20	ug/g dry	ND				50	
Dibromochloromethane	ND	0.05	ug/g dry	ND				50	
Dichlorodifluoromethane	ND	0.05	ug/g dry	ND				50	
1,2-Dibromoethane	ND	0.05	ug/g dry	ND				50	
1,2-Dichlorobenzene	ND	0.05	ug/g dry	ND				50	
1,3-Dichlorobenzene	ND	0.05	ug/g dry	ND				50	
1,4-Dichlorobenzene	ND	0.05	ug/g dry	ND				50	
1,1-Dichloroethane	ND	0.05	ug/g dry	ND				50	
1,2-Dichloroethane	ND	0.05	ug/g dry	ND				50	
1,1-Dichloroethylene	ND	0.05	ug/g dry	ND				50	
cis-1,2-Dichloroethylene	ND	0.05	ug/g dry	ND				50	
trans-1,2-Dichloroethylene	ND	0.05	ug/g dry	ND				50	
1,2-Dichloropropane	ND	0.05	ug/g dry	ND				50	
cis-1,3-Dichloropropylene	ND	0.05	ug/g dry	ND				50	
trans-1,3-Dichloropropylene	ND	0.05	ug/g dry	ND				50	
Ethylbenzene	ND	0.05	ug/g dry	ND				50	
Hexane	ND	0.05	ug/g dry	ND				50	
Methyl Ethyl Ketone (2-Butanone)	ND	0.50	ug/g dry	ND				50	
Methyl Butyl Ketone (2-Hexanone)	ND	2.00	ug/g dry	ND				50	
Methyl Isobutyl Ketone	ND	0.50	ug/g dry	ND				50	
Methyl tert-butyl ether	ND	0.05	ug/g dry	ND				50	
Methylene Chloride	ND	0.05	ug/g dry	ND				50	
Styrene	ND	0.05	ug/g dry	ND				50	
1,1,1,2-Tetrachloroethane	ND	0.05	ug/g dry	ND				50	
1,1,2,2-Tetrachloroethane	ND	0.05	ug/g dry	ND				50	
Tetrachloroethylene	ND	0.05	ug/g dry	ND				50	
Toluene	ND	0.05	ug/g dry	ND				50	
1,2,4-Trichlorobenzene	ND	0.05	ug/g dry	ND				50	
1,1,1-Trichloroethane	ND	0.05	ug/g dry	ND				50	
1,1,2-Trichloroethane	ND	0.05	ug/g dry	ND				50	
Trichloroethylene	ND	0.05	ug/g dry	ND				50	
Trichlorofluoromethane	ND	0.05	ug/g dry	ND				50	
1,3,5-Trimethylbenzene	ND	0.05	ug/g dry	ND				50	
Vinyl chloride	ND	0.02	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: 4-Bromofluorobenzene	5.00		ug/g dry	ND	92.5	50-140			
Surrogate: Dibromofluoromethane	4.81		ug/g dry	ND	88.9	50-140			
Surrogate: Toluene-d8	5.98		ug/g dry	ND	111	50-140			

**Certificate of Analysis**

Report Date: 01-Aug-2013

Client: **Stantec Consulting Ltd. (Ottawa)**

Order Date: 24-Jul-2013

Client PO: 45064625

Project Description: 122510670.215/ Boteler

**Method Quality Control: Spike**

Analyte	Result	Reporting Limit	Units	Source Result	%REC	%REC Limit	RPD	RPD Limit	Notes
<b>Hydrocarbons</b>									
F1 PHCs (C6-C10)	236	7	ug/g	ND	118	80-120			
F2 PHCs (C10-C16)	62	4	ug/g	ND	62.2	60-140			
F3 PHCs (C16-C34)	144	8	ug/g	ND	69.6	60-140			
F4 PHCs (C34-C50)	85	6	ug/g	ND	61.3	60-140			
<b>Metals</b>									
Antimony	229		ug/L	ND	91.5	70-130			
Arsenic	238		ug/L	ND	95.1	70-130			
Barium	238		ug/L	ND	95.4	70-130			
Beryllium	224		ug/L	ND	89.4	70-130			
Boron, available	4.62	0.5	ug/g	ND	92.4	70-122			
Boron	235		ug/L	ND	94.0	70-130			
Cadmium	223		ug/L	ND	89.3	70-130			
Chromium (VI)	4.6	0.2	ug/g	ND	93.0	70-130			
Chromium	229		ug/L	ND	91.6	70-130			
Cobalt	228		ug/L	ND	91.4	70-130			
Copper	234		ug/L	ND	93.6	70-130			
Lead	219		ug/L	ND	87.8	70-130			
Mercury	1.63	0.1	ug/g	ND	108	72-128			
Molybdenum	236		ug/L	ND	94.4	70-130			
Nickel	232		ug/L	ND	92.6	70-130			
Selenium	228		ug/L	ND	91.0	70-130			
Silver	207		ug/L	ND	82.8	70-130			
Thallium	246		ug/L	ND	98.3	70-130			
Uranium	235		ug/L	ND	93.8	70-130			
Vanadium	235		ug/L	ND	93.8	70-130			
Zinc	222		ug/L	ND	88.6	70-130			
<b>Semi-Volatiles</b>									
Acenaphthene	0.141	0.02	ug/g	ND	84.7	50-140			
Acenaphthylene	0.123	0.02	ug/g	ND	73.8	50-140			
Anthracene	0.129	0.02	ug/g	ND	77.7	50-140			
Benzo [a] anthracene	0.143	0.02	ug/g	ND	86.0	50-140			
Benzo [a] pyrene	0.125	0.02	ug/g	ND	74.7	50-140			
Benzo [b] fluoranthene	0.145	0.02	ug/g	ND	87.3	50-140			
Benzo [g,h,i] perylene	0.123	0.02	ug/g	ND	73.9	50-140			
Benzo [k] fluoranthene	0.151	0.02	ug/g	ND	90.9	50-140			
Biphenyl	0.152	0.02	ug/g	ND	91.4	50-140			
Chrysene	0.139	0.02	ug/g	ND	83.5	50-140			
Dibenzo [a,h] anthracene	0.123	0.02	ug/g	ND	73.7	50-140			
Fluoranthene	0.140	0.02	ug/g	ND	84.3	50-140			
Fluorene	0.133	0.02	ug/g	ND	79.6	50-140			
Indeno [1,2,3-cd] pyrene	0.131	0.02	ug/g	ND	78.8	50-140			
1-Methylnaphthalene	0.167	0.02	ug/g	ND	100	50-140			
2-Methylnaphthalene	0.185	0.02	ug/g	ND	111	50-140			
Naphthalene	0.167	0.01	ug/g	ND	100	50-140			
Phenanthrene	0.143	0.02	ug/g	ND	85.7	50-140			
Pyrene	0.145	0.02	ug/g	ND	87.2	50-140			
Surrogate: 2-Fluorobiphenyl	0.831		ug/g		62.3	50-140			

**Volatiles**

P: 1-800-749-1947  
E: PARACEL@PARACELLABS.COM

WWW.PARACELLABS.COM

**OTTAWA**  
300-2319 St. Laurent Blvd.  
Ottawa, ON K1G 4J8

**MISSISSAUGA**  
6845 Kismet Rd. Unit #27  
Mississauga, ON L5N 6J3

**NIAGARA FALLS**  
5415 Morning Glory Cr.  
Niagara Falls, ON L2J 0A3

**SARNIA**  
123 Christina St. N.  
Sarnia, ON N7T 5T7



**Certificate of Analysis**

Report Date: 01-Aug-2013

Client: **Stantec Consulting Ltd. (Ottawa)**

Order Date: 24-Jul-2013

Client PO: 45064625

Project Description: 122510670.215/ Boteler

**Method Quality Control: Spike**

Analyte	Result	Reporting Limit	Units	Source Result	%REC	%REC Limit	RPD	RPD Limit	Notes
Acetone	12.1	0.50	ug/g	ND	121	50-140			
Benzene	3.30	0.02	ug/g	ND	82.5	60-130			
Bromodichloromethane	4.37	0.05	ug/g	ND	109	60-130			
Bromoform	2.44	0.05	ug/g	ND	61.0	60-130			
Bromomethane	2.62	0.05	ug/g	ND	65.6	50-140			
Carbon Tetrachloride	2.65	0.05	ug/g	ND	66.3	60-130			
Chlorobenzene	3.86	0.05	ug/g	ND	96.5	60-130			
Chloroethane	3.64	0.05	ug/g	ND	91.0	50-140			
Chloroform	3.93	0.05	ug/g	ND	98.3	60-130			
Chloromethane	3.88	0.20	ug/g	ND	96.9	50-140			
Dibromochloromethane	2.54	0.05	ug/g	ND	63.5	60-130			
Dichlorodifluoromethane	3.31	0.05	ug/g	ND	82.8	50-140			
1,2-Dibromoethane	5.03	0.05	ug/g	ND	126	60-130			
1,2-Dichlorobenzene	3.12	0.05	ug/g	ND	78.0	60-130			
1,3-Dichlorobenzene	3.16	0.05	ug/g	ND	78.9	60-130			
1,4-Dichlorobenzene	3.60	0.05	ug/g	ND	90.0	60-130			
1,1-Dichloroethane	3.66	0.05	ug/g	ND	91.6	60-130			
1,2-Dichloroethane	3.83	0.05	ug/g	ND	95.8	60-130			
1,1-Dichloroethylene	3.23	0.05	ug/g	ND	80.7	60-130			
cis-1,2-Dichloroethylene	3.65	0.05	ug/g	ND	91.3	60-130			
trans-1,2-Dichloroethylene	3.45	0.05	ug/g	ND	86.2	60-130			
1,2-Dichloropropane	4.30	0.05	ug/g	ND	107	60-130			
cis-1,3-Dichloropropylene	2.62	0.05	ug/g	ND	65.4	60-130			
trans-1,3-Dichloropropylene	4.56	0.05	ug/g	ND	114	60-130			
Ethylbenzene	4.36	0.05	ug/g	ND	109	60-130			
Hexane	3.35	0.05	ug/g	ND	83.9	60-130			
Methyl Ethyl Ketone (2-Butanone)	12.5	0.50	ug/g	ND	125	50-140			
Methyl Butyl Ketone (2-Hexanone)	14.0	2.00	ug/g	ND	140	50-140			
Methyl Isobutyl Ketone	6.97	0.50	ug/g	ND	69.7	50-140			
Methyl tert-butyl ether	12.3	0.05	ug/g	ND	123	50-140			
Methylene Chloride	3.83	0.05	ug/g	ND	95.8	60-130			
Styrene	3.50	0.05	ug/g	ND	87.5	60-130			
1,1,1,2-Tetrachloroethane	3.74	0.05	ug/g	ND	93.6	60-130			
1,1,2,2-Tetrachloroethane	3.00	0.05	ug/g	ND	75.0	60-130			
Tetrachloroethylene	3.95	0.05	ug/g	ND	98.8	60-130			
Toluene	4.00	0.05	ug/g	ND	99.9	60-130			
1,2,4-Trichlorobenzene	4.60	0.05	ug/g	ND	115	60-130			
1,1,1-Trichloroethane	3.77	0.05	ug/g	ND	94.2	60-130			
1,1,2-Trichloroethane	3.88	0.05	ug/g	ND	97.1	60-130			
Trichloroethylene	3.91	0.05	ug/g	ND	97.7	60-130			
Trichlorofluoromethane	3.69	0.05	ug/g	ND	92.2	50-140			
1,3,5-Trimethylbenzene	3.59	0.05	ug/g	ND	89.8	60-130			
Vinyl chloride	3.74	0.02	ug/g	ND	93.6	50-140			
m,p-Xylenes	6.27	0.05	ug/g	ND	78.4	60-130			
o-Xylene	3.24	0.05	ug/g	ND	81.0	60-130			



**Certificate of Analysis**

Report Date: 01-Aug-2013

Client: **Stantec Consulting Ltd. (Ottawa)**

Order Date: 24-Jul-2013

Client PO: 45064625

Project Description: 122510670.215/ Boteler

**Qualifier Notes:**

**Sample Qualifiers :**

- 1 : Elevated detection limit due to dilution required because of high target analyte concentration.
- 2 : PAH surrogate recovery (2-Fluorobiphenyl) lower than expected due to matrix interference.
- 4 : Surrogate recovery outside of control limits. The data was accepted based on valid recovery of the remaining surrogate.

**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.



TRUSTED.  
RESPONSIVE.  
RELIABLE.

Head Office  
300-2319 St. Laurent Blvd.  
Ottawa, Ontario K1G 4J8  
p: 1-800-749-1947  
e: paracel@paracellabs.com  
www.paracellabs.com

Chain of Custody  
(Lab Use Only)

Page 1 of 2

OTTAWA • KINGSTON • NIAGARA • MISSISSAUGA • SARNIA

Client Name: Stantec Consulting Ltd. Project Reference: 122510670-220-215  
 Contact Name: Jill Peters-Dechman Quote # City Of Ottawa SOA 19609-91843-S01  
 Address: 1331 Clyde Avenue Suite 400 PO #  
 Ottawa, ON K2C3G4 Email Address: jill.peters-dechman@stantec.com  
 Telephone: 613-722-4420 Date Required: \_\_\_\_\_  
 Email Address: *brenda-cocke@stantec*

Criteria:  O. Reg. 153 (As Amended) Table 1  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

Paracel Order Number:		Matrix	Air Volume	# of Containers	Sample Taken		PHCs F1-F4+BTEX	VOCs	PAHs	Metals by ICP	Hg	CWI	B (HWS)	PCBs	FOC	EC/SAR	pH			
1330222					Date	Time														
Sample ID/Location Name																				
1	TP13-4 BAI424	S		2		Am	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
2	TP15-2 BAI425	S				Bm	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
3	TP18-6 BAI426	S			July	Am	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
4	TP17-4 BAI427	S				Am	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
5	TP16-5 BAI428	S			24/	Am	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
6	TP19-3 BAI429	S			2013		<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
7	TP20-4 BAI430	S					<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
8	TP21-3 BAI431	S					<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
9	TP24-6 BAI432	S					<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
10	TP30-3 BAI433	S				Pm	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

250ml + 1ml

Method of Delivery:  
Walk-in

Comments:

Relinquished By (Sign): <i>A. Waldrich</i>	Received by Driver/Depot:	Received at Lab: <i>MJC</i>	Verified By: <i>MJC</i>
Relinquished By (Print): <i>A. Waldrich</i>	Date/Time:	Date/Time: <i>July 24/13 6:23</i>	Date/Time: <i>July 25/13 10:32</i>
Date/Time: <i>2013/07/24</i>	Temperature: _____ °C	Temperature: <i>18.1</i> °C	pH Verified [ ] By: <i>NA</i>



TRUSTED.  
RESPONSIVE.  
RELIABLE.

Head Office  
300-2319 St. Laurent Blvd.  
Ottawa, Ontario K1G 4J8  
p: 1-800-749-1947  
e: paracel@paracellabs.com  
www.paracellabs.com

Chain of Custody  
(Lab Use Only)

Page 2 of 2

OTTAWA • KINGSTON • NIAGARA • MISSISSAUGA • SARNIA

Client Name: Stantec Consulting Ltd.  
Contact Name: Jill Peters-Dechman  
Address: 1331 Clyde Avenue Suite 400  
Ottawa, ON K2C3G4  
Telephone: 613-722-4420

Project Reference: 122510670.220-215  
Quote #: City Of Ottawa SOA 19609-91843-S01  
PO #  
Email Address: jill.peters-dechman@stantec.com  
branda.cooper@stantec

TAT:  Regular  3 Day  
 2 Day  1 Day  
Date Required: \_\_\_\_\_

Criteria:  O. Reg. 153 (As Amended) Table 1  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

Paracel Order Number:		Matrix	Air Volume	# of Containers	Sample Taken		PHCs F1-F4+BTEX	VOCs	PAHs	Metals by ICP	Hg	CrVI	B (HWS)	PCBs	FOC	EC/SAR	pH			
1330222					Date	Time														
Sample ID/Location Name																				
1	TP 26-2 BAI 434	S		2	1	pm	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
2	TP 25-3 BAI 435	S			July	pm	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
3	TP 27-5 BAI 436	S			July	pm	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
4	TP 29-4 BAI 437	S			24/	pm	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
5	<del>TP 28-3</del> TP 23-3 BAI 438	S			2013	pm	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
6	TP 28-3 BAI 439	S				pm	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
7		S					<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
8		S					<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
9		S					<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
10		S					<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

950ml+  
↓

Comments: Method of Delivery: Walk-in

Relinquished By (Sign): <i>A. Waldick</i>	Received by Driver/Depot:	Received at Lab: <i>M/C</i>	Verified By: <i>M/C</i>
Relinquished By (Print): <i>A. Waldick</i>	Date/Time:	Date/Time: <i>July 24/13 6:23</i>	Date/Time: <i>July 25/13 12:32</i>
Date/Time: <i>2013/07/24</i>	Temperature: _____ °C	Temperature: <i>18.1</i> °C	pH Verified [ ] By: <i>N/A</i>

## Certificate of Analysis

### Stantec Consulting Ltd. (Ottawa)

1331 Clyde Avenue Suite 400

Ottawa, ON K2C 3G4

Attn: Jill Peters-Dechman

Client PO: 45064625

Project: 122510670.220/ Boteler

Custody:

Phone: (613) 722-4420

Fax: (613) 738-0721

Report Date: 1-Aug-2013

Order Date: 24-Jul-2013

**Order #: 1330254**

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

Parcel ID	Client ID
1330254-01	TP13-1
1330254-02	TP14-1
1330254-03	TP15-1
1330254-04	TP18-1
1330254-05	TP17-1
1330254-06	TP16-1
1330254-07	TP19-1
1330254-08	TP20-1
1330254-09	TP21-1
1330254-10	TP23-1
1330254-11	TP30-1
1330254-12	TP26-1
1330254-13	TP25-1
1330254-14	TP29-1
1330254-15	TP27-1
1330254-16	TP28-1
1330254-17	TP24-1

Approved By:



Mark Foto, M.Sc. For Dale Robertson, BSc  
Laboratory Director

**Certificate of Analysis**

Report Date: 01-Aug-2013

 Client: **Stantec Consulting Ltd. (Ottawa)**

Order Date: 24-Jul-2013

Client PO: 45064625

Project Description: 122510670.220/ Boteler

**Analysis Summary Table**

Analysis	Method Reference/Description	Extraction Date	Analysis Date
Boron, available	MOE (HWE), EPA 200.7 - ICP-OES	29-Jul-13	30-Jul-13
Chromium, hexavalent	MOE E3056 - Extraction, colourimetric	26-Jul-13	30-Jul-13
Mercury	EPA 7471A - CVAA, digestion	29-Jul-13	30-Jul-13
MOE Metals by ICP-OES, soil Reg 153	based on MOE E3470, ICP-OES	29-Jul-13	29-Jul-13
PAHs by GC-MS	EPA 8270 - GC-MS, extraction	29-Jul-13	30-Jul-13
PHC F1	CWS Tier 1 - P&T GC-FID	29-Jul-13	31-Jul-13
PHC F2 - F4	CWS Tier 1 - GC-FID, extraction	30-Jul-13	30-Jul-13
Solids, %	Gravimetric, calculation	29-Jul-13	29-Jul-13
VOCs by P&T GC-MS	EPA 8260 - P&T GC-MS	29-Jul-13	31-Jul-13

**Certificate of Analysis**

Report Date: 01-Aug-2013

 Client: **Stantec Consulting Ltd. (Ottawa)**

Order Date: 24-Jul-2013

Client PO: 45064625

Project Description: 122510670.220/ Boteler

Client ID:	TP13-1	TP14-1	TP15-1	TP18-1
Sample Date:	24-Jul-13	24-Jul-13	24-Jul-13	24-Jul-13
Sample ID:	1330254-01	1330254-02	1330254-03	1330254-04
MDL/Units	Soil	Soil	Soil	Soil

**Physical Characteristics**

% Solids	0.1 % by Wt.	85.4	86.9	88.2	85.3
----------	--------------	------	------	------	------

**Metals**

Antimony	1.0 ug/g dry	<1.0	<1.0	<1.0	<1.0
Arsenic	1.0 ug/g dry	1.7	1.6	3.2	1.1
Barium	1.0 ug/g dry	71.3	122	117	67.8
Beryllium	1.0 ug/g dry	<1.0	<1.0	<1.0	<1.0
Boron	1.0 ug/g dry	2.9	3.5	5.1	2.2
Boron, available	0.5 ug/g dry	<0.5	<0.5	<0.5	<0.5
Cadmium	0.5 ug/g dry	<0.5	<0.5	<0.5	<0.5
Chromium	1.0 ug/g dry	14.0	14.5	15.3	12.1
Chromium (VI)	0.2 ug/g dry	<0.2	<0.2	<0.2	<0.2
Cobalt	1.0 ug/g dry	4.1	4.8	5.1	4.0
Copper	1.0 ug/g dry	10.5	13.4	22.8	11.2
Lead	1.0 ug/g dry	24.4	22.6	77.0	12.1
Mercury	0.1 ug/g dry	<0.1	0.1	0.3	<0.1
Molybdenum	1.0 ug/g dry	<1.0	<1.0	<1.0	<1.0
Nickel	1.0 ug/g dry	8.5	9.2	10.2	7.5
Selenium	1.0 ug/g dry	<1.0	<1.0	<1.0	<1.0
Silver	0.5 ug/g dry	<0.5	<0.5	<0.5	<0.5
Thallium	1.0 ug/g dry	<1.0	<1.0	<1.0	<1.0
Uranium	1.0 ug/g dry	<1.0	<1.0	<1.0	<1.0
Vanadium	1.0 ug/g dry	21.8	22.6	20.7	20.9
Zinc	1.0 ug/g dry	38.0	58.2	63.7	39.9

**Volatiles**

Acetone	0.50 ug/g dry	<0.50	<0.50	<0.50	<0.50
Benzene	0.02 ug/g dry	<0.02	<0.02	<0.02	<0.02
Bromodichloromethane	0.05 ug/g dry	<0.05	<0.05	<0.05	<0.05
Bromoform	0.05 ug/g dry	<0.05	<0.05	<0.05	<0.05
Bromomethane	0.05 ug/g dry	<0.05	<0.05	<0.05	<0.05
Carbon Tetrachloride	0.05 ug/g dry	<0.05	<0.05	<0.05	<0.05
Chlorobenzene	0.05 ug/g dry	<0.05	<0.05	<0.05	<0.05
Chloroethane	0.05 ug/g dry	<0.05	<0.05	<0.05	<0.05
Chloroform	0.05 ug/g dry	<0.05	<0.05	<0.05	<0.05

**Certificate of Analysis**

Report Date: 01-Aug-2013

Client: **Stantec Consulting Ltd. (Ottawa)**

Order Date: 24-Jul-2013

Client PO: 45064625

Project Description: 122510670.220/ Boteler

	Client ID:	TP13-1	TP14-1	TP15-1	TP18-1
	Sample Date:	24-Jul-13	24-Jul-13	24-Jul-13	24-Jul-13
	Sample ID:	1330254-01	1330254-02	1330254-03	1330254-04
	MDL/Units	Soil	Soil	Soil	Soil
Chloromethane	0.20 ug/g dry	<0.20	<0.20	<0.20	<0.20
Dibromochloromethane	0.05 ug/g dry	<0.05	<0.05	<0.05	<0.05
Dichlorodifluoromethane	0.05 ug/g dry	<0.05	<0.05	<0.05	<0.05
1,2-Dibromoethane	0.05 ug/g dry	<0.05	<0.05	<0.05	<0.05
1,2-Dichlorobenzene	0.05 ug/g dry	<0.05	<0.05	<0.05	<0.05
1,3-Dichlorobenzene	0.05 ug/g dry	<0.05	<0.05	<0.05	<0.05
1,4-Dichlorobenzene	0.05 ug/g dry	<0.05	<0.05	<0.05	<0.05
1,1-Dichloroethane	0.05 ug/g dry	<0.05	<0.05	<0.05	<0.05
1,2-Dichloroethane	0.05 ug/g dry	<0.05	<0.05	<0.05	<0.05
1,1-Dichloroethylene	0.05 ug/g dry	<0.05	<0.05	<0.05	<0.05
cis-1,2-Dichloroethylene	0.05 ug/g dry	<0.05	<0.05	<0.05	<0.05
trans-1,2-Dichloroethylene	0.05 ug/g dry	<0.05	<0.05	<0.05	<0.05
1,2-Dichloroethylene, total	0.05 ug/g dry	<0.05	<0.05	<0.05	<0.05
1,2-Dichloropropane	0.05 ug/g dry	<0.05	<0.05	<0.05	<0.05
cis-1,3-Dichloropropylene	0.05 ug/g dry	<0.05	<0.05	<0.05	<0.05
trans-1,3-Dichloropropylene	0.05 ug/g dry	<0.05	<0.05	<0.05	<0.05
1,3-Dichloropropene, total	0.05 ug/g dry	<0.05	<0.05	<0.05	<0.05
Ethylbenzene	0.05 ug/g dry	<0.05	<0.05	<0.05	<0.05
Hexane	0.05 ug/g dry	<0.05	<0.05	<0.05	<0.05
Methyl Ethyl Ketone (2-Butanone)	0.50 ug/g dry	<0.50	<0.50	<0.50	<0.50
Methyl Butyl Ketone (2-Hexanone)	2.00 ug/g dry	<2.00	<2.00	<2.00	<2.00
Methyl Isobutyl Ketone	0.50 ug/g dry	<0.50	<0.50	<0.50	<0.50
Methyl tert-butyl ether	0.05 ug/g dry	<0.05	<0.05	<0.05	<0.05
Methylene Chloride	0.05 ug/g dry	<0.05	<0.05	<0.05	<0.05
Styrene	0.05 ug/g dry	<0.05	<0.05	<0.05	<0.05
1,1,1,2-Tetrachloroethane	0.05 ug/g dry	<0.05	<0.05	<0.05	<0.05
1,1,1,2,2-Tetrachloroethane	0.05 ug/g dry	<0.05	<0.05	<0.05	<0.05
Tetrachloroethylene	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
1,2,4-Trichlorobenzene	0.05 ug/g dry	<0.05	<0.05	<0.05	<0.05
1,1,1-Trichloroethane	0.05 ug/g dry	<0.05	<0.05	<0.05	<0.05
1,1,2-Trichloroethane	0.05 ug/g dry	<0.05	<0.05	<0.05	<0.05
Trichloroethylene	0.05 ug/g dry	<0.05	<0.05	<0.05	<0.05
Trichlorofluoromethane	0.05 ug/g dry	<0.05	<0.05	<0.05	<0.05



**Certificate of Analysis**

Report Date: 01-Aug-2013

Order Date: 24-Jul-2013

 Client: **Stantec Consulting Ltd. (Ottawa)**

Client PO: 45064625

Project Description: 122510670.220/ Boteler

	Client ID: Sample Date: Sample ID:	TP13-1	TP14-1	TP15-1	TP18-1
		24-Jul-13 1330254-01	24-Jul-13 1330254-02	24-Jul-13 1330254-03	24-Jul-13 1330254-04
	MDL/Units	Soil	Soil	Soil	Soil
1,3,5-Trimethylbenzene	0.05 ug/g dry	<0.05	<0.05	<0.05	<0.05
Vinyl chloride	0.02 ug/g dry	<0.02	<0.02	<0.02	<0.02
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
4-Bromofluorobenzene	Surrogate	101%	101%	102%	101%
Dibromofluoromethane	Surrogate	104%	103%	104%	102%
Toluene-d8	Surrogate	107%	109%	107%	106%

**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	66	<8
F4 PHCs (C34-C50)	6 ug/g dry	<6	<6	18	<6

**Semi-Volatiles**

Acenaphthene	0.02 ug/g dry	<0.02	<0.02	0.05	0.18
Acenaphthylene	0.02 ug/g dry	0.07	0.09	0.25	0.30
Anthracene	0.02 ug/g dry	0.10	0.15	0.47	0.74
Benzo [a] anthracene	0.02 ug/g dry	0.21	0.24	0.87	1.67
Benzo [a] pyrene	0.02 ug/g dry	0.20	0.24	0.85	1.57
Benzo [b] fluoranthene	0.02 ug/g dry	0.24	0.28	0.37	1.89
Benzo [g,h,i] perylene	0.02 ug/g dry	0.13	0.16	0.57	1.08
Benzo [k] fluoranthene	0.02 ug/g dry	0.09	0.11	0.35	0.61
Biphenyl	0.02 ug/g dry	<0.02	<0.02	<0.02	<0.02
Chrysene	0.02 ug/g dry	0.20	0.25	0.90	1.50
Dibenzo [a,h] anthracene	0.02 ug/g dry	0.03	0.03	0.15	0.28
Fluoranthene	0.02 ug/g dry	0.35	0.22	1.81	3.42
Fluorene	0.02 ug/g dry	0.03	<0.02	0.08	0.24
Indeno [1,2,3-cd] pyrene	0.02 ug/g dry	0.10	0.11	0.53	0.98
1-Methylnaphthalene	0.02 ug/g dry	<0.02	<0.02	<0.02	0.06
2-Methylnaphthalene	0.02 ug/g dry	<0.02	<0.02	0.03	0.07
Methylnaphthalene (1&2)	0.04 ug/g dry	<0.04	<0.04	<0.04	0.12
Naphthalene	0.01 ug/g dry	0.02	0.01	0.07	0.10
Phenanthrene	0.02 ug/g dry	0.22	0.23	0.94	2.23
Pyrene	0.02 ug/g dry	0.31	0.19	1.46	0.94
2-Fluorobiphenyl	Surrogate	62.2%	120%	26.3% [3]	63.8%



**Certificate of Analysis**

Report Date: 01-Aug-2013

Client: **Stantec Consulting Ltd. (Ottawa)**

Order Date: 24-Jul-2013

Client PO: 45064625

Project Description: 122510670.220/ Boteler

	Client ID:	TP13-1	TP14-1	TP15-1	TP18-1
	Sample Date:	24-Jul-13	24-Jul-13	24-Jul-13	24-Jul-13
	Sample ID:	1330254-01	1330254-02	1330254-03	1330254-04
	MDL/Units	Soil	Soil	Soil	Soil
Terphenyl-d14	Surrogate	53.0%	32.3% [2]	56.4%	27.3% [2]

**Certificate of Analysis**

Report Date: 01-Aug-2013

 Client: **Stantec Consulting Ltd. (Ottawa)**

Order Date: 24-Jul-2013

Client PO: 45064625

Project Description: 122510670.220/ Boteler

	Client ID:	TP17-1	TP16-1	TP19-1	TP20-1
	Sample Date:	24-Jul-13	24-Jul-13	24-Jul-13	24-Jul-13
	Sample ID:	1330254-05	1330254-06	1330254-07	1330254-08
	MDL/Units	Soil	Soil	Soil	Soil

**Physical Characteristics**

% Solids	0.1 % by Wt.	89.7	87.6	87.2	84.5
----------	--------------	------	------	------	------

**Metals**

Antimony	1.0 ug/g dry	<1.0	<1.0	<1.0	<1.0
Arsenic	1.0 ug/g dry	11.4	4.2	4.7	5.2
Barium	1.0 ug/g dry	103	152	122	279
Beryllium	1.0 ug/g dry	<1.0	<1.0	<1.0	<1.0
Boron	1.0 ug/g dry	7.6	5.1	4.3	5.7
Boron, available	0.5 ug/g dry	0.5	<0.5	<0.5	0.8
Cadmium	0.5 ug/g dry	<0.5	<0.5	<0.5	<0.5
Chromium	1.0 ug/g dry	11.3	13.4	13.0	16.9
Chromium (VI)	0.2 ug/g dry	<0.2	<0.2	<0.2	<0.2
Cobalt	1.0 ug/g dry	5.3	5.0	4.7	6.1
Copper	1.0 ug/g dry	15.5	17.7	27.8	22.0
Lead	1.0 ug/g dry	44.7	49.0	120	183
Mercury	0.1 ug/g dry	0.1	0.2	0.5	0.4
Molybdenum	1.0 ug/g dry	<1.0	<1.0	<1.0	<1.0
Nickel	1.0 ug/g dry	11.2	9.8	10.1	11.4
Selenium	1.0 ug/g dry	<1.0	<1.0	<1.0	<1.0
Silver	0.5 ug/g dry	<0.5	<0.5	0.7	<0.5
Thallium	1.0 ug/g dry	<1.0	<1.0	<1.0	<1.0
Uranium	1.0 ug/g dry	<1.0	<1.0	<1.0	<1.0
Vanadium	1.0 ug/g dry	13.9	19.3	18.7	26.4
Zinc	1.0 ug/g dry	43.2	52.7	114	176

**Volatiles**

Acetone	0.50 ug/g dry	<0.50	<0.50	<0.50	<0.50
Benzene	0.02 ug/g dry	<0.02	<0.02	<0.02	<0.02
Bromodichloromethane	0.05 ug/g dry	<0.05	<0.05	<0.05	<0.05
Bromoform	0.05 ug/g dry	<0.05	<0.05	<0.05	<0.05
Bromomethane	0.05 ug/g dry	<0.05	<0.05	<0.05	<0.05
Carbon Tetrachloride	0.05 ug/g dry	<0.05	<0.05	<0.05	<0.05
Chlorobenzene	0.05 ug/g dry	<0.05	<0.05	<0.05	<0.05
Chloroethane	0.05 ug/g dry	<0.05	<0.05	<0.05	<0.05
Chloroform	0.05 ug/g dry	<0.05	<0.05	<0.05	<0.05

**Certificate of Analysis**

Report Date: 01-Aug-2013

Order Date: 24-Jul-2013

 Client: **Stantec Consulting Ltd. (Ottawa)**

Client PO: 45064625

Project Description: 122510670.220/ Boteler

	Client ID:	TP17-1	TP16-1	TP19-1	TP20-1
	Sample Date:	24-Jul-13	24-Jul-13	24-Jul-13	24-Jul-13
	Sample ID:	1330254-05	1330254-06	1330254-07	1330254-08
	MDL/Units	Soil	Soil	Soil	Soil
Chloromethane	0.20 ug/g dry	<0.20	<0.20	<0.20	<0.20
Dibromochloromethane	0.05 ug/g dry	<0.05	<0.05	<0.05	<0.05
Dichlorodifluoromethane	0.05 ug/g dry	<0.05	<0.05	<0.05	<0.05
1,2-Dibromoethane	0.05 ug/g dry	<0.05	<0.05	<0.05	<0.05
1,2-Dichlorobenzene	0.05 ug/g dry	<0.05	<0.05	<0.05	<0.05
1,3-Dichlorobenzene	0.05 ug/g dry	<0.05	<0.05	<0.05	<0.05
1,4-Dichlorobenzene	0.05 ug/g dry	<0.05	<0.05	<0.05	<0.05
1,1-Dichloroethane	0.05 ug/g dry	<0.05	<0.05	<0.05	<0.05
1,2-Dichloroethane	0.05 ug/g dry	<0.05	<0.05	<0.05	<0.05
1,1-Dichloroethylene	0.05 ug/g dry	<0.05	<0.05	<0.05	<0.05
cis-1,2-Dichloroethylene	0.05 ug/g dry	<0.05	<0.05	<0.05	<0.05
trans-1,2-Dichloroethylene	0.05 ug/g dry	<0.05	<0.05	<0.05	<0.05
1,2-Dichloroethylene, total	0.05 ug/g dry	<0.05	<0.05	<0.05	<0.05
1,2-Dichloropropane	0.05 ug/g dry	<0.05	<0.05	<0.05	<0.05
cis-1,3-Dichloropropylene	0.05 ug/g dry	<0.05	<0.05	<0.05	<0.05
trans-1,3-Dichloropropylene	0.05 ug/g dry	<0.05	<0.05	<0.05	<0.05
1,3-Dichloropropene, total	0.05 ug/g dry	<0.05	<0.05	<0.05	<0.05
Ethylbenzene	0.05 ug/g dry	<0.05	<0.05	<0.05	<0.05
Hexane	0.05 ug/g dry	<0.05	<0.05	<0.05	<0.05
Methyl Ethyl Ketone (2-Butanone)	0.50 ug/g dry	<0.50	<0.50	<0.50	<0.50
Methyl Butyl Ketone (2-Hexanone)	2.00 ug/g dry	<2.00	<2.00	<2.00	<2.00
Methyl Isobutyl Ketone	0.50 ug/g dry	<0.50	<0.50	<0.50	<0.50
Methyl tert-butyl ether	0.05 ug/g dry	<0.05	<0.05	<0.05	<0.05
Methylene Chloride	0.05 ug/g dry	<0.05	<0.05	<0.05	<0.05
Styrene	0.05 ug/g dry	<0.05	<0.05	<0.05	<0.05
1,1,1,2-Tetrachloroethane	0.05 ug/g dry	<0.05	<0.05	<0.05	<0.05
1,1,2,2-Tetrachloroethane	0.05 ug/g dry	<0.05	<0.05	<0.05	<0.05
Tetrachloroethylene	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
1,2,4-Trichlorobenzene	0.05 ug/g dry	<0.05	<0.05	<0.05	<0.05
1,1,1-Trichloroethane	0.05 ug/g dry	<0.05	<0.05	<0.05	<0.05
1,1,2-Trichloroethane	0.05 ug/g dry	<0.05	<0.05	<0.05	<0.05
Trichloroethylene	0.05 ug/g dry	<0.05	<0.05	<0.05	<0.05

**Certificate of Analysis**

Report Date: 01-Aug-2013

Client: **Stantec Consulting Ltd. (Ottawa)**

Order Date: 24-Jul-2013

Client PO: 45064625

Project Description: 122510670.220/ Boteler

	Client ID:	TP17-1	TP16-1	TP19-1	TP20-1
	Sample Date:	24-Jul-13	24-Jul-13	24-Jul-13	24-Jul-13
	Sample ID:	1330254-05	1330254-06	1330254-07	1330254-08
	MDL/Units	Soil	Soil	Soil	Soil
Trichlorofluoromethane	0.05 ug/g dry	<0.05	<0.05	<0.05	<0.05
1,3,5-Trimethylbenzene	0.05 ug/g dry	<0.05	<0.05	<0.05	<0.05
Vinyl chloride	0.02 ug/g dry	<0.02	<0.02	<0.02	<0.02
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
4-Bromofluorobenzene	Surrogate	102%	102%	102%	102%
Dibromofluoromethane	Surrogate	104%	102%	101%	102%
Toluene-d8	Surrogate	106%	107%	106%	105%

**Hydrocarbons**

F1 PHCs (C6-C10)	7 ug/g dry	<7	<7	<7	<7
F2 PHCs (C10-C16)	4 ug/g dry	<4	<4	13	<4
F3 PHCs (C16-C34)	8 ug/g dry	27	57	68	29
F4 PHCs (C34-C50)	6 ug/g dry	<6	9	13	<6

**Semi-Volatiles**

Acenaphthene	0.02 ug/g dry	0.20	0.18	0.24	0.09
Acenaphthylene	0.02 ug/g dry	0.57	0.34	0.74	1.25
Anthracene	0.02 ug/g dry	2.15	1.02	1.30	1.19
Benzo [a] anthracene	0.02 ug/g dry	2.53	1.19	3.44	1.88
Benzo [a] pyrene	0.02 ug/g dry	2.07	1.22	3.48	1.89
Benzo [b] fluoranthene	0.02 ug/g dry	2.22	1.85	5.65	2.06
Benzo [g,h,i] perylene	0.02 ug/g dry	1.03	0.66	2.41	0.64
Benzo [k] fluoranthene	0.02 ug/g dry	0.68	0.73	3.36	0.71
Biphenyl	0.02 ug/g dry	0.05	0.04	0.04	0.03
Chrysene	0.02 ug/g dry	2.28	1.26	3.49	1.75
Dibenzo [a,h] anthracene	0.02 ug/g dry	0.21	0.18	0.68	0.19
Fluoranthene	0.02 ug/g dry	3.28	2.66	6.01	5.74
Fluorene	0.02 ug/g dry	0.67	0.40	0.35	0.35
Indeno [1,2,3-cd] pyrene	0.02 ug/g dry	1.00	0.61	2.30	0.64
1-Methylnaphthalene	0.02 ug/g dry	0.05	0.09	0.21	0.06
2-Methylnaphthalene	0.02 ug/g dry	0.05	0.11	0.26	0.06
Methylnaphthalene (1&2)	0.04 ug/g dry	0.10	0.20	0.47	0.11
Naphthalene	0.01 ug/g dry	0.15	0.32	0.23	0.11
Phenanthrene	0.02 ug/g dry	5.31	2.66	3.29	2.95

**Certificate of Analysis**

Report Date: 01-Aug-2013

Client: **Stantec Consulting Ltd. (Ottawa)**

Order Date: 24-Jul-2013

Client PO: 45064625

Project Description: 122510670.220/ Boteler

	Client ID:	TP17-1	TP16-1	TP19-1	TP20-1
	Sample Date:	24-Jul-13	24-Jul-13	24-Jul-13	24-Jul-13
	Sample ID:	1330254-05	1330254-06	1330254-07	1330254-08
	MDL/Units	Soil	Soil	Soil	Soil
Pyrene	0.02 ug/g dry	2.57	2.45	5.62	4.46
2-Fluorobiphenyl	Surrogate	8.65% [3]	70.8%	114%	51.3%
Terphenyl-d14	Surrogate	34.1% [2]	71.6%	85.1%	38.3% [2]

**Certificate of Analysis**

Report Date: 01-Aug-2013

 Client: **Stantec Consulting Ltd. (Ottawa)**

Order Date: 24-Jul-2013

Client PO: 45064625

Project Description: 122510670.220/ Boteler

Client ID:	TP21-1	TP23-1	TP30-1	TP26-1
Sample Date:	24-Jul-13	24-Jul-13	24-Jul-13	24-Jul-13
Sample ID:	1330254-09	1330254-10	1330254-11	1330254-12
MDL/Units	Soil	Soil	Soil	Soil

**Physical Characteristics**

% Solids	0.1 % by Wt.	92.2	94.0	87.7	95.3
----------	--------------	------	------	------	------

**Metals**

Antimony	1.0 ug/g dry	<1.0	<1.0	<1.0	<1.0
Arsenic	1.0 ug/g dry	9.7	2.6	<1.0	1.1
Barium	1.0 ug/g dry	223	104	119	142
Beryllium	1.0 ug/g dry	<1.0	<1.0	<1.0	<1.0
Boron	1.0 ug/g dry	5.4	5.5	2.6	3.3
Boron, available	0.5 ug/g dry	<0.5	<0.5	<0.5	<0.5
Cadmium	0.5 ug/g dry	<0.5	<0.5	<0.5	<0.5
Chromium	1.0 ug/g dry	10.9	5.9	12.8	4.1
Chromium (VI)	0.2 ug/g dry	<0.2	<0.2	<0.2	<0.2
Cobalt	1.0 ug/g dry	5.1	2.7	4.4	1.9
Copper	1.0 ug/g dry	37.8	5.0	9.2	4.3
Lead	1.0 ug/g dry	334	13.0	6.6	8.3
Mercury	0.1 ug/g dry	0.2	<0.1	<0.1	<0.1
Molybdenum	1.0 ug/g dry	1.1	<1.0	<1.0	<1.0
Nickel	1.0 ug/g dry	11.4	5.9	7.3	4.0
Selenium	1.0 ug/g dry	<1.0	<1.0	<1.0	<1.0
Silver	0.5 ug/g dry	<0.5	<0.5	<0.5	<0.5
Thallium	1.0 ug/g dry	<1.0	<1.0	<1.0	<1.0
Uranium	1.0 ug/g dry	<1.0	<1.0	<1.0	<1.0
Vanadium	1.0 ug/g dry	16.5	6.5	21.5	5.5
Zinc	1.0 ug/g dry	98.2	12.8	20.3	7.5

**Volatiles**

Acetone	0.50 ug/g dry	<0.50	<0.50	<0.50	<0.50
Benzene	0.02 ug/g dry	<0.02	<0.02	<0.02	<0.02
Bromodichloromethane	0.05 ug/g dry	<0.05	<0.05	<0.05	<0.05
Bromoform	0.05 ug/g dry	<0.05	<0.05	<0.05	<0.05
Bromomethane	0.05 ug/g dry	<0.05	<0.05	<0.05	<0.05
Carbon Tetrachloride	0.05 ug/g dry	<0.05	<0.05	<0.05	<0.05
Chlorobenzene	0.05 ug/g dry	<0.05	<0.05	<0.05	<0.05
Chloroethane	0.05 ug/g dry	<0.05	<0.05	<0.05	<0.05
Chloroform	0.05 ug/g dry	<0.05	<0.05	<0.05	<0.05

**Certificate of Analysis**

Report Date: 01-Aug-2013

 Client: **Stantec Consulting Ltd. (Ottawa)**

Order Date: 24-Jul-2013

Client PO: 45064625

Project Description: 122510670.220/ Boteler

	Client ID:	TP21-1	TP23-1	TP30-1	TP26-1
	Sample Date:	24-Jul-13	24-Jul-13	24-Jul-13	24-Jul-13
	Sample ID:	1330254-09	1330254-10	1330254-11	1330254-12
	MDL/Units	Soil	Soil	Soil	Soil
Chloromethane	0.20 ug/g dry	<0.20	<0.20	<0.20	<0.20
Dibromochloromethane	0.05 ug/g dry	<0.05	<0.05	<0.05	<0.05
Dichlorodifluoromethane	0.05 ug/g dry	<0.05	<0.05	<0.05	<0.05
1,2-Dibromoethane	0.05 ug/g dry	<0.05	<0.05	<0.05	<0.05
1,2-Dichlorobenzene	0.05 ug/g dry	<0.05	<0.05	<0.05	<0.05
1,3-Dichlorobenzene	0.05 ug/g dry	<0.05	<0.05	<0.05	<0.05
1,4-Dichlorobenzene	0.05 ug/g dry	<0.05	<0.05	<0.05	<0.05
1,1-Dichloroethane	0.05 ug/g dry	<0.05	<0.05	<0.05	<0.05
1,2-Dichloroethane	0.05 ug/g dry	<0.05	<0.05	<0.05	<0.05
1,1-Dichloroethylene	0.05 ug/g dry	<0.05	<0.05	<0.05	<0.05
cis-1,2-Dichloroethylene	0.05 ug/g dry	<0.05	<0.05	<0.05	<0.05
trans-1,2-Dichloroethylene	0.05 ug/g dry	<0.05	<0.05	<0.05	<0.05
1,2-Dichloroethylene, total	0.05 ug/g dry	<0.05	<0.05	<0.05	<0.05
1,2-Dichloropropane	0.05 ug/g dry	<0.05	<0.05	<0.05	<0.05
cis-1,3-Dichloropropylene	0.05 ug/g dry	<0.05	<0.05	<0.05	<0.05
trans-1,3-Dichloropropylene	0.05 ug/g dry	<0.05	<0.05	<0.05	<0.05
1,3-Dichloropropene, total	0.05 ug/g dry	<0.05	<0.05	<0.05	<0.05
Ethylbenzene	0.05 ug/g dry	<0.05	<0.05	<0.05	<0.05
Hexane	0.05 ug/g dry	<0.05	<0.05	<0.05	<0.05
Methyl Ethyl Ketone (2-Butanone)	0.50 ug/g dry	<0.50	<0.50	<0.50	<0.50
Methyl Butyl Ketone (2-Hexanone)	2.00 ug/g dry	<2.00	<2.00	<2.00	<2.00
Methyl Isobutyl Ketone	0.50 ug/g dry	<0.50	<0.50	<0.50	<0.50
Methyl tert-butyl ether	0.05 ug/g dry	<0.05	<0.05	<0.05	<0.05
Methylene Chloride	0.05 ug/g dry	<0.05	<0.05	<0.05	<0.05
Styrene	0.05 ug/g dry	<0.05	<0.05	<0.05	<0.05
1,1,1,2-Tetrachloroethane	0.05 ug/g dry	<0.05	<0.05	<0.05	<0.05
1,1,2,2-Tetrachloroethane	0.05 ug/g dry	<0.05	<0.05	<0.05	<0.05
Tetrachloroethylene	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
1,2,4-Trichlorobenzene	0.05 ug/g dry	<0.05	<0.05	<0.05	<0.05
1,1,1-Trichloroethane	0.05 ug/g dry	<0.05	<0.05	<0.05	<0.05
1,1,2-Trichloroethane	0.05 ug/g dry	<0.05	<0.05	<0.05	<0.05
Trichloroethylene	0.05 ug/g dry	<0.05	<0.05	<0.05	<0.05
Trichlorofluoromethane	0.05 ug/g dry	<0.05	<0.05	<0.05	<0.05

 P: 1-800-749-1947  
 E: PARACEL@PARACELLABS.COM

WWW.PARACELLABS.COM

**OTTAWA**  
 300-2319 St. Laurent Blvd.  
 Ottawa, ON K1G 4J8

**MISSISSAUGA**  
 6845 Kitchener Rd. Unit #27  
 Mississauga, ON L5N 6J3

**NIAGARA FALLS**  
 5415 Morning Glory Cr.  
 Niagara Falls, ON L2J 0A3

**SARNIA**  
 123 Christina St. N.  
 Sarnia, ON N7T 5T7



**Certificate of Analysis**

Report Date: 01-Aug-2013

Order Date: 24-Jul-2013

 Client: **Stantec Consulting Ltd. (Ottawa)**

Client PO: 45064625

Project Description: 122510670.220/ Boteler

	Client ID:	TP21-1	TP23-1	TP30-1	TP26-1
	Sample Date:	24-Jul-13	24-Jul-13	24-Jul-13	24-Jul-13
	Sample ID:	1330254-09	1330254-10	1330254-11	1330254-12
	MDL/Units	Soil	Soil	Soil	Soil
1,3,5-Trimethylbenzene	0.05 ug/g dry	<0.05	<0.05	<0.05	<0.05
Vinyl chloride	0.02 ug/g dry	<0.02	<0.02	<0.02	<0.02
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
4-Bromofluorobenzene	Surrogate	101%	101%	101%	102%
Dibromofluoromethane	Surrogate	102%	102%	103%	101%
Toluene-d8	Surrogate	106%	105%	105%	104%

**Hydrocarbons**

F1 PHCs (C6-C10)	7 ug/g dry	<7	<7	<7	<7
F2 PHCs (C10-C16)	4 ug/g dry	<4	<4	<4	17
F3 PHCs (C16-C34)	8 ug/g dry	64	<8	20	1270
F4 PHCs (C34-C50)	6 ug/g dry	<6	<6	21	140

**Semi-Volatiles**

Acenaphthene	0.02 ug/g dry	0.92	<0.02	<0.02	<0.02
Acenaphthylene	0.02 ug/g dry	10.2	<0.02	0.41	<0.02
Anthracene	0.02 ug/g dry	10.9	<0.02	0.48	<0.02
Benzo [a] anthracene	0.02 ug/g dry	24.6	0.03	0.77	0.04
Benzo [a] pyrene	0.02 ug/g dry	20.0	0.02	0.70	0.03
Benzo [b] fluoranthene	0.02 ug/g dry	18.2	0.03	1.15	0.05
Benzo [g,h,i] perylene	0.02 ug/g dry	8.84	<0.02	0.20	<0.02
Benzo [k] fluoranthene	0.02 ug/g dry	7.29	<0.02	0.38	<0.02
Biphenyl	0.02 ug/g dry	0.41	<0.02	<0.02	<0.02
Chrysene	0.02 ug/g dry	22.0	0.03	0.66	0.04
Dibenzo [a,h] anthracene	0.02 ug/g dry	2.75	<0.02	0.05	<0.02
Fluoranthene	0.02 ug/g dry	47.3	0.04	1.34	0.06
Fluorene	0.02 ug/g dry	6.94	<0.02	0.08	<0.02
Indeno [1,2,3-cd] pyrene	0.02 ug/g dry	8.92	<0.02	0.19	<0.02
1-Methylnaphthalene	0.02 ug/g dry	0.61	<0.02	<0.02	<0.02
2-Methylnaphthalene	0.02 ug/g dry	0.64	<0.02	<0.02	<0.02
Methylnaphthalene (1&2)	0.04 ug/g dry	1.25	<0.04	<0.04	<0.04
Naphthalene	0.01 ug/g dry	0.92	<0.01	0.02	<0.01
Phenanthrene	0.02 ug/g dry	45.0	0.03	0.71	0.04
Pyrene	0.02 ug/g dry	35.8	0.04	1.12	0.05



**Certificate of Analysis**

Report Date: 01-Aug-2013

Client: **Stantec Consulting Ltd. (Ottawa)**

Order Date: 24-Jul-2013

Client PO: 45064625

Project Description: 122510670.220/ Boteler

		Client ID: Sample Date: Sample ID: MDL/Units	TP21-1 24-Jul-13 1330254-09 Soil	TP23-1 24-Jul-13 1330254-10 Soil	TP30-1 24-Jul-13 1330254-11 Soil	TP26-1 24-Jul-13 1330254-12 Soil
2-Fluorobiphenyl	Surrogate		87.6%	25.4% [3]	54.5%	78.3%
Terphenyl-d14	Surrogate		64.9%	43.4% [2]	44.9% [2]	43.9% [2]

**Certificate of Analysis**

Report Date: 01-Aug-2013

 Client: **Stantec Consulting Ltd. (Ottawa)**

Order Date: 24-Jul-2013

Client PO: 45064625

Project Description: 122510670.220/ Boteler

	Client ID:	TP25-1	TP29-1	TP27-1	TP28-1
	Sample Date:	24-Jul-13	24-Jul-13	24-Jul-13	24-Jul-13
	Sample ID:	1330254-13	1330254-14	1330254-15	1330254-16
	MDL/Units	Soil	Soil	Soil	Soil
<b>Physical Characteristics</b>					
% Solids	0.1 % by Wt.	84.8	91.8	83.8	88.4
<b>Metals</b>					
Antimony	1.0 ug/g dry	<1.0	<1.0	<1.0	<1.0
Arsenic	1.0 ug/g dry	1.3	2.4	3.8	1.9
Barium	1.0 ug/g dry	103	117	220	78.9
Beryllium	1.0 ug/g dry	<1.0	<1.0	<1.0	<1.0
Boron	1.0 ug/g dry	1.7	3.4	4.9	2.5
Boron, available	0.5 ug/g dry	<0.5	<0.5	<0.5	<0.5
Cadmium	0.5 ug/g dry	<0.5	<0.5	<0.5	<0.5
Chromium	1.0 ug/g dry	14.3	7.5	13.5	10.6
Chromium (VI)	0.2 ug/g dry	<0.2	<0.2	<0.2	<0.2
Cobalt	1.0 ug/g dry	3.7	2.9	3.8	3.6
Copper	1.0 ug/g dry	6.6	9.6	21.3	12.3
Lead	1.0 ug/g dry	10.3	24.7	354	13.4
Mercury	0.1 ug/g dry	<0.1	0.6	0.6	<0.1
Molybdenum	1.0 ug/g dry	<1.0	<1.0	<1.0	<1.0
Nickel	1.0 ug/g dry	7.3	6.6	8.0	6.6
Selenium	1.0 ug/g dry	<1.0	<1.0	<1.0	<1.0
Silver	0.5 ug/g dry	<0.5	<0.5	<0.5	<0.5
Thallium	1.0 ug/g dry	<1.0	1.0	<1.0	<1.0
Uranium	1.0 ug/g dry	<1.0	<1.0	<1.0	<1.0
Vanadium	1.0 ug/g dry	21.1	11.5	18.1	18.1
Zinc	1.0 ug/g dry	26.5	23.0	165	23.3
<b>Volatiles</b>					
Acetone	0.50 ug/g dry	<0.50	<0.50	<0.50	<0.50
Benzene	0.02 ug/g dry	<0.02	<0.02	<0.02	<0.02
Bromodichloromethane	0.05 ug/g dry	<0.05	<0.05	<0.05	<0.05
Bromoform	0.05 ug/g dry	<0.05	<0.05	<0.05	<0.05
Bromomethane	0.05 ug/g dry	<0.05	<0.05	<0.05	<0.05
Carbon Tetrachloride	0.05 ug/g dry	<0.05	<0.05	<0.05	<0.05
Chlorobenzene	0.05 ug/g dry	<0.05	<0.05	<0.05	<0.05
Chloroethane	0.05 ug/g dry	<0.05	<0.05	<0.05	<0.05
Chloroform	0.05 ug/g dry	<0.05	<0.05	<0.05	<0.05

**Certificate of Analysis**

Report Date: 01-Aug-2013

 Client: **Stantec Consulting Ltd. (Ottawa)**

Order Date: 24-Jul-2013

Client PO: 45064625

Project Description: 122510670.220/ Boteler

	Client ID:	TP25-1	TP29-1	TP27-1	TP28-1
	Sample Date:	24-Jul-13	24-Jul-13	24-Jul-13	24-Jul-13
	Sample ID:	1330254-13	1330254-14	1330254-15	1330254-16
	MDL/Units	Soil	Soil	Soil	Soil
Chloromethane	0.20 ug/g dry	<0.20	<0.20	<0.20	<0.20
Dibromochloromethane	0.05 ug/g dry	<0.05	<0.05	<0.05	<0.05
Dichlorodifluoromethane	0.05 ug/g dry	<0.05	<0.05	<0.05	<0.05
1,2-Dibromoethane	0.05 ug/g dry	<0.05	<0.05	<0.05	<0.05
1,2-Dichlorobenzene	0.05 ug/g dry	<0.05	<0.05	<0.05	<0.05
1,3-Dichlorobenzene	0.05 ug/g dry	<0.05	<0.05	<0.05	<0.05
1,4-Dichlorobenzene	0.05 ug/g dry	<0.05	<0.05	<0.05	<0.05
1,1-Dichloroethane	0.05 ug/g dry	<0.05	<0.05	<0.05	<0.05
1,2-Dichloroethane	0.05 ug/g dry	<0.05	<0.05	<0.05	<0.05
1,1-Dichloroethylene	0.05 ug/g dry	<0.05	<0.05	<0.05	<0.05
cis-1,2-Dichloroethylene	0.05 ug/g dry	<0.05	<0.05	<0.05	<0.05
trans-1,2-Dichloroethylene	0.05 ug/g dry	<0.05	<0.05	<0.05	<0.05
1,2-Dichloroethylene, total	0.05 ug/g dry	<0.05	<0.05	<0.05	<0.05
1,2-Dichloropropane	0.05 ug/g dry	<0.05	<0.05	<0.05	<0.05
cis-1,3-Dichloropropylene	0.05 ug/g dry	<0.05	<0.05	<0.05	<0.05
trans-1,3-Dichloropropylene	0.05 ug/g dry	<0.05	<0.05	<0.05	<0.05
1,3-Dichloropropene, total	0.05 ug/g dry	<0.05	<0.05	<0.05	<0.05
Ethylbenzene	0.05 ug/g dry	<0.05	<0.05	<0.05	<0.05
Hexane	0.05 ug/g dry	<0.05	<0.05	<0.05	<0.05
Methyl Ethyl Ketone (2-Butanone)	0.50 ug/g dry	<0.50	<0.50	<0.50	<0.50
Methyl Butyl Ketone (2-Hexanone)	2.00 ug/g dry	<2.00	<2.00	<2.00	<2.00
Methyl Isobutyl Ketone	0.50 ug/g dry	<0.50	<0.50	<0.50	<0.50
Methyl tert-butyl ether	0.05 ug/g dry	<0.05	<0.05	<0.05	<0.05
Methylene Chloride	0.05 ug/g dry	<0.05	<0.05	<0.05	<0.05
Styrene	0.05 ug/g dry	<0.05	<0.05	<0.05	<0.05
1,1,1,2-Tetrachloroethane	0.05 ug/g dry	<0.05	<0.05	<0.05	<0.05
1,1,2,2-Tetrachloroethane	0.05 ug/g dry	<0.05	<0.05	<0.05	<0.05
Tetrachloroethylene	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
1,2,4-Trichlorobenzene	0.05 ug/g dry	<0.05	<0.05	<0.05	<0.05
1,1,1-Trichloroethane	0.05 ug/g dry	<0.05	<0.05	<0.05	<0.05
1,1,2-Trichloroethane	0.05 ug/g dry	<0.05	<0.05	<0.05	<0.05
Trichloroethylene	0.05 ug/g dry	<0.05	<0.05	<0.05	<0.05

**Certificate of Analysis**

Report Date: 01-Aug-2013

Client: **Stantec Consulting Ltd. (Ottawa)**

Order Date: 24-Jul-2013

Client PO: 45064625

Project Description: 122510670.220/ Boteler

	Client ID:	TP25-1	TP29-1	TP27-1	TP28-1
	Sample Date:	24-Jul-13	24-Jul-13	24-Jul-13	24-Jul-13
	Sample ID:	1330254-13	1330254-14	1330254-15	1330254-16
	MDL/Units	Soil	Soil	Soil	Soil
Trichlorofluoromethane	0.05 ug/g dry	<0.05	<0.05	<0.05	<0.05
1,3,5-Trimethylbenzene	0.05 ug/g dry	<0.05	<0.05	<0.05	<0.05
Vinyl chloride	0.02 ug/g dry	<0.02	<0.02	<0.02	<0.02
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
4-Bromofluorobenzene	Surrogate	94.3%	99.5%	100%	101%
Dibromofluoromethane	Surrogate	101%	102%	103%	102%
Toluene-d8	Surrogate	103%	108%	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	38	66	466	<8
F4 PHCs (C34-C50)	6 ug/g dry	12	122	63	<6

**Semi-Volatiles**

Acenaphthene	0.02 ug/g dry	<0.02	<0.02	0.99	<0.02
Acenaphthylene	0.02 ug/g dry	0.02	0.02	1.98	0.05
Anthracene	0.02 ug/g dry	0.03	0.03	4.46	0.07
Benzo [a] anthracene	0.02 ug/g dry	0.07	0.07	9.04	0.16
Benzo [a] pyrene	0.02 ug/g dry	0.06	0.06	6.85	0.15
Benzo [b] fluoranthene	0.02 ug/g dry	0.07	0.10	10.1	0.15
Benzo [g,h,i] perylene	0.02 ug/g dry	0.03	0.04	3.89	0.10
Benzo [k] fluoranthene	0.02 ug/g dry	0.03	0.03	3.57	0.05
Biphenyl	0.02 ug/g dry	<0.02	<0.02	<0.40 [1]	<0.02
Chrysene	0.02 ug/g dry	0.07	0.11	8.88	0.16
Dibenzo [a,h] anthracene	0.02 ug/g dry	<0.02	<0.02	1.07	<0.02
Fluoranthene	0.02 ug/g dry	0.12	0.08	17.2	0.26
Fluorene	0.02 ug/g dry	<0.02	<0.02	1.92	0.03
Indeno [1,2,3-cd] pyrene	0.02 ug/g dry	0.03	0.03	3.42	0.10
1-Methylnaphthalene	0.02 ug/g dry	<0.02	<0.02	<0.40 [1]	0.02
2-Methylnaphthalene	0.02 ug/g dry	<0.02	<0.02	0.41	0.04
Methylnaphthalene (1&2)	0.04 ug/g dry	<0.04	<0.04	<0.80 [1]	0.06
Naphthalene	0.01 ug/g dry	<0.01	<0.01	0.97	0.01
Phenanthrene	0.02 ug/g dry	0.05	0.06	14.1	0.17

**Certificate of Analysis**

Report Date: 01-Aug-2013

Order Date: 24-Jul-2013

Client: **Stantec Consulting Ltd. (Ottawa)**

Client PO: 45064625

Project Description: 122510670.220/ Boteler

	Client ID:	TP25-1	TP29-1	TP27-1	TP28-1
	Sample Date:	24-Jul-13	24-Jul-13	24-Jul-13	24-Jul-13
	Sample ID:	1330254-13	1330254-14	1330254-15	1330254-16
	MDL/Units	Soil	Soil	Soil	Soil
Pyrene	0.02 ug/g dry	0.11	0.07	14.5	0.24
2-Fluorobiphenyl	Surrogate	86.4%	79.0%	73.2%	39.8% [3]
Terphenyl-d14	Surrogate	51.4%	46.0% [2]	78.5%	50.3%

**Certificate of Analysis**

Report Date: 01-Aug-2013

Order Date: 24-Jul-2013

 Client: **Stantec Consulting Ltd. (Ottawa)**

Client PO: 45064625

Project Description: 122510670.220/ Boteler

<b>Client ID:</b>	TP24-1	-	-	-
<b>Sample Date:</b>	24-Jul-13	-	-	-
<b>Sample ID:</b>	1330254-17	-	-	-
<b>MDL/Units</b>	Soil	-	-	-

**Physical Characteristics**

% Solids	0.1 % by Wt.	89.4	-	-	-
----------	--------------	------	---	---	---

**Metals**

Antimony	1.0 ug/g dry	<1.0	-	-	-
Arsenic	1.0 ug/g dry	2.8	-	-	-
Barium	1.0 ug/g dry	181	-	-	-
Beryllium	1.0 ug/g dry	<1.0	-	-	-
Boron	1.0 ug/g dry	3.6	-	-	-
Boron, available	0.5 ug/g dry	<0.5	-	-	-
Cadmium	0.5 ug/g dry	<0.5	-	-	-
Chromium	1.0 ug/g dry	15.0	-	-	-
Chromium (VI)	0.2 ug/g dry	<0.2	-	-	-
Cobalt	1.0 ug/g dry	4.9	-	-	-
Copper	1.0 ug/g dry	28.6	-	-	-
Lead	1.0 ug/g dry	187	-	-	-
Mercury	0.1 ug/g dry	0.6	-	-	-
Molybdenum	1.0 ug/g dry	<1.0	-	-	-
Nickel	1.0 ug/g dry	8.9	-	-	-
Selenium	1.0 ug/g dry	<1.0	-	-	-
Silver	0.5 ug/g dry	<0.5	-	-	-
Thallium	1.0 ug/g dry	<1.0	-	-	-
Uranium	1.0 ug/g dry	<1.0	-	-	-
Vanadium	1.0 ug/g dry	23.2	-	-	-
Zinc	1.0 ug/g dry	109	-	-	-

**Volatiles**

Acetone	0.50 ug/g dry	<0.50	-	-	-
Benzene	0.02 ug/g dry	<0.02	-	-	-
Bromodichloromethane	0.05 ug/g dry	<0.05	-	-	-
Bromoform	0.05 ug/g dry	<0.05	-	-	-
Bromomethane	0.05 ug/g dry	<0.05	-	-	-
Carbon Tetrachloride	0.05 ug/g dry	<0.05	-	-	-
Chlorobenzene	0.05 ug/g dry	<0.05	-	-	-
Chloroethane	0.05 ug/g dry	<0.05	-	-	-
Chloroform	0.05 ug/g dry	<0.05	-	-	-

**Certificate of Analysis**

Report Date: 01-Aug-2013

Client: **Stantec Consulting Ltd. (Ottawa)**

Order Date: 24-Jul-2013

Client PO: 45064625

Project Description: 122510670.220/ Boteler

	MDL/Units	Client ID: Sample Date: Sample ID:	TP24-1 24-Jul-13 1330254-17	-	-	-
		Soil		-	-	-
Chloromethane	0.20 ug/g dry	<0.20		-	-	-
Dibromochloromethane	0.05 ug/g dry	<0.05		-	-	-
Dichlorodifluoromethane	0.05 ug/g dry	<0.05		-	-	-
1,2-Dibromoethane	0.05 ug/g dry	<0.05		-	-	-
1,2-Dichlorobenzene	0.05 ug/g dry	<0.05		-	-	-
1,3-Dichlorobenzene	0.05 ug/g dry	<0.05		-	-	-
1,4-Dichlorobenzene	0.05 ug/g dry	<0.05		-	-	-
1,1-Dichloroethane	0.05 ug/g dry	<0.05		-	-	-
1,2-Dichloroethane	0.05 ug/g dry	<0.05		-	-	-
1,1-Dichloroethylene	0.05 ug/g dry	<0.05		-	-	-
cis-1,2-Dichloroethylene	0.05 ug/g dry	<0.05		-	-	-
trans-1,2-Dichloroethylene	0.05 ug/g dry	<0.05		-	-	-
1,2-Dichloroethylene, total	0.05 ug/g dry	<0.05		-	-	-
1,2-Dichloropropane	0.05 ug/g dry	<0.05		-	-	-
cis-1,3-Dichloropropylene	0.05 ug/g dry	<0.05		-	-	-
trans-1,3-Dichloropropylene	0.05 ug/g dry	<0.05		-	-	-
1,3-Dichloropropene, total	0.05 ug/g dry	<0.05		-	-	-
Ethylbenzene	0.05 ug/g dry	<0.05		-	-	-
Hexane	0.05 ug/g dry	<0.05		-	-	-
Methyl Ethyl Ketone (2-Butanone)	0.50 ug/g dry	<0.50		-	-	-
Methyl Butyl Ketone (2-Hexanone)	2.00 ug/g dry	<2.00		-	-	-
Methyl Isobutyl Ketone	0.50 ug/g dry	<0.50		-	-	-
Methyl tert-butyl ether	0.05 ug/g dry	<0.05		-	-	-
Methylene Chloride	0.05 ug/g dry	<0.05		-	-	-
Styrene	0.05 ug/g dry	<0.05		-	-	-
1,1,1,2-Tetrachloroethane	0.05 ug/g dry	<0.05		-	-	-
1,1,2,2-Tetrachloroethane	0.05 ug/g dry	<0.05		-	-	-
Tetrachloroethylene	0.05 ug/g dry	<0.05		-	-	-
Toluene	0.05 ug/g dry	<0.05		-	-	-
1,2,4-Trichlorobenzene	0.05 ug/g dry	<0.05		-	-	-
1,1,1-Trichloroethane	0.05 ug/g dry	<0.05		-	-	-
1,1,2-Trichloroethane	0.05 ug/g dry	<0.05		-	-	-
Trichloroethylene	0.05 ug/g dry	<0.05		-	-	-

**Certificate of Analysis**

Report Date: 01-Aug-2013

Client: **Stantec Consulting Ltd. (Ottawa)**

Order Date: 24-Jul-2013

Client PO: 45064625

Project Description: 122510670.220/ Boteler

	Client ID:	TP24-1	-	-	-
	Sample Date:	24-Jul-13	-	-	-
	Sample ID:	1330254-17	-	-	-
	MDL/Units	Soil	-	-	-
Trichlorofluoromethane	0.05 ug/g dry	<0.05	-	-	-
1,3,5-Trimethylbenzene	0.05 ug/g dry	<0.05	-	-	-
Vinyl chloride	0.02 ug/g dry	<0.02	-	-	-
m,p-Xylenes	0.05 ug/g dry	<0.05	-	-	-
o-Xylene	0.05 ug/g dry	<0.05	-	-	-
Xylenes, total	0.05 ug/g dry	<0.05	-	-	-
4-Bromofluorobenzene	Surrogate	101%	-	-	-
Dibromofluoromethane	Surrogate	103%	-	-	-
Toluene-d8	Surrogate	105%	-	-	-

**Hydrocarbons**

F1 PHCs (C6-C10)	7 ug/g dry	<7	-	-	-
F2 PHCs (C10-C16)	4 ug/g dry	<4	-	-	-
F3 PHCs (C16-C34)	8 ug/g dry	38	-	-	-
F4 PHCs (C34-C50)	6 ug/g dry	10	-	-	-

**Semi-Volatiles**

Acenaphthene	0.02 ug/g dry	0.03	-	-	-
Acenaphthylene	0.02 ug/g dry	0.51	-	-	-
Anthracene	0.02 ug/g dry	0.46	-	-	-
Benzo [a] anthracene	0.02 ug/g dry	0.81	-	-	-
Benzo [a] pyrene	0.02 ug/g dry	0.84	-	-	-
Benzo [b] fluoranthene	0.02 ug/g dry	0.75	-	-	-
Benzo [g,h,i] perylene	0.02 ug/g dry	0.48	-	-	-
Benzo [k] fluoranthene	0.02 ug/g dry	0.28	-	-	-
Biphenyl	0.02 ug/g dry	<0.02	-	-	-
Chrysene	0.02 ug/g dry	0.88	-	-	-
Dibenzo [a,h] anthracene	0.02 ug/g dry	0.14	-	-	-
Fluoranthene	0.02 ug/g dry	1.65	-	-	-
Fluorene	0.02 ug/g dry	0.08	-	-	-
Indeno [1,2,3-cd] pyrene	0.02 ug/g dry	0.48	-	-	-
1-Methylnaphthalene	0.02 ug/g dry	<0.02	-	-	-
2-Methylnaphthalene	0.02 ug/g dry	<0.02	-	-	-
Methylnaphthalene (1&2)	0.04 ug/g dry	<0.04	-	-	-
Naphthalene	0.01 ug/g dry	0.03	-	-	-



**Certificate of Analysis**

Report Date: 01-Aug-2013

Order Date: 24-Jul-2013

Client: **Stantec Consulting Ltd. (Ottawa)**

Client PO: 45064625

Project Description: 122510670.220/ Boteler

	Client ID:	TP24-1	-	-	-
	Sample Date:	24-Jul-13	-	-	-
	Sample ID:	1330254-17	-	-	-
	MDL/Units	Soil	-	-	-
Phenanthrene	0.02 ug/g dry	0.84	-	-	-
Pyrene	0.02 ug/g dry	1.39	-	-	-
2-Fluorobiphenyl	Surrogate	77.8%	-	-	-
Terphenyl-d14	Surrogate	51.7%	-	-	-

**Certificate of Analysis**

Report Date: 01-Aug-2013

Client: **Stantec Consulting Ltd. (Ottawa)**

Order Date: 24-Jul-2013

Client PO: 45064625

Project Description: 122510670.220/ Boteler

**Method Quality Control: Blank**

Analyte	Result	Reporting Limit	Units	Source Result	%REC	%REC Limit	RPD	RPD Limit	Notes
<b>Hydrocarbons</b>									
F1 PHCs (C6-C10)	ND	7	ug/g						
F2 PHCs (C10-C16)	ND	4	ug/g						
F3 PHCs (C16-C34)	ND	8	ug/g						
F4 PHCs (C34-C50)	ND	6	ug/g						
<b>Metals</b>									
Antimony	ND	1.0	ug/g						
Arsenic	ND	1.0	ug/g						
Barium	ND	1.0	ug/g						
Beryllium	ND	1.0	ug/g						
Boron, available	ND	0.5	ug/g						
Boron	ND	1.0	ug/g						
Cadmium	ND	0.5	ug/g						
Chromium (VI)	ND	0.2	ug/g						
Chromium	ND	1.0	ug/g						
Cobalt	ND	1.0	ug/g						
Copper	ND	1.0	ug/g						
Lead	ND	1.0	ug/g						
Mercury	ND	0.1	ug/g						
Molybdenum	ND	1.0	ug/g						
Nickel	ND	1.0	ug/g						
Selenium	ND	1.0	ug/g						
Silver	ND	0.5	ug/g						
Thallium	ND	1.0	ug/g						
Uranium	ND	1.0	ug/g						
Vanadium	ND	1.0	ug/g						
Zinc	ND	1.0	ug/g						
<b>Semi-Volatiles</b>									
Acenaphthene	ND	0.02	ug/g						
Acenaphthylene	ND	0.02	ug/g						
Anthracene	ND	0.02	ug/g						
Benzo [a] anthracene	ND	0.02	ug/g						
Benzo [a] pyrene	ND	0.02	ug/g						
Benzo [b] fluoranthene	ND	0.02	ug/g						
Benzo [g,h,i] perylene	ND	0.02	ug/g						
Benzo [k] fluoranthene	ND	0.02	ug/g						
Biphenyl	ND	0.02	ug/g						
Chrysene	ND	0.02	ug/g						
Dibenzo [a,h] anthracene	ND	0.02	ug/g						
Fluoranthene	ND	0.02	ug/g						
Fluorene	ND	0.02	ug/g						
Indeno [1,2,3-cd] pyrene	ND	0.02	ug/g						
1-Methylnaphthalene	ND	0.02	ug/g						
2-Methylnaphthalene	ND	0.02	ug/g						
Methylnaphthalene (1&2)	ND	0.04	ug/g						
Naphthalene	ND	0.01	ug/g						
Phenanthrene	ND	0.02	ug/g						
Pyrene	ND	0.02	ug/g						
Surrogate: 2-Fluorobiphenyl	0.739		ug/g		55.4	50-140			
Surrogate: Terphenyl-d14	0.886		ug/g		66.4	50-140			
<b>Volatiles</b>									
Acetone	ND	0.50	ug/g						
Benzene	ND	0.02	ug/g						
Bromodichloromethane	ND	0.05	ug/g						
Bromoform	ND	0.05	ug/g						
Bromomethane	ND	0.05	ug/g						

**Certificate of Analysis**

Report Date: 01-Aug-2013

Client: **Stantec Consulting Ltd. (Ottawa)**

Order Date: 24-Jul-2013

Client PO: 45064625

Project Description: 122510670.220/ Boteler

**Method Quality Control: Blank**

Analyte	Result	Reporting Limit	Units	Source Result	%REC	%REC Limit	RPD	RPD Limit	Notes
Carbon Tetrachloride	ND	0.05	ug/g						
Chlorobenzene	ND	0.05	ug/g						
Chloroethane	ND	0.05	ug/g						
Chloroform	ND	0.05	ug/g						
Chloromethane	ND	0.20	ug/g						
Dibromochloromethane	ND	0.05	ug/g						
Dichlorodifluoromethane	ND	0.05	ug/g						
1,2-Dibromoethane	ND	0.05	ug/g						
1,2-Dichlorobenzene	ND	0.05	ug/g						
1,3-Dichlorobenzene	ND	0.05	ug/g						
1,4-Dichlorobenzene	ND	0.05	ug/g						
1,1-Dichloroethane	ND	0.05	ug/g						
1,2-Dichloroethane	ND	0.05	ug/g						
1,1-Dichloroethylene	ND	0.05	ug/g						
cis-1,2-Dichloroethylene	ND	0.05	ug/g						
trans-1,2-Dichloroethylene	ND	0.05	ug/g						
1,2-Dichloroethylene, total	ND	0.05	ug/g						
1,2-Dichloropropane	ND	0.05	ug/g						
cis-1,3-Dichloropropylene	ND	0.05	ug/g						
trans-1,3-Dichloropropylene	ND	0.05	ug/g						
1,3-Dichloropropene, total	ND	0.05	ug/g						
Ethylbenzene	ND	0.05	ug/g						
Hexane	ND	0.05	ug/g						
Methyl Ethyl Ketone (2-Butanone)	ND	0.50	ug/g						
Methyl Butyl Ketone (2-Hexanone)	ND	2.00	ug/g						
Methyl Isobutyl Ketone	ND	0.50	ug/g						
Methyl tert-butyl ether	ND	0.05	ug/g						
Methylene Chloride	ND	0.05	ug/g						
Styrene	ND	0.05	ug/g						
1,1,1,2-Tetrachloroethane	ND	0.05	ug/g						
1,1,2,2-Tetrachloroethane	ND	0.05	ug/g						
Tetrachloroethylene	ND	0.05	ug/g						
Toluene	ND	0.05	ug/g						
1,2,4-Trichlorobenzene	ND	0.05	ug/g						
1,1,1-Trichloroethane	ND	0.05	ug/g						
1,1,2-Trichloroethane	ND	0.05	ug/g						
Trichloroethylene	ND	0.05	ug/g						
Trichlorofluoromethane	ND	0.05	ug/g						
1,3,5-Trimethylbenzene	ND	0.05	ug/g						
Vinyl chloride	ND	0.02	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: 4-Bromofluorobenzene	3.26		ug/g		102	50-140			
Surrogate: Dibromofluoromethane	1.84		ug/g		57.4	50-140			
Surrogate: Toluene-d8	3.08		ug/g		96.2	50-140			

**Certificate of Analysis**

Report Date: 01-Aug-2013

Client: **Stantec Consulting Ltd. (Ottawa)**

Order Date: 24-Jul-2013

Client PO: 45064625

Project Description: 122510670.220/ Boteler

**Method Quality Control: Duplicate**

Analyte	Result	Reporting Limit	Units	Source Result	%REC	%REC Limit	RPD	RPD Limit	Notes
<b>Hydrocarbons</b>									
F1 PHCs (C6-C10)	ND	7	ug/g dry	ND				40	
F2 PHCs (C10-C16)	ND	4	ug/g dry	ND				30	
F3 PHCs (C16-C34)	ND	8	ug/g dry	ND				30	
F4 PHCs (C34-C50)	ND	6	ug/g dry	ND				30	
<b>Metals</b>									
Antimony	ND	1.0	ug/g dry	ND			0.0	30	
Arsenic	2.44	1.0	ug/g dry	3.08			23.2	30	
Barium	160	10.0	ug/g dry	155			3.2	30	
Beryllium	ND	1.0	ug/g dry	ND			0.0	30	
Boron, available	ND	0.5	ug/g dry	ND			0.0	35	
Boron	12.8	1.0	ug/g dry	11.3			12.1	30	
Cadmium	ND	0.5	ug/g dry	ND			0.0	30	
Chromium (VI)	ND	0.2	ug/g dry	ND				35	
Chromium	13.8	1.0	ug/g dry	14.0			1.1	30	
Cobalt	7.44	1.0	ug/g dry	6.96			6.6	30	
Copper	18.3	1.0	ug/g dry	21.1			13.8	30	
Lead	25.9	1.0	ug/g dry	24.9			3.9	30	
Mercury	ND	0.1	ug/g dry	ND			0.0	35	
Molybdenum	ND	1.0	ug/g dry	ND			0.0	30	
Nickel	13.7	1.0	ug/g dry	14.0			2.1	30	
Selenium	ND	1.0	ug/g dry	ND			0.0	30	
Silver	ND	0.5	ug/g dry	ND			0.0	30	
Thallium	ND	1.0	ug/g dry	ND			0.0	30	
Uranium	5.13	1.0	ug/g dry	5.20			1.3	30	
Vanadium	11.3	1.0	ug/g dry	11.1			2.0	30	
Zinc	25.8	1.0	ug/g dry	26.3			2.1	30	
<b>Physical Characteristics</b>									
% Solids	85.0	0.1	% by Wt.	85.4			0.4	25	
<b>Semi-Volatiles</b>									
Acenaphthene	0.036	0.02	ug/g dry	ND			0.0	40	
Acenaphthylene	0.115	0.02	ug/g dry	0.074			43.2	40	QR-04
Anthracene	0.200	0.02	ug/g dry	0.104			63.3	40	QR-04
Benzo [a] anthracene	0.504	0.02	ug/g dry	0.207			83.4	40	QR-04
Benzo [a] pyrene	0.552	0.02	ug/g dry	0.204			92.2	40	QR-04
Benzo [b] fluoranthene	0.583	0.02	ug/g dry	0.240			83.5	40	QR-04
Benzo [g,h,i] perylene	0.336	0.02	ug/g dry	0.126			90.9	40	QR-04
Benzo [k] fluoranthene	0.217	0.02	ug/g dry	0.087			85.7	40	QR-04
Biphenyl	ND	0.02	ug/g dry	ND			0.0	40	
Chrysene	0.540	0.02	ug/g dry	0.204			90.3	40	QR-04
Dibenzo [a,h] anthracene	0.076	0.02	ug/g dry	0.028			92.3	40	QR-04
Fluoranthene	0.998	0.02	ug/g dry	0.346			96.9	40	QR-04
Fluorene	0.046	0.02	ug/g dry	0.027			54.4	40	QR-04
Indeno [1,2,3-cd] pyrene	0.271	0.02	ug/g dry	0.096			95.4	40	QR-04
1-Methylnaphthalene	ND	0.02	ug/g dry	ND			0.0	40	
2-Methylnaphthalene	0.024	0.02	ug/g dry	ND			0.0	40	
Naphthalene	0.094	0.01	ug/g dry	0.015			145.0	40	QR-04
Phenanthrene	0.535	0.02	ug/g dry	0.224			81.9	40	QR-04
Pyrene	0.806	0.02	ug/g dry	0.311			88.8	40	QR-04
Surrogate: 2-Fluorobiphenyl	1.15		ug/g dry	ND	73.4	50-140			
Surrogate: Terphenyl-d14	1.15		ug/g dry	ND	73.8	50-140			
<b>Volatiles</b>									
Acetone	ND	0.50	ug/g dry	ND				50	
Benzene	ND	0.02	ug/g dry	ND				50	

**Certificate of Analysis**

Report Date: 01-Aug-2013

Client: **Stantec Consulting Ltd. (Ottawa)**

Order Date: 24-Jul-2013

Client PO: 45064625

Project Description: 122510670.220/ Boteler

**Method Quality Control: Duplicate**

Analyte	Result	Reporting Limit	Units	Source Result	%REC	%REC Limit	RPD	RPD Limit	Notes
Bromodichloromethane	ND	0.05	ug/g dry	ND				50	
Bromoform	ND	0.05	ug/g dry	ND				50	
Bromomethane	ND	0.05	ug/g dry	ND				50	
Carbon Tetrachloride	ND	0.05	ug/g dry	ND				50	
Chlorobenzene	ND	0.05	ug/g dry	ND				50	
Chloroethane	ND	0.05	ug/g dry	ND				50	
Chloroform	ND	0.05	ug/g dry	ND				50	
Chloromethane	ND	0.20	ug/g dry	ND				50	
Dibromochloromethane	ND	0.05	ug/g dry	ND				50	
Dichlorodifluoromethane	ND	0.05	ug/g dry	ND				50	
1,2-Dibromoethane	ND	0.05	ug/g dry	ND				50	
1,2-Dichlorobenzene	ND	0.05	ug/g dry	ND				50	
1,3-Dichlorobenzene	ND	0.05	ug/g dry	ND				50	
1,4-Dichlorobenzene	ND	0.05	ug/g dry	ND				50	
1,1-Dichloroethane	ND	0.05	ug/g dry	ND				50	
1,2-Dichloroethane	ND	0.05	ug/g dry	ND				50	
1,1-Dichloroethylene	ND	0.05	ug/g dry	ND				50	
cis-1,2-Dichloroethylene	ND	0.05	ug/g dry	ND				50	
trans-1,2-Dichloroethylene	ND	0.05	ug/g dry	ND				50	
1,2-Dichloropropane	ND	0.05	ug/g dry	ND				50	
cis-1,3-Dichloropropylene	ND	0.05	ug/g dry	ND				50	
trans-1,3-Dichloropropylene	ND	0.05	ug/g dry	ND				50	
Ethylbenzene	ND	0.05	ug/g dry	ND				50	
Hexane	ND	0.05	ug/g dry	ND				50	
Methyl Ethyl Ketone (2-Butanone)	ND	0.50	ug/g dry	ND				50	
Methyl Butyl Ketone (2-Hexanone)	ND	2.00	ug/g dry	ND				50	
Methyl Isobutyl Ketone	ND	0.50	ug/g dry	ND				50	
Methyl tert-butyl ether	ND	0.05	ug/g dry	ND				50	
Methylene Chloride	ND	0.05	ug/g dry	ND				50	
Styrene	ND	0.05	ug/g dry	ND				50	
1,1,1,2-Tetrachloroethane	ND	0.05	ug/g dry	ND				50	
1,1,2,2-Tetrachloroethane	ND	0.05	ug/g dry	ND				50	
Tetrachloroethylene	ND	0.05	ug/g dry	ND				50	
Toluene	ND	0.05	ug/g dry	ND				50	
1,2,4-Trichlorobenzene	ND	0.05	ug/g dry	ND				50	
1,1,1-Trichloroethane	ND	0.05	ug/g dry	ND				50	
1,1,2-Trichloroethane	ND	0.05	ug/g dry	ND				50	
Trichloroethylene	ND	0.05	ug/g dry	ND				50	
Trichlorofluoromethane	ND	0.05	ug/g dry	ND				50	
1,3,5-Trimethylbenzene	ND	0.05	ug/g dry	ND				50	
Vinyl chloride	ND	0.02	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: 4-Bromofluorobenzene	2.60		ug/g dry	ND	104	50-140			
Surrogate: Dibromofluoromethane	1.56		ug/g dry	ND	62.6	50-140			
Surrogate: Toluene-d8	2.18		ug/g dry	ND	87.2	50-140			

**Certificate of Analysis**

Report Date: 01-Aug-2013

Client: **Stantec Consulting Ltd. (Ottawa)**

Order Date: 24-Jul-2013

Client PO: 45064625

Project Description: 122510670.220/ Boteler

**Method Quality Control: Spike**

Analyte	Result	Reporting Limit	Units	Source Result	%REC	%REC Limit	RPD	RPD Limit	Notes
<b>Hydrocarbons</b>									
F1 PHCs (C6-C10)	199	7	ug/g	ND	99.7	80-120			
F2 PHCs (C10-C16)	62	4	ug/g	ND	62.2	60-140			
F3 PHCs (C16-C34)	144	8	ug/g	ND	69.6	60-140			
F4 PHCs (C34-C50)	85	6	ug/g	ND	61.3	60-140			
<b>Metals</b>									
Antimony	226		ug/L	2.24	89.4	70-130			
Arsenic	250		ug/L	61.5	75.4	70-130			
Barium	458		ug/L	ND	91.6	70-130			
Beryllium	204		ug/L	6.96	78.9	70-130			
Boron, available	3.52	0.5	ug/g	ND	70.5	70-122			
Boron	450		ug/L	227	89.3	70-130			
Cadmium	192		ug/L	0.77	76.4	70-130			
Chromium (VI)	4.6	0.2	ug/g	ND	93.0	70-130			
Chromium	477		ug/L	280	78.7	70-130			
Cobalt	313		ug/L	139	69.3	70-130			QM-07
Copper	629		ug/L	421	82.9	70-130			
Lead	737		ug/L	499	95.4	70-130			
Mercury	1.68	0.1	ug/g	ND	112	72-128			
Molybdenum	186		ug/L	6.03	72.1	70-130			
Nickel	458		ug/L	281	71.0	70-130			
Selenium	179		ug/L	ND	83.3	70-130			
Silver	177		ug/L	0.20	70.7	70-130			
Thallium	188		ug/L	11.6	70.7	70-130			
Uranium	285		ug/L	104	72.4	70-130			
Vanadium	419		ug/L	221	79.2	70-130			
Zinc	718		ug/L	526	76.6	70-130			
<b>Semi-Volatiles</b>									
Acenaphthene	0.164	0.02	ug/g	ND	84.1	50-140			
Acenaphthylene	0.183	0.02	ug/g	0.074	55.9	50-140			
Anthracene	0.275	0.02	ug/g	0.104	87.5	50-140			
Benzo [a] anthracene	0.462	0.02	ug/g	0.207	131	50-140			
Benzo [a] pyrene	0.355	0.02	ug/g	0.204	77.8	50-140			
Benzo [b] fluoranthene	0.537	0.02	ug/g	0.240	153	50-140			QM-06
Benzo [g,h,i] perylene	0.258	0.02	ug/g	0.126	67.5	50-140			
Benzo [k] fluoranthene	0.351	0.02	ug/g	0.087	135	50-140			
Biphenyl	0.108	0.02	ug/g	ND	55.1	50-140			
Chrysene	0.492	0.02	ug/g	0.204	148	50-140			QM-06
Dibenzo [a,h] anthracene	0.169	0.02	ug/g	0.028	72.2	50-140			
Fluoranthene	0.475	0.02	ug/g	0.346	65.8	50-140			
Fluorene	0.196	0.02	ug/g	0.027	86.9	50-140			
Indeno [1,2,3-cd] pyrene	0.255	0.02	ug/g	0.096	81.5	50-140			
1-Methylnaphthalene	0.098	0.02	ug/g	ND	50.0	50-140			
2-Methylnaphthalene	0.142	0.02	ug/g	ND	72.9	50-140			
Naphthalene	0.123	0.01	ug/g	0.015	55.3	50-140			
Phenanthrene	0.390	0.02	ug/g	0.224	85.3	50-140			
Pyrene	0.485	0.02	ug/g	0.311	89.3	50-140			
Surrogate: 2-Fluorobiphenyl	0.936		ug/g		59.9	50-140			

**Volatiles**

**Certificate of Analysis**

Report Date: 01-Aug-2013

Client: **Stantec Consulting Ltd. (Ottawa)**

Order Date: 24-Jul-2013

Client PO: 45064625

Project Description: 122510670.220/ Boteler

**Method Quality Control: Spike**

Analyte	Result	Reporting Limit	Units	Source Result	%REC	%REC Limit	RPD	RPD Limit	Notes
Acetone	7.93	0.50	ug/g	ND	79.3	50-140			
Benzene	4.15	0.02	ug/g	ND	104	60-130			
Bromodichloromethane	3.43	0.05	ug/g	ND	85.6	60-130			
Bromoform	2.48	0.05	ug/g	ND	62.0	60-130			
Bromomethane	4.43	0.05	ug/g	ND	111	50-140			
Carbon Tetrachloride	3.10	0.05	ug/g	ND	77.4	60-130			
Chlorobenzene	4.18	0.05	ug/g	ND	105	60-130			
Chloroethane	3.49	0.05	ug/g	ND	87.3	50-140			
Chloroform	4.10	0.05	ug/g	ND	103	60-130			
Chloromethane	2.96	0.20	ug/g	ND	74.0	50-140			
Dibromochloromethane	3.19	0.05	ug/g	ND	79.8	60-130			
Dichlorodifluoromethane	4.37	0.05	ug/g	ND	109	50-140			
1,2-Dibromoethane	3.92	0.05	ug/g	ND	98.1	60-130			
1,2-Dichlorobenzene	3.72	0.05	ug/g	ND	93.1	60-130			
1,3-Dichlorobenzene	3.85	0.05	ug/g	ND	96.4	60-130			
1,4-Dichlorobenzene	3.33	0.05	ug/g	ND	83.3	60-130			
1,1-Dichloroethane	2.98	0.05	ug/g	ND	74.4	60-130			
1,2-Dichloroethane	4.21	0.05	ug/g	ND	105	60-130			
1,1-Dichloroethylene	3.16	0.05	ug/g	ND	78.9	60-130			
cis-1,2-Dichloroethylene	4.63	0.05	ug/g	ND	116	60-130			
trans-1,2-Dichloroethylene	3.22	0.05	ug/g	ND	80.6	60-130			
1,2-Dichloropropane	3.63	0.05	ug/g	ND	90.7	60-130			
cis-1,3-Dichloropropylene	2.97	0.05	ug/g	ND	74.3	60-130			
trans-1,3-Dichloropropylene	2.45	0.05	ug/g	ND	61.4	60-130			
Ethylbenzene	4.30	0.05	ug/g	ND	107	60-130			
Hexane	5.02	0.05	ug/g	ND	126	60-130			
Methyl Ethyl Ketone (2-Butanone)	7.28	0.50	ug/g	ND	72.8	50-140			
Methyl Butyl Ketone (2-Hexanone)	5.58	2.00	ug/g	ND	55.8	50-140			
Methyl Isobutyl Ketone	8.61	0.50	ug/g	ND	86.1	50-140			
Methyl tert-butyl ether	7.04	0.05	ug/g	ND	70.4	50-140			
Methylene Chloride	3.84	0.05	ug/g	ND	96.0	60-130			
Styrene	4.19	0.05	ug/g	ND	105	60-130			
1,1,1,2-Tetrachloroethane	3.29	0.05	ug/g	ND	82.3	60-130			
1,1,2,2-Tetrachloroethane	3.83	0.05	ug/g	ND	95.7	60-130			
Tetrachloroethylene	4.09	0.05	ug/g	ND	102	60-130			
Toluene	4.44	0.05	ug/g	ND	111	60-130			
1,2,4-Trichlorobenzene	3.44	0.05	ug/g	ND	85.9	60-130			
1,1,1-Trichloroethane	3.10	0.05	ug/g	ND	77.6	60-130			
1,1,2-Trichloroethane	3.63	0.05	ug/g	ND	90.9	60-130			
Trichloroethylene	3.55	0.05	ug/g	ND	88.8	60-130			
Trichlorofluoromethane	2.76	0.05	ug/g	ND	69.0	50-140			
1,3,5-Trimethylbenzene	4.11	0.05	ug/g	ND	103	60-130			
Vinyl chloride	2.86	0.02	ug/g	ND	71.5	50-140			
m,p-Xylenes	7.78	0.05	ug/g	ND	97.3	60-130			
o-Xylene	4.19	0.05	ug/g	ND	105	60-130			



**Certificate of Analysis**

Report Date: 01-Aug-2013

Client: **Stantec Consulting Ltd. (Ottawa)**

Order Date: 24-Jul-2013

Client PO: 45064625

Project Description: 122510670.220/ Boteler

**Qualifier Notes:**

**Sample Qualifiers :**

- 1 : Elevated detection limit due to dilution required because of high target analyte concentration.
- 2 : PAH surrogate recovery (p-terphenyl-d14) lower than expected due to matrix interference.
- 3 : PAH surrogate recovery (2-Fluorobiphenyl) lower than expected due to matrix interference.

**QC Qualifiers :**

- QM-06 : Due to noted non-homogeneity of the QC sample matrix, the spike recoveries were out side the accepted range. Batch data accepted based on other QC.
- QM-07 : The spike recovery was outside acceptance limits for the MS and/or MSD. The batch was accepted based on other acceptable QC.
- 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.





TRUSTED.  
RESPONSIVE.  
RELIABLE.

Head Office  
300-2319 St. Laurent Blvd.  
Ottawa, Ontario K1G 4J8  
p: 1-800-749-1947  
e: paracel@paracellabs.com  
www.paracellabs.com

Chain of Custody  
(Lab Use Only)

Page 1 of 2

OTTAWA • KINGSTON • NIAGARA • MISSISSAUGA • SARNIA

Client Name: Stantec Consulting Ltd.	Project Reference: 122510670.220	TAT: <input checked="" type="checkbox"/> Regular <input type="checkbox"/> 3 Day
Contact Name: Jill Peters-Dechman	Quote # City Of Ottawa SOA 19609-91843-S01	<input type="checkbox"/> 2 Day <input type="checkbox"/> 1 Day
Address: 1331 Clyde Avenue Suite 400 Ottawa, ON K2C3G4	PO #	Date Required: _____
Telephone: 613-722-4420	Email Address: jill.peters-dechman@stantec.com	

Criteria:  O. Reg. 153 (As Amended) Table 1  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:

1330254

Sample ID/Location Name	Matrix	Air Volume	# of Containers	Sample Taken		PHCs F1-F4+BTEX	VOCs	PAHs	Metals by ICP	Hg	CrVI	B (HWS)	PCBs	FOC	EC/SAR	pH			
				Date	Time														
1 TP 13-1 BAI440	s		2	↑	Am	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
2 TP 14-1 BAI441	s			↑		<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
3 TP 15-1 BAI442	s					<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
4 TP 18-1 BAI443	s			↓		<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
5 TP 17-1 BAI444	s			↓		<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
6 TP 16-1 BAI445	s			↓		<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
7 TP 19-1 BAI446	s			↓		<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
8 TP 20-1 BAI447	s			↓		<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
9 TP 21-1 BAI448	s			↓		<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
10 TP 23-1 BAI449	s			↓		<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

Comments: \_\_\_\_\_ Method of Delivery: Walk-in

Relinquished By (Sign): <i>A. Waldich</i>	Received by Driver/Depot:	Received at Lab: <i>M/C</i>	Verified By: <i>M/C</i>
Relinquished By (Print): A. Waldich	Date/Time: _____	Date/Time: July 24/18 6:23	Date/Time: July 24/18 4:38
Date/Time: 2018/07/24	Temperature: _____ °C	Temperature: 18.0 °C	pH Verified [ ] By: N/A



TRUSTED.  
RESPONSIVE.  
RELIABLE.

Head Office  
300-2319 St. Laurent Blvd.  
Ottawa, Ontario K1G 4J8  
p: 1-800-749-1947  
e: paracel@paracellabs.com  
www.paracellabs.com

Chain of Custody  
(Lab Use Only)

Page 2 of 2

OTTAWA • KINGSTON • NIAGARA • MISSISSAUGA • SARNIA

Client Name: Stantec Consulting Ltd.  
Contact Name: Jill Peters-Dechman  
Address: 1331 Clyde Avenue Suite 400  
Ottawa, ON K2C3G4  
Telephone: 613-722-4420

Project Reference: 122510670.220  
Quote #: City Of Ottawa SOA 19609-91843-S01  
PO #  
Email Address: jill.peters-dechman@stantec.com

TAT:  Regular  3 Day  
 2 Day  1 Day  
Date Required: \_\_\_\_\_

Criteria:  O. Reg. 153 (As Amended) Table 1  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

Paracel Order Number: 1330254			Matrix	Air Volume	# of Containers	Sample Taken		PHCs F1-F4+BTEX	VOCs	PAHs	Metals by ICP	Hg	CrVI	B (HWS)	PCBs	FOC	EC/SAR	pH						
Sample ID/Location Name						Date	Time																	
1	TP 30-1	BA1450	s		2																			
2	TP 26-1	BA1451	s																					
3	TP 25-1	BA1452	s																					
4	TP 29-1	BA1453	s																					
5	TP 27-1	BA1454	s																					
6	TP 28-1	BA1455	s																					
7	TP 24-1	BA1456	s																					
8			s																					
9			s																					
10			s																					

Comments: \_\_\_\_\_ Method of Delivery: Walk-in

Relinquished By (Sign): <i>A. Waldich</i>	Received by Driver/Depot:	Received at Lab: <i>M/C</i>	Verified By: <i>M/C</i>
Relinquished By (Print): A. Waldich	Date/Time:	Date/Time: July 24/13 6:23	Date/Time: July 24/13 4:38
Date/Time: 2013/07/24	Temperature: _____ °C	Temperature: 19.1 °C	pH Verified [ ] By: N/A

### Sample Submission Deficiency Form

Client:	Stantec Consulting		Date:	July 25/13	
Contact:	Jill Peters - Dechman / Alison Waldick		COC #		
Project:	122510670.220 (City of Ottawa)	REGULATED:	<input checked="" type="checkbox"/> YES <input type="checkbox"/> NO	CSR:	Mary-Jane
Issue:	<input type="checkbox"/> COC <input checked="" type="checkbox"/> SAMPLE <input type="checkbox"/> OTHER	REG:	153 Table 1		

Client Sample ID	Problem	Resolution	Initial
TP24-1	- not listed on COC	- add to COC per Allison - -myc	myc

Client Notified by Telephone (Date/Time): July 25/13 12:25pm

Comments: \_\_\_\_\_  
 \_\_\_\_\_  
 \_\_\_\_\_  
 \_\_\_\_\_  
 \_\_\_\_\_

Client must initial samples, sign and return form to lab prior to any work commencing on samples listed on this form.

Client Authorization Signature: \_\_\_\_\_ DATE: \_\_\_\_\_

## Certificate of Analysis

### Stantec Consulting Ltd. (Ottawa)

1331 Clyde Avenue Suite 400  
Ottawa, ON K2C 3G4  
Attn: Jill Peters-Dechman

Phone: (613) 722-4420  
Fax: (613) 738-0721

Client PO: 45064625  
Project: 122510670.215/ Boteler  
Custody: 10422

Report Date: 1-Aug-2013  
Order Date: 25-Jul-2013

**Order #: 1330261**

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

Paracel ID	Client ID
1330261-01	TP190-3
1330261-02	TP200-3

Approved By:



Mark Foto, M.Sc. For Dale Robertson, BSc  
Laboratory Director

**Certificate of Analysis**

Report Date: 01-Aug-2013

 Client: **Stantec Consulting Ltd. (Ottawa)**

Order Date: 25-Jul-2013

Client PO: 45064625

Project Description: 122510670.215/ Boteler

**Analysis Summary Table**

Analysis	Method Reference/Description	Extraction Date	Analysis Date
Boron, available	MOE (HWE), EPA 200.7 - ICP-OES	29-Jul-13	30-Jul-13
Chromium, hexavalent	MOE E3056 - Extraction, colourimetric	29-Jul-13	30-Jul-13
Mercury	EPA 7471A - CVAA, digestion	29-Jul-13	30-Jul-13
MOE Metals by ICP-OES, soil Reg 153	based on MOE E3470, ICP-OES	31-Jul-13	31-Jul-13
PAHs by GC-MS	EPA 8270 - GC-MS, extraction	30-Jul-13	1-Aug-13
PHC F1	CWS Tier 1 - P&T GC-FID	29-Jul-13	31-Jul-13
PHC F2 - F4	CWS Tier 1 - GC-FID, extraction	30-Jul-13	31-Jul-13
Solids, %	Gravimetric, calculation	29-Jul-13	29-Jul-13
VOCs by P&T GC-MS	EPA 8260 - P&T GC-MS	29-Jul-13	31-Jul-13

P: 1-800-749-1947  
 E: PARACEL@PARACELLABS.COM

WWW.PARACELLABS.COM

**OTTAWA**  
 300-2319 St. Laurent Blvd.  
 Ottawa, ON K1G 4J8

**MISSISSAUGA**  
 6845 Kitimat Rd. Unit #27  
 Mississauga, ON L5N 6J3

**NIAGARA FALLS**  
 5415 Morning Glory Cr.  
 Niagara Falls, ON L2J 0A3

**SARNIA**  
 123 Christina St. N.  
 Sarnia, ON N7T 5T7

**Certificate of Analysis**

Report Date: 01-Aug-2013

 Client: **Stantec Consulting Ltd. (Ottawa)**

Order Date: 25-Jul-2013

Client PO: 45064625

Project Description: 122510670.215/ Boteler

<b>Client ID:</b>	TP190-3	TP200-3	-	-
<b>Sample Date:</b>	25-Jul-13	25-Jul-13	-	-
<b>Sample ID:</b>	1330261-01	1330261-02	-	-
<b>MDL/Units</b>	Soil	Soil	-	-

**Physical Characteristics**

% Solids	0.1 % by Wt.	86.7	87.2	-	-
----------	--------------	------	------	---	---

**Metals**

Antimony	1.0 ug/g dry	1.6	<1.0	-	-
Arsenic	1.0 ug/g dry	<1.0	3.0	-	-
Barium	1.0 ug/g dry	69.9	152	-	-
Beryllium	1.0 ug/g dry	<1.0	<1.0	-	-
Boron	1.0 ug/g dry	2.2	5.3	-	-
Boron, available	0.5 ug/g dry	<0.5	<0.5	-	-
Cadmium	0.5 ug/g dry	<0.5	<0.5	-	-
Chromium	1.0 ug/g dry	15.2	18.6	-	-
Chromium (VI)	0.2 ug/g dry	<0.2	<0.2	-	-
Cobalt	1.0 ug/g dry	4.5	6.1	-	-
Copper	1.0 ug/g dry	10.9	19.1	-	-
Lead	1.0 ug/g dry	60.4	109	-	-
Mercury	0.1 ug/g dry	<0.1	0.4	-	-
Molybdenum	1.0 ug/g dry	<1.0	<1.0	-	-
Nickel	1.0 ug/g dry	9.5	10.9	-	-
Selenium	1.0 ug/g dry	<1.0	<1.0	-	-
Silver	0.5 ug/g dry	<0.5	<0.5	-	-
Thallium	1.0 ug/g dry	<1.0	<1.0	-	-
Uranium	1.0 ug/g dry	<1.0	<1.0	-	-
Vanadium	1.0 ug/g dry	21.7	28.5	-	-
Zinc	1.0 ug/g dry	39.2	80.9	-	-

**Volatiles**

Acetone	0.50 ug/g dry	<0.50	<0.50	-	-
Benzene	0.02 ug/g dry	<0.02	<0.02	-	-
Bromodichloromethane	0.05 ug/g dry	<0.05	<0.05	-	-
Bromoform	0.05 ug/g dry	<0.05	<0.05	-	-
Bromomethane	0.05 ug/g dry	<0.05	<0.05	-	-
Carbon Tetrachloride	0.05 ug/g dry	<0.05	<0.05	-	-
Chlorobenzene	0.05 ug/g dry	<0.05	<0.05	-	-
Chloroethane	0.05 ug/g dry	<0.05	<0.05	-	-
Chloroform	0.05 ug/g dry	<0.05	<0.05	-	-

**Certificate of Analysis**

Report Date: 01-Aug-2013

Order Date: 25-Jul-2013

 Client: **Stantec Consulting Ltd. (Ottawa)**

Client PO: 45064625

Project Description: 122510670.215/ Boteler

	MDL/Units	Client ID:	TP190-3	TP200-3	-	-
		Sample Date:	25-Jul-13	25-Jul-13		
		Sample ID:	1330261-01	1330261-02	-	-
			Soil	Soil	-	-
Chloromethane	0.20 ug/g dry		<0.20	<0.20	-	-
Dibromochloromethane	0.05 ug/g dry		<0.05	<0.05	-	-
Dichlorodifluoromethane	0.05 ug/g dry		<0.05	<0.05	-	-
1,2-Dibromoethane	0.05 ug/g dry		<0.05	<0.05	-	-
1,2-Dichlorobenzene	0.05 ug/g dry		<0.05	<0.05	-	-
1,3-Dichlorobenzene	0.05 ug/g dry		<0.05	<0.05	-	-
1,4-Dichlorobenzene	0.05 ug/g dry		<0.05	<0.05	-	-
1,1-Dichloroethane	0.05 ug/g dry		<0.05	<0.05	-	-
1,2-Dichloroethane	0.05 ug/g dry		<0.05	<0.05	-	-
1,1-Dichloroethylene	0.05 ug/g dry		<0.05	<0.05	-	-
cis-1,2-Dichloroethylene	0.05 ug/g dry		<0.05	<0.05	-	-
trans-1,2-Dichloroethylene	0.05 ug/g dry		<0.05	<0.05	-	-
1,2-Dichloroethylene, total	0.05 ug/g dry		<0.05	<0.05	-	-
1,2-Dichloropropane	0.05 ug/g dry		<0.05	<0.05	-	-
cis-1,3-Dichloropropylene	0.05 ug/g dry		<0.05	<0.05	-	-
trans-1,3-Dichloropropylene	0.05 ug/g dry		<0.05	<0.05	-	-
1,3-Dichloropropene, total	0.05 ug/g dry		<0.05	<0.05	-	-
Ethylbenzene	0.05 ug/g dry		<0.05	<0.05	-	-
Hexane	0.05 ug/g dry		<0.05	<0.05	-	-
Methyl Ethyl Ketone (2-Butanone)	0.50 ug/g dry		<0.50	<0.50	-	-
Methyl Butyl Ketone (2-Hexanone)	2.00 ug/g dry		<2.00	<2.00	-	-
Methyl Isobutyl Ketone	0.50 ug/g dry		<0.50	<0.50	-	-
Methyl tert-butyl ether	0.05 ug/g dry		<0.05	<0.05	-	-
Methylene Chloride	0.05 ug/g dry		<0.05	<0.05	-	-
Styrene	0.05 ug/g dry		<0.05	<0.05	-	-
1,1,1,2-Tetrachloroethane	0.05 ug/g dry		<0.05	<0.05	-	-
1,1,1,2,2-Tetrachloroethane	0.05 ug/g dry		<0.05	<0.05	-	-
Tetrachloroethylene	0.05 ug/g dry		<0.05	<0.05	-	-
Toluene	0.05 ug/g dry		<0.05	<0.05	-	-
1,2,4-Trichlorobenzene	0.05 ug/g dry		<0.05	<0.05	-	-
1,1,1-Trichloroethane	0.05 ug/g dry		<0.05	<0.05	-	-
1,1,2-Trichloroethane	0.05 ug/g dry		<0.05	<0.05	-	-
Trichloroethylene	0.05 ug/g dry		<0.05	<0.05	-	-
Trichlorofluoromethane	0.05 ug/g dry		<0.05	<0.05	-	-

 P: 1-800-749-1947  
 E: PARACEL@PARACELLABS.COM

WWW.PARACELLABS.COM

**OTTAWA**  
 300-2319 St. Laurent Blvd.  
 Ottawa, ON K1G 4J8

**MISSISSAUGA**  
 6845 Kitimat Rd. Unit #27  
 Mississauga, ON L5N 6J3

**NIAGARA FALLS**  
 5415 Morning Glory Cr.  
 Niagara Falls, ON L2J 0A3

**SARNIA**  
 123 Christina St. N.  
 Sarnia, ON N7T 5T7



**Certificate of Analysis**

Report Date: 01-Aug-2013

Order Date: 25-Jul-2013

 Client: **Stantec Consulting Ltd. (Ottawa)**

Client PO: 45064625

Project Description: 122510670.215/ Boteler

	MDL/Units	Client ID:	TP190-3	TP200-3		
		Sample Date:	25-Jul-13	25-Jul-13		
		Sample ID:	1330261-01	1330261-02		
			Soil	Soil		
1,3,5-Trimethylbenzene	0.05 ug/g dry		<0.05	<0.05	-	-
Vinyl chloride	0.02 ug/g dry		<0.02	<0.02	-	-
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	-	-
4-Bromofluorobenzene	Surrogate		95.1%	103%	-	-
Dibromofluoromethane	Surrogate		69.2%	75.7%	-	-
Toluene-d8	Surrogate		82.3%	84.0%	-	-

**Hydrocarbons**

F1 PHCs (C6-C10)	7 ug/g dry	<7	<7	-	-
F2 PHCs (C10-C16)	4 ug/g dry	469	<4	-	-
F3 PHCs (C16-C34)	8 ug/g dry	159	24	-	-
F4 PHCs (C34-C50)	6 ug/g dry	<6	<6	-	-

**Semi-Volatiles**

Acenaphthene	0.02 ug/g dry	<0.02	<0.02	-	-
Acenaphthylene	0.02 ug/g dry	0.15	0.22	-	-
Anthracene	0.02 ug/g dry	0.12	0.23	-	-
Benzo [a] anthracene	0.02 ug/g dry	0.22	0.44	-	-
Benzo [a] pyrene	0.02 ug/g dry	0.27	0.48	-	-
Benzo [b] fluoranthene	0.02 ug/g dry	0.27	0.52	-	-
Benzo [g,h,i] perylene	0.02 ug/g dry	0.11	0.21	-	-
Benzo [k] fluoranthene	0.02 ug/g dry	0.09	0.22	-	-
Biphenyl	0.02 ug/g dry	0.02	<0.02	-	-
Chrysene	0.02 ug/g dry	0.24	0.49	-	-
Dibenzo [a,h] anthracene	0.02 ug/g dry	0.02	0.06	-	-
Fluoranthene	0.02 ug/g dry	0.35	0.94	-	-
Fluorene	0.02 ug/g dry	0.04	0.05	-	-
Indeno [1,2,3-cd] pyrene	0.02 ug/g dry	0.09	0.22	-	-
1-Methylnaphthalene	0.02 ug/g dry	0.02	<0.02	-	-
2-Methylnaphthalene	0.02 ug/g dry	0.02	<0.02	-	-
Methylnaphthalene (1&2)	0.04 ug/g dry	0.04	<0.04	-	-
Naphthalene	0.01 ug/g dry	0.03	0.02	-	-
Phenanthrene	0.02 ug/g dry	0.22	0.49	-	-
Pyrene	0.02 ug/g dry	0.33	0.82	-	-
2-Fluorobiphenyl	Surrogate	75.3%	55.8%	-	-



**Certificate of Analysis**

Report Date: 01-Aug-2013

Client: **Stantec Consulting Ltd. (Ottawa)**

Order Date: 25-Jul-2013

Client PO: 45064625

Project Description: 122510670.215/ Boteler

	Client ID:	TP190-3	TP200-3	-	-
	Sample Date:	25-Jul-13	25-Jul-13	-	-
	Sample ID:	1330261-01	1330261-02	-	-
	MDL/Units	Soil	Soil	-	-
Terphenyl-d14	Surrogate	56.0%	56.2%	-	-

**Certificate of Analysis**

Report Date: 01-Aug-2013

Client: **Stantec Consulting Ltd. (Ottawa)**

Order Date: 25-Jul-2013

Client PO: 45064625

Project Description: 122510670.215/ Boteler

**Method Quality Control: Blank**

Analyte	Result	Reporting Limit	Units	Source Result	%REC	%REC Limit	RPD	RPD Limit	Notes
<b>Hydrocarbons</b>									
F1 PHCs (C6-C10)	ND	7	ug/g						
F2 PHCs (C10-C16)	ND	4	ug/g						
F3 PHCs (C16-C34)	ND	8	ug/g						
F4 PHCs (C34-C50)	ND	6	ug/g						
<b>Metals</b>									
Antimony	ND	1.0	ug/g						
Arsenic	ND	1.0	ug/g						
Barium	ND	1.0	ug/g						
Beryllium	ND	1.0	ug/g						
Boron, available	ND	0.5	ug/g						
Boron	ND	1.0	ug/g						
Cadmium	ND	0.5	ug/g						
Chromium (VI)	ND	0.2	ug/g						
Chromium	ND	1.0	ug/g						
Cobalt	ND	1.0	ug/g						
Copper	ND	1.0	ug/g						
Lead	ND	1.0	ug/g						
Mercury	ND	0.1	ug/g						
Molybdenum	ND	1.0	ug/g						
Nickel	ND	1.0	ug/g						
Selenium	ND	1.0	ug/g						
Silver	ND	0.5	ug/g						
Thallium	ND	1.0	ug/g						
Uranium	ND	1.0	ug/g						
Vanadium	ND	1.0	ug/g						
Zinc	ND	1.0	ug/g						
<b>Semi-Volatiles</b>									
Acenaphthene	ND	0.02	ug/g						
Acenaphthylene	ND	0.02	ug/g						
Anthracene	ND	0.02	ug/g						
Benzo [a] anthracene	ND	0.02	ug/g						
Benzo [a] pyrene	ND	0.02	ug/g						
Benzo [b] fluoranthene	ND	0.02	ug/g						
Benzo [g,h,i] perylene	ND	0.02	ug/g						
Benzo [k] fluoranthene	ND	0.02	ug/g						
Biphenyl	ND	0.02	ug/g						
Chrysene	ND	0.02	ug/g						
Dibenzo [a,h] anthracene	ND	0.02	ug/g						
Fluoranthene	ND	0.02	ug/g						
Fluorene	ND	0.02	ug/g						
Indeno [1,2,3-cd] pyrene	ND	0.02	ug/g						
1-Methylnaphthalene	ND	0.02	ug/g						
2-Methylnaphthalene	ND	0.02	ug/g						
Methylnaphthalene (1&2)	ND	0.04	ug/g						
Naphthalene	ND	0.01	ug/g						
Phenanthrene	ND	0.02	ug/g						
Pyrene	ND	0.02	ug/g						
Surrogate: 2-Fluorobiphenyl	0.709		ug/g		53.2	50-140			
Surrogate: Terphenyl-d14	0.874		ug/g		65.5	50-140			
<b>Volatiles</b>									
Acetone	ND	0.50	ug/g						
Benzene	ND	0.02	ug/g						
Bromodichloromethane	ND	0.05	ug/g						
Bromoform	ND	0.05	ug/g						
Bromomethane	ND	0.05	ug/g						

**Certificate of Analysis**

Report Date: 01-Aug-2013

Client: **Stantec Consulting Ltd. (Ottawa)**

Order Date: 25-Jul-2013

Client PO: 45064625

Project Description: 122510670.215/ Boteler

**Method Quality Control: Blank**

Analyte	Result	Reporting Limit	Units	Source Result	%REC	%REC Limit	RPD	RPD Limit	Notes
Carbon Tetrachloride	ND	0.05	ug/g						
Chlorobenzene	ND	0.05	ug/g						
Chloroethane	ND	0.05	ug/g						
Chloroform	ND	0.05	ug/g						
Chloromethane	ND	0.20	ug/g						
Dibromochloromethane	ND	0.05	ug/g						
Dichlorodifluoromethane	ND	0.05	ug/g						
1,2-Dibromoethane	ND	0.05	ug/g						
1,2-Dichlorobenzene	ND	0.05	ug/g						
1,3-Dichlorobenzene	ND	0.05	ug/g						
1,4-Dichlorobenzene	ND	0.05	ug/g						
1,1-Dichloroethane	ND	0.05	ug/g						
1,2-Dichloroethane	ND	0.05	ug/g						
1,1-Dichloroethylene	ND	0.05	ug/g						
cis-1,2-Dichloroethylene	ND	0.05	ug/g						
trans-1,2-Dichloroethylene	ND	0.05	ug/g						
1,2-Dichloroethylene, total	ND	0.05	ug/g						
1,2-Dichloropropane	ND	0.05	ug/g						
cis-1,3-Dichloropropylene	ND	0.05	ug/g						
trans-1,3-Dichloropropylene	ND	0.05	ug/g						
1,3-Dichloropropene, total	ND	0.05	ug/g						
Ethylbenzene	ND	0.05	ug/g						
Hexane	ND	0.05	ug/g						
Methyl Ethyl Ketone (2-Butanone)	ND	0.50	ug/g						
Methyl Butyl Ketone (2-Hexanone)	ND	2.00	ug/g						
Methyl Isobutyl Ketone	ND	0.50	ug/g						
Methyl tert-butyl ether	ND	0.05	ug/g						
Methylene Chloride	ND	0.05	ug/g						
Styrene	ND	0.05	ug/g						
1,1,1,2-Tetrachloroethane	ND	0.05	ug/g						
1,1,2,2-Tetrachloroethane	ND	0.05	ug/g						
Tetrachloroethylene	ND	0.05	ug/g						
Toluene	ND	0.05	ug/g						
1,2,4-Trichlorobenzene	ND	0.05	ug/g						
1,1,1-Trichloroethane	ND	0.05	ug/g						
1,1,2-Trichloroethane	ND	0.05	ug/g						
Trichloroethylene	ND	0.05	ug/g						
Trichlorofluoromethane	ND	0.05	ug/g						
1,3,5-Trimethylbenzene	ND	0.05	ug/g						
Vinyl chloride	ND	0.02	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: 4-Bromofluorobenzene	3.26		ug/g		102	50-140			
Surrogate: Dibromofluoromethane	1.84		ug/g		57.4	50-140			
Surrogate: Toluene-d8	3.08		ug/g		96.2	50-140			

**Certificate of Analysis**

Report Date: 01-Aug-2013

Client: **Stantec Consulting Ltd. (Ottawa)**

Order Date: 25-Jul-2013

Client PO: 45064625

Project Description: 122510670.215/ Boteler

**Method Quality Control: Duplicate**

Analyte	Result	Reporting Limit	Units	Source Result	%REC	%REC Limit	RPD	RPD Limit	Notes
<b>Hydrocarbons</b>									
F1 PHCs (C6-C10)	16	7	ug/g dry	14			14.2	40	
<b>Metals</b>									
Antimony	ND	1.0	ug/g dry	ND			0.0	30	
Arsenic	ND	1.0	ug/g dry	1.06			0.0	30	
Barium	64.9	1.0	ug/g dry	84.6			26.4	30	
Beryllium	ND	1.0	ug/g dry	ND			0.0	30	
Boron, available	ND	0.5	ug/g dry	ND			0.0	35	
Boron	2.62	1.0	ug/g dry	3.01			13.8	30	
Cadmium	ND	0.5	ug/g dry	ND			0.0	30	
Chromium (VI)	ND	0.2	ug/g dry	ND				35	
Chromium	13.0	1.0	ug/g dry	14.2			8.7	30	
Cobalt	4.26	1.0	ug/g dry	4.65			8.7	30	
Copper	10.0	1.0	ug/g dry	10.5			4.7	30	
Lead	18.4	1.0	ug/g dry	14.4			24.8	30	
Mercury	ND	0.1	ug/g dry	ND			0.0	35	
Molybdenum	ND	1.0	ug/g dry	ND			0.0	30	
Nickel	7.63	1.0	ug/g dry	7.93			3.8	30	
Selenium	ND	1.0	ug/g dry	ND			0.0	30	
Silver	ND	0.5	ug/g dry	ND			0.0	30	
Thallium	1.30	1.0	ug/g dry	ND			0.0	30	
Uranium	ND	1.0	ug/g dry	ND				30	
Vanadium	19.3	1.0	ug/g dry	21.0			8.5	30	
Zinc	26.6	1.0	ug/g dry	25.1			6.1	30	
<b>Physical Characteristics</b>									
% Solids	85.0	0.1	% by Wt.	85.4			0.4	25	
<b>Semi-Volatiles</b>									
Acenaphthene	ND	0.02	ug/g dry	ND				40	
Acenaphthylene	0.060	0.02	ug/g dry	0.078			25.4	40	
Anthracene	0.073	0.02	ug/g dry	0.114			44.4	40	
Benzo [a] anthracene	0.116	0.02	ug/g dry	0.160			32.2	40	
Benzo [a] pyrene	0.101	0.02	ug/g dry	0.140			32.3	40	
Benzo [b] fluoranthene	0.094	0.02	ug/g dry	0.113			19.0	40	
Benzo [g,h,i] perylene	0.051	0.02	ug/g dry	0.056			8.6	40	
Benzo [k] fluoranthene	0.039	0.02	ug/g dry	0.046			16.1	40	
Biphenyl	ND	0.02	ug/g dry	ND				40	
Chrysene	0.110	0.02	ug/g dry	0.146			27.7	40	
Dibenzo [a,h] anthracene	ND	0.02	ug/g dry	ND				40	
Fluoranthene	0.233	0.02	ug/g dry	0.340			37.3	40	
Fluorene	ND	0.02	ug/g dry	0.032			0.0	40	
Indeno [1,2,3-cd] pyrene	0.047	0.02	ug/g dry	0.054			15.3	40	
1-Methylnaphthalene	ND	0.02	ug/g dry	ND				40	
2-Methylnaphthalene	ND	0.02	ug/g dry	ND				40	
Naphthalene	ND	0.01	ug/g dry	ND				40	
Phenanthrene	0.149	0.02	ug/g dry	0.264			55.8	40	QR-01
Pyrene	0.194	0.02	ug/g dry	0.280			36.3	40	
Surrogate: 2-Fluorobiphenyl	0.822		ug/g dry	ND	55.0	50-140			
Surrogate: Terphenyl-d14	0.900		ug/g dry	ND	60.3	50-140			
<b>Volatiles</b>									
Acetone	ND	0.50	ug/g dry	ND				50	
Benzene	ND	0.02	ug/g dry	ND				50	
Bromodichloromethane	ND	0.05	ug/g dry	ND				50	
Bromoform	ND	0.05	ug/g dry	ND				50	
Bromomethane	ND	0.05	ug/g dry	ND				50	

**Certificate of Analysis**

Report Date: 01-Aug-2013

Client: **Stantec Consulting Ltd. (Ottawa)**

Order Date: 25-Jul-2013

Client PO: 45064625

Project Description: 122510670.215/ Boteler

**Method Quality Control: Duplicate**

Analyte	Result	Reporting Limit	Units	Source Result	%REC	%REC Limit	RPD	RPD Limit	Notes
Carbon Tetrachloride	ND	0.05	ug/g dry	ND				50	
Chlorobenzene	ND	0.05	ug/g dry	ND				50	
Chloroethane	ND	0.05	ug/g dry	ND				50	
Chloroform	ND	0.05	ug/g dry	ND				50	
Chloromethane	ND	0.20	ug/g dry	ND				50	
Dibromochloromethane	ND	0.05	ug/g dry	ND				50	
Dichlorodifluoromethane	ND	0.05	ug/g dry	ND				50	
1,2-Dibromoethane	ND	0.05	ug/g dry	ND				50	
1,2-Dichlorobenzene	ND	0.05	ug/g dry	ND				50	
1,3-Dichlorobenzene	ND	0.05	ug/g dry	ND				50	
1,4-Dichlorobenzene	ND	0.05	ug/g dry	ND				50	
1,1-Dichloroethane	ND	0.05	ug/g dry	ND				50	
1,2-Dichloroethane	ND	0.05	ug/g dry	ND				50	
1,1-Dichloroethylene	ND	0.05	ug/g dry	ND				50	
cis-1,2-Dichloroethylene	ND	0.05	ug/g dry	ND				50	
trans-1,2-Dichloroethylene	ND	0.05	ug/g dry	ND				50	
1,2-Dichloropropane	ND	0.05	ug/g dry	ND				50	
cis-1,3-Dichloropropylene	ND	0.05	ug/g dry	ND				50	
trans-1,3-Dichloropropylene	ND	0.05	ug/g dry	ND				50	
Ethylbenzene	0.554	0.05	ug/g dry	0.698			23.1	50	
Hexane	ND	0.05	ug/g dry	ND			0.0	50	
Methyl Ethyl Ketone (2-Butanone)	ND	0.50	ug/g dry	ND				50	
Methyl Butyl Ketone (2-Hexanone)	ND	2.00	ug/g dry	ND				50	
Methyl Isobutyl Ketone	ND	0.50	ug/g dry	ND				50	
Methyl tert-butyl ether	ND	0.05	ug/g dry	ND				50	
Methylene Chloride	ND	0.05	ug/g dry	ND				50	
Styrene	ND	0.05	ug/g dry	ND				50	
1,1,1,2-Tetrachloroethane	ND	0.05	ug/g dry	ND				50	
1,1,2,2-Tetrachloroethane	ND	0.05	ug/g dry	ND				50	
Tetrachloroethylene	ND	0.05	ug/g dry	ND				50	
Toluene	ND	0.05	ug/g dry	ND			0.0	50	
1,2,4-Trichlorobenzene	ND	0.05	ug/g dry	ND				50	
1,1,1-Trichloroethane	ND	0.05	ug/g dry	ND				50	
1,1,2-Trichloroethane	ND	0.05	ug/g dry	ND				50	
Trichloroethylene	ND	0.05	ug/g dry	ND				50	
Trichlorofluoromethane	ND	0.05	ug/g dry	ND				50	
1,3,5-Trimethylbenzene	0.385	0.05	ug/g dry	0.406			5.2	50	
Vinyl chloride	ND	0.02	ug/g dry	ND			0.0	50	
m,p-Xylenes	0.595	0.05	ug/g dry	0.761			24.4	50	
o-Xylene	ND	0.05	ug/g dry	ND			0.0	50	
Surrogate: 4-Bromofluorobenzene	2.37		ug/g dry	ND	106	50-140			
Surrogate: Dibromofluoromethane	1.73		ug/g dry	ND	77.2	50-140			
Surrogate: Toluene-d8	1.82		ug/g dry	ND	81.3	50-140			

**Certificate of Analysis**

Report Date: 01-Aug-2013

Client: **Stantec Consulting Ltd. (Ottawa)**

Order Date: 25-Jul-2013

Client PO: 45064625

Project Description: 122510670.215/ Boteler

**Method Quality Control: Spike**

Analyte	Result	Reporting Limit	Units	Source Result	%REC	%REC Limit	RPD	RPD Limit	Notes
<b>Hydrocarbons</b>									
F1 PHCs (C6-C10)	199	7	ug/g	ND	99.7	80-120			
<b>Metals</b>									
Antimony	229		ug/L	ND	91.5	70-130			
Arsenic	238		ug/L	ND	95.1	70-130			
Barium	238		ug/L	ND	95.4	70-130			
Beryllium	224		ug/L	ND	89.4	70-130			
Boron, available	3.52	0.5	ug/g	ND	70.5	70-122			
Boron	235		ug/L	ND	94.0	70-130			
Cadmium	223		ug/L	ND	89.3	70-130			
Chromium (VI)	4.8	0.2	ug/g	ND	86.0	70-130			
Chromium	229		ug/L	ND	91.6	70-130			
Cobalt	228		ug/L	ND	91.4	70-130			
Copper	234		ug/L	ND	93.6	70-130			
Lead	219		ug/L	ND	87.8	70-130			
Mercury	1.68	0.1	ug/g	ND	112	72-128			
Molybdenum	236		ug/L	ND	94.4	70-130			
Nickel	232		ug/L	ND	92.6	70-130			
Selenium	228		ug/L	ND	91.0	70-130			
Silver	207		ug/L	ND	82.8	70-130			
Thallium	246		ug/L	ND	98.3	70-130			
Uranium	235		ug/L	ND	93.8	70-130			
Vanadium	235		ug/L	ND	93.8	70-130			
Zinc	222		ug/L	ND	88.6	70-130			
<b>Semi-Volatiles</b>									
Acenaphthene	0.208	0.02	ug/g	ND	111	50-140			
Acenaphthylene	0.239	0.02	ug/g	0.078	86.3	50-140			
Anthracene	0.281	0.02	ug/g	0.114	89.3	50-140			
Benzo [a] anthracene	0.320	0.02	ug/g	0.160	85.7	50-140			
Benzo [a] pyrene	0.300	0.02	ug/g	0.140	85.7	50-140			
Benzo [b] fluoranthene	0.272	0.02	ug/g	0.113	85.0	50-140			
Benzo [g,h,i] perylene	0.198	0.02	ug/g	0.056	76.1	50-140			
Benzo [k] fluoranthene	0.225	0.02	ug/g	0.046	95.9	50-140			
Biphenyl	0.299	0.02	ug/g	ND	160	50-140			QM-06
Chrysene	0.328	0.02	ug/g	0.146	97.7	50-140			
Dibenzo [a,h] anthracene	0.181	0.02	ug/g	ND	96.8	50-140			
Fluoranthene	0.413	0.02	ug/g	0.340	38.9	50-140			QM-06
Fluorene	0.258	0.02	ug/g	0.032	121	50-140			
Indeno [1,2,3-cd] pyrene	0.223	0.02	ug/g	0.054	90.2	50-140			
1-Methylnaphthalene	0.129	0.02	ug/g	ND	69.2	50-140			
2-Methylnaphthalene	0.139	0.02	ug/g	ND	74.2	50-140			
Naphthalene	0.149	0.01	ug/g	ND	80.0	50-140			
Phenanthrene	0.353	0.02	ug/g	0.264	48.0	50-140			QM-06
Pyrene	0.380	0.02	ug/g	0.280	53.2	50-140			
Surrogate: 2-Fluorobiphenyl	0.885		ug/g		59.3	50-140			
<b>Volatiles</b>									
Acetone	7.93	0.50	ug/g	ND	79.3	50-140			
Benzene	4.15	0.02	ug/g	ND	104	60-130			
Bromodichloromethane	3.43	0.05	ug/g	ND	85.6	60-130			

**Certificate of Analysis**

Report Date: 01-Aug-2013

Client: **Stantec Consulting Ltd. (Ottawa)**

Order Date: 25-Jul-2013

Client PO: 45064625

Project Description: 122510670.215/ Boteler

**Method Quality Control: Spike**

Analyte	Result	Reporting Limit	Units	Source Result	%REC	%REC Limit	RPD	RPD Limit	Notes
Bromoform	2.48	0.05	ug/g	ND	62.0	60-130			
Bromomethane	4.43	0.05	ug/g	ND	111	50-140			
Carbon Tetrachloride	3.10	0.05	ug/g	ND	77.4	60-130			
Chlorobenzene	4.18	0.05	ug/g	ND	105	60-130			
Chloroethane	3.49	0.05	ug/g	ND	87.3	50-140			
Chloroform	4.10	0.05	ug/g	ND	103	60-130			
Chloromethane	2.96	0.20	ug/g	ND	74.0	50-140			
Dibromochloromethane	3.19	0.05	ug/g	ND	79.8	60-130			
Dichlorodifluoromethane	4.37	0.05	ug/g	ND	109	50-140			
1,2-Dibromoethane	3.92	0.05	ug/g	ND	98.1	60-130			
1,2-Dichlorobenzene	3.72	0.05	ug/g	ND	93.1	60-130			
1,3-Dichlorobenzene	3.85	0.05	ug/g	ND	96.4	60-130			
1,4-Dichlorobenzene	3.33	0.05	ug/g	ND	83.3	60-130			
1,1-Dichloroethane	2.98	0.05	ug/g	ND	74.4	60-130			
1,2-Dichloroethane	4.21	0.05	ug/g	ND	105	60-130			
1,1-Dichloroethylene	3.16	0.05	ug/g	ND	78.9	60-130			
cis-1,2-Dichloroethylene	4.63	0.05	ug/g	ND	116	60-130			
trans-1,2-Dichloroethylene	3.22	0.05	ug/g	ND	80.6	60-130			
1,2-Dichloropropane	3.63	0.05	ug/g	ND	90.7	60-130			
cis-1,3-Dichloropropylene	2.97	0.05	ug/g	ND	74.3	60-130			
trans-1,3-Dichloropropylene	2.45	0.05	ug/g	ND	61.4	60-130			
Ethylbenzene	4.30	0.05	ug/g	ND	107	60-130			
Hexane	5.02	0.05	ug/g	ND	126	60-130			
Methyl Ethyl Ketone (2-Butanone)	7.28	0.50	ug/g	ND	72.8	50-140			
Methyl Butyl Ketone (2-Hexanone)	5.58	2.00	ug/g	ND	55.8	50-140			
Methyl Isobutyl Ketone	8.61	0.50	ug/g	ND	86.1	50-140			
Methyl tert-butyl ether	7.04	0.05	ug/g	ND	70.4	50-140			
Methylene Chloride	3.84	0.05	ug/g	ND	96.0	60-130			
Styrene	4.19	0.05	ug/g	ND	105	60-130			
1,1,1,2-Tetrachloroethane	3.29	0.05	ug/g	ND	82.3	60-130			
1,1,2,2-Tetrachloroethane	3.83	0.05	ug/g	ND	95.7	60-130			
Tetrachloroethylene	4.09	0.05	ug/g	ND	102	60-130			
Toluene	4.44	0.05	ug/g	ND	111	60-130			
1,2,4-Trichlorobenzene	3.44	0.05	ug/g	ND	85.9	60-130			
1,1,1-Trichloroethane	3.10	0.05	ug/g	ND	77.6	60-130			
1,1,2-Trichloroethane	3.63	0.05	ug/g	ND	90.9	60-130			
Trichloroethylene	3.55	0.05	ug/g	ND	88.8	60-130			
Trichlorofluoromethane	2.76	0.05	ug/g	ND	69.0	50-140			
1,3,5-Trimethylbenzene	4.11	0.05	ug/g	ND	103	60-130			
Vinyl chloride	2.86	0.02	ug/g	ND	71.5	50-140			
m,p-Xylenes	7.78	0.05	ug/g	ND	97.3	60-130			
o-Xylene	4.19	0.05	ug/g	ND	105	60-130			



**Certificate of Analysis**

Report Date: 01-Aug-2013

Client: **Stantec Consulting Ltd. (Ottawa)**

Order Date: 25-Jul-2013

Client PO: 45064625

Project Description: 122510670.215/ Boteler

**Qualifier Notes:**

**QC Qualifiers :**

QM-06 : Due to noted non-homogeneity of the QC sample matrix, the spike recoveries were out side the accepted range. Batch data accepted based on other QC.

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

**Sample Data Revisions**

None

**Work Order Revisions / Comments:**

None

**Other Report Notes:**

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

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

**CCME PHC additional information:**

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



OTTAWA ● KINGSTON ● NIAGARA ● MISSISSAUGA ● SARNIA

Page 1 of 1

Client Name: <b>Stantec</b>	Project Reference: <b>100510670 (215)</b>	TAT: <input checked="" type="checkbox"/> Regular <input type="checkbox"/> 3 Day
Contact Name: <b>Jill Peters - Deelman</b>	Quote # <b>SOA 19609-91843-501</b>	<input type="checkbox"/> 2 Day <input type="checkbox"/> 1 Day
Address: <b>1331 Clyde Ave Suite 400</b>	PO #	Date Required:
Telephone: <b>613-722-4420</b>	Email Address: <b>jill.peters-deelman@stantec.com</b>	

Criteria:  O. Reg. 153/04 (As Amended) Table 1  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: <b>1330261</b>			Matrix	Air Volume	# of Containers	Sample Taken		PHC/BTEX	VOC'S	PAH	Metals by ICP	Hg	Cr-VI	B (HWS)				
Sample ID/Location Name		Date				Time												
1	TP 190-3	BA1457	S	/	2	July 25	PM	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	250ml + vial
2	TP 200-3	BA1458	S	/	2	2013	PM	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	"
3																		
4																		
5																		
6																		
7																		
8																		
9																		
10																		

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

Relinquished By (Sign): <b>A. Waldick</b>	Received by Driver/Depot:	Received at Lab: <b>M/C</b>	Verified By: <b>M/C</b>
Relinquished By (Print): <b>A. Waldick</b>	Date/Time:	Date/Time: <b>July 25/13 6:21</b>	Date/Time: <b>July 25/13 6:42</b>
Date/Time: <b>2013/07/25</b>	Temperature: _____ °C	Temperature: <b>20 °C</b>	pH Verified <input type="checkbox"/> By: <b>N/A</b>

## Certificate of Analysis

### Stantec Consulting Ltd. (Ottawa)

1331 Clyde Avenue Suite 400  
Ottawa, ON K2C 3G4  
Attn: Jill Peters-Dechman

Phone: (613) 722-4420  
Fax: (613) 738-0721

Client PO: 45064625  
Project: 122510670.220/ Boteler  
Custody:

Report Date: 11-Aug-2013  
Order Date: 25-Jul-2013

**Order #: 1330318**

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

Parcel ID	Client ID
1330318-01	MW13-12 SS5
1330318-04	MW13-14 SS3
1330318-07	MW13-120 SS5
1330318-08	MW13-13 SS5
1330318-11	BH13-9 SS5
1330318-13	BH13-8

Approved By:



Mark Foto, M.Sc. For Dale Robertson, BSc  
Laboratory Director

**Certificate of Analysis**

Report Date: 11-Aug-2013

 Client: **Stantec Consulting Ltd. (Ottawa)**

Order Date: 25-Jul-2013

Client PO: 45064625

Project Description: 122510670.220/ Boteler

**Analysis Summary Table**

Analysis	Method Reference/Description	Extraction Date	Analysis Date
Boron, available	MOE (HWE), EPA 200.7 - ICP-OES	31-Jul-13	1-Aug-13
Chromium, hexavalent	MOE E3056 - Extraction, colourimetric	29-Jul-13	30-Jul-13
Conductivity	MOE E3138 - probe @25 °C, water ext	30-Jul-13	30-Jul-13
Mercury	EPA 7471A - CVAA, digestion	30-Jul-13	30-Jul-13
MOE Metals by ICP-OES, soil Reg 153	based on MOE E3470, ICP-OES	31-Jul-13	31-Jul-13
PAHs by GC-MS	EPA 8270 - GC-MS, extraction	30-Jul-13	31-Jul-13
PCBs, total	SW846 8082A - GC-ECD	29-Jul-13	30-Jul-13
pH	EPA 150.1 - pH probe @ 25 °C, CaCl buffered ext.	29-Jul-13	30-Jul-13
PHC F1	CWS Tier 1 - P&T GC-FID	29-Jul-13	31-Jul-13
PHC F2 - F4	CWS Tier 1 - GC-FID, extraction	30-Jul-13	31-Jul-13
SAR	Calculation	1-Aug-13	2-Aug-13
Solids, %	Gravimetric, calculation	29-Jul-13	29-Jul-13
VOCs by P&T GC-MS	EPA 8260 - P&T GC-MS	29-Jul-13	31-Jul-13

**Certificate of Analysis**

Report Date: 11-Aug-2013

 Client: **Stantec Consulting Ltd. (Ottawa)**

Order Date: 25-Jul-2013

Client PO: 45064625

Project Description: 122510670.220/ Boteler

	Client ID:	MW13-12 SS5	MW13-14 SS3	MW13-120 SS5	MW13-13 SS5
	Sample Date:	25-Jul-13	25-Jul-13	25-Jul-13	25-Jul-13
	Sample ID:	1330318-01	1330318-04	1330318-07	1330318-08
	MDL/Units	Soil	Soil	Soil	Soil

**Physical Characteristics**

% Solids	0.1 % by Wt.	89.3	81.8	92.2	83.7
----------	--------------	------	------	------	------

**General Inorganics**

SAR	0.01 N/A	2.68	3.32	2.26	1.72
Conductivity	5 uS/cm	360	351	440	311
pH	0.05 pH Units	7.92	-	7.92	-

**Metals**

Antimony	1.0 ug/g dry	<1.0	<1.0	<1.0	<1.0
Arsenic	1.0 ug/g dry	1.1	<1.0	1.2	<1.0
Barium	1.0 ug/g dry	84.6	47.4	74.2	115
Beryllium	1.0 ug/g dry	<1.0	<1.0	<1.0	<1.0
Boron	1.0 ug/g dry	3.0	2.0	2.8	2.6
Boron, available	0.5 ug/g dry	<0.5	<0.5	<0.5	<0.5
Cadmium	0.5 ug/g dry	<0.5	<0.5	<0.5	<0.5
Chromium	1.0 ug/g dry	14.2	11.0	17.4	16.8
Chromium (VI)	0.2 ug/g dry	<0.2	<0.2	<0.2	<0.2
Cobalt	1.0 ug/g dry	4.7	4.0	4.7	5.4
Copper	1.0 ug/g dry	10.5	8.7	10.5	10.9
Lead	1.0 ug/g dry	14.4	3.4	14.4	4.0
Mercury	0.1 ug/g dry	<0.1	<0.1	<0.1	<0.1
Molybdenum	1.0 ug/g dry	<1.0	<1.0	1.5	<1.0
Nickel	1.0 ug/g dry	7.9	6.4	8.0	9.3
Selenium	1.0 ug/g dry	<1.0	<1.0	<1.0	<1.0
Silver	0.5 ug/g dry	<0.5	<0.5	<0.5	<0.5
Thallium	1.0 ug/g dry	<1.0	<1.0	<1.0	<1.0
Uranium	1.0 ug/g dry	<1.0	<1.0	<1.0	<1.0
Vanadium	1.0 ug/g dry	21.0	20.5	20.7	27.4
Zinc	1.0 ug/g dry	25.1	16.4	22.8	23.0

**Volatiles**

Acetone	0.50 ug/g dry	<0.50	<0.50	<0.50	<0.50
Benzene	0.02 ug/g dry	<0.02	<0.02	<0.02	<0.02
Bromodichloromethane	0.05 ug/g dry	<0.05	<0.05	<0.05	<0.05
Bromoform	0.05 ug/g dry	<0.05	<0.05	<0.05	<0.05
Bromomethane	0.05 ug/g dry	<0.05	<0.05	<0.05	<0.05
Carbon Tetrachloride	0.05 ug/g dry	<0.05	<0.05	<0.05	<0.05

 P: 1-800-749-1947  
 E: PARACEL@PARACELLABS.COM

WWW.PARACELLABS.COM

**OTTAWA**  
 300-2319 St. Laurent Blvd.  
 Ottawa, ON K1G 4J8

**MISSISSAUGA**  
 6845 Kismet Rd. Unit #27  
 Mississauga, ON L5N 6J3

**NIAGARA FALLS**  
 5415 Morning Glory Cr.  
 Niagara Falls, ON L2J 0A3

**SARNIA**  
 123 Christina St. N.  
 Sarnia, ON N7T 5T7

**Certificate of Analysis**

Report Date: 11-Aug-2013

 Client: **Stantec Consulting Ltd. (Ottawa)**

Order Date: 25-Jul-2013

Client PO: 45064625

Project Description: 122510670.220/ Boteler

	Client ID:	MW13-12 SS5	MW13-14 SS3	MW13-120 SS5	MW13-13 SS5
	Sample Date:	25-Jul-13	25-Jul-13	25-Jul-13	25-Jul-13
	Sample ID:	1330318-01	1330318-04	1330318-07	1330318-08
	MDL/Units	Soil	Soil	Soil	Soil
Chlorobenzene	0.05 ug/g dry	<0.05	<0.05	<0.05	<0.05
Chloroethane	0.05 ug/g dry	<0.05	<0.05	<0.05	<0.05
Chloroform	0.05 ug/g dry	<0.05	<0.05	<0.05	<0.05
Chloromethane	0.20 ug/g dry	<0.20	<0.20	<0.20	<0.20
Dibromochloromethane	0.05 ug/g dry	<0.05	<0.05	<0.05	<0.05
Dichlorodifluoromethane	0.05 ug/g dry	<0.05	<0.05	<0.05	<0.05
1,2-Dibromoethane	0.05 ug/g dry	<0.05	<0.05	<0.05	<0.05
1,2-Dichlorobenzene	0.05 ug/g dry	<0.05	<0.05	<0.05	<0.05
1,3-Dichlorobenzene	0.05 ug/g dry	<0.05	<0.05	<0.05	<0.05
1,4-Dichlorobenzene	0.05 ug/g dry	<0.05	<0.05	<0.05	<0.05
1,1-Dichloroethane	0.05 ug/g dry	<0.05	<0.05	<0.05	<0.05
1,2-Dichloroethane	0.05 ug/g dry	<0.05	<0.05	<0.05	<0.05
1,1-Dichloroethylene	0.05 ug/g dry	<0.05	<0.05	<0.05	<0.05
cis-1,2-Dichloroethylene	0.05 ug/g dry	<0.05	<0.05	<0.05	<0.05
trans-1,2-Dichloroethylene	0.05 ug/g dry	<0.05	<0.05	<0.05	<0.05
1,2-Dichloroethylene, total	0.05 ug/g dry	<0.05	<0.05	<0.05	<0.05
1,2-Dichloropropane	0.05 ug/g dry	<0.05	<0.05	<0.05	<0.05
cis-1,3-Dichloropropylene	0.05 ug/g dry	<0.05	<0.05	<0.05	<0.05
trans-1,3-Dichloropropylene	0.05 ug/g dry	<0.05	<0.05	<0.05	<0.05
1,3-Dichloropropene, total	0.05 ug/g dry	<0.05	<0.05	<0.05	<0.05
Ethylbenzene	0.05 ug/g dry	<0.05	<0.05	<0.05	<0.05
Hexane	0.05 ug/g dry	<0.05	<0.05	<0.05	<0.05
Methyl Ethyl Ketone (2-Butanone)	0.50 ug/g dry	<0.50	<0.50	<0.50	<0.50
Methyl Butyl Ketone (2-Hexanone)	2.00 ug/g dry	<2.00	<2.00	<2.00	<2.00
Methyl Isobutyl Ketone	0.50 ug/g dry	<0.50	<0.50	<0.50	<0.50
Methyl tert-butyl ether	0.05 ug/g dry	<0.05	<0.05	<0.05	<0.05
Methylene Chloride	0.05 ug/g dry	<0.05	<0.05	<0.05	<0.05
Styrene	0.05 ug/g dry	<0.05	<0.05	<0.05	<0.05
1,1,1,2-Tetrachloroethane	0.05 ug/g dry	<0.05	<0.05	<0.05	<0.05
1,1,1,2,2-Tetrachloroethane	0.05 ug/g dry	<0.05	<0.05	<0.05	<0.05
Tetrachloroethylene	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
1,2,4-Trichlorobenzene	0.05 ug/g dry	<0.05	<0.05	<0.05	<0.05
1,1,1-Trichloroethane	0.05 ug/g dry	<0.05	<0.05	<0.05	<0.05

**Certificate of Analysis**

Report Date: 11-Aug-2013

Order Date: 25-Jul-2013

 Client: **Stantec Consulting Ltd. (Ottawa)**

Client PO: 45064625

Project Description: 122510670.220/ Boteler

	Client ID: Sample Date: Sample ID:	MW13-12 SS5	MW13-14 SS3	MW13-120 SS5	MW13-13 SS5
		25-Jul-13 1330318-01	25-Jul-13 1330318-04	25-Jul-13 1330318-07	25-Jul-13 1330318-08
	MDL/Units	Soil	Soil	Soil	Soil
1,1,2-Trichloroethane	0.05 ug/g dry	<0.05	<0.05	<0.05	<0.05
Trichloroethylene	0.05 ug/g dry	<0.05	<0.05	<0.05	<0.05
Trichlorofluoromethane	0.05 ug/g dry	<0.05	<0.05	<0.05	<0.05
1,3,5-Trimethylbenzene	0.05 ug/g dry	<0.05	<0.05	<0.05	<0.05
Vinyl chloride	0.02 ug/g dry	<0.02	<0.02	<0.02	<0.02
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
4-Bromofluorobenzene	Surrogate	100%	99.5%	99.8%	100%
Dibromofluoromethane	Surrogate	102%	105%	103%	99.5%
Toluene-d8	Surrogate	106%	98.5%	103%	96.5%

**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

**Semi-Volatiles**

Acenaphthene	0.02 ug/g dry	<0.02	<0.02	<0.02	<0.02
Acenaphthylene	0.02 ug/g dry	0.08	<0.02	0.13	<0.02
Anthracene	0.02 ug/g dry	0.11	<0.02	0.17	<0.02
Benzo [a] anthracene	0.02 ug/g dry	0.16	<0.02	0.29	<0.02
Benzo [a] pyrene	0.02 ug/g dry	0.14	<0.02	0.23	<0.02
Benzo [b] fluoranthene	0.02 ug/g dry	0.11	<0.02	0.27	<0.02
Benzo [g,h,i] perylene	0.02 ug/g dry	0.06	<0.02	0.11	<0.02
Benzo [k] fluoranthene	0.02 ug/g dry	0.05	<0.02	0.10	<0.02
Biphenyl	0.02 ug/g dry	<0.02	<0.02	<0.02	<0.02
Chrysene	0.02 ug/g dry	0.15	<0.02	0.28	<0.02
Dibenzo [a,h] anthracene	0.02 ug/g dry	<0.02	<0.02	0.03	<0.02
Fluoranthene	0.02 ug/g dry	0.34	<0.02	0.60	<0.02
Fluorene	0.02 ug/g dry	0.03	<0.02	0.06	<0.02
Indeno [1,2,3-cd] pyrene	0.02 ug/g dry	0.05	<0.02	0.10	<0.02
1-Methylnaphthalene	0.02 ug/g dry	<0.02	<0.02	<0.02	<0.02
2-Methylnaphthalene	0.02 ug/g dry	<0.02	<0.02	<0.02	<0.02
Methylnaphthalene (1&2)	0.04 ug/g dry	<0.04	<0.04	<0.04	<0.04
Naphthalene	0.01 ug/g dry	<0.01	<0.01	0.02	<0.01

**Certificate of Analysis**

Report Date: 11-Aug-2013

Order Date: 25-Jul-2013

 Client: **Stantec Consulting Ltd. (Ottawa)**

Client PO: 45064625

Project Description: 122510670.220/ Boteler

	Client ID:	MW13-12 SS5	MW13-14 SS3	MW13-120 SS5	MW13-13 SS5
	Sample Date:	25-Jul-13	25-Jul-13	25-Jul-13	25-Jul-13
	Sample ID:	1330318-01	1330318-04	1330318-07	1330318-08
	MDL/Units	Soil	Soil	Soil	Soil
Phenanthrene	0.02 ug/g dry	0.26	<0.02	0.47	<0.02
Pyrene	0.02 ug/g dry	0.28	<0.02	0.45	<0.02
2-Fluorobiphenyl	Surrogate	119%	62.4%	51.8%	82.9%
Terphenyl-d14	Surrogate	63.5%	52.1%	50.8%	55.5%

**PCBs**

PCBs, total	0.05 ug/g dry	<0.05	<0.05	<0.05	-
Decachlorobiphenyl	Surrogate	95.9%	80.6%	74.5%	-



**Certificate of Analysis**

Report Date: 11-Aug-2013

Client: **Stantec Consulting Ltd. (Ottawa)**

Order Date: 25-Jul-2013

Client PO: 45064625

Project Description: 122510670.220/ Boteler

<b>Client ID:</b>	BH13-9 SS5	BH13-8	-	-
<b>Sample Date:</b>	25-Jul-13	25-Jul-13	-	-
<b>Sample ID:</b>	1330318-11	1330318-13	-	-
<b>MDL/Units</b>	Soil	Soil	-	-

**Physical Characteristics**

% Solids	0.1 % by Wt.	89.2	82.7	-	-
----------	--------------	------	------	---	---

**General Inorganics**

SAR	0.01 N/A	35.6	12.2	-	-
Conductivity	5 uS/cm	5250	4790	-	-

**Metals**

Antimony	1.0 ug/g dry	<1.0	1.2	-	-
Arsenic	1.0 ug/g dry	2.4	5.1	-	-
Barium	1.0 ug/g dry	136	180	-	-
Beryllium	1.0 ug/g dry	<1.0	<1.0	-	-
Boron	1.0 ug/g dry	5.6	7.8	-	-
Boron, available	0.5 ug/g dry	1.1	1.0	-	-
Cadmium	0.5 ug/g dry	<0.5	<0.5	-	-
Chromium	1.0 ug/g dry	20.7	17.1	-	-
Chromium (VI)	0.2 ug/g dry	<0.2	<0.2	-	-
Cobalt	1.0 ug/g dry	6.2	5.6	-	-
Copper	1.0 ug/g dry	11.1	68.6	-	-
Lead	1.0 ug/g dry	8.0	464	-	-
Mercury	0.1 ug/g dry	<0.1	0.7	-	-
Molybdenum	1.0 ug/g dry	<1.0	<1.0	-	-
Nickel	1.0 ug/g dry	12.5	10.9	-	-
Selenium	1.0 ug/g dry	<1.0	<1.0	-	-
Silver	0.5 ug/g dry	<0.5	<0.5	-	-
Thallium	1.0 ug/g dry	<1.0	<1.0	-	-
Uranium	1.0 ug/g dry	<1.0	<1.0	-	-
Vanadium	1.0 ug/g dry	43.3	23.2	-	-
Zinc	1.0 ug/g dry	47.3	113	-	-

**Volatiles**

Acetone	0.50 ug/g dry	<0.50	<0.50	-	-
Benzene	0.02 ug/g dry	<0.02	<0.02	-	-
Bromodichloromethane	0.05 ug/g dry	<0.05	<0.05	-	-
Bromoform	0.05 ug/g dry	<0.05	<0.05	-	-
Bromomethane	0.05 ug/g dry	<0.05	<0.05	-	-
Carbon Tetrachloride	0.05 ug/g dry	<0.05	<0.05	-	-



**Certificate of Analysis**

Report Date: 11-Aug-2013

Order Date: 25-Jul-2013

 Client: **Stantec Consulting Ltd. (Ottawa)**

Client PO: 45064625

Project Description: 122510670.220/ Boteler

	MDL/Units	Client ID:	BH13-9 SS5	BH13-8		
		Sample Date:	25-Jul-13	25-Jul-13		
		Sample ID:	1330318-11	1330318-13		
			Soil	Soil		
Chlorobenzene	0.05 ug/g dry		<0.05	<0.05	-	-
Chloroethane	0.05 ug/g dry		<0.05	<0.05	-	-
Chloroform	0.05 ug/g dry		<0.05	<0.05	-	-
Chloromethane	0.20 ug/g dry		<0.20	<0.20	-	-
Dibromochloromethane	0.05 ug/g dry		<0.05	<0.05	-	-
Dichlorodifluoromethane	0.05 ug/g dry		<0.05	<0.05	-	-
1,2-Dibromoethane	0.05 ug/g dry		<0.05	<0.05	-	-
1,2-Dichlorobenzene	0.05 ug/g dry		<0.05	<0.05	-	-
1,3-Dichlorobenzene	0.05 ug/g dry		<0.05	<0.05	-	-
1,4-Dichlorobenzene	0.05 ug/g dry		<0.05	<0.05	-	-
1,1-Dichloroethane	0.05 ug/g dry		<0.05	<0.05	-	-
1,2-Dichloroethane	0.05 ug/g dry		<0.05	<0.05	-	-
1,1-Dichloroethylene	0.05 ug/g dry		<0.05	<0.05	-	-
cis-1,2-Dichloroethylene	0.05 ug/g dry		<0.05	<0.05	-	-
trans-1,2-Dichloroethylene	0.05 ug/g dry		<0.05	<0.05	-	-
1,2-Dichloroethylene, total	0.05 ug/g dry		<0.05	<0.05	-	-
1,2-Dichloropropane	0.05 ug/g dry		<0.05	<0.05	-	-
cis-1,3-Dichloropropylene	0.05 ug/g dry		<0.05	<0.05	-	-
trans-1,3-Dichloropropylene	0.05 ug/g dry		<0.05	<0.05	-	-
1,3-Dichloropropene, total	0.05 ug/g dry		<0.05	<0.05	-	-
Ethylbenzene	0.05 ug/g dry		<0.05	<0.05	-	-
Hexane	0.05 ug/g dry		<0.05	<0.05	-	-
Methyl Ethyl Ketone (2-Butanone)	0.50 ug/g dry		<0.50	<0.50	-	-
Methyl Butyl Ketone (2-Hexanone)	2.00 ug/g dry		<2.00	<2.00	-	-
Methyl Isobutyl Ketone	0.50 ug/g dry		<0.50	<0.50	-	-
Methyl tert-butyl ether	0.05 ug/g dry		<0.05	<0.05	-	-
Methylene Chloride	0.05 ug/g dry		<0.05	<0.05	-	-
Styrene	0.05 ug/g dry		<0.05	<0.05	-	-
1,1,1,2-Tetrachloroethane	0.05 ug/g dry		<0.05	<0.05	-	-
1,1,1,2,2-Tetrachloroethane	0.05 ug/g dry		<0.05	<0.05	-	-
Tetrachloroethylene	0.05 ug/g dry		<0.05	<0.05	-	-
Toluene	0.05 ug/g dry		<0.05	<0.05	-	-
1,2,4-Trichlorobenzene	0.05 ug/g dry		<0.05	<0.05	-	-

**Certificate of Analysis**

Report Date: 11-Aug-2013

Order Date: 25-Jul-2013

Client: **Stantec Consulting Ltd. (Ottawa)**

Client PO: 45064625

Project Description: 122510670.220/ Boteler

	Client ID: Sample Date: Sample ID: MDL/Units	BH13-9 SS5 25-Jul-13 1330318-11 Soil	BH13-8 25-Jul-13 1330318-13 Soil	-	-
1,1,1-Trichloroethane	0.05 ug/g dry	<0.05	<0.05	-	-
1,1,2-Trichloroethane	0.05 ug/g dry	<0.05	<0.05	-	-
Trichloroethylene	0.05 ug/g dry	<0.05	<0.05	-	-
Trichlorofluoromethane	0.05 ug/g dry	<0.05	<0.05	-	-
1,3,5-Trimethylbenzene	0.05 ug/g dry	<0.05	<0.05	-	-
Vinyl chloride	0.02 ug/g dry	<0.02	<0.02	-	-
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	-	-
4-Bromofluorobenzene	Surrogate	99.0%	99.4%	-	-
Dibromofluoromethane	Surrogate	105%	105%	-	-
Toluene-d8	Surrogate	108%	100%	-	-

**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	-	-
F4 PHCs (C34-C50)	6 ug/g dry	<6	<6	-	-

**Semi-Volatiles**

Acenaphthene	0.02 ug/g dry	<0.02	0.09	-	-
Acenaphthylene	0.02 ug/g dry	<0.02	0.27	-	-
Anthracene	0.02 ug/g dry	<0.02	0.47	-	-
Benzo [a] anthracene	0.02 ug/g dry	<0.02	0.76	-	-
Benzo [a] pyrene	0.02 ug/g dry	<0.02	0.82	-	-
Benzo [b] fluoranthene	0.02 ug/g dry	<0.02	0.93	-	-
Benzo [g,h,i] perylene	0.02 ug/g dry	<0.02	0.41	-	-
Benzo [k] fluoranthene	0.02 ug/g dry	<0.02	0.33	-	-
Biphenyl	0.02 ug/g dry	<0.02	<0.02	-	-
Chrysene	0.02 ug/g dry	<0.02	0.87	-	-
Dibenzo [a,h] anthracene	0.02 ug/g dry	<0.02	0.11	-	-
Fluoranthene	0.02 ug/g dry	<0.02	1.71	-	-
Fluorene	0.02 ug/g dry	<0.02	0.18	-	-
Indeno [1,2,3-cd] pyrene	0.02 ug/g dry	<0.02	0.37	-	-
1-Methylnaphthalene	0.02 ug/g dry	<0.02	0.04	-	-
2-Methylnaphthalene	0.02 ug/g dry	<0.02	0.04	-	-

**Certificate of Analysis**

Report Date: 11-Aug-2013

Order Date: 25-Jul-2013

Client: **Stantec Consulting Ltd. (Ottawa)**

Client PO: 45064625

Project Description: 122510670.220/ Boteler

	MDL/Units	Client ID: Sample Date: Sample ID:	BH13-9 SS5 25-Jul-13 1330318-11 Soil	BH13-8 25-Jul-13 1330318-13 Soil	-	-
Methylnaphthalene (1&2)	0.04 ug/g dry		<0.04	0.08	-	-
Naphthalene	0.01 ug/g dry		<0.01	0.09	-	-
Phenanthrene	0.02 ug/g dry		<0.02	1.45	-	-
Pyrene	0.02 ug/g dry		<0.02	1.35	-	-
2-Fluorobiphenyl	Surrogate		55.4%	90.5%	-	-
Terphenyl-d14	Surrogate		57.0%	57.8%	-	-
<b>PCBs</b>						
PCBs, total	0.05 ug/g dry		<0.05	<0.05	-	-
Decachlorobiphenyl	Surrogate		92.9%	85.0%	-	-

**Certificate of Analysis**

Report Date: 11-Aug-2013

Client: **Stantec Consulting Ltd. (Ottawa)**

Order Date: 25-Jul-2013

Client PO: 45064625

Project Description: 122510670.220/ Boteler

**Method Quality Control: Blank**

Analyte	Result	Reporting Limit	Units	Source Result	%REC	%REC Limit	RPD	RPD Limit	Notes
<b>General Inorganics</b>									
Conductivity	ND	5	uS/cm						
<b>Hydrocarbons</b>									
F1 PHCs (C6-C10)	ND	7	ug/g						
F2 PHCs (C10-C16)	ND	4	ug/g						
F3 PHCs (C16-C34)	ND	8	ug/g						
F4 PHCs (C34-C50)	ND	6	ug/g						
<b>Metals</b>									
Antimony	ND	1.0	ug/g						
Arsenic	ND	1.0	ug/g						
Barium	ND	1.0	ug/g						
Beryllium	ND	1.0	ug/g						
Boron, available	ND	0.5	ug/g						
Boron	ND	1.0	ug/g						
Cadmium	ND	0.5	ug/g						
Chromium (VI)	ND	0.2	ug/g						
Chromium	ND	1.0	ug/g						
Cobalt	ND	1.0	ug/g						
Copper	ND	1.0	ug/g						
Lead	ND	1.0	ug/g						
Mercury	ND	0.1	ug/g						
Molybdenum	ND	1.0	ug/g						
Nickel	ND	1.0	ug/g						
Selenium	ND	1.0	ug/g						
Silver	ND	0.5	ug/g						
Thallium	ND	1.0	ug/g						
Uranium	ND	1.0	ug/g						
Vanadium	ND	1.0	ug/g						
Zinc	ND	1.0	ug/g						
<b>PCBs</b>									
PCBs, total	ND	0.05	ug/g						
Surrogate: Decachlorobiphenyl	0.0564		ug/g		56.4	60-140			
<b>Semi-Volatiles</b>									
Acenaphthene	ND	0.02	ug/g						
Acenaphthylene	ND	0.02	ug/g						
Anthracene	ND	0.02	ug/g						
Benzo [a] anthracene	ND	0.02	ug/g						
Benzo [a] pyrene	ND	0.02	ug/g						
Benzo [b] fluoranthene	ND	0.02	ug/g						
Benzo [g,h,i] perylene	ND	0.02	ug/g						
Benzo [k] fluoranthene	ND	0.02	ug/g						
Biphenyl	ND	0.02	ug/g						
Chrysene	ND	0.02	ug/g						
Dibenzo [a,h] anthracene	ND	0.02	ug/g						
Fluoranthene	ND	0.02	ug/g						
Fluorene	ND	0.02	ug/g						
Indeno [1,2,3-cd] pyrene	ND	0.02	ug/g						
1-Methylnaphthalene	ND	0.02	ug/g						
2-Methylnaphthalene	ND	0.02	ug/g						
Methylnaphthalene (1&2)	ND	0.04	ug/g						
Naphthalene	ND	0.01	ug/g						
Phenanthrene	ND	0.02	ug/g						
Pyrene	ND	0.02	ug/g						
Surrogate: 2-Fluorobiphenyl	0.709		ug/g		53.2	50-140			
Surrogate: Terphenyl-d14	0.874		ug/g		65.5	50-140			

**Certificate of Analysis**

Report Date: 11-Aug-2013

Client: **Stantec Consulting Ltd. (Ottawa)**

Order Date: 25-Jul-2013

Client PO: 45064625

Project Description: 122510670.220/ Boteler

**Method Quality Control: Blank**

Analyte	Result	Reporting Limit	Units	Source Result	%REC	%REC Limit	RPD	RPD Limit	Notes
<b>Volatiles</b>									
Acetone	ND	0.50	ug/g						
Benzene	ND	0.02	ug/g						
Bromodichloromethane	ND	0.05	ug/g						
Bromoform	ND	0.05	ug/g						
Bromomethane	ND	0.05	ug/g						
Carbon Tetrachloride	ND	0.05	ug/g						
Chlorobenzene	ND	0.05	ug/g						
Chloroethane	ND	0.05	ug/g						
Chloroform	ND	0.05	ug/g						
Chloromethane	ND	0.20	ug/g						
Dibromochloromethane	ND	0.05	ug/g						
Dichlorodifluoromethane	ND	0.05	ug/g						
1,2-Dibromoethane	ND	0.05	ug/g						
1,2-Dichlorobenzene	ND	0.05	ug/g						
1,3-Dichlorobenzene	ND	0.05	ug/g						
1,4-Dichlorobenzene	ND	0.05	ug/g						
1,1-Dichloroethane	ND	0.05	ug/g						
1,2-Dichloroethane	ND	0.05	ug/g						
1,1-Dichloroethylene	ND	0.05	ug/g						
cis-1,2-Dichloroethylene	ND	0.05	ug/g						
trans-1,2-Dichloroethylene	ND	0.05	ug/g						
1,2-Dichloroethylene, total	ND	0.05	ug/g						
1,2-Dichloropropane	ND	0.05	ug/g						
cis-1,3-Dichloropropylene	ND	0.05	ug/g						
trans-1,3-Dichloropropylene	ND	0.05	ug/g						
1,3-Dichloropropene, total	ND	0.05	ug/g						
Ethylbenzene	ND	0.05	ug/g						
Hexane	ND	0.05	ug/g						
Methyl Ethyl Ketone (2-Butanone)	ND	0.50	ug/g						
Methyl Butyl Ketone (2-Hexanone)	ND	2.00	ug/g						
Methyl Isobutyl Ketone	ND	0.50	ug/g						
Methyl tert-butyl ether	ND	0.05	ug/g						
Methylene Chloride	ND	0.05	ug/g						
Styrene	ND	0.05	ug/g						
1,1,1,2-Tetrachloroethane	ND	0.05	ug/g						
1,1,2,2-Tetrachloroethane	ND	0.05	ug/g						
Tetrachloroethylene	ND	0.05	ug/g						
Toluene	ND	0.05	ug/g						
1,2,4-Trichlorobenzene	ND	0.05	ug/g						
1,1,1-Trichloroethane	ND	0.05	ug/g						
1,1,2-Trichloroethane	ND	0.05	ug/g						
Trichloroethylene	ND	0.05	ug/g						
Trichlorofluoromethane	ND	0.05	ug/g						
1,3,5-Trimethylbenzene	ND	0.05	ug/g						
Vinyl chloride	ND	0.02	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: 4-Bromofluorobenzene	3.26		ug/g		102	50-140			
Surrogate: Dibromofluoromethane	1.84		ug/g		57.4	50-140			
Surrogate: Toluene-d8	3.08		ug/g		96.2	50-140			

**Certificate of Analysis**

Report Date: 11-Aug-2013

Client: **Stantec Consulting Ltd. (Ottawa)**

Order Date: 25-Jul-2013

Client PO: 45064625

Project Description: 122510670.220/ Boteler

**Method Quality Control: Duplicate**

Analyte	Result	Reporting Limit	Units	Source Result	%REC	%REC Limit	RPD	RPD Limit	Notes
<b>General Inorganics</b>									
Conductivity	352	5	uS/cm	360			2.1	6.2	
pH	7.87	0.05	pH Units	7.88			0.1	10	
<b>Hydrocarbons</b>									
F1 PHCs (C6-C10)	16	7	ug/g dry	14			14.2	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	
<b>Metals</b>									
Antimony	ND	1.0	ug/g dry	ND			0.0	30	
Arsenic	ND	1.0	ug/g dry	1.06			0.0	30	
Barium	64.9	1.0	ug/g dry	84.6			26.4	30	
Beryllium	ND	1.0	ug/g dry	ND			0.0	30	
Boron, available	ND	0.5	ug/g dry	ND			0.0	35	
Boron	2.62	1.0	ug/g dry	3.01			13.8	30	
Cadmium	ND	0.5	ug/g dry	ND			0.0	30	
Chromium (VI)	ND	0.2	ug/g dry	ND				35	
Chromium	13.0	1.0	ug/g dry	14.2			8.7	30	
Cobalt	4.26	1.0	ug/g dry	4.65			8.7	30	
Copper	10.0	1.0	ug/g dry	10.5			4.7	30	
Lead	18.4	1.0	ug/g dry	14.4			24.8	30	
Mercury	ND	0.1	ug/g dry	ND			0.0	35	
Molybdenum	ND	1.0	ug/g dry	ND			0.0	30	
Nickel	7.63	1.0	ug/g dry	7.93			3.8	30	
Selenium	ND	1.0	ug/g dry	ND			0.0	30	
Silver	ND	0.5	ug/g dry	ND			0.0	30	
Thallium	1.30	1.0	ug/g dry	ND			0.0	30	
Uranium	ND	1.0	ug/g dry	ND				30	
Vanadium	19.3	1.0	ug/g dry	21.0			8.5	30	
Zinc	26.6	1.0	ug/g dry	25.1			6.1	30	
<b>PCBs</b>									
PCBs, total	ND	0.05	ug/g dry	ND				40	
Surrogate: Decachlorobiphenyl	0.0878		ug/g dry	ND	78.4	60-140			
<b>Physical Characteristics</b>									
% Solids	85.0	0.1	% by Wt.	85.4			0.4	25	
<b>Semi-Volatiles</b>									
Acenaphthene	ND	0.02	ug/g dry	ND				40	
Acenaphthylene	0.060	0.02	ug/g dry	0.078			25.4	40	
Anthracene	0.073	0.02	ug/g dry	0.114			44.4	40	
Benzo [a] anthracene	0.116	0.02	ug/g dry	0.160			32.2	40	
Benzo [a] pyrene	0.101	0.02	ug/g dry	0.140			32.3	40	
Benzo [b] fluoranthene	0.094	0.02	ug/g dry	0.113			19.0	40	
Benzo [g,h,i] perylene	0.051	0.02	ug/g dry	0.056			8.6	40	
Benzo [k] fluoranthene	0.039	0.02	ug/g dry	0.046			16.1	40	
Biphenyl	ND	0.02	ug/g dry	ND				40	
Chrysene	0.110	0.02	ug/g dry	0.146			27.7	40	
Dibenzo [a,h] anthracene	ND	0.02	ug/g dry	ND				40	
Fluoranthene	0.233	0.02	ug/g dry	0.340			37.3	40	
Fluorene	ND	0.02	ug/g dry	0.032			0.0	40	
Indeno [1,2,3-cd] pyrene	0.047	0.02	ug/g dry	0.054			15.3	40	
1-Methylnaphthalene	ND	0.02	ug/g dry	ND				40	
2-Methylnaphthalene	ND	0.02	ug/g dry	ND				40	
Naphthalene	ND	0.01	ug/g dry	ND			0.0	40	
Phenanthrene	0.149	0.02	ug/g dry	0.264			55.8	40	QR-01

**Certificate of Analysis**

Report Date: 11-Aug-2013

Client: **Stantec Consulting Ltd. (Ottawa)**

Order Date: 25-Jul-2013

Client PO: 45064625

Project Description: 122510670.220/ Boteler

**Method Quality Control: Duplicate**

Analyte	Result	Reporting Limit	Units	Source Result	%REC	%REC Limit	RPD	RPD Limit	Notes
Pyrene	0.194	0.02	ug/g dry	0.280			36.3	40	
Surrogate: 2-Fluorobiphenyl	0.822		ug/g dry	ND	55.0	50-140			
Surrogate: Terphenyl-d14	0.900		ug/g dry	ND	60.3	50-140			
<b>Volatiles</b>									
Acetone	ND	0.50	ug/g dry	ND				50	
Benzene	ND	0.02	ug/g dry	ND				50	
Bromodichloromethane	ND	0.05	ug/g dry	ND				50	
Bromoform	ND	0.05	ug/g dry	ND				50	
Bromomethane	ND	0.05	ug/g dry	ND				50	
Carbon Tetrachloride	ND	0.05	ug/g dry	ND				50	
Chlorobenzene	ND	0.05	ug/g dry	ND				50	
Chloroethane	ND	0.05	ug/g dry	ND				50	
Chloroform	ND	0.05	ug/g dry	ND				50	
Chloromethane	ND	0.20	ug/g dry	ND				50	
Dibromochloromethane	ND	0.05	ug/g dry	ND				50	
Dichlorodifluoromethane	ND	0.05	ug/g dry	ND				50	
1,2-Dibromoethane	ND	0.05	ug/g dry	ND				50	
1,2-Dichlorobenzene	ND	0.05	ug/g dry	ND				50	
1,3-Dichlorobenzene	ND	0.05	ug/g dry	ND				50	
1,4-Dichlorobenzene	ND	0.05	ug/g dry	ND				50	
1,1-Dichloroethane	ND	0.05	ug/g dry	ND				50	
1,2-Dichloroethane	ND	0.05	ug/g dry	ND				50	
1,1-Dichloroethylene	ND	0.05	ug/g dry	ND				50	
cis-1,2-Dichloroethylene	ND	0.05	ug/g dry	ND				50	
trans-1,2-Dichloroethylene	ND	0.05	ug/g dry	ND				50	
1,2-Dichloropropane	ND	0.05	ug/g dry	ND				50	
cis-1,3-Dichloropropylene	ND	0.05	ug/g dry	ND				50	
trans-1,3-Dichloropropylene	ND	0.05	ug/g dry	ND				50	
Ethylbenzene	0.554	0.05	ug/g dry	0.698			23.1	50	
Hexane	ND	0.05	ug/g dry	ND			0.0	50	
Methyl Ethyl Ketone (2-Butanone)	ND	0.50	ug/g dry	ND				50	
Methyl Butyl Ketone (2-Hexanone)	ND	2.00	ug/g dry	ND				50	
Methyl Isobutyl Ketone	ND	0.50	ug/g dry	ND				50	
Methyl tert-butyl ether	ND	0.05	ug/g dry	ND				50	
Methylene Chloride	ND	0.05	ug/g dry	ND				50	
Styrene	ND	0.05	ug/g dry	ND				50	
1,1,1,2-Tetrachloroethane	ND	0.05	ug/g dry	ND				50	
1,1,2,2-Tetrachloroethane	ND	0.05	ug/g dry	ND				50	
Tetrachloroethylene	ND	0.05	ug/g dry	ND				50	
Toluene	ND	0.05	ug/g dry	ND			0.0	50	
1,2,4-Trichlorobenzene	ND	0.05	ug/g dry	ND				50	
1,1,1-Trichloroethane	ND	0.05	ug/g dry	ND				50	
1,1,2-Trichloroethane	ND	0.05	ug/g dry	ND				50	
Trichloroethylene	ND	0.05	ug/g dry	ND				50	
Trichlorofluoromethane	ND	0.05	ug/g dry	ND				50	
1,3,5-Trimethylbenzene	0.385	0.05	ug/g dry	0.406			5.2	50	
Vinyl chloride	ND	0.02	ug/g dry	ND			0.0	50	
m,p-Xylenes	0.595	0.05	ug/g dry	0.761			24.4	50	
o-Xylene	ND	0.05	ug/g dry	ND			0.0	50	
Surrogate: 4-Bromofluorobenzene	2.37		ug/g dry	ND	106	50-140			
Surrogate: Dibromofluoromethane	1.73		ug/g dry	ND	77.2	50-140			
Surrogate: Toluene-d8	1.82		ug/g dry	ND	81.3	50-140			



**Certificate of Analysis**

Report Date: 11-Aug-2013

Client: **Stantec Consulting Ltd. (Ottawa)**

Order Date: 25-Jul-2013

Client PO: 45064625

Project Description: 122510670.220/ Boteler

**Method Quality Control: Spike**

Analyte	Result	Reporting Limit	Units	Source Result	%REC	%REC Limit	RPD	RPD Limit	Notes
<b>Hydrocarbons</b>									
F1 PHCs (C6-C10)	199	7	ug/g	ND	99.7	80-120			
F2 PHCs (C10-C16)	76	4	ug/g	ND	75.1	60-140			
F3 PHCs (C16-C34)	201	8	ug/g	ND	96.4	60-140			
F4 PHCs (C34-C50)	129	6	ug/g	ND	92.7	60-140			
<b>Metals</b>									
Antimony	229		ug/L	ND	91.5	70-130			
Arsenic	238		ug/L	ND	95.1	70-130			
Barium	238		ug/L	ND	95.4	70-130			
Beryllium	224		ug/L	ND	89.4	70-130			
Boron, available	4.46	0.5	ug/g	ND	89.2	70-122			
Boron	235		ug/L	ND	94.0	70-130			
Cadmium	223		ug/L	ND	89.3	70-130			
Chromium (VI)	4.8	0.2	ug/g	ND	86.0	70-130			
Chromium	229		ug/L	ND	91.6	70-130			
Cobalt	228		ug/L	ND	91.4	70-130			
Copper	234		ug/L	ND	93.6	70-130			
Lead	219		ug/L	ND	87.8	70-130			
Mercury	1.70	0.1	ug/g	ND	113	72-128			
Molybdenum	236		ug/L	ND	94.4	70-130			
Nickel	232		ug/L	ND	92.6	70-130			
Selenium	228		ug/L	ND	91.0	70-130			
Silver	207		ug/L	ND	82.8	70-130			
Thallium	246		ug/L	ND	98.3	70-130			
Uranium	235		ug/L	ND	93.8	70-130			
Vanadium	235		ug/L	ND	93.8	70-130			
Zinc	222		ug/L	ND	88.6	70-130			
<b>PCBs</b>									
PCBs, total	0.525	0.05	ug/g	ND	117	60-140			
Surrogate: Decachlorobiphenyl	0.0709		ug/g		63.3	60-140			
<b>Semi-Volatiles</b>									
Acenaphthene	0.208	0.02	ug/g	ND	111	50-140			
Acenaphthylene	0.239	0.02	ug/g	0.078	86.3	50-140			
Anthracene	0.281	0.02	ug/g	0.114	89.3	50-140			
Benzo [a] anthracene	0.320	0.02	ug/g	0.160	85.7	50-140			
Benzo [a] pyrene	0.300	0.02	ug/g	0.140	85.7	50-140			
Benzo [b] fluoranthene	0.272	0.02	ug/g	0.113	85.0	50-140			
Benzo [g,h,i] perylene	0.198	0.02	ug/g	0.056	76.1	50-140			
Benzo [k] fluoranthene	0.225	0.02	ug/g	0.046	95.9	50-140			
Biphenyl	0.299	0.02	ug/g	ND	160	50-140			QM-06
Chrysene	0.328	0.02	ug/g	0.146	97.7	50-140			
Dibenzo [a,h] anthracene	0.181	0.02	ug/g	ND	96.8	50-140			
Fluoranthene	0.413	0.02	ug/g	0.340	38.9	50-140			QM-06
Fluorene	0.258	0.02	ug/g	0.032	121	50-140			
Indeno [1,2,3-cd] pyrene	0.223	0.02	ug/g	0.054	90.2	50-140			
1-Methylnaphthalene	0.129	0.02	ug/g	ND	69.2	50-140			
2-Methylnaphthalene	0.139	0.02	ug/g	ND	74.2	50-140			
Naphthalene	0.149	0.01	ug/g	ND	80.0	50-140			
Phenanthrene	0.353	0.02	ug/g	0.264	48.0	50-140			QM-06



**Certificate of Analysis**

Report Date: 11-Aug-2013

Client: **Stantec Consulting Ltd. (Ottawa)**

Order Date: 25-Jul-2013

Client PO: 45064625

Project Description: 122510670.220/ Boteler

**Method Quality Control: Spike**

Analyte	Result	Reporting Limit	Units	Source Result	%REC	%REC Limit	RPD	RPD Limit	Notes
Pyrene	0.380	0.02	ug/g	0.280	53.2	50-140			
<b>Volatiles</b>									
Acetone	7.93	0.50	ug/g	ND	79.3	50-140			
Benzene	4.15	0.02	ug/g	ND	104	60-130			
Bromodichloromethane	3.43	0.05	ug/g	ND	85.6	60-130			
Bromoform	2.48	0.05	ug/g	ND	62.0	60-130			
Bromomethane	4.43	0.05	ug/g	ND	111	50-140			
Carbon Tetrachloride	3.10	0.05	ug/g	ND	77.4	60-130			
Chlorobenzene	4.18	0.05	ug/g	ND	105	60-130			
Chloroethane	3.49	0.05	ug/g	ND	87.3	50-140			
Chloroform	4.10	0.05	ug/g	ND	103	60-130			
Chloromethane	2.96	0.20	ug/g	ND	74.0	50-140			
Dibromochloromethane	3.19	0.05	ug/g	ND	79.8	60-130			
Dichlorodifluoromethane	4.37	0.05	ug/g	ND	109	50-140			
1,2-Dibromoethane	3.92	0.05	ug/g	ND	98.1	60-130			
1,2-Dichlorobenzene	3.72	0.05	ug/g	ND	93.1	60-130			
1,3-Dichlorobenzene	3.85	0.05	ug/g	ND	96.4	60-130			
1,4-Dichlorobenzene	3.33	0.05	ug/g	ND	83.3	60-130			
1,1-Dichloroethane	2.98	0.05	ug/g	ND	74.4	60-130			
1,2-Dichloroethane	4.21	0.05	ug/g	ND	105	60-130			
1,1-Dichloroethylene	3.16	0.05	ug/g	ND	78.9	60-130			
cis-1,2-Dichloroethylene	4.63	0.05	ug/g	ND	116	60-130			
trans-1,2-Dichloroethylene	3.22	0.05	ug/g	ND	80.6	60-130			
1,2-Dichloropropane	3.63	0.05	ug/g	ND	90.7	60-130			
cis-1,3-Dichloropropylene	2.97	0.05	ug/g	ND	74.3	60-130			
trans-1,3-Dichloropropylene	2.45	0.05	ug/g	ND	61.4	60-130			
Ethylbenzene	4.30	0.05	ug/g	ND	107	60-130			
Hexane	5.02	0.05	ug/g	ND	126	60-130			
Methyl Ethyl Ketone (2-Butanone)	7.28	0.50	ug/g	ND	72.8	50-140			
Methyl Butyl Ketone (2-Hexanone)	5.58	2.00	ug/g	ND	55.8	50-140			
Methyl Isobutyl Ketone	8.61	0.50	ug/g	ND	86.1	50-140			
Methyl tert-butyl ether	7.04	0.05	ug/g	ND	70.4	50-140			
Methylene Chloride	3.84	0.05	ug/g	ND	96.0	60-130			
Styrene	4.19	0.05	ug/g	ND	105	60-130			
1,1,1,2-Tetrachloroethane	3.29	0.05	ug/g	ND	82.3	60-130			
1,1,2,2-Tetrachloroethane	3.83	0.05	ug/g	ND	95.7	60-130			
Tetrachloroethylene	4.09	0.05	ug/g	ND	102	60-130			
Toluene	4.44	0.05	ug/g	ND	111	60-130			
1,2,4-Trichlorobenzene	3.44	0.05	ug/g	ND	85.9	60-130			
1,1,1-Trichloroethane	3.10	0.05	ug/g	ND	77.6	60-130			
1,1,2-Trichloroethane	3.63	0.05	ug/g	ND	90.9	60-130			
Trichloroethylene	3.55	0.05	ug/g	ND	88.8	60-130			
Trichlorofluoromethane	2.76	0.05	ug/g	ND	69.0	50-140			
1,3,5-Trimethylbenzene	4.11	0.05	ug/g	ND	103	60-130			
Vinyl chloride	2.86	0.02	ug/g	ND	71.5	50-140			
m,p-Xylenes	7.78	0.05	ug/g	ND	97.3	60-130			
o-Xylene	4.19	0.05	ug/g	ND	105	60-130			

**Certificate of Analysis**

Report Date: 11-Aug-2013

Client: **Stantec Consulting Ltd. (Ottawa)**

Order Date: 25-Jul-2013

Client PO: 45064625

Project Description: 122510670.220/ Boteler

**Qualifier Notes:**

**QC Qualifiers :**

QM-06 : Due to noted non-homogeneity of the QC sample matrix, the spike recoveries were out side the accepted range. Batch data accepted based on other QC.

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

**Sample Data Revisions**

None

**Work Order Revisions / Comments:**

None

**Other Report Notes:**

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

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

**CCME PHC additional information:**

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



TRUSTED.  
RESPONSIVE.  
RELIABLE.

Head Office  
300-2319 St. Laurent Blvd.  
Ottawa, Ontario K1G 4J8  
p: 1-800-749-1947  
e: paracel@paracellabs.com  
www.paracellabs.com

Chain of Custody  
(Lab Use Only)

Page 1 of 2

OTTAWA • KINGSTON • NIAGARA • MISSISSAUGA • SARNIA

Client Name: Stantec Consulting Ltd.	Project Reference: 122510670.220	TAT: <input checked="" type="checkbox"/> Regular <input type="checkbox"/> 3 Day
Contact Name: Jill Peters-Dechman	Quote # City Of Ottawa SOA 19609-91843-S01	<input type="checkbox"/> 2 Day <input type="checkbox"/> 1 Day
Address: 1331 Clyde Avenue Suite 400 Ottawa, ON K2C3G4	PO #	Date Required: _____
Telephone: 613-722-4420	Email Address: jill.peters-dechman@stantec.com	

Criteria  O. Reg. 153 (As Amended) Table 1  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)

Paracel Order Number: 1330318		Matrix	Air Volume	# of Containers	Sample Taken		PHCs F1-F4+BTEX	VOCs	PAHs	Metals by ICP	Hg	CrVI	B (HWS)	PCBs	FOC	EC/SAR	pH				
Sample ID/Location Name	Date				Time																
1	MW 13-12 S55	BA14le0		3	↑	AM	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	2x250ml +1vial
2	MW 13-12	BA14le0		1	↑	AM	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	↓
3	MW 13-12 S51	BA14le1		1	July	AM	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	2x250ml +1vial
4	MW 13-14 S53	BA14le2		3	July	PM	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	120ml
5	MW 13-14 S51	BA14le3		1	25/08	PM	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	250ml
6	MW 13-14	BA14le4		1	↓	PM	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	2x250ml +1vial
7	MW 13-120 S55	BA14le5		3	↓	AM	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	↓
8	<del>MW 13-13 S55</del>	BA14le6		3	↓	PM	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	120ml
9	MW 13-13	BA14le7		1	↓	PM	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
10		<del>BA14le8</del>			↓		<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	

Method of Delivery:  
Walk-in

Relinquished By (Sign): <i>A. Waldick</i>	Received by Driver/Depot:	Received at Lab: <i>MJC</i>	Verified By: <i>MJC</i>
Relinquished By (Print): A. Waldick	Date/Time:	Date/Time: July 25/13 6:28	Date/Time: July 26/13 3:08
Date/Time: 2013/07/25	Temperature: _____ °C	Temperature: 6.9 °C	pH Verified [ ] By: N/A



TRUSTED.  
RESPONSIVE.  
RELIABLE.

Head Office  
300-2319 St. Laurent Blvd.  
Ottawa, Ontario K1G 4J8  
p: 1-800-749-1947  
e: paracel@paracellabs.com  
www.paracellabs.com

Chain of Custody  
(Lab Use Only)

Page 2 of 2

OTTAWA • KINGSTON • NIAGARA • MISSISSAUGA • SARNIA

Client Name: Stantec Consulting Ltd.	Project Reference: 122510670.220	TAT: <input checked="" type="checkbox"/> Regular <input type="checkbox"/> 3 Day
Contact Name: Jill Peters-Dechman	Quote # City Of Ottawa SOA 19609-91843-S01	<input type="checkbox"/> 2 Day <input type="checkbox"/> 1 Day
Address: 1331 Clyde Avenue Suite 400 Ottawa, ON K2C3G4	PO #	Date Required: _____
Telephone: 613-722-4420	Email Address: jill.peters-dechman@stantec.com	

Criteria:  O. Reg. 153 (As Amended) Table 1  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: 1330318		Matrix	Air Volume	# of Containers	Sample Taken		PHCs F1-F4+BTEX	VOCs	PAHs	Metals by ICP				PCBs	FOC	EC/SAR	pH				
Sample ID/Location Name	Date				Time	Hg				CrVI	B (HWS)										
1	BH 13-9 SS3	BA1468	✓	1		Pm															130ml
2	BH 13-9 SS5	BA1469	✓	3		Pm															2x250ml 1 vial
3	BH 13-9	BA1470	✓	3	July	Am															250ml
4	BH 13-8	BA1471	✓	3	25/08																130ml + 250ml + 1 vial
5		S																			
6		S																			
7		S																			
8		S																			
9		S																			
10		S																			

Comments: BH 13-8 (120ml) use for FOC. If not enough soil, pls contact. low recovery. pls contact if 1x 250ml is not enough for all analyses. Walk-in

Relinquished By (Sign): <i>A. Waldick</i>	Received by Driver/Depot:	Received at Lab: <i>MIC</i>	Verified By: <i>MIC</i>
Relinquished By (Print): A. Waldick	Date/Time:	Date/Time: July 25/13 6:28	Date/Time: July 26/13 3:28
Date/Time: 2013/07/25	Temperature: _____ °C	Temperature: 6.9 °C	pH Verified [ ] By: NA

## Certificate of Analysis

### Stantec Consulting Ltd. (Ottawa)

1331 Clyde Avenue Suite 400  
Ottawa, ON K2C 3G4  
Attn: Jill Peters-Dechman

Phone: (613) 722-4420  
Fax: (613) 738-0721

Client PO: 45064625  
Project: 122510670.205/ Boteler  
Custody: 10423

Report Date: 14-Aug-2013  
Order Date: 26-Jul-2013

**Order #: 1331026**

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

Paracel ID	Client ID
1331026-01	Comp 1
1331026-02	Comp 2

Approved By:



Mark Foto, M.Sc. For Dale Robertson, BSc  
Laboratory Director

**Certificate of Analysis**

Report Date: 14-Aug-2013

Client: **Stantec Consulting Ltd. (Ottawa)**

Order Date: 26-Jul-2013

Client PO: 45064625

Project Description: 122510670.205/ Boteler

**Analysis Summary Table**

Analysis	Method Reference/Description	Extraction Date	Analysis Date
Atlantic RBCA Tier 2 Petroleum Hydrocarbons	Subcontract	31-Jul-13	31-Jul-13
pH	EPA 150.1 - pH probe @ 25 °C, CaCl buffered ext.	29-Jul-13	30-Jul-13

**Certificate of Analysis**

Report Date: 14-Aug-2013

 Client: **Stantec Consulting Ltd. (Ottawa)**

Order Date: 26-Jul-2013

Client PO: 45064625

Project Description: 122510670.205/ Boteler

<b>Client ID:</b>	Comp 1	Comp 2	-	-
<b>Sample Date:</b>	26-Jul-13	26-Jul-13	-	-
<b>Sample ID:</b>	1331026-01	1331026-02	-	-
<b>MDL/Units</b>	Soil	Soil	-	-

**General Inorganics**

pH	0.05 pH Units	-	7.83	-	-
----	---------------	---	------	---	---

**Subcontract**

Benzene	0.005 ug/g	0.008 [1]	-	-	-
Toluene	0.05 ug/g	<0.05 [1]	-	-	-
Ethylbenzene	0.01 ug/g	0.03 [1]	-	-	-
Xylenes, total	0.05 ug/g	0.1 [1]	-	-	-
C6-C8 Aliphatics	2.0 ug/g	<2.0 [1]	-	-	-
C8-C10 Aliphatics	2.0 ug/g	<2.0 [1]	-	-	-
C10-C12 Aliphatics	5.0 ug/g	10.0 [1]	-	-	-
C12-C16 Aliphatics	5.0 ug/g	160 [1]	-	-	-
C16-C21 Aliphatics	5.0 ug/g	260 [1]	-	-	-
C21-C34 Aliphatics	5.0 ug/g	60.0 [1]	-	-	-
C8-C10 Aromatics	0.1 ug/g	0.3 [1]	-	-	-
C10-C12 Aromatics	5.0 ug/g	<5.0 [1]	-	-	-
C12-C16 Aromatics	5.0 ug/g	61.0 [1]	-	-	-
C16-C21 Aromatics	5.0 ug/g	170 [1]	-	-	-
C21-C34 Aromatics	5.0 ug/g	210 [1]	-	-	-
TPH	14.0 ug/g	840 [1] [2]	-	-	-

**Certificate of Analysis**

Report Date: 14-Aug-2013

Client: **Stantec Consulting Ltd. (Ottawa)**

Order Date: 26-Jul-2013

Client PO: 45064625

Project Description: 122510670.205/ Boteler

**Method Quality Control: Duplicate**

Analyte	Result	Reporting Limit	Units	Source Result	%REC	%REC Limit	RPD	RPD Limit	Notes
---------	--------	-----------------	-------	---------------	------	------------	-----	-----------	-------

**General Inorganics**

pH	7.87	0.05	pH Units	7.88			0.1	10	
----	------	------	----------	------	--	--	-----	----	--



**Certificate of Analysis**

Report Date: 14-Aug-2013

Client: **Stantec Consulting Ltd. (Ottawa)**

Order Date: 26-Jul-2013

Client PO: 45064625

Project Description: 122510670.205/ Boteler

**Qualifier Notes:**

**Sample Qualifiers :**

- 1 : Subcontracted analysis.
- 2 : Resemblance: Weathered Fuel Oil and Lube Oil Fraction with possible PAHs detected.

**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.



TRUSTED .  
RESPONSIVE .  
RELIABLE .

Head Office  
300-2319 St. Laurent Blvd.  
Ottawa, Ontario K1G 4J8  
p: 1-800-749-1947  
e: paracel@paracellabs.com  
www.paracellabs.com

Chain of Custody

(Lab Use Only)

No 10423

OTTAWA ● KINGSTON ● NIAGARA ● MISSISSAUGA ● SARNIA

Page 1 of 1

Client Name: Stantec  
Contact Name: Jill Peters-Dechman  
Address: 1331 Clyde Ave  
Telephone: 613-722-4400

Project Reference: 122510670, 215  
Quote #: SOA # 01910-91843-S01  
PO # \_\_\_\_\_  
Email Address: \_\_\_\_\_

TAT:  Regular  3 Day  
 2 Day  1 Day  
Date Required: \_\_\_\_\_

Criteria:  O. Reg. 153/04 (As Amended) Table \_\_\_\_\_  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:

1331026

Sample ID/Location Name	Matrix	Air Volume	# of Containers	Sample Taken		Aromatic Aliphatic Hydrocarbons pH	Required Analyses															
				Date	Time		1	2	3	4	5	6	7	8	9	10						
1 <u>Comp 1 BA1472</u>	<u>S</u>		<u>1</u>	<u>July 26</u>	<u>AM</u>	<input checked="" type="checkbox"/>															<u>250ml</u>	
2 <u>Comp 2 BA1473</u>	<u>S</u>		<u>1</u>	<u>2013</u>	<u>PM</u>	<input checked="" type="checkbox"/>															<u>↓</u>	
3																						
4																						
5																						
6																						
7																						
8																						
9																						
10																						

Comments:

Method of Delivery:

Walk-in

Relinquished By (Sign): <u>A. Waldick</u>	Received by Driver/Depot:	Received at Lab: <u>M/C [Signature]</u>	Verified By: <u>M/C [Signature]</u>
Relinquished By (Print): <u>A. Waldick</u>	Date/Time:	Date/Time: <u>July 26/13 4:29</u>	Date/Time: <u>July 29/13 12:57</u>
Date/Time: <u>2013/07/26</u>	Temperature: _____ °C	Temperature: <u>20/4 °C</u>	pH Verified <input type="checkbox"/> By: <u>N/A</u>

## Certificate of Analysis

### Stantec Consulting Ltd. (Ottawa)

1331 Clyde Avenue Suite 400  
Ottawa, ON K2C 3G4  
Attn: Jill Peters-Dechman

Phone: (613) 722-4420  
Fax: (613) 738-0721

Client PO: 45064625  
Project: 122510670.215/ Boteler  
Custody: 96653

Report Date: 9-Aug-2013  
Order Date: 31-Jul-2013

**Order #: 1331219**

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

Parcel ID	Client ID
1331219-01	MW13-11
1331219-02	MW13-14
1331219-03	MW13-140
1331219-04	Trip Blank

Approved By:



Mark Foto, M.Sc. For Dale Robertson, BSc  
Laboratory Director

**Certificate of Analysis**

Report Date: 09-Aug-2013

Client: **Stantec Consulting Ltd. (Ottawa)**

Order Date: 31-Jul-2013

Client PO: 45064625

Project Description: 122510670.215/ Boteler

**Analysis Summary Table**

Analysis	Method Reference/Description	Extraction Date	Analysis Date
Anions	EPA 300.1 - IC	8-Aug-13	8-Aug-13
Chromium, hexavalent	MOE E3056 - colourimetric	1-Aug-13	2-Aug-13
Cyanide, free	MOE E3015 - Auto Colour	9-Aug-13	9-Aug-13
Mercury	EPA 245.1 - Cold Vapour AA	1-Aug-13	1-Aug-13
Metals, ICP-MS	EPA 200.8 - ICP-MS	6-Aug-13	6-Aug-13
PAHs by GC-MS	EPA 625 - GC-MS, extraction	9-Aug-13	9-Aug-13
pH	EPA 150.1 - pH probe @25 °C	8-Aug-13	8-Aug-13
PHC F1	CWS Tier 1 - P&T GC-FID	3-Aug-13	4-Aug-13
PHC F2 - F4	CWS Tier 1 - GC-FID, extraction	6-Aug-13	7-Aug-13
VOCs by P&T GC-MS	EPA 624 - P&T GC-MS	3-Aug-13	8-Aug-13

**Certificate of Analysis**

Report Date: 09-Aug-2013

 Client: **Stantec Consulting Ltd. (Ottawa)**

Order Date: 31-Jul-2013

Client PO: 45064625

Project Description: 122510670.215/ Boteler

Client ID:	MW13-11	MW13-14	MW13-140	Trip Blank
Sample Date:	31-Jul-13	31-Jul-13	31-Jul-13	31-Jul-13
Sample ID:	1331219-01	1331219-02	1331219-03	1331219-04
MDL/Units	Water	Water	Water	Water

**General Inorganics**

Parameter	MDL/Units	MW13-11	MW13-14	MW13-140	Trip Blank
Cyanide, free	2 ug/L	<2	<2	<2	-
pH	0.1 pH Units	7.2	7.0	7.0	-

**Anions**

Parameter	MDL/Units	MW13-11	MW13-14	MW13-140	Trip Blank
Chloride	1 mg/L	1590	1420	1470	-

**Metals**

Parameter	MDL/Units	MW13-11	MW13-14	MW13-140	Trip Blank
Mercury	0.1 ug/L	<0.1	<0.1	<0.1	-
Antimony	0.5 ug/L	0.7	<0.5	<0.5	-
Arsenic	1 ug/L	<1	<1	<1	-
Barium	1 ug/L	72	71	71	-
Beryllium	0.5 ug/L	<0.5	<0.5	<0.5	-
Boron	10 ug/L	106	49	49	-
Cadmium	0.1 ug/L	<0.1	<0.1	<0.1	-
Chromium	1 ug/L	13	15	17	-
Chromium (VI)	10 ug/L	<10	<10	<10	-
Cobalt	0.5 ug/L	1.2	0.7	0.8	-
Copper	0.5 ug/L	3.7	1.2	1.2	-
Lead	0.1 ug/L	<0.1	<0.1	<0.1	-
Molybdenum	0.5 ug/L	6.6	4.3	4.3	-
Nickel	1 ug/L	15	7	7	-
Selenium	1 ug/L	<1	<1	<1	-
Silver	0.1 ug/L	<0.1	<0.1	<0.1	-
Sodium	200 ug/L	1090000	1060000	1070000	-
Thallium	0.1 ug/L	<0.1	<0.1	<0.1	-
Uranium	0.1 ug/L	6.3	2.3	2.3	-
Vanadium	0.5 ug/L	8.0	9.8	8.9	-
Zinc	5 ug/L	25	<5	12	-

**Volatiles**

Parameter	MDL/Units	MW13-11	MW13-14	MW13-140	Trip Blank
Acetone	5.0 ug/L	<5.0	<5.0	<5.0	<5.0
Benzene	0.5 ug/L	<0.5	<0.5	<0.5	<0.5
Bromodichloromethane	0.5 ug/L	<0.5	<0.5	<0.5	<0.5
Bromoform	0.5 ug/L	<0.5	<0.5	<0.5	<0.5
Bromomethane	0.5 ug/L	<0.5	<0.5	<0.5	1.0
Carbon Tetrachloride	0.2 ug/L	<0.2	<0.2	<0.2	<0.2
Chlorobenzene	0.5 ug/L	<0.5	<0.5	<0.5	<0.5

 P: 1-800-749-1947  
 E: PARACEL@PARACELLABS.COM

WWW.PARACELLABS.COM

**OTTAWA**  
 300-2319 St. Laurent Blvd.  
 Ottawa, ON K1G 4J8

**MISSISSAUGA**  
 6845 Kitimat Rd. Unit #27  
 Mississauga, ON L5N 6J3

**NIAGARA FALLS**  
 5415 Morning Glory Cr.  
 Niagara Falls, ON L2J 0A3

**SARNIA**  
 123 Christina St. N.  
 Sarnia, ON N7T 5T7

**Certificate of Analysis**

Report Date: 09-Aug-2013

Order Date: 31-Jul-2013

 Client: **Stantec Consulting Ltd. (Ottawa)**

Client PO: 45064625

Project Description: 122510670.215/ Boteler

	Client ID:	MW13-11	MW13-14	MW13-140	Trip Blank
	Sample Date:	31-Jul-13	31-Jul-13	31-Jul-13	31-Jul-13
	Sample ID:	1331219-01	1331219-02	1331219-03	1331219-04
	MDL/Units	Water	Water	Water	Water
Chloroethane	1.0 ug/L	<1.0	<1.0	<1.0	<1.0
Chloroform	0.5 ug/L	<0.5	<0.5	<0.5	<0.5
Chloromethane	3.0 ug/L	<3.0	<3.0	<3.0	<3.0
Dibromochloromethane	0.5 ug/L	<0.5	<0.5	<0.5	<0.5
Dichlorodifluoromethane	1.0 ug/L	<1.0	<1.0	<1.0	<1.0
1,2-Dibromoethane	0.2 ug/L	<0.2	<0.2	<0.2	<0.2
1,2-Dichlorobenzene	0.5 ug/L	<0.5	<0.5	<0.5	<0.5
1,3-Dichlorobenzene	0.5 ug/L	<0.5	<0.5	<0.5	<0.5
1,4-Dichlorobenzene	0.5 ug/L	<0.5	<0.5	<0.5	<0.5
1,1-Dichloroethane	0.5 ug/L	<0.5	<0.5	<0.5	<0.5
1,2-Dichloroethane	0.5 ug/L	<0.5	<0.5	<0.5	<0.5
1,1-Dichloroethylene	0.5 ug/L	<0.5	<0.5	<0.5	<0.5
cis-1,2-Dichloroethylene	0.5 ug/L	<0.5	<0.5	<0.5	<0.5
trans-1,2-Dichloroethylene	0.5 ug/L	<0.5	<0.5	<0.5	<0.5
1,2-Dichloroethylene, total	0.5 ug/L	<0.5	<0.5	<0.5	<0.5
1,2-Dichloropropane	0.5 ug/L	<0.5	<0.5	<0.5	<0.5
cis-1,3-Dichloropropylene	0.5 ug/L	<0.5	<0.5	<0.5	<0.5
trans-1,3-Dichloropropylene	0.5 ug/L	<0.5	<0.5	<0.5	<0.5
1,3-Dichloropropene, total	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
Hexane	1.0 ug/L	<1.0	<1.0	<1.0	<1.0
Methyl Ethyl Ketone (2-Butanone)	5.0 ug/L	<5.0	<5.0	<5.0	<5.0
Methyl Butyl Ketone (2-Hexanone)	10.0 ug/L	<10.0	<10.0	<10.0	<10.0
Methyl Isobutyl Ketone	5.0 ug/L	<5.0	<5.0	<5.0	<5.0
Methyl tert-butyl ether	2.0 ug/L	<2.0	<2.0	<2.0	<2.0
Methylene Chloride	5.0 ug/L	<5.0	<5.0	<5.0	<5.0
Styrene	0.5 ug/L	<0.5	<0.5	<0.5	<0.5
1,1,1,2-Tetrachloroethane	0.5 ug/L	<0.5	<0.5	<0.5	<0.5
1,1,2,2-Tetrachloroethane	0.5 ug/L	<0.5	<0.5	<0.5	<0.5
Tetrachloroethylene	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
1,2,4-Trichlorobenzene	0.5 ug/L	<0.5	<0.5	<0.5	<0.5
1,1,1-Trichloroethane	0.5 ug/L	<0.5	<0.5	<0.5	<0.5
1,1,2-Trichloroethane	0.5 ug/L	<0.5	<0.5	<0.5	<0.5

**Certificate of Analysis**

Report Date: 09-Aug-2013

Client: **Stantec Consulting Ltd. (Ottawa)**

Order Date: 31-Jul-2013

Client PO: 45064625

Project Description: 122510670.215/ Boteler

	Client ID:	MW13-11	MW13-14	MW13-140	Trip Blank
	Sample Date:	31-Jul-13	31-Jul-13	31-Jul-13	31-Jul-13
	Sample ID:	1331219-01	1331219-02	1331219-03	1331219-04
	MDL/Units	Water	Water	Water	Water
Trichloroethylene	0.5 ug/L	<0.5	<0.5	<0.5	<0.5
Trichlorofluoromethane	1.0 ug/L	<1.0	<1.0	<1.0	<1.0
1,3,5-Trimethylbenzene	0.5 ug/L	<0.5	<0.5	<0.5	<0.5
Vinyl chloride	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
4-Bromofluorobenzene	Surrogate	116%	116%	127%	86.0%
Dibromofluoromethane	Surrogate	119%	115%	114%	120%
Toluene-d8	Surrogate	99.8%	99.5%	98.3%	91.8%

**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	-

**Semi-Volatiles**

Acenaphthene	0.05 ug/L	<0.05	<0.05	<0.05	-
Acenaphthylene	0.05 ug/L	<0.05	<0.05	<0.05	-
Anthracene	0.01 ug/L	0.03	<0.01	<0.01	-
Benzo [a] anthracene	0.01 ug/L	0.06	<0.01	<0.01	-
Benzo [a] pyrene	0.01 ug/L	0.03	<0.01	<0.01	-
Benzo [b] fluoranthene	0.05 ug/L	<0.05	<0.05	<0.05	-
Benzo [g,h,i] perylene	0.05 ug/L	<0.05	<0.05	<0.05	-
Benzo [k] fluoranthene	0.05 ug/L	<0.05	<0.05	<0.05	-
Biphenyl	0.05 ug/L	<0.05	<0.05	<0.05	-
Chrysene	0.05 ug/L	<0.05	<0.05	<0.05	-
Dibenzo [a,h] anthracene	0.05 ug/L	<0.05	<0.05	<0.05	-
Fluoranthene	0.01 ug/L	0.07	<0.01	<0.01	-
Fluorene	0.05 ug/L	<0.05	<0.05	<0.05	-
Indeno [1,2,3-cd] pyrene	0.05 ug/L	<0.05	<0.05	<0.05	-
1-Methylnaphthalene	0.05 ug/L	<0.05	<0.05	<0.05	-
2-Methylnaphthalene	0.05 ug/L	<0.05	<0.05	<0.05	-
Methylnaphthalene (1&2)	0.10 ug/L	<0.10	<0.10	<0.10	-
Naphthalene	0.05 ug/L	<0.05	<0.05	<0.05	-
Phenanthrene	0.05 ug/L	0.06	<0.05	<0.05	-

**Certificate of Analysis**

Report Date: 09-Aug-2013

Order Date: 31-Jul-2013

Client: **Stantec Consulting Ltd. (Ottawa)**

Project Description: 122510670.215/ Boteler

Client PO: 45064625

	<b>Client ID:</b>	MW13-11	MW13-14	MW13-140	Trip Blank
	<b>Sample Date:</b>	31-Jul-13	31-Jul-13	31-Jul-13	31-Jul-13
	<b>Sample ID:</b>	1331219-01	1331219-02	1331219-03	1331219-04
	<b>MDL/Units</b>	Water	Water	Water	Water
Pyrene	0.01 ug/L	0.06	<0.01	<0.01	-
2-Fluorobiphenyl	Surrogate	119%	102%	121%	-
Terphenyl-d14	Surrogate	96.4%	73.8%	93.9%	-



**Certificate of Analysis**

Report Date: 09-Aug-2013

Client: **Stantec Consulting Ltd. (Ottawa)**

Order Date: 31-Jul-2013

Client PO: 45064625

Project Description: 122510670.215/ Boteler

**Method Quality Control: Blank**

Analyte	Result	Reporting Limit	Units	Source Result	%REC	%REC Limit	RPD	RPD Limit	Notes
<b>Anions</b>									
Chloride	ND	1	mg/L						
<b>General Inorganics</b>									
Cyanide, free	ND	2	ug/L						
<b>Hydrocarbons</b>									
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						
<b>Metals</b>									
Mercury	ND	0.1	ug/L						
Antimony	ND	0.5	ug/L						
Arsenic	ND	1	ug/L						
Barium	ND	1	ug/L						
Beryllium	ND	0.5	ug/L						
Boron	ND	10	ug/L						
Cadmium	ND	0.1	ug/L						
Chromium (VI)	ND	10	ug/L						
Chromium	ND	1	ug/L						
Cobalt	ND	0.5	ug/L						
Copper	ND	0.5	ug/L						
Lead	ND	0.1	ug/L						
Molybdenum	ND	0.5	ug/L						
Nickel	ND	1	ug/L						
Selenium	ND	1	ug/L						
Silver	ND	0.1	ug/L						
Sodium	ND	200	ug/L						
Thallium	ND	0.1	ug/L						
Uranium	ND	0.1	ug/L						
Vanadium	ND	0.5	ug/L						
Zinc	ND	5	ug/L						
<b>Semi-Volatiles</b>									
Acenaphthene	ND	0.05	ug/L						
Acenaphthylene	ND	0.05	ug/L						
Anthracene	ND	0.01	ug/L						
Benzo [a] anthracene	ND	0.01	ug/L						
Benzo [a] pyrene	ND	0.01	ug/L						
Benzo [b] fluoranthene	ND	0.05	ug/L						
Benzo [g,h,i] perylene	ND	0.05	ug/L						
Benzo [k] fluoranthene	ND	0.05	ug/L						
Biphenyl	ND	0.05	ug/L						
Chrysene	ND	0.05	ug/L						
Dibenzo [a,h] anthracene	ND	0.05	ug/L						
Fluoranthene	ND	0.01	ug/L						
Fluorene	ND	0.05	ug/L						
Indeno [1,2,3-cd] pyrene	ND	0.05	ug/L						
1-Methylnaphthalene	ND	0.05	ug/L						
2-Methylnaphthalene	ND	0.05	ug/L						
Methylnaphthalene (1&2)	ND	0.10	ug/L						
Naphthalene	ND	0.05	ug/L						
Phenanthrene	ND	0.05	ug/L						
Pyrene	ND	0.01	ug/L						
Surrogate: 2-Fluorobiphenyl	19.8		ug/L		98.9	50-140			
Surrogate: Terphenyl-d14	20.8		ug/L		104	50-140			
<b>Volatiles</b>									

**Certificate of Analysis**

Report Date: 09-Aug-2013

Client: **Stantec Consulting Ltd. (Ottawa)**

Order Date: 31-Jul-2013

Client PO: 45064625

Project Description: 122510670.215/ Boteler

**Method Quality Control: Blank**

Analyte	Result	Reporting Limit	Units	Source Result	%REC	%REC Limit	RPD	RPD Limit	Notes
Acetone	ND	5.0	ug/L						
Benzene	ND	0.5	ug/L						
Bromodichloromethane	ND	0.5	ug/L						
Bromoform	ND	0.5	ug/L						
Bromomethane	ND	0.5	ug/L						
Carbon Tetrachloride	ND	0.2	ug/L						
Chlorobenzene	ND	0.5	ug/L						
Chloroethane	ND	1.0	ug/L						
Chloroform	ND	0.5	ug/L						
Chloromethane	ND	3.0	ug/L						
Dibromochloromethane	ND	0.5	ug/L						
Dichlorodifluoromethane	ND	1.0	ug/L						
1,2-Dibromoethane	ND	0.2	ug/L						
1,2-Dichlorobenzene	ND	0.5	ug/L						
1,3-Dichlorobenzene	ND	0.5	ug/L						
1,4-Dichlorobenzene	ND	0.5	ug/L						
1,1-Dichloroethane	ND	0.5	ug/L						
1,2-Dichloroethane	ND	0.5	ug/L						
1,1-Dichloroethylene	ND	0.5	ug/L						
cis-1,2-Dichloroethylene	ND	0.5	ug/L						
trans-1,2-Dichloroethylene	ND	0.5	ug/L						
1,2-Dichloroethylene, total	ND	0.5	ug/L						
1,2-Dichloropropane	ND	0.5	ug/L						
cis-1,3-Dichloropropylene	ND	0.5	ug/L						
trans-1,3-Dichloropropylene	ND	0.5	ug/L						
1,3-Dichloropropene, total	ND	0.5	ug/L						
Ethylbenzene	ND	0.5	ug/L						
Hexane	ND	1.0	ug/L						
Methyl Ethyl Ketone (2-Butanone)	ND	5.0	ug/L						
Methyl Butyl Ketone (2-Hexanone)	ND	10.0	ug/L						
Methyl Isobutyl Ketone	ND	5.0	ug/L						
Methyl tert-butyl ether	ND	2.0	ug/L						
Methylene Chloride	ND	5.0	ug/L						
Styrene	ND	0.5	ug/L						
1,1,1,2-Tetrachloroethane	ND	0.5	ug/L						
1,1,2,2-Tetrachloroethane	ND	0.5	ug/L						
Tetrachloroethylene	ND	0.5	ug/L						
Toluene	ND	0.5	ug/L						
1,2,4-Trichlorobenzene	ND	0.5	ug/L						
1,1,1-Trichloroethane	ND	0.5	ug/L						
1,1,2-Trichloroethane	ND	0.5	ug/L						
Trichloroethylene	ND	0.5	ug/L						
Trichlorofluoromethane	ND	1.0	ug/L						
1,3,5-Trimethylbenzene	ND	0.5	ug/L						
Vinyl chloride	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: 4-Bromofluorobenzene	88.8		ug/L		111	50-140			
Surrogate: Dibromofluoromethane	81.6		ug/L		102	50-140			
Surrogate: Toluene-d8	76.9		ug/L		96.1	50-140			

**Certificate of Analysis**

Report Date: 09-Aug-2013

Client: **Stantec Consulting Ltd. (Ottawa)**

Order Date: 31-Jul-2013

Client PO: 45064625

Project Description: 122510670.215/ Boteler

**Method Quality Control: Duplicate**

Analyte	Result	Reporting Limit	Units	Source Result	%REC	%REC Limit	RPD	RPD Limit	Notes
<b>Anions</b>									
Chloride	1610	25	mg/L	1590			1.5	10	
<b>General Inorganics</b>									
Cyanide, free	ND	2	ug/L	ND				20	
pH	7.8	0.1	pH Units	7.8			0.0	10	
<b>Hydrocarbons</b>									
F1 PHCs (C6-C10)	ND	25	ug/L	ND				30	
<b>Metals</b>									
Mercury	ND	0.1	ug/L	ND			0.0	20	
Antimony	1.33	0.5	ug/L	ND			0.0	20	
Arsenic	ND	1	ug/L	ND			0.0	20	
Barium	ND	1	ug/L	ND			0.0	20	
Beryllium	ND	0.5	ug/L	ND			0.0	20	
Boron	ND	10	ug/L	ND			0.0	20	
Cadmium	0.21	0.1	ug/L	0.18			13.5	20	
Chromium (VI)	ND	10	ug/L	ND				20	
Chromium	ND	1	ug/L	ND			0.0	20	
Cobalt	ND	0.5	ug/L	ND			0.0	20	
Copper	ND	0.5	ug/L	ND			0.0	20	
Lead	ND	0.1	ug/L	ND			0.0	20	
Molybdenum	ND	0.5	ug/L	ND			0.0	20	
Nickel	ND	1	ug/L	ND			0.0	20	
Selenium	ND	1	ug/L	ND			0.0	20	
Silver	ND	0.1	ug/L	ND			0.0	20	
Sodium	ND	200	ug/L	ND			0.0	20	
Thallium	ND	0.1	ug/L	ND			0.0	20	
Uranium	ND	0.1	ug/L	ND			0.0	20	
Vanadium	ND	0.5	ug/L	ND			0.0	20	
Zinc	ND	5	ug/L	ND			0.0	20	
<b>Volatiles</b>									
Acetone	ND	5.0	ug/L	ND				30	
Benzene	3.72	0.5	ug/L	3.71			0.3	30	
Bromodichloromethane	ND	0.5	ug/L	ND				30	
Bromoform	ND	0.5	ug/L	ND				30	
Bromomethane	ND	0.5	ug/L	ND				30	
Carbon Tetrachloride	ND	0.2	ug/L	ND				30	
Chlorobenzene	8.07	0.5	ug/L	8.01			0.7	30	
Chloroethane	ND	1.0	ug/L	ND				30	
Chloroform	ND	0.5	ug/L	ND				30	
Chloromethane	ND	3.0	ug/L	ND				30	
Dibromochloromethane	ND	0.5	ug/L	ND				30	
Dichlorodifluoromethane	ND	1.0	ug/L	ND				30	
1,2-Dibromoethane	ND	0.2	ug/L	ND				30	
1,2-Dichlorobenzene	ND	0.5	ug/L	ND				30	
1,3-Dichlorobenzene	ND	0.5	ug/L	ND				30	
1,4-Dichlorobenzene	6.16	0.5	ug/L	6.08			1.3	30	
1,1-Dichloroethane	ND	0.5	ug/L	ND				30	
1,2-Dichloroethane	ND	0.5	ug/L	ND				30	
1,1-Dichloroethylene	ND	0.5	ug/L	ND				30	
cis-1,2-Dichloroethylene	ND	0.5	ug/L	ND				30	
trans-1,2-Dichloroethylene	ND	0.5	ug/L	ND				30	
1,2-Dichloropropane	ND	0.5	ug/L	ND				30	
cis-1,3-Dichloropropylene	ND	0.5	ug/L	ND				30	
trans-1,3-Dichloropropylene	ND	0.5	ug/L	ND				30	
Ethylbenzene	ND	0.5	ug/L	ND				30	

P: 1-800-749-1947  
E: PARACEL@PARACELLABS.COM

WWW.PARACELLABS.COM

**OTTAWA**  
300-2319 St. Laurent Blvd.  
Ottawa, ON K1G 4J8

**MISSISSAUGA**  
6645 Kitchmat Rd. Unit #27  
Mississauga, ON L5N 6J3

**NIAGARA FALLS**  
5415 Morning Glory Cr.  
Niagara Falls, ON L2J 0A3

**SARNIA**  
123 Christina St. N.  
Sarnia, ON N7T 5T7

**Certificate of Analysis**

Report Date: 09-Aug-2013

Client: **Stantec Consulting Ltd. (Ottawa)**

Order Date: 31-Jul-2013

Client PO: 45064625

Project Description: 122510670.215/ Boteler

**Method Quality Control: Duplicate**

Analyte	Result	Reporting Limit	Units	Source Result	%REC	%REC Limit	RPD	RPD Limit	Notes
Hexane	ND	1.0	ug/L	ND				30	
Methyl Ethyl Ketone (2-Butanone)	ND	5.0	ug/L	ND				30	
Methyl Butyl Ketone (2-Hexanone)	ND	10.0	ug/L	ND				30	
Methyl Isobutyl Ketone	ND	5.0	ug/L	ND				30	
Methyl tert-butyl ether	ND	2.0	ug/L	ND				30	
Methylene Chloride	ND	5.0	ug/L	ND				30	
Styrene	ND	0.5	ug/L	ND				30	
1,1,1,2-Tetrachloroethane	ND	0.5	ug/L	ND				30	
1,1,2,2-Tetrachloroethane	ND	0.5	ug/L	ND				30	
Tetrachloroethylene	ND	0.5	ug/L	ND				30	
Toluene	ND	0.5	ug/L	ND				30	
1,2,4-Trichlorobenzene	ND	0.5	ug/L	ND				30	
1,1,1-Trichloroethane	ND	0.5	ug/L	ND				30	
1,1,2-Trichloroethane	ND	0.5	ug/L	ND				30	
Trichloroethylene	ND	0.5	ug/L	ND				30	
Trichlorofluoromethane	ND	1.0	ug/L	ND				30	
1,3,5-Trimethylbenzene	ND	0.5	ug/L	ND				30	
Vinyl chloride	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: 4-Bromofluorobenzene	87.4		ug/L	ND	109	50-140			
Surrogate: Dibromofluoromethane	86.2		ug/L	ND	108	50-140			
Surrogate: Toluene-d8	78.6		ug/L	ND	98.3	50-140			

**Certificate of Analysis**

Report Date: 09-Aug-2013

Client: **Stantec Consulting Ltd. (Ottawa)**

Order Date: 31-Jul-2013

Client PO: 45064625

Project Description: 122510670.215/ Boteler

**Method Quality Control: Spike**

Analyte	Result	Reporting Limit	Units	Source Result	%REC	%REC Limit	RPD	RPD Limit	Notes
<b>Anions</b>									
Chloride	9.81		mg/L	ND	98.1	78-112			
<b>General Inorganics</b>									
Cyanide, free	24.2	2	ug/L	ND	80.5	70-130			
<b>Hydrocarbons</b>									
F1 PHCs (C6-C10)	2050	25	ug/L	ND	103	68-117			
F2 PHCs (C10-C16)	2020	100	ug/L	ND	112	60-140			
F3 PHCs (C16-C34)	4070	100	ug/L	ND	109	60-140			
F4 PHCs (C34-C50)	2300	100	ug/L	ND	92.9	60-140			
<b>Metals</b>									
Mercury	3.21	0.1	ug/L	ND	107	78-137			
Antimony	47.7		ug/L	ND	96.1	80-120			
Arsenic	50.6		ug/L	ND	104	80-120			
Barium	47.0		ug/L	ND	94.0	80-120			
Beryllium	45.1		ug/L	0.02	90.2	80-120			
Boron	44		ug/L	3	80.5	80-120			
Cadmium	51.4		ug/L	0.18	102	80-120			
Chromium (VI)	212	10	ug/L	ND	106	70-130			
Chromium	45.9		ug/L	0.8	90.1	80-120			
Cobalt	44.6		ug/L	0.001	89.3	80-120			
Copper	46.4		ug/L	0.05	92.7	80-120			
Lead	45.8		ug/L	ND	91.6	80-120			
Molybdenum	43.2		ug/L	ND	87.0	80-120			
Nickel	45.6		ug/L	ND	91.2	80-120			
Selenium	63.6		ug/L	0.09	127	80-120			QM-07
Silver	45.6		ug/L	ND	91.3	80-120			
Sodium	923		ug/L	23	90.0	80-120			
Thallium	47.3		ug/L	ND	94.9	80-120			
Uranium	46.2		ug/L	ND	92.5	80-120			
Vanadium	46.9		ug/L	0.21	93.4	80-120			
Zinc	60		ug/L	0.2	120	80-120			
<b>Semi-Volatiles</b>									
Acenaphthene	5.40	0.05	ug/L	ND	108	50-140			
Acenaphthylene	5.07	0.05	ug/L	ND	101	50-140			
Anthracene	4.89	0.01	ug/L	ND	97.8	50-140			
Benzo [a] anthracene	4.94	0.01	ug/L	ND	98.8	50-140			
Benzo [a] pyrene	4.88	0.01	ug/L	ND	97.6	50-140			
Benzo [b] fluoranthene	4.70	0.05	ug/L	ND	94.0	50-140			
Benzo [g,h,i] perylene	3.95	0.05	ug/L	ND	79.0	50-140			
Benzo [k] fluoranthene	4.47	0.05	ug/L	ND	89.4	50-140			
Biphenyl	6.74	0.05	ug/L	ND	135	50-140			
Chrysene	5.15	0.05	ug/L	ND	103	50-140			
Dibenzo [a,h] anthracene	2.91	0.05	ug/L	ND	58.3	50-140			
Fluoranthene	4.87	0.01	ug/L	ND	97.4	50-140			
Fluorene	4.87	0.05	ug/L	ND	97.4	50-140			
Indeno [1,2,3-cd] pyrene	3.29	0.05	ug/L	ND	65.8	50-140			
1-Methylnaphthalene	4.13	0.05	ug/L	ND	82.6	50-140			
2-Methylnaphthalene	4.38	0.05	ug/L	ND	87.7	50-140			
Naphthalene	4.72	0.05	ug/L	ND	94.4	50-140			

**Certificate of Analysis**

Report Date: 09-Aug-2013

Client: **Stantec Consulting Ltd. (Ottawa)**

Order Date: 31-Jul-2013

Client PO: 45064625

Project Description: 122510670.215/ Boteler

**Method Quality Control: Spike**

Analyte	Result	Reporting Limit	Units	Source Result	%REC	%REC Limit	RPD	RPD Limit	Notes
Phenanthrene	5.11	0.05	ug/L	ND	102	50-140			
Pyrene	4.97	0.01	ug/L	ND	99.5	50-140			
Surrogate: 2-Fluorobiphenyl	25.8		ug/L		129	50-140			
<b>Volatiles</b>									
Acetone	57.2	5.0	ug/L	ND	57.2	50-140			
Benzene	42.8	0.5	ug/L	ND	107	50-140			
Bromodichloromethane	47.3	0.5	ug/L	ND	118	50-140			
Bromoform	31.0	0.5	ug/L	ND	77.5	50-140			
Bromomethane	35.1	0.5	ug/L	ND	87.8	50-140			
Carbon Tetrachloride	42.4	0.2	ug/L	ND	106	50-140			
Chlorobenzene	40.6	0.5	ug/L	ND	102	50-140			
Chloroethane	29.5	1.0	ug/L	ND	73.7	50-140			
Chloroform	43.9	0.5	ug/L	ND	110	50-140			
Chloromethane	28.7	3.0	ug/L	ND	71.7	50-140			
Dibromochloromethane	48.2	0.5	ug/L	ND	121	50-140			
Dichlorodifluoromethane	26.9	1.0	ug/L	ND	67.2	50-140			
1,2-Dibromoethane	38.0	0.2	ug/L	ND	95.0	50-140			
1,2-Dichlorobenzene	40.6	0.5	ug/L	ND	101	50-140			
1,3-Dichlorobenzene	38.9	0.5	ug/L	ND	97.2	50-140			
1,4-Dichlorobenzene	37.6	0.5	ug/L	ND	94.0	50-140			
1,1-Dichloroethane	45.8	0.5	ug/L	ND	115	50-140			
1,2-Dichloroethane	38.6	0.5	ug/L	ND	96.5	50-140			
1,1-Dichloroethylene	26.5	0.5	ug/L	ND	66.2	50-140			
cis-1,2-Dichloroethylene	46.8	0.5	ug/L	ND	117	50-140			
trans-1,2-Dichloroethylene	46.9	0.5	ug/L	ND	117	50-140			
1,2-Dichloropropane	36.8	0.5	ug/L	ND	92.1	50-140			
cis-1,3-Dichloropropylene	44.4	0.5	ug/L	ND	111	50-140			
trans-1,3-Dichloropropylene	44.1	0.5	ug/L	ND	110	50-140			
Ethylbenzene	38.7	0.5	ug/L	ND	96.8	50-140			
Hexane	32.4	1.0	ug/L	ND	81.0	50-140			
Methyl Ethyl Ketone (2-Butanone)	48.1	5.0	ug/L	ND	48.1	50-140			
Methyl Butyl Ketone (2-Hexanone)	57.6	10.0	ug/L	ND	57.6	50-140			
Methyl Isobutyl Ketone	91.4	5.0	ug/L	ND	91.4	50-140			
Methyl tert-butyl ether	77.8	2.0	ug/L	ND	77.8	50-140			
Methylene Chloride	45.8	5.0	ug/L	ND	115	50-140			
Styrene	37.5	0.5	ug/L	ND	93.6	50-140			
1,1,1,2-Tetrachloroethane	46.6	0.5	ug/L	ND	117	50-140			
1,1,2,2-Tetrachloroethane	52.5	0.5	ug/L	ND	131	50-140			
Tetrachloroethylene	38.8	0.5	ug/L	ND	97.0	50-140			
Toluene	37.4	0.5	ug/L	ND	93.4	50-140			
1,2,4-Trichlorobenzene	42.2	0.5	ug/L	ND	106	50-140			
1,1,1-Trichloroethane	51.0	0.5	ug/L	ND	127	50-140			
1,1,2-Trichloroethane	40.1	0.5	ug/L	ND	100	50-140			
Trichloroethylene	42.2	0.5	ug/L	ND	105	50-140			
Trichlorofluoromethane	29.6	1.0	ug/L	ND	73.9	50-140			
1,3,5-Trimethylbenzene	39.7	0.5	ug/L	ND	99.2	50-140			
Vinyl chloride	41.1	0.5	ug/L	ND	103	50-140			
m,p-Xylenes	75.5	0.5	ug/L	ND	94.4	50-140			
o-Xylene	32.8	0.5	ug/L	ND	82.0	50-140			

**Certificate of Analysis**

Report Date: 09-Aug-2013

Client: **Stantec Consulting Ltd. (Ottawa)**

Order Date: 31-Jul-2013

Client PO: 45064625

Project Description: 122510670.215/ Boteler

**Qualifier Notes:**

**QC Qualifiers :**

QM-07 : The spike recovery was outside acceptance limits for the MS and/or MSD. The batch was accepted based on other acceptable QC.

**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.





TRUSTED .  
RESPONSIVE .  
RELIABLE .

Head Office  
300-2319 St. Laurent Blvd.  
Ottawa, Ontario K1G 4J8  
p: 1-800-749-1947  
e: paracel@paracellabs.com  
www.paracellabs.com

**Chain of Custody**  
(Lab Use Only)  
**Nº 96653**

OTTAWA • KINGSTON • NIAGARA • MISSISSAUGA • SARNIA

Page 1 of 1

Client Name: <u>Stantec</u>	Project Reference: <u>122510670.215</u>	TAT: <input checked="" type="checkbox"/> Regular   13 Day
Contact Name: <u>Jill Petrus - Dechman</u>	Quote # <u>504 # 0190... City of Ottawa</u>	12 Day   11 Day
Address: <u>1331 Clyde Ave</u>	PO #	Date Required: _____
Telephone: <u>613-722-4420</u>	Email Address: <u>jill.petrus-dechman@stantec</u>	

Criteria:  O. Reg. 153/04 Table 1 |  O. Reg. 153/11 (Current) Table 1 |  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)

Paracel Order Number: <u>1331219</u>				Required Analyses																
Sample ID/Location Name	Matrix	Air Volume	# of Containers	Sample Taken		PHCs FI-F4+BTEX	VOCs	PAHs	Metals by ICP/MS	Hg	CrVI	B (HWS)								
				Date	Time															
1	MW13-11 BA1507	AW	10	July 31	10:00	X	X	X	X	X	X									
2	MW13-14 BA1508	V	10	July 31	10:45	X	X	X	X	X	X									
3	MW13-140 BA1509	V	10	July 31	11:00	X	X	X	X	X	X									
4	Trip Blank BA1510						X													
5																				
6																				
7																				
8																				
9																				
10																				

Comments: \* Received extra VOC vial for Trip Blank. See SSDF. - mjc  
Extra gen., chlorine, cn bottle for each sample.

Method of Delivery: Pick up

Relinquished By (Print & Sign): <u>A. Waldick / [Signature]</u>	Received by Driver/Depot: <u>[Signature]</u>	Received at Lab: <u>SUNEPORN</u>	Verified By: <u>mjc</u>
Date/Time: <u>31/07/13 3:21 PM</u>	Temperature: _____ °C	Date/Time: <u>JUL 31, 2013 04:20</u>	Date/Time: <u>July 31 / 13 / 6:34</u>
Date/Time: <u>2013/07/31</u>	Temperature: _____ °C	Temperature: <u>14.8 °C</u>	pH Verified   LB: <u>mjc</u>



### Sample Submission Deficiency Form

Client:	Stantec.		Date:	July 31/13
Contact:	Jill Peters - Dechman / Allisen Waldick		COC #	96653
Project:	122510670.215 (City of Ottawa)	REGULATED:	<input checked="" type="checkbox"/> YES <input type="checkbox"/> NO	CSR:
Issue:	<input type="checkbox"/> COC <input checked="" type="checkbox"/> SAMPLE <input type="checkbox"/> OTHER	REG:	153, Table 1	MJC

Client Sample ID	Problem	Resolution	Initial
Trip Blank	- received VOC vial for Trip Blank not listed on COC	- add Trip Blank for VOC analysis to WO per Allisen	MJC
extra bottles for samples MW13-11, MW13-14, MW13-140	- received extra Cr, gen chem, chlorine bottles for all samples	- analyze for <del>chlorine</del> , total Cr MOE general inorganics package per Allisen.	MJC

Client Notified by Telephone (Date/Time): July 31/13, Aug 2/13, Aug 6/13, Aug 7/13

Comments: \_\_\_\_\_  
 \_\_\_\_\_  
 \_\_\_\_\_  
 \_\_\_\_\_  
 \_\_\_\_\_

Client must initial samples, sign and return form to lab prior to any work commencing on samples listed on this form.

Client Authorization Signature: \_\_\_\_\_ DATE: \_\_\_\_\_

## Certificate of Analysis

### Stantec Consulting Ltd. (Ottawa)

1331 Clyde Avenue Suite 400  
Ottawa, ON K2C 3G4  
Attn: Jill Peters-Dechman

Phone: (613) 722-4420  
Fax: (613) 738-0721

Client PO: 45064625  
Project: 122510670.215/ Boteler Street  
Custody: 11936

Report Date: 3-Sep-2013  
Order Date: 29-Aug-2013

**Order #: 1335238**

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

Paracel ID	Client ID
1335238-01	TP5-1
1335238-02	TP11-1
1335238-03	TP16-1
1335238-04	TP25-1
1335238-05	TP30-1

Approved By:



Mark Foto, M.Sc. For 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 circumstances be liable to you in connection with this work

## Certificate of Analysis

Report Date: 03-Sep-2013

Order Date: 29-Aug-2013

Client: **Stantec Consulting Ltd. (Ottawa)**

Client PO: 45064625

Project Description: 122510670.215/ Boteler Street

### Analysis Summary Table

Analysis	Method Reference/Description	Extraction Date	Analysis Date
pH	EPA 150.1 - pH probe @ 25 °C, CaCl buffered ext.	3-Sep-13	3-Sep-13

### 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'.

### Certificate of Analysis

Report Date: 03-Sep-2013

Order Date: 29-Aug-2013

 Client: **Stantec Consulting Ltd. (Ottawa)**

Client PO: 45064625

Project Description: 122510670.215/ Boteler Street

### Sample Results

pH				Matrix: Soil
				Sample Date: 29-Aug-13
Parcel ID	Client ID	Units	MDL	Result
1335238-01	TP5-1	pH Units	0.05	7.70
1335238-02	TP11-1	pH Units	0.05	7.65
1335238-03	TP16-1	pH Units	0.05	7.74
1335238-04	TP25-1	pH Units	0.05	7.44
1335238-05	TP30-1	pH Units	0.05	7.80

### Laboratory Internal QA/QC

Analyte	Result	Reporting Limit	Units	Source Result	%REC	%REC Limit	RPD	RPD Limit	Notes
<b>Matrix Blank</b>									
<b>Matrix Duplicate</b>									
pH	7.25	0.05	pH Units	7.29			0.6	10	
<b>Matrix Spike</b>				ND					



TRUSTED .  
RESPONSIVE .  
RELIABLE .

Head Office  
300-2319 St. Laurent Blvd.  
Ottawa, Ontario K1G 4J8  
p: 1-800-749-1947  
e: paracel@paracellabs.com  
www.paracellabs.com

Chain of Custody  
(Lab Use Only)  
No 11936

OTTAWA • KINGSTON • NIAGARA • MISSISSAUGA • SARNIA

Page 1 of 1

Client Name: <i>Stantec Ottawa</i>	Project Reference: <i>122510670.215</i>	TAT: <input checked="" type="checkbox"/> Regular <input type="checkbox"/> 3 Day
Contact Name: <i>Jill Peters - Dechman</i>	Quote # <i>City of Ottawa S0A</i>	<input type="checkbox"/> 2 Day <input type="checkbox"/> 1 Day
Address: <i>1331 Clyde Ave, Suite 400 Ottawa</i>	PO #	Date Required
Telephone: <i>613-722-4420</i>	Email Address: <i>Jill.peters-dechman@stantec.com</i>	

Criteria:  O. Reg. 153/04 (As Amended) Table S  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

Paracel Order Number:		Matrix	Air Volume	# of Containers	Sample Taken		PH	Required Analyses														
1335238					Date	Time																
Sample ID/Location Name																						
1	TP 5-1 BAI 641	S		1	↑	16:00	X															120 ml
2	TP 11-1 BAI 642	↓					X															
3	TP 16-1 BAI 643	↓					X															
4	TP 25-1 BAI 644	↓					X															
5	TP 30-1 BAI 645	↓		↓	↓	↓	X															↓
6																						
7																						
8																						
9																						
10																						

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

Relinquished By (Sign): <i>[Signature]</i>	Received by Driver/Depot:	Received at Lab: <i>MJC</i>	Verified By: <i>MJC</i>
Relinquished By (Print): <i>A. Waldick</i>	Date/Time:	Date/Time: <i>Aug 29/13 6:18</i>	Date/Time: <i>Aug 29/13 6:49</i>
Date/Time: <i>2013/08/29 18:18</i>	Temperature: _____ °C	Temperature: <i>14.4</i> °C	pH Verified   By: <i>J NA</i>

## Certificate of Analysis

### Stantec Consulting Ltd. (Ottawa)

1331 Clyde Avenue Suite 400  
Ottawa, ON K2C 3G4  
Attn: Jill Peters-Dechman

Phone: (613) 722-4420  
Fax: (613) 738-0721

Client PO: 45064625  
Project: 122510670.225/ Boteler  
Custody:

Report Date: 1-Apr-2014  
Order Date: 1-Apr-2014

**Order #: 1414092**

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

Paracel ID	Client ID
1414092-01	BH14-4 SS2
1414092-02	BH14-5 SS1
1414092-03	BH14-6 SS1

Approved By:



Mark Foto, M.Sc. For Dale Robertson, BSc  
Laboratory Director

**Certificate of Analysis**

Client: **Stantec Consulting Ltd. (Ottawa)**

Client PO: 45064625

Project Description: 122510670.225/ Boteler

Report Date: 01-Apr-2014

Order Date: 1-Apr-2014

**Analysis Summary Table**

Analysis	Method Reference/Description	Extraction Date	Analysis Date
PAHs by GC-MS	EPA 625 - GC-MS, extraction	11-Mar-14	11-Mar-14

**Certificate of Analysis**

Report Date: 01-Apr-2014

 Client: **Stantec Consulting Ltd. (Ottawa)**

Order Date: 1-Apr-2014

Client PO: 45064625

Project Description: 122510670.225/ Boteler

Client ID:	BH14-4 SS2	BH14-5 SS1	BH14-6 SS1	-
Sample Date:	05-Mar-14	05-Mar-14	05-Mar-14	-
Sample ID:	1414092-01	1414092-02	1414092-03	-
MDL/Units	Leachate	Leachate	Leachate	-

**Semi-Volatiles**

	0.05 ug/L	15.8 [1]	<0.50 [1]	<0.50 [1]	-
Acenaphthene	0.05 ug/L	15.8 [1]	<0.50 [1]	<0.50 [1]	-
Acenaphthylene	0.05 ug/L	37.5 [1]	<0.50 [1]	<0.50 [1]	-
Anthracene	0.01 ug/L	11.5 [1]	<0.10 [1]	<0.10 [1]	-
Benzo [a] anthracene	0.01 ug/L	0.46 [1]	<0.10 [1]	<0.10 [1]	-
Benzo [a] pyrene	0.01 ug/L	<0.10 [1]	<0.10 [1]	<0.10 [1]	-
Benzo [b] fluoranthene	0.05 ug/L	<0.50 [1]	<0.50 [1]	<0.50 [1]	-
Benzo [g,h,i] perylene	0.05 ug/L	<0.50 [1]	<0.50 [1]	<0.50 [1]	-
Benzo [k] fluoranthene	0.05 ug/L	<0.50 [1]	<0.50 [1]	<0.50 [1]	-
Biphenyl	0.05 ug/L	14.0 [1]	<0.50 [1]	<0.50 [1]	-
Chrysene	0.05 ug/L	<0.50 [1]	<0.50 [1]	<0.50 [1]	-
Dibenzo [a,h] anthracene	0.05 ug/L	<0.50 [1]	<0.50 [1]	<0.50 [1]	-
Fluoranthene	0.01 ug/L	14.5 [1]	<0.10 [1]	<0.10 [1]	-
Fluorene	0.05 ug/L	71.2 [1]	<0.50 [1]	<0.50 [1]	-
Indeno [1,2,3-cd] pyrene	0.05 ug/L	<0.50 [1]	<0.50 [1]	<0.50 [1]	-
1-Methylnaphthalene	0.05 ug/L	30.7 [1]	<0.50 [1]	<0.50 [1]	-
2-Methylnaphthalene	0.05 ug/L	25.7 [1]	<0.50 [1]	<0.50 [1]	-
Methylnaphthalene (1&2)	0.10 ug/L	56.4 [1]	<1.00 [1]	<1.00 [1]	-
Naphthalene	0.05 ug/L	53.5 [1]	<0.50 [1]	<0.50 [1]	-
Phenanthrene	0.05 ug/L	79.5 [1]	<0.50 [1]	<0.50 [1]	-
Pyrene	0.01 ug/L	7.10 [1]	<0.10 [1]	<0.10 [1]	-
2-Fluorobiphenyl	Surrogate	77.5% [1]	104% [1]	74.3% [1]	-
Terphenyl-d14	Surrogate	61.0% [1]	97.8% [1]	77.9% [1]	-



**Certificate of Analysis**

Report Date: 01-Apr-2014

Client: **Stantec Consulting Ltd. (Ottawa)**

Order Date: 1-Apr-2014

Client PO: 45064625

Project Description: 122510670.225/ Boteler

**Method Quality Control: Blank**

Analyte	Result	Reporting Limit	Units	Source Result	%REC	%REC Limit	RPD	RPD Limit	Notes
<b>Semi-Volatiles</b>									
Acenaphthene	ND	0.05	ug/L						
Acenaphthylene	ND	0.05	ug/L						
Anthracene	ND	0.01	ug/L						
Benzo [a] anthracene	ND	0.01	ug/L						
Benzo [a] pyrene	ND	0.01	ug/L						
Benzo [b] fluoranthene	ND	0.05	ug/L						
Benzo [g,h,i] perylene	ND	0.05	ug/L						
Benzo [k] fluoranthene	ND	0.05	ug/L						
Biphenyl	ND	0.05	ug/L						
Chrysene	ND	0.05	ug/L						
Dibenzo [a,h] anthracene	ND	0.05	ug/L						
Fluoranthene	ND	0.01	ug/L						
Fluorene	ND	0.05	ug/L						
Indeno [1,2,3-cd] pyrene	ND	0.05	ug/L						
1-Methylnaphthalene	ND	0.05	ug/L						
2-Methylnaphthalene	ND	0.05	ug/L						
Methylnaphthalene (1&2)	ND	0.10	ug/L						
Naphthalene	ND	0.05	ug/L						
Phenanthrene	ND	0.05	ug/L						
Pyrene	ND	0.01	ug/L						
Surrogate: 2-Fluorobiphenyl	12.7		ug/L		63.3	50-140			
Surrogate: Terphenyl-d14	13.7		ug/L		68.5	50-140			

**Certificate of Analysis**

Report Date: 01-Apr-2014

Client: **Stantec Consulting Ltd. (Ottawa)**

Order Date: 1-Apr-2014

Client PO: 45064625

Project Description: 122510670.225/ Boteler

**Method Quality Control: Spike**

Analyte	Result	Reporting Limit	Units	Source Result	%REC	%REC Limit	RPD	RPD Limit	Notes
<b>Semi-Volatiles</b>									
Acenaphthene	3.71	0.05	ug/L	ND	74.2	50-140			
Acenaphthylene	4.85	0.05	ug/L	ND	97.0	50-140			
Anthracene	3.79	0.01	ug/L	ND	75.8	50-140			
Benzo [a] anthracene	3.64	0.01	ug/L	ND	72.8	50-140			
Benzo [a] pyrene	3.69	0.01	ug/L	ND	73.8	50-140			
Benzo [b] fluoranthene	5.13	0.05	ug/L	ND	103	50-140			
Benzo [g,h,i] perylene	4.82	0.05	ug/L	ND	96.5	50-140			
Benzo [k] fluoranthene	5.77	0.05	ug/L	ND	115	50-140			
Biphenyl	4.79	0.05	ug/L	ND	95.7	50-140			
Chrysene	4.02	0.05	ug/L	ND	80.4	50-140			
Dibenzo [a,h] anthracene	4.97	0.05	ug/L	ND	99.4	50-140			
Fluoranthene	4.38	0.01	ug/L	ND	87.6	50-140			
Fluorene	3.53	0.05	ug/L	ND	70.5	50-140			
Indeno [1,2,3-cd] pyrene	4.71	0.05	ug/L	ND	94.2	50-140			
1-Methylnaphthalene	3.01	0.05	ug/L	ND	60.2	50-140			
2-Methylnaphthalene	4.22	0.05	ug/L	ND	84.5	50-140			
Naphthalene	3.56	0.05	ug/L	ND	71.3	50-140			
Phenanthrene	4.07	0.05	ug/L	ND	81.5	50-140			
Pyrene	3.56	0.01	ug/L	ND	71.1	50-140			
Surrogate: 2-Fluorobiphenyl	13.1		ug/L		65.7	50-140			

**Certificate of Analysis**

Client: **Stantec Consulting Ltd. (Ottawa)**

Client PO: 45064625

Project Description: 122510670.225/ Boteler

Report Date: 01-Apr-2014

Order Date: 1-Apr-2014

**Qualifier Notes:**

*Sample Qualifiers :*

1 : Results are based on TCLP extraction of soil material followed by GC-MS analysis. Detection limits have been raised due to the prep ratio used on the TCLP extract.

**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.

OTTAWA • KINGSTON • NIAGARA • MISSISSAUGA • SARNIA

Client Name: <i>Stantec Consulting Ltd.</i>	Project Reference: <i>122510170</i>	TAT: <input checked="" type="checkbox"/> Regular <input type="checkbox"/> 3 Day <input type="checkbox"/> 2 Day <input type="checkbox"/> 1 Day Date Required: _____
Contact Name: <i>Jill Peters - Dechman</i>	Quote # <i>City of Ottawa SOA - 01910-41843 - 501</i>	
Address: <i>Suite 400, 1351 Clyde Avenue Ottawa, ON K2C 0G5</i>	PO # <i>122510170, 225</i>	
Telephone: <i>453-722-4420</i>	Email Address: <i>jill.peters-dechman@stantec.com</i>	

Criteria:  O. Reg. 153/04 (As Amended) Table 1 |  RSC Filings |  O. Reg. 358/00 |  PWOG |  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: <i>1414092</i> <del><i>1410305</i></del>		Matrix	Air Volume	# of Containers	Sample Taken		TCLP PAMS	Notes
Sample ID/Location Name					Date	Time		
1	<i>BH14-4 SS2 BCF165</i>	<i>Soil</i>	<i>Y</i>	<i>2</i>	<i>2-14-13/05</i>	<i>16:30</i>	<input checked="" type="checkbox"/>	<i>→ report full PAMS from leachate extraction Per Jill.</i>
2	<i>BH14-5 SS1 BCF167</i>	<i>Soil</i>	<i>X</i>	<i>2</i>	<i>2-14-13/05</i>	<i>15:30</i>	<input checked="" type="checkbox"/>	
3	<i>BH14-6 SS1 BCF167</i>	<i>Soil</i>	<i>X</i>	<i>2</i>	<i>2-14-13/05</i>	<i>16:00</i>	<input checked="" type="checkbox"/>	
4								
5								
6								
7								
8								
9								
10								

Comments: *- any questions, please contact Jill Peters - Dechman, Stantec.*

*Scz*  
*April 1, 2014 1:16pm*  
*Walk in*

Method of Delivery

Relinquished By (Sign): <i>J. Wilson</i>	Received by Driver/Depo:	Received at Lab: <i>MJC</i>	Verified By: <i>MJC</i>
Relinquished By (Print): <i>J. Wilson</i>	Date/Time: _____	Date/Time: <i>Mar 7/14 5:44</i>	Date/Time: <i>Mar 7/14 5:51</i>
Date/Time: <i>2014/03/07 17:40</i>	Temperature: _____ °C	Temperature: <i>10 °C</i>	pH Verified   By: <i>NA</i>

## Certificate of Analysis

### Stantec Consulting Ltd. (Ottawa)

1331 Clyde Avenue Suite 400  
Ottawa, ON K2C 3G4  
Attn: Jill Peters-Dechman

Phone: (613) 722-4420  
Fax: (613) 738-0721

Client PO: 45064625  
Project: 122510670/ Boteler  
Custody: 101220

Report Date: 22-Apr-2014  
Order Date: 11-Apr-2014

**Order #: 1415263**

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

Paracel ID	Client ID
1415263-01	MW13-2
1415263-02	MW13-1
1415263-03	MW14-3
1415263-04	MW14-1
1415263-05	MW13-14
1415263-06	MW13-11
1415263-07	Field Blank

Approved By:



Mark Foto, M.Sc. For Dale Robertson, BSc  
Laboratory Director

**Certificate of Analysis**

Client: **Stantec Consulting Ltd. (Ottawa)**

Client PO: 45064625

Project Description: 122510670/ Boteler

Report Date: 22-Apr-2014

Order Date: 11-Apr-2014

**Analysis Summary Table**

Analysis	Method Reference/Description	Extraction Date	Analysis Date
Chromium, hexavalent	MOE E3056 - colourimetric	16-Apr-14	16-Apr-14
Mercury	EPA 245.1 - Cold Vapour AA	15-Apr-14	15-Apr-14
Metals, ICP-MS	EPA 200.8 - ICP-MS	17-Apr-14	17-Apr-14
PAHs by GC-MS	EPA 625 - GC-MS, extraction	15-Apr-14	16-Apr-14
PHC F1	CWS Tier 1 - P&T GC-FID	11-Apr-14	15-Apr-14
PHC F2 - F4	CWS Tier 1 - GC-FID, extraction	14-Apr-14	15-Apr-14
VOCs by P&T GC-MS	EPA 624 - P&T GC-MS	15-Apr-14	15-Apr-14

P: 1-800-749-1947  
E: PARACEL@PARACELLABS.COM

WWW.PARACELLABS.COM

**OTTAWA**  
300-2319 St. Laurent Blvd.  
Ottawa, ON K1G 4J8

**MISSISSAUGA**  
6845 Kitimat Rd. Unit #27  
Mississauga, ON L5N 6J3

**NIAGARA FALLS**  
5415 Morning Glory Cr.  
Niagara Falls, ON L2J 0A3

**SARNIA**  
123 Christina St. N.  
Sarnia, ON N7T 5T7

**Certificate of Analysis**

Report Date: 22-Apr-2014

Order Date: 11-Apr-2014

 Client: **Stantec Consulting Ltd. (Ottawa)**

Client PO: 45064625

Project Description: 122510670/ Boteler

Client ID:	MW13-2	MW13-1	MW14-3	MW14-1
Sample Date:	10-Apr-14	10-Apr-14	10-Apr-14	10-Apr-14
Sample ID:	1415263-01	1415263-02	1415263-03	1415263-04
MDL/Units	Water	Water	Water	Water

**Metals**

Element	MDL/Units	MW13-2	MW13-1	MW14-3	MW14-1
Mercury	0.1 ug/L	<0.1	<0.1	<0.1	<0.1
Antimony	0.5 ug/L	<0.5	<0.5	<0.5	<0.5
Arsenic	1 ug/L	<1	<1	3	1
Barium	1 ug/L	52	87	53	52
Beryllium	0.5 ug/L	<0.5	<0.5	<0.5	<0.5
Boron	10 ug/L	73	73	331	195
Cadmium	0.1 ug/L	<0.1	<0.1	<0.1	<0.1
Chromium	1 ug/L	7	8	22	<1
Chromium (VI)	10 ug/L	<10	<10	<10	<10
Cobalt	0.5 ug/L	3.0	3.1	1.7	<0.5
Copper	0.5 ug/L	3.9	3.8	11.9	11.4
Lead	0.1 ug/L	0.1	0.2	0.3	0.4
Molybdenum	0.5 ug/L	3.3	9.0	12.3	5.2
Nickel	1 ug/L	4	7	9	4
Selenium	1 ug/L	9	3	9	3
Silver	0.1 ug/L	<0.1	<0.1	<0.1	<0.1
Sodium	200 ug/L	64600	579000	2420000	639000
Thallium	0.1 ug/L	0.1	<0.1	0.1	<0.1
Uranium	0.1 ug/L	4.6	2.5	16.3	3.9
Vanadium	0.5 ug/L	16.1	10.5	23.7	4.7
Zinc	5 ug/L	9	8	13	9

**Volatiles**

Element	MDL/Units	MW13-2	MW13-1	MW14-3	MW14-1
Acetone	5.0 ug/L	<5.0	<5.0	<5.0	<5.0
Benzene	0.5 ug/L	<0.5	<0.5	<0.5	<0.5
Bromodichloromethane	0.5 ug/L	<0.5	<0.5	<0.5	<0.5
Bromoform	0.5 ug/L	<0.5	<0.5	<0.5	<0.5
Bromomethane	0.5 ug/L	<0.5	<0.5	<0.5	<0.5
Carbon Tetrachloride	0.2 ug/L	<0.2	<0.2	<0.2	<0.2
Chlorobenzene	0.5 ug/L	<0.5	<0.5	<0.5	<0.5
Chloroethane	1.0 ug/L	<1.0	<1.0	<1.0	<1.0
Chloroform	0.5 ug/L	<0.5	<0.5	<0.5	<0.5
Chloromethane	3.0 ug/L	<3.0	<3.0	<3.0	<3.0
Dibromochloromethane	0.5 ug/L	<0.5	<0.5	<0.5	<0.5

**Certificate of Analysis**

Report Date: 22-Apr-2014

Order Date: 11-Apr-2014

 Client: **Stantec Consulting Ltd. (Ottawa)**

Client PO: 45064625

Project Description: 122510670/ Boteler

	Client ID:	MW13-2	MW13-1	MW14-3	MW14-1
	Sample Date:	10-Apr-14	10-Apr-14	10-Apr-14	10-Apr-14
	Sample ID:	1415263-01	1415263-02	1415263-03	1415263-04
	MDL/Units	Water	Water	Water	Water
Dichlorodifluoromethane	1.0 ug/L	<1.0	<1.0	<1.0	<1.0
1,2-Dibromoethane	0.2 ug/L	<0.2	<0.2	<0.2	<0.2
1,2-Dichlorobenzene	0.5 ug/L	<0.5	<0.5	<0.5	<0.5
1,3-Dichlorobenzene	0.5 ug/L	<0.5	<0.5	<0.5	<0.5
1,4-Dichlorobenzene	0.5 ug/L	<0.5	<0.5	<0.5	<0.5
1,1-Dichloroethane	0.5 ug/L	<0.5	<0.5	<0.5	<0.5
1,2-Dichloroethane	0.5 ug/L	<0.5	<0.5	<0.5	<0.5
1,1-Dichloroethylene	0.5 ug/L	<0.5	<0.5	<0.5	<0.5
cis-1,2-Dichloroethylene	0.5 ug/L	<0.5	<0.5	<0.5	<0.5
trans-1,2-Dichloroethylene	0.5 ug/L	<0.5	<0.5	<0.5	<0.5
1,2-Dichloroethylene, total	0.5 ug/L	<0.5	<0.5	<0.5	<0.5
1,2-Dichloropropane	0.5 ug/L	<0.5	<0.5	<0.5	<0.5
cis-1,3-Dichloropropylene	0.5 ug/L	<0.5	<0.5	<0.5	<0.5
trans-1,3-Dichloropropylene	0.5 ug/L	<0.5	<0.5	<0.5	<0.5
1,3-Dichloropropene, total	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
Hexane	1.0 ug/L	<1.0	<1.0	<1.0	<1.0
Methyl Ethyl Ketone (2-Butanone)	5.0 ug/L	<5.0	<5.0	<5.0	<5.0
Methyl Butyl Ketone (2-Hexanone)	10.0 ug/L	<10.0	<10.0	<10.0	<10.0
Methyl Isobutyl Ketone	5.0 ug/L	<5.0	<5.0	<5.0	<5.0
Methyl tert-butyl ether	2.0 ug/L	<2.0	<2.0	<2.0	<2.0
Methylene Chloride	5.0 ug/L	<5.0	<5.0	<5.0	<5.0
Styrene	0.5 ug/L	<0.5	<0.5	<0.5	<0.5
1,1,1,2-Tetrachloroethane	0.5 ug/L	<0.5	<0.5	<0.5	<0.5
1,1,2,2-Tetrachloroethane	0.5 ug/L	<0.5	<0.5	<0.5	<0.5
Tetrachloroethylene	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
1,1,1-Trichloroethane	0.5 ug/L	<0.5	<0.5	<0.5	<0.5
1,1,2-Trichloroethane	0.5 ug/L	<0.5	<0.5	<0.5	<0.5
Trichloroethylene	0.5 ug/L	<0.5	<0.5	<0.5	<0.5
Trichlorofluoromethane	1.0 ug/L	<1.0	<1.0	<1.0	<1.0
1,3,5-Trimethylbenzene	0.5 ug/L	<0.5	<0.5	<0.5	<0.5
Vinyl chloride	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



**Certificate of Analysis**

Report Date: 22-Apr-2014

 Client: **Stantec Consulting Ltd. (Ottawa)**

Order Date: 11-Apr-2014

Client PO: 45064625

Project Description: 122510670/ Boteler

	Client ID: Sample Date: Sample ID:	MW13-2 10-Apr-14 1415263-01	MW13-1 10-Apr-14 1415263-02	MW14-3 10-Apr-14 1415263-03	MW14-1 10-Apr-14 1415263-04
	MDL/Units	Water	Water	Water	Water
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
4-Bromofluorobenzene	Surrogate	110%	111%	113%	114%
Dibromofluoromethane	Surrogate	118%	118%	120%	113%
Toluene-d8	Surrogate	115%	114%	115%	114%

**Hydrocarbons**

F1 PHCs (C6-C10)	25 ug/L	<25	<25	<25	<25
F2 PHCs (C10-C16)	100 ug/L	<100	<100	<100	<119 [4]
F3 PHCs (C16-C34)	100 ug/L	<100	<100	<100	3050 [4]
F4 PHCs (C34-C50)	100 ug/L	<100	<100	<100	1760 [4]
F1 + F2 PHCs	125 ug/L	<125	<125	<125	-
F1 + F2 PHCs	144 ug/L	-	-	-	<144
F3 + F4 PHCs	200 ug/L	<200	<200	<200	-
F3 + F4 PHCs	238 ug/L	-	-	-	4810

**Semi-Volatiles**

Acenaphthene	0.05 ug/L	<0.05	<0.05	<0.05	1.05 [4]
Acenaphthylene	0.05 ug/L	<0.05	<0.05	0.13	2.88 [4]
Anthracene	0.01 ug/L	<0.01	<0.01	0.14	5.43 [4]
Benzo [a] anthracene	0.01 ug/L	<0.01	<0.01	0.68	18.1 [4]
Benzo [a] pyrene	0.01 ug/L	<0.01	<0.01	0.62	17.3 [4]
Benzo [b] fluoranthene	0.05 ug/L	<0.05	<0.05	0.89	31.0 [4]
Benzo [g,h,i] perylene	0.05 ug/L	<0.05	<0.05	0.42	11.9 [4]
Benzo [k] fluoranthene	0.05 ug/L	<0.05	<0.05	0.60	12.3 [4]
Biphenyl	0.05 ug/L	<0.05	<0.05	<0.05	0.12 [4]
Chrysene	0.05 ug/L	<0.05	<0.05	0.75	21.9 [4]
Dibenzo [a,h] anthracene	0.05 ug/L	<0.05	<0.05	<0.05	3.42 [4]
Fluoranthene	0.01 ug/L	<0.01	<0.01	1.12	44.0 [4]
Fluorene	0.05 ug/L	<0.05	<0.05	<0.05	1.49 [4]
Indeno [1,2,3-cd] pyrene	0.05 ug/L	<0.05	<0.05	0.33	10.4 [4]
1-Methylnaphthalene	0.05 ug/L	<0.05	<0.05	<0.05	0.27 [4]
2-Methylnaphthalene	0.05 ug/L	<0.05	<0.05	<0.05	0.26 [4]
Methylnaphthalene (1&2)	0.10 ug/L	<0.10	<0.10	<0.10	0.53 [4]
Naphthalene	0.05 ug/L	<0.05	<0.05	<0.05	0.49 [4]
Phenanthrene	0.05 ug/L	<0.05	<0.05	0.33	18.8 [4]
Pyrene	0.01 ug/L	<0.01	<0.01	1.05	38.4 [4]

**Certificate of Analysis**

Report Date: 22-Apr-2014

Order Date: 11-Apr-2014

Client: **Stantec Consulting Ltd. (Ottawa)**

Project Description: 122510670/ Boteler

Client PO: 45064625

	Client ID:	MW13-2	MW13-1	MW14-3	MW14-1
	Sample Date:	10-Apr-14	10-Apr-14	10-Apr-14	10-Apr-14
	Sample ID:	1415263-01	1415263-02	1415263-03	1415263-04
	MDL/Units	Water	Water	Water	Water
2-Fluorobiphenyl	Surrogate	77.5%	84.9%	87.6%	74.3% [4]
Terphenyl-d14	Surrogate	97.1%	102%	103%	90.5% [4]

**Certificate of Analysis**

Report Date: 22-Apr-2014

Order Date: 11-Apr-2014

 Client: **Stantec Consulting Ltd. (Ottawa)**

Client PO: 45064625

Project Description: 122510670/ Boteler

Client ID:	MW13-14	MW13-11	Field Blank	-
Sample Date:	10-Apr-14	10-Apr-14	10-Apr-14	-
Sample ID:	1415263-05	1415263-06	1415263-07	-
MDL/Units	Water	Water	Water	-

<b>Metals</b>					
Mercury	0.1 ug/L	<0.1	<0.1	-	-
Antimony	0.5 ug/L	<0.5	<0.5	-	-
Arsenic	1 ug/L	<1	1	-	-
Barium	1 ug/L	63	49	-	-
Beryllium	0.5 ug/L	<0.5	<0.5	-	-
Boron	10 ug/L	81	182	-	-
Cadmium	0.1 ug/L	<0.1	<0.1	-	-
Chromium	1 ug/L	16	9	-	-
Chromium (VI)	10 ug/L	<10	<10	-	-
Cobalt	0.5 ug/L	1.0	1.1	-	-
Copper	0.5 ug/L	5.0	4.0	-	-
Lead	0.1 ug/L	0.1	0.1	-	-
Molybdenum	0.5 ug/L	6.7	4.1	-	-
Nickel	1 ug/L	6	11	-	-
Selenium	1 ug/L	1	18	-	-
Silver	0.1 ug/L	<0.1	<0.1	-	-
Sodium	200 ug/L	778000	354000	-	-
Thallium	0.1 ug/L	<0.1	<0.1	-	-
Uranium	0.1 ug/L	8.7	5.9	-	-
Vanadium	0.5 ug/L	22.2	13.1	-	-
Zinc	5 ug/L	6	15	-	-

<b>Volatiles</b>					
Acetone	5.0 ug/L	<5.0	<5.0	<5.0	-
Benzene	0.5 ug/L	<0.5	<0.5	<0.5	-
Bromodichloromethane	0.5 ug/L	<0.5	<0.5	<0.5	-
Bromoform	0.5 ug/L	<0.5	<0.5	<0.5	-
Bromomethane	0.5 ug/L	<0.5	<0.5	<0.5	-
Carbon Tetrachloride	0.2 ug/L	<0.2	<0.2	<0.2	-
Chlorobenzene	0.5 ug/L	<0.5	<0.5	<0.5	-
Chloroethane	1.0 ug/L	<1.0	<1.0	<1.0	-
Chloroform	0.5 ug/L	<0.5	<0.5	<0.5	-
Chloromethane	3.0 ug/L	<3.0	<3.0	<3.0	-
Dibromochloromethane	0.5 ug/L	<0.5	<0.5	<0.5	-

**Certificate of Analysis**

Report Date: 22-Apr-2014

 Client: **Stantec Consulting Ltd. (Ottawa)**

Order Date: 11-Apr-2014

Client PO: 45064625

Project Description: 122510670/ Boteler

	Client ID:	MW13-14	MW13-11	Field Blank	
	Sample Date:	10-Apr-14	10-Apr-14	10-Apr-14	
	Sample ID:	1415263-05	1415263-06	1415263-07	
	MDL/Units	Water	Water	Water	
Dichlorodifluoromethane	1.0 ug/L	<1.0	<1.0	<1.0	-
1,2-Dibromoethane	0.2 ug/L	<0.2	<0.2	<0.2	-
1,2-Dichlorobenzene	0.5 ug/L	<0.5	<0.5	<0.5	-
1,3-Dichlorobenzene	0.5 ug/L	<0.5	<0.5	<0.5	-
1,4-Dichlorobenzene	0.5 ug/L	<0.5	<0.5	<0.5	-
1,1-Dichloroethane	0.5 ug/L	<0.5	<0.5	<0.5	-
1,2-Dichloroethane	0.5 ug/L	<0.5	<0.5	<0.5	-
1,1-Dichloroethylene	0.5 ug/L	<0.5	<0.5	<0.5	-
cis-1,2-Dichloroethylene	0.5 ug/L	<0.5	<0.5	<0.5	-
trans-1,2-Dichloroethylene	0.5 ug/L	<0.5	<0.5	<0.5	-
1,2-Dichloroethylene, total	0.5 ug/L	<0.5	<0.5	<0.5	-
1,2-Dichloropropane	0.5 ug/L	<0.5	<0.5	<0.5	-
cis-1,3-Dichloropropylene	0.5 ug/L	<0.5	<0.5	<0.5	-
trans-1,3-Dichloropropylene	0.5 ug/L	<0.5	<0.5	<0.5	-
1,3-Dichloropropene, total	0.5 ug/L	<0.5	<0.5	<0.5	-
Ethylbenzene	0.5 ug/L	<0.5	<0.5	<0.5	-
Hexane	1.0 ug/L	<1.0	<1.0	<1.0	-
Methyl Ethyl Ketone (2-Butanone)	5.0 ug/L	<5.0	<5.0	<5.0	-
Methyl Butyl Ketone (2-Hexanone)	10.0 ug/L	<10.0	<10.0	<10.0	-
Methyl Isobutyl Ketone	5.0 ug/L	<5.0	<5.0	<5.0	-
Methyl tert-butyl ether	2.0 ug/L	<2.0	<2.0	<2.0	-
Methylene Chloride	5.0 ug/L	<5.0	<5.0	<5.0	-
Styrene	0.5 ug/L	<0.5	<0.5	<0.5	-
1,1,1,2-Tetrachloroethane	0.5 ug/L	<0.5	<0.5	<0.5	-
1,1,2,2-Tetrachloroethane	0.5 ug/L	<0.5	<0.5	<0.5	-
Tetrachloroethylene	0.5 ug/L	<0.5	<0.5	<0.5	-
Toluene	0.5 ug/L	<0.5	<0.5	<0.5	-
1,1,1-Trichloroethane	0.5 ug/L	<0.5	<0.5	<0.5	-
1,1,2-Trichloroethane	0.5 ug/L	<0.5	<0.5	<0.5	-
Trichloroethylene	0.5 ug/L	<0.5	<0.5	<0.5	-
Trichlorofluoromethane	1.0 ug/L	<1.0	<1.0	<1.0	-
1,3,5-Trimethylbenzene	0.5 ug/L	<0.5	<0.5	<0.5	-
Vinyl chloride	0.5 ug/L	<0.5	<0.5	<0.5	-

**Certificate of Analysis**

Report Date: 22-Apr-2014

Client: **Stantec Consulting Ltd. (Ottawa)**

Order Date: 11-Apr-2014

Client PO: 45064625

Project Description: 122510670/ Boteler

	Client ID: Sample Date: Sample ID:	MW13-14 10-Apr-14 1415263-05 Water	MW13-11 10-Apr-14 1415263-06 Water	Field Blank 10-Apr-14 1415263-07 Water	- - - -
	MDL/Units				
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	-
4-Bromofluorobenzene	Surrogate	104%	105%	105%	-
Dibromofluoromethane	Surrogate	100%	100%	100%	-
Toluene-d8	Surrogate	103%	104%	104%	-

**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	-

**Semi-Volatiles**

Acenaphthene	0.05 ug/L	<0.05	<0.05	-	-
Acenaphthylene	0.05 ug/L	<0.05	<0.05	-	-
Anthracene	0.01 ug/L	<0.01	<0.01	-	-
Benzo [a] anthracene	0.01 ug/L	<0.01	<0.01	-	-
Benzo [a] pyrene	0.01 ug/L	<0.01	<0.01	-	-
Benzo [b] fluoranthene	0.05 ug/L	<0.05	<0.05	-	-
Benzo [g,h,i] perylene	0.05 ug/L	<0.05	<0.05	-	-
Benzo [k] fluoranthene	0.05 ug/L	<0.05	<0.05	-	-
Biphenyl	0.05 ug/L	<0.05	<0.05	-	-
Chrysene	0.05 ug/L	<0.05	<0.05	-	-
Dibenzo [a,h] anthracene	0.05 ug/L	<0.05	<0.05	-	-
Fluoranthene	0.01 ug/L	<0.01	<0.01	-	-
Fluorene	0.05 ug/L	<0.05	<0.05	-	-
Indeno [1,2,3-cd] pyrene	0.05 ug/L	<0.05	<0.05	-	-
1-Methylnaphthalene	0.05 ug/L	<0.05	<0.05	-	-
2-Methylnaphthalene	0.05 ug/L	<0.05	<0.05	-	-
Methylnaphthalene (1&2)	0.10 ug/L	<0.10	<0.10	-	-
Naphthalene	0.05 ug/L	<0.05	<0.05	-	-
Phenanthrene	0.05 ug/L	<0.05	<0.05	-	-
Pyrene	0.01 ug/L	<0.01	<0.01	-	-

**Certificate of Analysis**

Report Date: 22-Apr-2014

Client: **Stantec Consulting Ltd. (Ottawa)**

Order Date: 11-Apr-2014

Client PO: 45064625

Project Description: 122510670/ Boteler

	Client ID:	MW13-14	MW13-11	Field Blank	
	Sample Date:	10-Apr-14	10-Apr-14	10-Apr-14	-
	Sample ID:	1415263-05	1415263-06	1415263-07	-
	MDL/Units	Water	Water	Water	-
2-Fluorobiphenyl	Surrogate	86.5%	81.5%	-	-
Terphenyl-d14	Surrogate	100%	102%	-	-

**Certificate of Analysis**

Report Date: 22-Apr-2014

Client: **Stantec Consulting Ltd. (Ottawa)**

Order Date: 11-Apr-2014

Client PO: 45064625

Project Description: 122510670/ Boteler

**Method Quality Control: Blank**

Analyte	Result	Reporting Limit	Units	Source Result	%REC	%REC Limit	RPD	RPD Limit	Notes
<b>Hydrocarbons</b>									
F1 PHCs (C6-C10)	ND	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						
<b>Metals</b>									
Mercury	ND	0.1	ug/L						
Antimony	ND	0.5	ug/L						
Arsenic	ND	1	ug/L						
Barium	ND	1	ug/L						
Beryllium	ND	0.5	ug/L						
Boron	ND	10	ug/L						
Cadmium	ND	0.1	ug/L						
Chromium (VI)	ND	10	ug/L						
Chromium	ND	1	ug/L						
Cobalt	ND	0.5	ug/L						
Copper	ND	0.5	ug/L						
Lead	ND	0.1	ug/L						
Molybdenum	ND	0.5	ug/L						
Nickel	ND	1	ug/L						
Selenium	ND	1	ug/L						
Silver	ND	0.1	ug/L						
Sodium	ND	200	ug/L						
Thallium	ND	0.1	ug/L						
Uranium	ND	0.1	ug/L						
Vanadium	ND	0.5	ug/L						
Zinc	ND	5	ug/L						
<b>Semi-Volatiles</b>									
Acenaphthene	ND	0.05	ug/L						
Acenaphthylene	ND	0.05	ug/L						
Anthracene	ND	0.01	ug/L						
Benzo [a] anthracene	ND	0.01	ug/L						
Benzo [a] pyrene	ND	0.01	ug/L						
Benzo [b] fluoranthene	ND	0.05	ug/L						
Benzo [g,h,i] perylene	ND	0.05	ug/L						
Benzo [k] fluoranthene	ND	0.05	ug/L						
Biphenyl	ND	0.05	ug/L						
Chrysene	ND	0.05	ug/L						
Dibenzo [a,h] anthracene	ND	0.05	ug/L						
Fluoranthene	ND	0.01	ug/L						
Fluorene	ND	0.05	ug/L						
Indeno [1,2,3-cd] pyrene	ND	0.05	ug/L						
1-Methylnaphthalene	ND	0.05	ug/L						
2-Methylnaphthalene	ND	0.05	ug/L						
Methylnaphthalene (1&2)	ND	0.10	ug/L						
Naphthalene	ND	0.05	ug/L						
Phenanthrene	ND	0.05	ug/L						
Pyrene	ND	0.01	ug/L						
Surrogate: 2-Fluorobiphenyl	17.4		ug/L		86.9	50-140			
Surrogate: Terphenyl-d14	19.6		ug/L		98.1	50-140			
<b>Volatiles</b>									
Acetone	ND	5.0	ug/L						
Benzene	ND	0.5	ug/L						
Bromodichloromethane	ND	0.5	ug/L						
Bromoform	ND	0.5	ug/L						
Bromomethane	ND	0.5	ug/L						

**Certificate of Analysis**

Report Date: 22-Apr-2014

Client: **Stantec Consulting Ltd. (Ottawa)**

Order Date: 11-Apr-2014

Client PO: 45064625

Project Description: 122510670/ Boteler

**Method Quality Control: Blank**

Analyte	Result	Reporting Limit	Units	Source Result	%REC	%REC Limit	RPD	RPD Limit	Notes
Carbon Tetrachloride	ND	0.2	ug/L						
Chlorobenzene	ND	0.5	ug/L						
Chloroethane	ND	1.0	ug/L						
Chloroform	ND	0.5	ug/L						
Chloromethane	ND	3.0	ug/L						
Dibromochloromethane	ND	0.5	ug/L						
Dichlorodifluoromethane	ND	1.0	ug/L						
1,2-Dibromoethane	ND	0.2	ug/L						
1,2-Dichlorobenzene	ND	0.5	ug/L						
1,3-Dichlorobenzene	ND	0.5	ug/L						
1,4-Dichlorobenzene	ND	0.5	ug/L						
1,1-Dichloroethane	ND	0.5	ug/L						
1,2-Dichloroethane	ND	0.5	ug/L						
1,1-Dichloroethylene	ND	0.5	ug/L						
cis-1,2-Dichloroethylene	ND	0.5	ug/L						
trans-1,2-Dichloroethylene	ND	0.5	ug/L						
1,2-Dichloroethylene, total	ND	0.5	ug/L						
1,2-Dichloropropane	ND	0.5	ug/L						
cis-1,3-Dichloropropylene	ND	0.5	ug/L						
trans-1,3-Dichloropropylene	ND	0.5	ug/L						
1,3-Dichloropropene, total	ND	0.5	ug/L						
Ethylbenzene	ND	0.5	ug/L						
Hexane	ND	1.0	ug/L						
Methyl Ethyl Ketone (2-Butanone)	ND	5.0	ug/L						
Methyl Butyl Ketone (2-Hexanone)	ND	10.0	ug/L						
Methyl Isobutyl Ketone	ND	5.0	ug/L						
Methyl tert-butyl ether	ND	2.0	ug/L						
Methylene Chloride	ND	5.0	ug/L						
Styrene	ND	0.5	ug/L						
1,1,1,2-Tetrachloroethane	ND	0.5	ug/L						
1,1,2,2-Tetrachloroethane	ND	0.5	ug/L						
Tetrachloroethylene	ND	0.5	ug/L						
Toluene	ND	0.5	ug/L						
1,1,1-Trichloroethane	ND	0.5	ug/L						
1,1,2-Trichloroethane	ND	0.5	ug/L						
Trichloroethylene	ND	0.5	ug/L						
Trichlorofluoromethane	ND	1.0	ug/L						
1,3,5-Trimethylbenzene	ND	0.5	ug/L						
Vinyl chloride	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: 4-Bromofluorobenzene	88.4		ug/L		110	50-140			
Surrogate: Dibromofluoromethane	83.0		ug/L		104	50-140			
Surrogate: Toluene-d8	90.1		ug/L		113	50-140			



**Certificate of Analysis**

Report Date: 22-Apr-2014

Client: **Stantec Consulting Ltd. (Ottawa)**

Order Date: 11-Apr-2014

Client PO: 45064625

Project Description: 122510670/ Boteler

**Method Quality Control: Duplicate**

Analyte	Result	Reporting Limit	Units	Source Result	%REC	%REC Limit	RPD	RPD Limit	Notes
<b>Hydrocarbons</b>									
F1 PHCs (C6-C10)	ND	25	ug/L	ND				30	
<b>Metals</b>									
Mercury	ND	0.1	ug/L	ND			0.0	20	
Antimony	ND	0.5	ug/L	ND			0.0	20	
Arsenic	ND	1	ug/L	ND			0.0	20	
Barium	ND	1	ug/L	ND			0.0	20	
Beryllium	ND	0.5	ug/L	ND			0.0	20	
Boron	ND	10	ug/L	ND			0.0	20	
Cadmium	ND	0.1	ug/L	ND			0.0	20	
Chromium (VI)	ND	10	ug/L	ND				20	
Chromium	ND	1	ug/L	ND			0.0	20	
Cobalt	ND	0.5	ug/L	ND			0.0	20	
Copper	ND	0.5	ug/L	ND			0.0	20	
Lead	ND	0.1	ug/L	ND			0.0	20	
Molybdenum	ND	0.5	ug/L	ND			0.0	20	
Nickel	ND	1	ug/L	ND			0.0	20	
Selenium	ND	1	ug/L	ND			0.0	20	
Silver	ND	0.1	ug/L	ND			0.0	20	
Sodium	ND	200	ug/L	ND			0.0	20	
Thallium	ND	0.1	ug/L	ND			0.0	20	
Uranium	ND	0.1	ug/L	ND			0.0	20	
Vanadium	ND	0.5	ug/L	ND			0.0	20	
Zinc	ND	5	ug/L	ND			0.0	20	
<b>Volatiles</b>									
Acetone	ND	5.0	ug/L	ND				30	
Benzene	ND	0.5	ug/L	ND				30	
Bromodichloromethane	ND	0.5	ug/L	ND				30	
Bromoform	ND	0.5	ug/L	ND				30	
Bromomethane	ND	0.5	ug/L	ND				30	
Carbon Tetrachloride	ND	0.2	ug/L	ND				30	
Chlorobenzene	ND	0.5	ug/L	ND				30	
Chloroethane	ND	1.0	ug/L	ND				30	
Chloroform	ND	0.5	ug/L	ND				30	
Chloromethane	ND	3.0	ug/L	ND				30	
Dibromochloromethane	ND	0.5	ug/L	ND				30	
Dichlorodifluoromethane	ND	1.0	ug/L	ND				30	
1,2-Dibromoethane	ND	0.2	ug/L	ND				30	
1,2-Dichlorobenzene	ND	0.5	ug/L	ND				30	
1,3-Dichlorobenzene	ND	0.5	ug/L	ND				30	
1,4-Dichlorobenzene	ND	0.5	ug/L	ND				30	
1,1-Dichloroethane	ND	0.5	ug/L	ND				30	
1,2-Dichloroethane	ND	0.5	ug/L	ND				30	
1,1-Dichloroethylene	ND	0.5	ug/L	ND				30	
cis-1,2-Dichloroethylene	25.0	0.5	ug/L	23.8			4.8	30	
trans-1,2-Dichloroethylene	1.45	0.5	ug/L	1.28			12.5	30	
1,2-Dichloropropane	ND	0.5	ug/L	ND				30	
cis-1,3-Dichloropropylene	ND	0.5	ug/L	ND				30	
trans-1,3-Dichloropropylene	ND	0.5	ug/L	ND				30	
Ethylbenzene	ND	0.5	ug/L	ND				30	
Hexane	ND	1.0	ug/L	ND				30	
Methyl Ethyl Ketone (2-Butanone)	ND	5.0	ug/L	ND				30	
Methyl Butyl Ketone (2-Hexanone)	ND	10.0	ug/L	ND				30	
Methyl Isobutyl Ketone	ND	5.0	ug/L	ND				30	
Methyl tert-butyl ether	ND	2.0	ug/L	ND				30	
Methylene Chloride	ND	5.0	ug/L	ND				30	

P: 1-800-749-1947  
E: PARACEL@PARACELLABS.COM

WWW.PARACELLABS.COM

**OTTAWA**  
300-2319 St. Laurent Blvd.  
Ottawa, ON K1G 4J8

**MISSISSAUGA**  
6645 Kitchmat Rd. Unit #27  
Mississauga, ON L5N 6J3

**NIAGARA FALLS**  
5415 Morning Glory Cr.  
Niagara Falls, ON L2J 0A3

**SARNIA**  
123 Christina St. N.  
Sarnia, ON N7T 5T7

**Certificate of Analysis**

Report Date: 22-Apr-2014

Client: **Stantec Consulting Ltd. (Ottawa)**

Order Date: 11-Apr-2014

Client PO: 45064625

Project Description: 122510670/ Boteler

**Method Quality Control: Duplicate**

Analyte	Result	Reporting Limit	Units	Source Result	%REC	%REC Limit	RPD	RPD Limit	Notes
Styrene	ND	0.5	ug/L	ND				30	
1,1,1,2-Tetrachloroethane	ND	0.5	ug/L	ND				30	
1,1,2,2-Tetrachloroethane	ND	0.5	ug/L	ND				30	
Tetrachloroethylene	283	0.5	ug/L	282			0.3	30	GEN-14
Toluene	ND	0.5	ug/L	ND				30	
1,1,1-Trichloroethane	ND	0.5	ug/L	ND				30	
1,1,2-Trichloroethane	ND	0.5	ug/L	ND				30	
Trichloroethylene	94.0	0.5	ug/L	90.3			4.1	30	
Trichlorofluoromethane	ND	1.0	ug/L	ND				30	
1,3,5-Trimethylbenzene	ND	0.5	ug/L	ND				30	
Vinyl chloride	1.64	0.5	ug/L	1.43			13.7	30	
m,p-Xylenes	ND	0.5	ug/L	ND				30	
o-Xylene	ND	0.5	ug/L	ND				30	
Surrogate: 4-Bromofluorobenzene	91.6		ug/L	ND	114	50-140			
Surrogate: Dibromofluoromethane	83.6		ug/L	ND	105	50-140			
Surrogate: Toluene-d8	91.1		ug/L	ND	114	50-140			

**Certificate of Analysis**

Report Date: 22-Apr-2014

Client: **Stantec Consulting Ltd. (Ottawa)**

Order Date: 11-Apr-2014

Client PO: 45064625

Project Description: 122510670/ Boteler

**Method Quality Control: Spike**

Analyte	Result	Reporting Limit	Units	Source Result	%REC	%REC Limit	RPD	RPD Limit	Notes
<b>Hydrocarbons</b>									
F1 PHCs (C6-C10)	1870	25	ug/L	ND	93.5	68-117			
F2 PHCs (C10-C16)	1730	100	ug/L	ND	96.2	60-140			
F3 PHCs (C16-C34)	3460	100	ug/L	ND	93.1	60-140			
F4 PHCs (C34-C50)	2480	100	ug/L	ND	100	60-140			
<b>Metals</b>									
Mercury	2.80	0.1	ug/L	ND	93.5	78-137			
Antimony	48.0		ug/L	ND	101	80-120			
Arsenic	53.7		ug/L	ND	107	80-120			
Barium	51.5		ug/L	ND	103	80-120			
Beryllium	55.4		ug/L	0.007	111	80-120			
Boron	53		ug/L	6	93.7	80-120			
Cadmium	56.9		ug/L	ND	114	80-120			
Chromium (VI)	207	10	ug/L	ND	104	70-130			
Chromium	58.1		ug/L	0.6	115	80-120			
Cobalt	54.7		ug/L	0.0003	109	80-120			
Copper	53.7		ug/L	0.007	107	80-120			
Lead	51.9		ug/L	0.02	104	80-120			
Molybdenum	50.8		ug/L	ND	102	80-120			
Nickel	56.3		ug/L	0.003	113	80-120			
Selenium	52.8		ug/L	ND	106	80-120			
Silver	55.6		ug/L	ND	111	80-120			
Sodium	1210		ug/L	13	120	80-120			
Thallium	52.0		ug/L	ND	104	80-120			
Uranium	50.9		ug/L	ND	102	80-120			
Vanadium	59.6		ug/L	0.10	119	80-120			
Zinc	51		ug/L	ND	104	80-120			
<b>Semi-Volatiles</b>									
Acenaphthene	4.31	0.05	ug/L	ND	86.2	50-140			
Acenaphthylene	4.15	0.05	ug/L	ND	82.9	50-140			
Anthracene	4.05	0.01	ug/L	ND	81.0	50-140			
Benzo [a] anthracene	4.01	0.01	ug/L	ND	80.1	50-140			
Benzo [a] pyrene	3.30	0.01	ug/L	ND	65.9	50-140			
Benzo [b] fluoranthene	4.69	0.05	ug/L	ND	93.8	50-140			
Benzo [g,h,i] perylene	3.94	0.05	ug/L	ND	78.8	50-140			
Benzo [k] fluoranthene	6.08	0.05	ug/L	ND	122	50-140			
Biphenyl	3.57	0.05	ug/L	ND	71.4	50-140			
Chrysene	4.43	0.05	ug/L	ND	88.6	50-140			
Dibenzo [a,h] anthracene	3.22	0.05	ug/L	ND	64.4	50-140			
Fluoranthene	4.32	0.01	ug/L	ND	86.4	50-140			
Fluorene	4.22	0.05	ug/L	ND	84.3	50-140			
Indeno [1,2,3-cd] pyrene	3.51	0.05	ug/L	ND	70.2	50-140			
1-Methylnaphthalene	3.48	0.05	ug/L	ND	69.7	50-140			
2-Methylnaphthalene	3.71	0.05	ug/L	ND	74.2	50-140			
Naphthalene	3.43	0.05	ug/L	ND	68.6	50-140			
Phenanthrene	4.04	0.05	ug/L	ND	80.8	50-140			
Pyrene	4.36	0.01	ug/L	ND	87.3	50-140			
Surrogate: 2-Fluorobiphenyl	19.1		ug/L		95.7	50-140			

**Volatiles**

**Certificate of Analysis**

Report Date: 22-Apr-2014

Client: **Stantec Consulting Ltd. (Ottawa)**

Order Date: 11-Apr-2014

Client PO: 45064625

Project Description: 122510670/ Boteler

**Method Quality Control: Spike**

Analyte	Result	Reporting Limit	Units	Source Result	%REC	%REC Limit	RPD	RPD Limit	Notes
Acetone	99.4	5.0	ug/L	ND	99.4	50-140			
Benzene	40.5	0.5	ug/L	ND	101	50-140			
Bromodichloromethane	41.6	0.5	ug/L	ND	104	50-140			
Bromoform	42.4	0.5	ug/L	ND	106	50-140			
Bromomethane	50.6	0.5	ug/L	ND	127	50-140			
Carbon Tetrachloride	40.5	0.2	ug/L	ND	101	50-140			
Chlorobenzene	40.0	0.5	ug/L	ND	100	50-140			
Chloroethane	48.7	1.0	ug/L	ND	122	50-140			
Chloroform	41.1	0.5	ug/L	ND	103	50-140			
Chloromethane	43.6	3.0	ug/L	ND	109	50-140			
Dibromochloromethane	44.2	0.5	ug/L	ND	111	50-140			
Dichlorodifluoromethane	51.1	1.0	ug/L	ND	128	50-140			
1,2-Dibromoethane	40.1	0.2	ug/L	ND	100	50-140			
1,2-Dichlorobenzene	40.0	0.5	ug/L	ND	100	50-140			
1,3-Dichlorobenzene	40.2	0.5	ug/L	ND	101	50-140			
1,4-Dichlorobenzene	41.8	0.5	ug/L	ND	105	50-140			
1,1-Dichloroethane	41.1	0.5	ug/L	ND	103	50-140			
1,2-Dichloroethane	40.9	0.5	ug/L	ND	102	50-140			
1,1-Dichloroethylene	43.8	0.5	ug/L	ND	109	50-140			
cis-1,2-Dichloroethylene	142	0.5	ug/L	114	71.0	50-140			
trans-1,2-Dichloroethylene	43.6	0.5	ug/L	2.24	103	50-140			
1,2-Dichloropropane	38.8	0.5	ug/L	ND	96.9	50-140			
cis-1,3-Dichloropropylene	38.8	0.5	ug/L	ND	96.9	50-140			
trans-1,3-Dichloropropylene	37.9	0.5	ug/L	ND	94.7	50-140			
Ethylbenzene	40.0	0.5	ug/L	ND	100	50-140			
Hexane	41.0	1.0	ug/L	ND	103	50-140			
Methyl Ethyl Ketone (2-Butanone)	84.4	5.0	ug/L	ND	84.4	50-140			
Methyl Butyl Ketone (2-Hexanone)	100	10.0	ug/L	ND	100	50-140			
Methyl Isobutyl Ketone	102	5.0	ug/L	ND	102	50-140			
Methyl tert-butyl ether	100	2.0	ug/L	ND	100	50-140			
Methylene Chloride	42.4	5.0	ug/L	ND	106	50-140			
Styrene	39.6	0.5	ug/L	ND	99.0	50-140			
1,1,1,2-Tetrachloroethane	39.4	0.5	ug/L	ND	98.6	50-140			
1,1,2,2-Tetrachloroethane	41.4	0.5	ug/L	ND	104	50-140			
Tetrachloroethylene	38.8	0.5	ug/L	ND	97.0	50-140			
Toluene	39.3	0.5	ug/L	ND	98.2	50-140			
1,1,1-Trichloroethane	37.9	0.5	ug/L	ND	94.7	50-140			
1,1,2-Trichloroethane	39.9	0.5	ug/L	ND	99.7	50-140			
Trichloroethylene	37.3	0.5	ug/L	ND	93.4	50-140			
Trichlorofluoromethane	46.6	1.0	ug/L	ND	116	50-140			
1,3,5-Trimethylbenzene	39.4	0.5	ug/L	ND	98.6	50-140			
Vinyl chloride	39.8	0.5	ug/L	6.68	82.8	50-140			
m,p-Xylenes	90.7	0.5	ug/L	ND	113	50-140			
o-Xylene	40.2	0.5	ug/L	ND	100	50-140			

**Certificate of Analysis**

Client: **Stantec Consulting Ltd. (Ottawa)**

Client PO: 45064625

Project Description: 122510670/ Boteler

Report Date: 22-Apr-2014

Order Date: 11-Apr-2014

**Qualifier Notes:**

**Login Qualifiers :**

Sample - Filtered and preserved by Paracel upon receipt at the laboratory - Hg and CrVI

*Applies to samples: MW13-2, MW13-1, MW14-3, MW14-1, MW13-14, MW13-11*

Sample - Not submitted in the correct container - Sub-sampled for Hg and CrVI

*Applies to samples: MW13-2, MW13-1, MW14-3, MW14-1, MW13-14, MW13-11*

**Sample Qualifiers :**

4 : Water sample included significant sediment amount that was included in extraction process. This is expected to result in reduced accuracy of the reported result.

**QC Qualifiers :**

GEN-14 : This result exceeds the calibration range of the instrument. The result may be biased.

**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.

OTTAWA • KINGSTON • NIAGARA • MISSISSAUGA • SARNIA

Page 1 of 1

Client Name: <u>Stantec Consulting Ltd</u>	Project Reference: <u>122510670 - Batch Burn</u>	TAT: <input checked="" type="checkbox"/> Regular [ ] 3 Day
Contact Name: <u>Jill Peters-Dedman</u>	Quote # <u>City of Ottawa SOA# - 01910-91843-501</u>	[ ] 2 Day [ ] 1 Day
Address: <u>Suite 400, 1351 Clyde Avenue Ottawa, ON K2C 3K4</u>	PO # <u>122510670, 225</u>	Date Required: _____
Telephone: <u>615-722-4430</u>	Email Address: <u>jill.peters-dedman@stantec.com</u>	

Criteria:  O. Reg. 153/04 (As Amended) Table 1 [ ] RSC Filing [ ] O. Reg. 558/00 [ ] PWQO [ ] CCME [ ] SUB (Storm) [ ] SUB (Sanitary) Municipality: \_\_\_\_\_ [ ] Other: \_\_\_\_\_

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

Parcel Order Number: <u>1415263</u>				Required Analyses														
Sample ID/Location Name	Matrix	Air Volume	# of Containers	Sample Taken		PHCs F1-F4+BTEX	VOCs	PAHs	Metals by ICP			B (HWS)						
				Date	Time				Hg	CrVI								
1 MW13-2 BCF 201	GW	X	5	2014/04/10	11:00	✓	✓	✓	✓	✓	✓							
2 MW13-1 BCF 202	GW	X	5	2014/04/10	12:15	✓	✓	✓	✓	✓	✓							
3 MW14-3 BCF 203	GW	X	5	2014/04/10	14:20	✓	✓	✓	✓	✓	✓							
4 MW14-1 BCF 204	GW	X	5	2014/04/10	17:45	✓	✓	✓	✓	✓	✓							
5 MW13-14 BCF 205	GW	X	5	2014/04/10	17:00	✓	✓	✓	✓	✓	✓							
6 MW13-11 BCF 206	GW	X	5	2014/04/10	15:45	✓	✓	✓	✓	✓	✓							
7 Field Blank BCF 207	Water	X	3	2014/04/10	15:10	✓	✓											
8 Trip Blank	Water	X	2	2014/03/31	-	✓	✓											
9																		
10	* Sub-sample = filter/preserve for Hg & CrVI per Jill. -mjc																	

Comments: - Metals by ICP = O. Reg 153 short list metals; MW14-1 metals was NOT field filtered + preservative - all other metals are field filtered. *was rinsed out.*

Method of Delivery: Walk-in

Relinquished By (Sign): <u>J. Urban</u>	Received by Driver/Depot:	Received at Lab: <u>[Signature]</u>	Verified By: <u>[Signature]</u>
Relinquished By (Print): <u>J. Urban</u>	Date/Time: _____	Date/Time: <u>Apr 11/14</u>	Date/Time: <u>Apr 11/14 3:18</u>
Date/Time: <u>2014/04/11 10:22</u>	Temperature: _____ °C	Temperature: <u>9.2°C 10:24</u>	pH Verified [ ] By: <u>[Signature]</u>

## Certificate of Analysis

### Stantec Consulting Ltd. (Ottawa)

1331 Clyde Avenue Suite 400  
Ottawa, ON K2C 3G4  
Attn: Jill Peters-Dechman

Phone: (613) 722-4420  
Fax: (613) 738-0721

Client PO: 45064625  
Project: 122510670/ Boteler  
Custody: 17323

Report Date: 22-Apr-2014  
Order Date: 11-Apr-2014

**Order #: 1415265**

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

Parcel ID	Client ID
1415265-01	MW14-2
1415265-02	MW14-A
1415265-03	MW13-10
1415265-04	Field Blank
1415265-05	Trip Blank
1415265-06	MW13-13

Approved By:



Mark Foto, M.Sc. For Dale Robertson, BSc  
Laboratory Director



**Certificate of Analysis**

Report Date: 22-Apr-2014

 Client: **Stantec Consulting Ltd. (Ottawa)**

Order Date: 11-Apr-2014

Client PO: 45064625

Project Description: 122510670/ Boteler

**Analysis Summary Table**

Analysis	Method Reference/Description	Extraction Date	Analysis Date
Chromium, hexavalent	MOE E3056 - colourimetric	16-Apr-14	16-Apr-14
Mercury	EPA 245.1 - Cold Vapour AA	15-Apr-14	15-Apr-14
Metals, ICP-MS	EPA 200.8 - ICP-MS	17-Apr-14	17-Apr-14
PAHs by GC-MS	EPA 625 - GC-MS, extraction	15-Apr-14	16-Apr-14
PHC F1	CWS Tier 1 - P&T GC-FID	15-Apr-14	15-Apr-14
PHC F2 - F4	CWS Tier 1 - GC-FID, extraction	14-Apr-14	15-Apr-14
VOCs by P&T GC-MS	EPA 624 - P&T GC-MS	15-Apr-14	15-Apr-14

P: 1-800-749-1947  
 E: PARACEL@PARACELLABS.COM

WWW.PARACELLABS.COM

**OTTAWA**  
 300-2319 St. Laurent Blvd.  
 Ottawa, ON K1G 4J8

**MISSISSAUGA**  
 6845 Kitimat Rd. Unit #27  
 Mississauga, ON L5N 6J3

**NIAGARA FALLS**  
 5415 Morning Glory Cr.  
 Niagara Falls, ON L2J 0A3

**SARNIA**  
 123 Christina St. N.  
 Sarnia, ON N7T 5T7



**Certificate of Analysis**

Report Date: 22-Apr-2014

Order Date: 11-Apr-2014

 Client: **Stantec Consulting Ltd. (Ottawa)**

Client PO: 45064625

Project Description: 122510670/ Boteler

Client ID:	MW14-2	MW14-A	MW13-10	Field Blank
Sample Date:	11-Apr-14	11-Apr-14	11-Apr-14	11-Apr-14
Sample ID:	1415265-01	1415265-02	1415265-03	1415265-04
MDL/Units	Water	Water	Water	Water

**Metals**

Element	MDL/Units	MW14-2	MW14-A	MW13-10	Field Blank
Mercury	0.1 ug/L	<0.1	<0.1	-	-
Antimony	0.5 ug/L	<0.5	<0.5	-	-
Arsenic	1 ug/L	1	1	-	-
Barium	1 ug/L	134	135	-	-
Beryllium	0.5 ug/L	<0.5	<0.5	-	-
Boron	10 ug/L	257	269	-	-
Cadmium	0.1 ug/L	<0.1	<0.1	-	-
Chromium	1 ug/L	6	4	-	-
Chromium (VI)	10 ug/L	<10	<10	-	-
Cobalt	0.5 ug/L	2.2	5.4	-	-
Copper	0.5 ug/L	3.7	4.0	-	-
Lead	0.1 ug/L	0.1	0.1	-	-
Molybdenum	0.5 ug/L	3.6	3.4	-	-
Nickel	1 ug/L	9	9	-	-
Selenium	1 ug/L	19	14	-	-
Silver	0.1 ug/L	<0.1	<0.1	-	-
Sodium	200 ug/L	197000	202000	-	-
Thallium	0.1 ug/L	0.2	<0.1	-	-
Uranium	0.1 ug/L	9.0	9.1	-	-
Vanadium	0.5 ug/L	10.4	5.5	-	-
Zinc	5 ug/L	11	12	-	-

**Volatiles**

Element	MDL/Units	MW14-2	MW14-A	MW13-10	Field Blank
Acetone	5.0 ug/L	<5.0	<5.0	-	<5.0
Benzene	0.5 ug/L	<0.5	<0.5	-	<0.5
Bromodichloromethane	0.5 ug/L	<0.5	<0.5	-	<0.5
Bromoform	0.5 ug/L	<0.5	<0.5	-	<0.5
Bromomethane	0.5 ug/L	<0.5	<0.5	-	<0.5
Carbon Tetrachloride	0.2 ug/L	<0.2	<0.2	-	<0.2
Chlorobenzene	0.5 ug/L	<0.5	<0.5	-	<0.5
Chloroethane	1.0 ug/L	<1.0	<1.0	-	<1.0
Chloroform	0.5 ug/L	1.2	1.2	-	<0.5
Chloromethane	3.0 ug/L	<3.0	<3.0	-	<3.0
Dibromochloromethane	0.5 ug/L	<0.5	<0.5	-	<0.5

**Certificate of Analysis**

Report Date: 22-Apr-2014

Order Date: 11-Apr-2014

 Client: **Stantec Consulting Ltd. (Ottawa)**

Client PO: 45064625

Project Description: 122510670/ Boteler

	Client ID:	MW14-2	MW14-A	MW13-10	Field Blank
	Sample Date:	11-Apr-14	11-Apr-14	11-Apr-14	11-Apr-14
	Sample ID:	1415265-01	1415265-02	1415265-03	1415265-04
	MDL/Units	Water	Water	Water	Water
Dichlorodifluoromethane	1.0 ug/L	<1.0	<1.0	-	<1.0
1,2-Dibromoethane	0.2 ug/L	<0.2	<0.2	-	<0.2
1,2-Dichlorobenzene	0.5 ug/L	<0.5	<0.5	-	<0.5
1,3-Dichlorobenzene	0.5 ug/L	<0.5	<0.5	-	<0.5
1,4-Dichlorobenzene	0.5 ug/L	<0.5	<0.5	-	<0.5
1,1-Dichloroethane	0.5 ug/L	<0.5	<0.5	-	<0.5
1,2-Dichloroethane	0.5 ug/L	<0.5	<0.5	-	<0.5
1,1-Dichloroethylene	0.5 ug/L	<0.5	<0.5	-	<0.5
cis-1,2-Dichloroethylene	0.5 ug/L	<0.5	<0.5	-	<0.5
trans-1,2-Dichloroethylene	0.5 ug/L	<0.5	<0.5	-	<0.5
1,2-Dichloroethylene, total	0.5 ug/L	<0.5	<0.5	-	<0.5
1,2-Dichloropropane	0.5 ug/L	<0.5	<0.5	-	<0.5
cis-1,3-Dichloropropylene	0.5 ug/L	<0.5	<0.5	-	<0.5
trans-1,3-Dichloropropylene	0.5 ug/L	<0.5	<0.5	-	<0.5
1,3-Dichloropropene, total	0.5 ug/L	<0.5	<0.5	-	<0.5
Ethylbenzene	0.5 ug/L	<0.5	<0.5	-	<0.5
Hexane	1.0 ug/L	<1.0	<1.0	-	<1.0
Methyl Ethyl Ketone (2-Butanone)	5.0 ug/L	<5.0	<5.0	-	<5.0
Methyl Butyl Ketone (2-Hexanone)	10.0 ug/L	<10.0	<10.0	-	<10.0
Methyl Isobutyl Ketone	5.0 ug/L	<5.0	<5.0	-	<5.0
Methyl tert-butyl ether	2.0 ug/L	<2.0	<2.0	-	<2.0
Methylene Chloride	5.0 ug/L	<5.0	<5.0	-	<5.0
Styrene	0.5 ug/L	<0.5	<0.5	-	<0.5
1,1,1,2-Tetrachloroethane	0.5 ug/L	<0.5	<0.5	-	<0.5
1,1,2,2-Tetrachloroethane	0.5 ug/L	<0.5	<0.5	-	<0.5
Tetrachloroethylene	0.5 ug/L	<0.5	<0.5	-	<0.5
Toluene	0.5 ug/L	<0.5	<0.5	-	<0.5
1,1,1-Trichloroethane	0.5 ug/L	<0.5	<0.5	-	<0.5
1,1,2-Trichloroethane	0.5 ug/L	<0.5	<0.5	-	<0.5
Trichloroethylene	0.5 ug/L	<0.5	<0.5	-	<0.5
Trichlorofluoromethane	1.0 ug/L	<1.0	<1.0	-	<1.0
1,3,5-Trimethylbenzene	0.5 ug/L	<0.5	<0.5	-	<0.5
Vinyl chloride	0.5 ug/L	<0.5	<0.5	-	<0.5
m,p-Xylenes	0.5 ug/L	<0.5	<0.5	-	<0.5

**Certificate of Analysis**

Report Date: 22-Apr-2014

Order Date: 11-Apr-2014

 Client: **Stantec Consulting Ltd. (Ottawa)**

Client PO: 45064625

Project Description: 122510670/ Boteler

	Client ID: Sample Date: Sample ID:	MW14-2 11-Apr-14 1415265-01	MW14-A 11-Apr-14 1415265-02	MW13-10 11-Apr-14 1415265-03	Field Blank 11-Apr-14 1415265-04
	MDL/Units	Water	Water	Water	Water
o-Xylene	0.5 ug/L	<0.5	<0.5	-	<0.5
Xylenes, total	0.5 ug/L	<0.5	<0.5	-	<0.5
4-Bromofluorobenzene	Surrogate	104%	105%	-	104%
Dibromofluoromethane	Surrogate	98.7%	102%	-	99.7%
Toluene-d8	Surrogate	103%	102%	-	103%

**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

**Semi-Volatiles**

Acenaphthene	0.05 ug/L	<0.05	<0.05	<0.05 [1]	-
Acenaphthylene	0.05 ug/L	0.06	<0.05	<0.05 [1]	-
Anthracene	0.01 ug/L	0.02	0.03	0.06 [1]	-
Benzo [a] anthracene	0.01 ug/L	0.09	0.09	0.34 [1]	-
Benzo [a] pyrene	0.01 ug/L	<0.01	0.05	0.14 [1]	-
Benzo [b] fluoranthene	0.05 ug/L	0.08	0.10	0.37 [1]	-
Benzo [g,h,i] perylene	0.05 ug/L	<0.05	<0.05	0.42 [1]	-
Benzo [k] fluoranthene	0.05 ug/L	<0.05	0.05	0.18 [1]	-
Biphenyl	0.05 ug/L	0.22	<0.05	0.42 [1]	-
Chrysene	0.05 ug/L	0.08	0.07	0.32 [1]	-
Dibenzo [a,h] anthracene	0.05 ug/L	<0.05	<0.05	<0.05 [1]	-
Fluoranthene	0.01 ug/L	0.14	0.16	0.31 [1]	-
Fluorene	0.05 ug/L	0.06	<0.05	0.09 [1]	-
Indeno [1,2,3-cd] pyrene	0.05 ug/L	<0.05	<0.05	0.17 [1]	-
1-Methylnaphthalene	0.05 ug/L	<0.05	<0.05	<0.05 [1]	-
2-Methylnaphthalene	0.05 ug/L	<0.05	<0.05	<0.05 [1]	-
Methylnaphthalene (1&2)	0.10 ug/L	<0.10	<0.10	<0.10 [1]	-
Naphthalene	0.05 ug/L	<0.05	<0.05	0.43 [1]	-
Phenanthrene	0.05 ug/L	0.19	0.13	0.30 [1]	-
Pyrene	0.01 ug/L	0.13	0.13	0.43 [1]	-
2-Fluorobiphenyl	Surrogate	81.4%	85.9%	76.2% [1]	-
Terphenyl-d14	Surrogate	99.2%	104%	80.8% [1]	-

**Certificate of Analysis**

Report Date: 22-Apr-2014

Client: **Stantec Consulting Ltd. (Ottawa)**

Order Date: 11-Apr-2014

Client PO: 45064625

Project Description: 122510670/ Boteler

<b>Client ID:</b>	Trip Blank	MW13-13	-	-
<b>Sample Date:</b>	11-Apr-14	11-Apr-14	-	-
<b>Sample ID:</b>	1415265-05	1415265-06	-	-
<b>MDL/Units</b>	Water	Water	-	-

**Volatiles**

Acetone	5.0 ug/L	<5.0	<5.0	-	-
Benzene	0.5 ug/L	<0.5	<0.5	-	-
Bromodichloromethane	0.5 ug/L	<0.5	<0.5	-	-
Bromoform	0.5 ug/L	<0.5	<0.5	-	-
Bromomethane	0.5 ug/L	<0.5	<0.5	-	-
Carbon Tetrachloride	0.2 ug/L	<0.2	<0.2	-	-
Chlorobenzene	0.5 ug/L	<0.5	<0.5	-	-
Chloroethane	1.0 ug/L	<1.0	<1.0	-	-
Chloroform	0.5 ug/L	<0.5	<0.5	-	-
Chloromethane	3.0 ug/L	<3.0	<3.0	-	-
Dibromochloromethane	0.5 ug/L	<0.5	<0.5	-	-
Dichlorodifluoromethane	1.0 ug/L	<1.0	<1.0	-	-
1,2-Dibromoethane	0.2 ug/L	<0.2	<0.2	-	-
1,2-Dichlorobenzene	0.5 ug/L	<0.5	<0.5	-	-
1,3-Dichlorobenzene	0.5 ug/L	<0.5	<0.5	-	-
1,4-Dichlorobenzene	0.5 ug/L	<0.5	<0.5	-	-
1,1-Dichloroethane	0.5 ug/L	<0.5	<0.5	-	-
1,2-Dichloroethane	0.5 ug/L	<0.5	<0.5	-	-
1,1-Dichloroethylene	0.5 ug/L	<0.5	<0.5	-	-
cis-1,2-Dichloroethylene	0.5 ug/L	<0.5	<0.5	-	-
trans-1,2-Dichloroethylene	0.5 ug/L	<0.5	<0.5	-	-
1,2-Dichloroethylene, total	0.5 ug/L	<0.5	<0.5	-	-
1,2-Dichloropropane	0.5 ug/L	<0.5	<0.5	-	-
cis-1,3-Dichloropropylene	0.5 ug/L	<0.5	<0.5	-	-
trans-1,3-Dichloropropylene	0.5 ug/L	<0.5	<0.5	-	-
1,3-Dichloropropene, total	0.5 ug/L	<0.5	<0.5	-	-
Ethylbenzene	0.5 ug/L	<0.5	<0.5	-	-
Hexane	1.0 ug/L	<1.0	<1.0	-	-
Methyl Ethyl Ketone (2-Butanone)	5.0 ug/L	<5.0	<5.0	-	-
Methyl Butyl Ketone (2-Hexanone)	10.0 ug/L	<10.0	<10.0	-	-
Methyl Isobutyl Ketone	5.0 ug/L	<5.0	<5.0	-	-
Methyl tert-butyl ether	2.0 ug/L	<2.0	<2.0	-	-

**Certificate of Analysis**

Report Date: 22-Apr-2014

 Client: **Stantec Consulting Ltd. (Ottawa)**

Order Date: 11-Apr-2014

Client PO: 45064625

Project Description: 122510670/ Boteler

	Client ID:	Trip Blank	MW13-13		
	Sample Date:	11-Apr-14	11-Apr-14		
	Sample ID:	1415265-05	1415265-06		
	MDL/Units	Water	Water		
Methylene Chloride	5.0 ug/L	<5.0	<5.0	-	-
Styrene	0.5 ug/L	<0.5	<0.5	-	-
1,1,1,2-Tetrachloroethane	0.5 ug/L	<0.5	<0.5	-	-
1,1,2,2-Tetrachloroethane	0.5 ug/L	<0.5	<0.5	-	-
Tetrachloroethylene	0.5 ug/L	<0.5	<0.5	-	-
Toluene	0.5 ug/L	<0.5	<0.5	-	-
1,1,1-Trichloroethane	0.5 ug/L	<0.5	<0.5	-	-
1,1,2-Trichloroethane	0.5 ug/L	<0.5	<0.5	-	-
Trichloroethylene	0.5 ug/L	<0.5	<0.5	-	-
Trichlorofluoromethane	1.0 ug/L	<1.0	<1.0	-	-
1,3,5-Trimethylbenzene	0.5 ug/L	<0.5	<0.5	-	-
Vinyl chloride	0.5 ug/L	<0.5	<0.5	-	-
m,p-Xylenes	0.5 ug/L	<0.5	<0.5	-	-
o-Xylene	0.5 ug/L	<0.5	<0.5	-	-
Xylenes, total	0.5 ug/L	<0.5	<0.5	-	-
4-Bromofluorobenzene	Surrogate	104%	105%	-	-
Dibromofluoromethane	Surrogate	100%	102%	-	-
Toluene-d8	Surrogate	103%	103%	-	-

**Hydrocarbons**

F1 PHCs (C6-C10)	25 ug/L	<25	<25	-	-
F2 PHCs (C10-C16)	100 ug/L	<100	<100	-	-
F3 PHCs (C16-C34)	100 ug/L	<100	<100	-	-
F4 PHCs (C34-C50)	100 ug/L	<100	<100	-	-
F1 + F2 PHCs	125 ug/L	<125	<125	-	-
F3 + F4 PHCs	200 ug/L	<200	<200	-	-

**Certificate of Analysis**

Report Date: 22-Apr-2014

Client: **Stantec Consulting Ltd. (Ottawa)**

Order Date: 11-Apr-2014

Client PO: 45064625

Project Description: 122510670/ Boteler

**Method Quality Control: Blank**

Analyte	Result	Reporting Limit	Units	Source Result	%REC	%REC Limit	RPD	RPD Limit	Notes
<b>Hydrocarbons</b>									
F1 PHCs (C6-C10)	ND	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						
<b>Metals</b>									
Mercury	ND	0.1	ug/L						
Antimony	ND	0.5	ug/L						
Arsenic	ND	1	ug/L						
Barium	ND	1	ug/L						
Beryllium	ND	0.5	ug/L						
Boron	ND	10	ug/L						
Cadmium	ND	0.1	ug/L						
Chromium (VI)	ND	10	ug/L						
Chromium	ND	1	ug/L						
Cobalt	ND	0.5	ug/L						
Copper	ND	0.5	ug/L						
Lead	ND	0.1	ug/L						
Molybdenum	ND	0.5	ug/L						
Nickel	ND	1	ug/L						
Selenium	ND	1	ug/L						
Silver	ND	0.1	ug/L						
Sodium	ND	200	ug/L						
Thallium	ND	0.1	ug/L						
Uranium	ND	0.1	ug/L						
Vanadium	ND	0.5	ug/L						
Zinc	ND	5	ug/L						
<b>Semi-Volatiles</b>									
Acenaphthene	ND	0.05	ug/L						
Acenaphthylene	ND	0.05	ug/L						
Anthracene	ND	0.01	ug/L						
Benzo [a] anthracene	ND	0.01	ug/L						
Benzo [a] pyrene	ND	0.01	ug/L						
Benzo [b] fluoranthene	ND	0.05	ug/L						
Benzo [g,h,i] perylene	ND	0.05	ug/L						
Benzo [k] fluoranthene	ND	0.05	ug/L						
Biphenyl	ND	0.05	ug/L						
Chrysene	ND	0.05	ug/L						
Dibenzo [a,h] anthracene	ND	0.05	ug/L						
Fluoranthene	ND	0.01	ug/L						
Fluorene	ND	0.05	ug/L						
Indeno [1,2,3-cd] pyrene	ND	0.05	ug/L						
1-Methylnaphthalene	ND	0.05	ug/L						
2-Methylnaphthalene	ND	0.05	ug/L						
Methylnaphthalene (1&2)	ND	0.10	ug/L						
Naphthalene	ND	0.05	ug/L						
Phenanthrene	ND	0.05	ug/L						
Pyrene	ND	0.01	ug/L						
Surrogate: 2-Fluorobiphenyl	17.4		ug/L		86.9	50-140			
Surrogate: Terphenyl-d14	19.6		ug/L		98.1	50-140			
<b>Volatiles</b>									
Acetone	ND	5.0	ug/L						
Benzene	ND	0.5	ug/L						
Bromodichloromethane	ND	0.5	ug/L						
Bromoform	ND	0.5	ug/L						
Bromomethane	ND	0.5	ug/L						

**Certificate of Analysis**

Report Date: 22-Apr-2014

Client: **Stantec Consulting Ltd. (Ottawa)**

Order Date: 11-Apr-2014

Client PO: 45064625

Project Description: 122510670/ Boteler

**Method Quality Control: Blank**

Analyte	Result	Reporting Limit	Units	Source Result	%REC	%REC Limit	RPD	RPD Limit	Notes
Carbon Tetrachloride	ND	0.2	ug/L						
Chlorobenzene	ND	0.5	ug/L						
Chloroethane	ND	1.0	ug/L						
Chloroform	ND	0.5	ug/L						
Chloromethane	ND	3.0	ug/L						
Dibromochloromethane	ND	0.5	ug/L						
Dichlorodifluoromethane	ND	1.0	ug/L						
1,2-Dibromoethane	ND	0.2	ug/L						
1,2-Dichlorobenzene	ND	0.5	ug/L						
1,3-Dichlorobenzene	ND	0.5	ug/L						
1,4-Dichlorobenzene	ND	0.5	ug/L						
1,1-Dichloroethane	ND	0.5	ug/L						
1,2-Dichloroethane	ND	0.5	ug/L						
1,1-Dichloroethylene	ND	0.5	ug/L						
cis-1,2-Dichloroethylene	ND	0.5	ug/L						
trans-1,2-Dichloroethylene	ND	0.5	ug/L						
1,2-Dichloroethylene, total	ND	0.5	ug/L						
1,2-Dichloropropane	ND	0.5	ug/L						
cis-1,3-Dichloropropylene	ND	0.5	ug/L						
trans-1,3-Dichloropropylene	ND	0.5	ug/L						
1,3-Dichloropropene, total	ND	0.5	ug/L						
Ethylbenzene	ND	0.5	ug/L						
Hexane	ND	1.0	ug/L						
Methyl Ethyl Ketone (2-Butanone)	ND	5.0	ug/L						
Methyl Butyl Ketone (2-Hexanone)	ND	10.0	ug/L						
Methyl Isobutyl Ketone	ND	5.0	ug/L						
Methyl tert-butyl ether	ND	2.0	ug/L						
Methylene Chloride	ND	5.0	ug/L						
Styrene	ND	0.5	ug/L						
1,1,1,2-Tetrachloroethane	ND	0.5	ug/L						
1,1,2,2-Tetrachloroethane	ND	0.5	ug/L						
Tetrachloroethylene	ND	0.5	ug/L						
Toluene	ND	0.5	ug/L						
1,1,1-Trichloroethane	ND	0.5	ug/L						
1,1,2-Trichloroethane	ND	0.5	ug/L						
Trichloroethylene	ND	0.5	ug/L						
Trichlorofluoromethane	ND	1.0	ug/L						
1,3,5-Trimethylbenzene	ND	0.5	ug/L						
Vinyl chloride	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: 4-Bromofluorobenzene	82.9		ug/L		104	50-140			
Surrogate: Dibromofluoromethane	78.9		ug/L		98.6	50-140			
Surrogate: Toluene-d8	82.3		ug/L		103	50-140			



**Certificate of Analysis**

Report Date: 22-Apr-2014

Client: **Stantec Consulting Ltd. (Ottawa)**

Order Date: 11-Apr-2014

Client PO: 45064625

Project Description: 122510670/ Boteler

**Method Quality Control: Duplicate**

Analyte	Result	Reporting Limit	Units	Source Result	%REC	%REC Limit	RPD	RPD Limit	Notes
<b>Hydrocarbons</b>									
F1 PHCs (C6-C10)	ND	25	ug/L	ND				30	
<b>Metals</b>									
Mercury	ND	0.1	ug/L	ND			0.0	20	
Antimony	ND	0.5	ug/L	ND			0.0	20	
Arsenic	ND	1	ug/L	ND			0.0	20	
Barium	ND	1	ug/L	ND			0.0	20	
Beryllium	ND	0.5	ug/L	ND			0.0	20	
Boron	ND	10	ug/L	ND			0.0	20	
Cadmium	ND	0.1	ug/L	ND			0.0	20	
Chromium (VI)	ND	10	ug/L	ND				20	
Chromium	ND	1	ug/L	ND			0.0	20	
Cobalt	ND	0.5	ug/L	ND			0.0	20	
Copper	ND	0.5	ug/L	ND			0.0	20	
Lead	ND	0.1	ug/L	ND			0.0	20	
Molybdenum	ND	0.5	ug/L	ND			0.0	20	
Nickel	ND	1	ug/L	ND			0.0	20	
Selenium	ND	1	ug/L	ND			0.0	20	
Silver	ND	0.1	ug/L	ND			0.0	20	
Sodium	ND	200	ug/L	ND			0.0	20	
Thallium	ND	0.1	ug/L	ND			0.0	20	
Uranium	ND	0.1	ug/L	ND			0.0	20	
Vanadium	ND	0.5	ug/L	ND			0.0	20	
Zinc	ND	5	ug/L	ND			0.0	20	
<b>Volatiles</b>									
Acetone	ND	5.0	ug/L	ND				30	
Benzene	ND	0.5	ug/L	ND				30	
Bromodichloromethane	ND	0.5	ug/L	ND				30	
Bromoform	ND	0.5	ug/L	ND				30	
Bromomethane	ND	0.5	ug/L	ND				30	
Carbon Tetrachloride	ND	0.2	ug/L	ND				30	
Chlorobenzene	ND	0.5	ug/L	ND				30	
Chloroethane	ND	1.0	ug/L	ND				30	
Chloroform	ND	0.5	ug/L	ND				30	
Chloromethane	ND	3.0	ug/L	ND				30	
Dibromochloromethane	ND	0.5	ug/L	ND				30	
Dichlorodifluoromethane	ND	1.0	ug/L	ND				30	
1,2-Dibromoethane	ND	0.2	ug/L	ND				30	
1,2-Dichlorobenzene	ND	0.5	ug/L	ND				30	
1,3-Dichlorobenzene	ND	0.5	ug/L	ND				30	
1,4-Dichlorobenzene	ND	0.5	ug/L	ND				30	
1,1-Dichloroethane	ND	0.5	ug/L	ND				30	
1,2-Dichloroethane	ND	0.5	ug/L	ND				30	
1,1-Dichloroethylene	ND	0.5	ug/L	ND				30	
cis-1,2-Dichloroethylene	ND	0.5	ug/L	ND				30	
trans-1,2-Dichloroethylene	ND	0.5	ug/L	ND				30	
1,2-Dichloropropane	ND	0.5	ug/L	ND				30	
cis-1,3-Dichloropropylene	ND	0.5	ug/L	ND				30	
trans-1,3-Dichloropropylene	ND	0.5	ug/L	ND				30	
Ethylbenzene	ND	0.5	ug/L	ND				30	
Hexane	ND	1.0	ug/L	ND				30	
Methyl Ethyl Ketone (2-Butanone)	ND	5.0	ug/L	ND				30	
Methyl Butyl Ketone (2-Hexanone)	ND	10.0	ug/L	ND				30	
Methyl Isobutyl Ketone	ND	5.0	ug/L	ND				30	
Methyl tert-butyl ether	ND	2.0	ug/L	ND				30	
Methylene Chloride	ND	5.0	ug/L	ND				30	

P: 1-800-749-1947  
E: PARACEL@PARACELLABS.COM

WWW.PARACELLABS.COM

**OTTAWA**  
300-2319 St. Laurent Blvd.  
Ottawa, ON K1G 4J8

**MISSISSAUGA**  
6645 Kitchmat Rd. Unit #27  
Mississauga, ON L5N 6J3

**NIAGARA FALLS**  
5415 Morning Glory Cr.  
Niagara Falls, ON L2J 0A3

**SARNIA**  
123 Christina St. N.  
Sarnia, ON N7T 5T7



**Certificate of Analysis**

Report Date: 22-Apr-2014

Client: **Stantec Consulting Ltd. (Ottawa)**

Order Date: 11-Apr-2014

Client PO: 45064625

Project Description: 122510670/ Boteler

**Method Quality Control: Duplicate**

Analyte	Result	Reporting Limit	Units	Source Result	%REC	%REC Limit	RPD	RPD Limit	Notes
Styrene	ND	0.5	ug/L	ND				30	
1,1,1,2-Tetrachloroethane	ND	0.5	ug/L	ND				30	
1,1,2,2-Tetrachloroethane	ND	0.5	ug/L	ND				30	
Tetrachloroethylene	ND	0.5	ug/L	ND				30	
Toluene	ND	0.5	ug/L	ND				30	
1,1,1-Trichloroethane	ND	0.5	ug/L	ND				30	
1,1,2-Trichloroethane	ND	0.5	ug/L	ND				30	
Trichloroethylene	ND	0.5	ug/L	ND				30	
Trichlorofluoromethane	ND	1.0	ug/L	ND				30	
1,3,5-Trimethylbenzene	ND	0.5	ug/L	ND				30	
Vinyl chloride	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: 4-Bromofluorobenzene	82.0		ug/L	ND	102	50-140			
Surrogate: Dibromofluoromethane	82.1		ug/L	ND	103	50-140			
Surrogate: Toluene-d8	81.8		ug/L	ND	102	50-140			

**Certificate of Analysis**

Report Date: 22-Apr-2014

Client: **Stantec Consulting Ltd. (Ottawa)**

Order Date: 11-Apr-2014

Client PO: 45064625

Project Description: 122510670/ Boteler

**Method Quality Control: Spike**

Analyte	Result	Reporting Limit	Units	Source Result	%REC	%REC Limit	RPD	RPD Limit	Notes
<b>Hydrocarbons</b>									
F1 PHCs (C6-C10)	2090	25	ug/L	ND	105	68-117			
F2 PHCs (C10-C16)	1730	100	ug/L	ND	96.2	60-140			
F3 PHCs (C16-C34)	3460	100	ug/L	ND	93.1	60-140			
F4 PHCs (C34-C50)	2480	100	ug/L	ND	100	60-140			
<b>Metals</b>									
Mercury	2.80	0.1	ug/L	ND	93.5	78-137			
Antimony	48.0		ug/L	ND	101	80-120			
Arsenic	53.7		ug/L	ND	107	80-120			
Barium	51.5		ug/L	ND	103	80-120			
Beryllium	55.4		ug/L	0.007	111	80-120			
Boron	53		ug/L	6	93.7	80-120			
Cadmium	56.9		ug/L	ND	114	80-120			
Chromium (VI)	207	10	ug/L	ND	104	70-130			
Chromium	58.1		ug/L	0.6	115	80-120			
Cobalt	54.7		ug/L	0.0003	109	80-120			
Copper	53.7		ug/L	0.007	107	80-120			
Lead	51.9		ug/L	0.02	104	80-120			
Molybdenum	50.8		ug/L	ND	102	80-120			
Nickel	56.3		ug/L	0.003	113	80-120			
Selenium	52.8		ug/L	ND	106	80-120			
Silver	55.6		ug/L	ND	111	80-120			
Sodium	1210		ug/L	13	120	80-120			
Thallium	52.0		ug/L	ND	104	80-120			
Uranium	50.9		ug/L	ND	102	80-120			
Vanadium	59.6		ug/L	0.10	119	80-120			
Zinc	51		ug/L	ND	104	80-120			
<b>Semi-Volatiles</b>									
Acenaphthene	4.31	0.05	ug/L	ND	86.2	50-140			
Acenaphthylene	4.15	0.05	ug/L	ND	82.9	50-140			
Anthracene	4.05	0.01	ug/L	ND	81.0	50-140			
Benzo [a] anthracene	4.01	0.01	ug/L	ND	80.1	50-140			
Benzo [a] pyrene	3.30	0.01	ug/L	ND	65.9	50-140			
Benzo [b] fluoranthene	4.69	0.05	ug/L	ND	93.8	50-140			
Benzo [g,h,i] perylene	3.94	0.05	ug/L	ND	78.8	50-140			
Benzo [k] fluoranthene	6.08	0.05	ug/L	ND	122	50-140			
Biphenyl	3.57	0.05	ug/L	ND	71.4	50-140			
Chrysene	4.43	0.05	ug/L	ND	88.6	50-140			
Dibenzo [a,h] anthracene	3.22	0.05	ug/L	ND	64.4	50-140			
Fluoranthene	4.32	0.01	ug/L	ND	86.4	50-140			
Fluorene	4.22	0.05	ug/L	ND	84.3	50-140			
Indeno [1,2,3-cd] pyrene	3.51	0.05	ug/L	ND	70.2	50-140			
1-Methylnaphthalene	3.48	0.05	ug/L	ND	69.7	50-140			
2-Methylnaphthalene	3.71	0.05	ug/L	ND	74.2	50-140			
Naphthalene	3.43	0.05	ug/L	ND	68.6	50-140			
Phenanthrene	4.04	0.05	ug/L	ND	80.8	50-140			
Pyrene	4.36	0.01	ug/L	ND	87.3	50-140			
Surrogate: 2-Fluorobiphenyl	19.1		ug/L		95.7	50-140			

**Volatiles**

P: 1-800-749-1947  
E: PARACEL@PARACELLABS.COM

WWW.PARACELLABS.COM

**OTTAWA**  
300-2319 St. Laurent Blvd.  
Ottawa, ON K1G 4J8

**MISSISSAUGA**  
6845 Kitchin Rd. Unit #27  
Mississauga, ON L5N 6J3

**NIAGARA FALLS**  
5415 Morning Glory Cr.  
Niagara Falls, ON L2J 0A3

**SARNIA**  
123 Christina St. N.  
Sarnia, ON N7T 5T7

**Certificate of Analysis**

Report Date: 22-Apr-2014

Client: **Stantec Consulting Ltd. (Ottawa)**

Order Date: 11-Apr-2014

Client PO: 45064625

Project Description: 122510670/ Boteler

**Method Quality Control: Spike**

Analyte	Result	Reporting Limit	Units	Source Result	%REC	%REC Limit	RPD	RPD Limit	Notes
Acetone	86.2	5.0	ug/L	ND	86.2	50-140			
Benzene	39.3	0.5	ug/L	ND	98.3	50-140			
Bromodichloromethane	40.2	0.5	ug/L	ND	100	50-140			
Bromoform	43.8	0.5	ug/L	ND	109	50-140			
Bromomethane	43.1	0.5	ug/L	ND	108	50-140			
Carbon Tetrachloride	43.6	0.2	ug/L	ND	109	50-140			
Chlorobenzene	40.7	0.5	ug/L	ND	102	50-140			
Chloroethane	42.7	1.0	ug/L	ND	107	50-140			
Chloroform	39.9	0.5	ug/L	ND	99.7	50-140			
Chloromethane	37.3	3.0	ug/L	ND	93.3	50-140			
Dibromochloromethane	44.6	0.5	ug/L	ND	112	50-140			
Dichlorodifluoromethane	43.0	1.0	ug/L	ND	108	50-140			
1,2-Dibromoethane	38.2	0.2	ug/L	ND	95.6	50-140			
1,2-Dichlorobenzene	43.0	0.5	ug/L	ND	107	50-140			
1,3-Dichlorobenzene	43.0	0.5	ug/L	ND	107	50-140			
1,4-Dichlorobenzene	43.0	0.5	ug/L	ND	108	50-140			
1,1-Dichloroethane	49.8	0.5	ug/L	ND	124	50-140			
1,2-Dichloroethane	38.6	0.5	ug/L	ND	96.5	50-140			
1,1-Dichloroethylene	39.3	0.5	ug/L	ND	98.3	50-140			
cis-1,2-Dichloroethylene	38.8	0.5	ug/L	ND	97.0	50-140			
trans-1,2-Dichloroethylene	38.4	0.5	ug/L	ND	96.1	50-140			
1,2-Dichloropropane	34.2	0.5	ug/L	ND	85.6	50-140			
cis-1,3-Dichloropropylene	37.3	0.5	ug/L	ND	93.3	50-140			
trans-1,3-Dichloropropylene	37.0	0.5	ug/L	ND	92.5	50-140			
Ethylbenzene	40.3	0.5	ug/L	ND	101	50-140			
Hexane	29.5	1.0	ug/L	ND	73.7	50-140			
Methyl Ethyl Ketone (2-Butanone)	85.3	5.0	ug/L	ND	85.3	50-140			
Methyl Butyl Ketone (2-Hexanone)	83.0	10.0	ug/L	ND	83.0	50-140			
Methyl Isobutyl Ketone	85.7	5.0	ug/L	ND	85.7	50-140			
Methyl tert-butyl ether	117	2.0	ug/L	ND	117	50-140			
Methylene Chloride	39.6	5.0	ug/L	ND	99.0	50-140			
Styrene	39.0	0.5	ug/L	ND	97.6	50-140			
1,1,1,2-Tetrachloroethane	41.7	0.5	ug/L	ND	104	50-140			
1,1,2,2-Tetrachloroethane	38.4	0.5	ug/L	ND	95.9	50-140			
Tetrachloroethylene	38.8	0.5	ug/L	ND	97.0	50-140			
Toluene	39.5	0.5	ug/L	ND	98.7	50-140			
1,1,1-Trichloroethane	39.6	0.5	ug/L	ND	98.9	50-140			
1,1,2-Trichloroethane	37.5	0.5	ug/L	ND	93.8	50-140			
Trichloroethylene	37.3	0.5	ug/L	ND	93.4	50-140			
Trichlorofluoromethane	41.3	1.0	ug/L	ND	103	50-140			
1,3,5-Trimethylbenzene	40.5	0.5	ug/L	ND	101	50-140			
Vinyl chloride	31.4	0.5	ug/L	ND	78.6	50-140			
m,p-Xylenes	91.0	0.5	ug/L	ND	114	50-140			
o-Xylene	40.5	0.5	ug/L	ND	101	50-140			

**Certificate of Analysis**

Client: **Stantec Consulting Ltd. (Ottawa)**

Client PO: 45064625

Project Description: 122510670/ Boteler

Report Date: 22-Apr-2014

Order Date: 11-Apr-2014

**Qualifier Notes:**

**Login Qualifiers :**

Sample - Filtered and preserved by Paracel upon receipt at the laboratory - Hg and CrVI

*Applies to samples: MW14-2, MW14-A*

Sample - Not submitted in the correct container - Sub-sampled for Hg and CrVI

*Applies to samples: MW14-2, MW14-A*

**Sample Qualifiers :**

1 : Elevated Reporting Limits due to limited sample volume.

**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.

OTTAWA • KINGSTON • NIAGARA • MISSISSAUGA • SARNIA

Page 1 of 1

Client Name: <u>Stantec Consulting Ltd.</u>	Project Reference: <u>122510670 - Bateleur Perm</u>	TAT: <input checked="" type="checkbox"/> Regular <input type="checkbox"/> 3 Day
Contact Name: <u>Jill Peters - Dechmann</u>	Quote # <u>City of Ottawa SA# -01 910-91843-501</u>	<input type="checkbox"/> 2 Day <input type="checkbox"/> 1 Day
Address: <u>Suite 400, 1331 Clyde Avenue Ottawa ON K2C 3G4</u>	PO # <u>122510670, 225</u>	Date Required: _____
Telephone: <u>613-722-4420</u>	Email Address: <u>Jill.peters-dechmann@stantec.com</u>	

Criteria:  O. Reg. 153/04 (As Amended) Table 1  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									
Paracel Order Number: <u>1415265</u>		Matrix	Air Volume	# of Containers	Sample Taken		PAC1-F4	VOCs	PAHs	metals by ICP	Hg / CrVI				
Sample ID/Location Name					Date	Time									
1	MW14-a BCF208	GW	x	5	2-14/04/11	10:45	✓	✓	✓	✓	✓				
2	MW14-A BCF209	GW	x	5	2-14/04/11	10:45	✓	✓	✓	✓	✓				
3	MW13-10 BCF210	GW	x	1	2-14/04/11	10:15			✓			- half PAC	batch filled		
4	Field Blank BCF211	water	x	3	2-14/04/11	10:40	✓	✓							
5	Trip Blank BCF212	water	x	2	2-14/04/11	-	✓	✓							
6	MW13-13 BCF213	GW	x	3	2-14/04/11	10:30	✓	✓				- half PAC	batch filled		
7															
8															
9															
10															

Comments: - all metals samples field filters  
- metals by ICP = O. Reg. 153 show list metals → include Hg + CrVI (subsample & filter/preserve) per J.H. - mic

Method of Delivery: Walk-in

Relinquished By (Sign): <u>[Signature]</u>	Received by Driver/Depot:	Received at Lab: <u>MJC</u>	Verified By: <u>MJC</u>
Relinquished By (Print): <u>J. Weber</u>	Date/Time: _____	Date/Time: <u>Apr 11/14 12:33</u>	Date/Time: <u>Apr 11/14 3:25</u>
Date/Time: <u>2014/04/11 12:36</u>	Temperature: _____ °C	Temperature: <u>8.14 °C</u>	pH Verified: <u>By MJC</u>

## Certificate of Analysis

### Stantec Consulting Ltd. (Ottawa)

1331 Clyde Avenue Suite 400  
Ottawa, ON K2C 3G4  
Attn: Jill Peters-Dechman

Phone: (613) 722-4420  
Fax: (613) 738-0721

Client PO: 45064625  
Project: 122510670/ Boteler  
Custody: 101290

Report Date: 25-Apr-2014  
Order Date: 24-Apr-2014

**Order #: 1417229**

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

Paracel ID	Client ID
1417229-01	MW14-1-F
1417229-02	MW14-1
1417229-03	MW14-3-F
1417229-04	MW14-3
1417229-05	MW13-10-F

Approved By:



Mark Foto, M.Sc. For Dale Robertson, BSc  
Laboratory Director

**Certificate of Analysis**

Client: **Stantec Consulting Ltd. (Ottawa)**

Client PO: 45064625

Project Description: 122510670/ Boteler

Report Date: 25-Apr-2014

Order Date: 24-Apr-2014

**Analysis Summary Table**

Analysis	Method Reference/Description	Extraction Date	Analysis Date
PAHs by GC-MS	EPA 625 - GC-MS, extraction	24-Apr-14	25-Apr-14

**Certificate of Analysis**

Report Date: 25-Apr-2014

Order Date: 24-Apr-2014

 Client: **Stantec Consulting Ltd. (Ottawa)**

Client PO: 45064625

Project Description: 122510670/ Boteler

Client ID:	MW14-1-F	MW14-1	MW14-3-F	MW14-3
Sample Date:	24-Apr-14	24-Apr-14	24-Apr-14	24-Apr-14
Sample ID:	1417229-01	1417229-02	1417229-03	1417229-04
MDL/Units	Water	Water	Water	Water

**Semi-Volatiles**

	MDL/Units	MW14-1-F	MW14-1	MW14-3-F	MW14-3
Acenaphthene	0.05 ug/L	<0.05 [2]	0.27	<0.05 [2]	<0.05
Acenaphthylene	0.05 ug/L	<0.05 [2]	0.92	<0.05 [2]	0.12
Anthracene	0.01 ug/L	<0.01 [2]	1.40	0.03 [2]	0.13
Benzo [a] anthracene	0.01 ug/L	<0.01 [2]	4.79	<0.01 [2]	0.52
Benzo [a] pyrene	0.01 ug/L	<0.01 [2]	4.48	<0.01 [2]	0.50
Benzo [b] fluoranthene	0.05 ug/L	<0.05 [2]	6.55	<0.05 [2]	0.54
Benzo [g,h,i] perylene	0.05 ug/L	<0.05 [2]	1.12	<0.05 [2]	0.10
Benzo [k] fluoranthene	0.05 ug/L	<0.05 [2]	3.78	<0.05 [2]	0.27
Biphenyl	0.05 ug/L	<0.05 [2]	<0.05	<0.05 [2]	<0.05
Chrysene	0.05 ug/L	<0.05 [2]	5.67	<0.05 [2]	0.60
Dibenzo [a,h] anthracene	0.05 ug/L	<0.05 [2]	0.34	<0.05 [2]	<0.05
Fluoranthene	0.01 ug/L	<0.01 [2]	9.91	0.04 [2]	0.83
Fluorene	0.05 ug/L	<0.05 [2]	0.39	<0.05 [2]	<0.05
Indeno [1,2,3-cd] pyrene	0.05 ug/L	<0.05 [2]	1.25	<0.05 [2]	0.10
1-Methylnaphthalene	0.05 ug/L	<0.05 [2]	0.06	<0.05 [2]	<0.05
2-Methylnaphthalene	0.05 ug/L	<0.05 [2]	0.07	<0.05 [2]	<0.05
Methylnaphthalene (1&2)	0.10 ug/L	<0.10 [2]	0.13	<0.10 [2]	<0.10
Naphthalene	0.05 ug/L	<0.05 [2]	0.12	<0.05 [2]	<0.05
Phenanthrene	0.05 ug/L	<0.05 [2]	4.66	<0.05 [2]	0.24
Pyrene	0.01 ug/L	<0.01 [2]	9.03	0.04 [2]	0.76
2-Fluorobiphenyl	Surrogate	92.1% [2]	68.4%	67.1% [2]	65.1%
Terphenyl-d14	Surrogate	123% [2]	91.8%	107% [2]	109%



**Certificate of Analysis**

Report Date: 25-Apr-2014

Order Date: 24-Apr-2014

 Client: **Stantec Consulting Ltd. (Ottawa)**

Client PO: 45064625

Project Description: 122510670/ Boteler

<b>Client ID:</b>	MW13-10-F	-	-	-
<b>Sample Date:</b>	24-Apr-14	-	-	-
<b>Sample ID:</b>	1417229-05	-	-	-
<b>MDL/Units</b>	Water	-	-	-

**Semi-Volatiles**

Acenaphthene	0.05 ug/L	<0.25 [1] [2]	-	-	-
Acenaphthylene	0.05 ug/L	<0.25 [1] [2]	-	-	-
Anthracene	0.01 ug/L	<0.05 [1] [2]	-	-	-
Benzo [a] anthracene	0.01 ug/L	<0.05 [1] [2]	-	-	-
Benzo [a] pyrene	0.01 ug/L	<0.05 [1] [2]	-	-	-
Benzo [b] fluoranthene	0.05 ug/L	<0.25 [1] [2]	-	-	-
Benzo [g,h,i] perylene	0.05 ug/L	<0.25 [1] [2]	-	-	-
Benzo [k] fluoranthene	0.05 ug/L	<0.25 [1] [2]	-	-	-
Biphenyl	0.05 ug/L	<0.25 [1] [2]	-	-	-
Chrysene	0.05 ug/L	<0.25 [1] [2]	-	-	-
Dibenzo [a,h] anthracene	0.05 ug/L	<0.25 [1] [2]	-	-	-
Fluoranthene	0.01 ug/L	<0.05 [1] [2]	-	-	-
Fluorene	0.05 ug/L	<0.25 [1] [2]	-	-	-
Indeno [1,2,3-cd] pyrene	0.05 ug/L	<0.25 [1] [2]	-	-	-
1-Methylnaphthalene	0.05 ug/L	<0.25 [1] [2]	-	-	-
2-Methylnaphthalene	0.05 ug/L	<0.25 [1] [2]	-	-	-
Methylnaphthalene (1&2)	0.10 ug/L	<0.50 [1] [2]	-	-	-
Naphthalene	0.05 ug/L	<0.25 [1] [2]	-	-	-
Phenanthrene	0.05 ug/L	<0.25 [1] [2]	-	-	-
Pyrene	0.01 ug/L	<0.05 [1] [2]	-	-	-
2-Fluorobiphenyl	Surrogate	78.1% [1] [2]	-	-	-
Terphenyl-d14	Surrogate	125% [1] [2]	-	-	-

**Certificate of Analysis**

Report Date: 25-Apr-2014

Client: **Stantec Consulting Ltd. (Ottawa)**

Order Date: 24-Apr-2014

Client PO: 45064625

Project Description: 122510670/ Boteler

**Method Quality Control: Blank**

Analyte	Result	Reporting Limit	Units	Source Result	%REC	%REC Limit	RPD	RPD Limit	Notes
<b>Semi-Volatiles</b>									
Acenaphthene	ND	0.05	ug/L						
Acenaphthylene	ND	0.05	ug/L						
Anthracene	ND	0.01	ug/L						
Benzo [a] anthracene	ND	0.01	ug/L						
Benzo [a] pyrene	ND	0.01	ug/L						
Benzo [b] fluoranthene	ND	0.05	ug/L						
Benzo [g,h,i] perylene	ND	0.05	ug/L						
Benzo [k] fluoranthene	ND	0.05	ug/L						
Biphenyl	ND	0.05	ug/L						
Chrysene	ND	0.05	ug/L						
Dibenzo [a,h] anthracene	ND	0.05	ug/L						
Fluoranthene	ND	0.01	ug/L						
Fluorene	ND	0.05	ug/L						
Indeno [1,2,3-cd] pyrene	ND	0.05	ug/L						
1-Methylnaphthalene	ND	0.05	ug/L						
2-Methylnaphthalene	ND	0.05	ug/L						
Methylnaphthalene (1&2)	ND	0.10	ug/L						
Naphthalene	ND	0.05	ug/L						
Phenanthrene	ND	0.05	ug/L						
Pyrene	ND	0.01	ug/L						
Surrogate: 2-Fluorobiphenyl	15.1		ug/L		75.7	50-140			
Surrogate: Terphenyl-d14	24.3		ug/L		122	50-140			

**Certificate of Analysis**

Report Date: 25-Apr-2014

Client: **Stantec Consulting Ltd. (Ottawa)**

Order Date: 24-Apr-2014

Client PO: 45064625

Project Description: 122510670/ Boteler

**Method Quality Control: Spike**

Analyte	Result	Reporting Limit	Units	Source Result	%REC	%REC Limit	RPD	RPD Limit	Notes
<b>Semi-Volatiles</b>									
Acenaphthene	4.42	0.05	ug/L	ND	88.4	50-140			
Acenaphthylene	4.46	0.05	ug/L	ND	89.3	50-140			
Anthracene	4.48	0.01	ug/L	ND	89.5	50-140			
Benzo [a] anthracene	4.42	0.01	ug/L	ND	88.5	50-140			
Benzo [a] pyrene	5.15	0.01	ug/L	ND	103	50-140			
Benzo [b] fluoranthene	4.18	0.05	ug/L	ND	83.5	50-140			
Benzo [g,h,i] perylene	2.85	0.05	ug/L	ND	57.1	50-140			
Benzo [k] fluoranthene	4.61	0.05	ug/L	ND	92.1	50-140			
Biphenyl	3.78	0.05	ug/L	ND	75.5	50-140			
Chrysene	4.78	0.05	ug/L	ND	95.6	50-140			
Dibenzo [a,h] anthracene	2.80	0.05	ug/L	ND	56.1	50-140			
Fluoranthene	4.87	0.01	ug/L	ND	97.4	50-140			
Fluorene	4.23	0.05	ug/L	ND	84.7	50-140			
Indeno [1,2,3-cd] pyrene	2.88	0.05	ug/L	ND	57.6	50-140			
1-Methylnaphthalene	4.31	0.05	ug/L	ND	86.2	50-140			
2-Methylnaphthalene	4.42	0.05	ug/L	ND	88.4	50-140			
Naphthalene	4.03	0.05	ug/L	ND	80.6	50-140			
Phenanthrene	4.51	0.05	ug/L	ND	90.2	50-140			
Pyrene	5.07	0.01	ug/L	ND	101	50-140			
Surrogate: 2-Fluorobiphenyl	15.6		ug/L		78.2	50-140			

**Certificate of Analysis**

Client: **Stantec Consulting Ltd. (Ottawa)**

Client PO: 45064625

Project Description: 122510670/ Boteler

Report Date: 25-Apr-2014

Order Date: 24-Apr-2014

**Qualifier Notes:**

**Sample Qualifiers :**

- 1 : Elevated Reporting Limits due to limited sample volume.
- 2 : Sample was filtered through a 0.45 um membrane filter prior to extraction/analysis.

**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.

Client Name: <u>Stanke Consulting Ltd.</u>	Project Reference: <u>122510670 - Botek</u>	TAT: <input type="checkbox"/> Regular <input type="checkbox"/> 3 Day
Contact Name: <u>Jill Peters-Dechman / Breaka Thom</u>	Quote # <u>-</u>	<input type="checkbox"/> 2 Day <input checked="" type="checkbox"/> 1 Day
Address: <u>Suite 400, 1351 Clyde Avenue Ottawa, ON K2C 3G4</u>	PO # <u>122510670, 225</u>	Date Required: <u>24 hr within TAT</u>
Telephone: <u>613-722-4420</u>	Email Address: <u>jill.peters-dechman@stanke.com breaka.thom@stanke.com</u>	

Criteria:  O. Reg. 153/04 (As Amended) Table 3  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

Paracel Order Number: <u>1417229</u>			Matrix	Air Volume	# of Containers	Sample Taken		PHCs F1-F4+BTEX	VOCs	PAHs	Metals by ICP	Hg	CrVI	B (HWS)							
Sample ID/Location Name		Date				Time															
1	MW14-1-F BCF258	GW	X	2	2014/04/24	12:30				✓											lab filter + analyse (Decant)
2	MW14-1 BCF259	GW	X	2	2014/04/24	12:35				✓											analyse as is to solvent
3	MW14-3-F BCF260	GW	X	2	2014/04/24	13:15				✓											lab filter + analyse (Decant)
4	MW14-3 BCF261	GW	X	2	2014/04/24	13:20				✓											analyse as is to solvent
5	MW13-10-F BCF262	GW	X	1	2014/04/24	13:50				✓											lab filter + analyse (only fill 1/4 bottle)
6																					(Decant)
7																					
8																					
9																					
10																					

Comments: -any questions contact Jill Peters-Dechman ; MW13-10-F has liquid sample taken.

Method of Delivery: Walk-in

Relinquished By (Sign): <u>J. Urban</u>	Received by Driver/Depot:	Received at Lab: <u>[Signature]</u>	Verified By: <u>MIC</u>
Relinquished By (Print): <u>J. Urban</u>	Date/Time: _____	Date/Time: <u>2014/04/24 3:00</u>	Date/Time: <u>Apr 24/14 3:28</u>
Date/Time: <u>2014/04/24 15:00</u>	Temperature: _____ °C	Temperature: <u>15.1</u> °C	pH Verified <input type="checkbox"/> By: <u>N/A</u>

## Certificate of Analysis

### Stantec Consulting Ltd. (Ottawa)

1331 Clyde Avenue Suite 400  
Ottawa, ON K2C 3G4  
Attn: Jill Peters-Dechman

Phone: (613) 722-4420  
Fax: (613) 738-0721

Client PO: 45064625  
Project: 122510670/ Boteler  
Custody: 101289

Report Date: 25-Apr-2014  
Order Date: 24-Apr-2014

**Order #: 1417234**

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

Paracel ID	Client ID
1417234-01	MW13-13

Approved By:



Mark Foto, M.Sc. For Dale Robertson, BSc  
Laboratory Director

**Certificate of Analysis**

Client: **Stantec Consulting Ltd. (Ottawa)**

Client PO: 45064625

Project Description: 122510670/ Boteler

Report Date: 25-Apr-2014

Order Date: 24-Apr-2014

**Analysis Summary Table**

Analysis	Method Reference/Description	Extraction Date	Analysis Date
Chromium, hexavalent	MOE E3056 - colourimetric	25-Apr-14	25-Apr-14
Mercury	EPA 245.1 - Cold Vapour AA	25-Apr-14	25-Apr-14
Metals, ICP-MS	EPA 200.8 - ICP-MS	25-Apr-14	25-Apr-14
PAHs by GC-MS	EPA 625 - GC-MS, extraction	24-Apr-14	25-Apr-14

**Certificate of Analysis**

Report Date: 25-Apr-2014

 Client: **Stantec Consulting Ltd. (Ottawa)**

Order Date: 24-Apr-2014

Client PO: 45064625

Project Description: 122510670/ Boteler

<b>Client ID:</b>	MW13-13	-	-	-
<b>Sample Date:</b>	24-Apr-14	-	-	-
<b>Sample ID:</b>	1417234-01	-	-	-
<b>MDL/Units</b>	Water	-	-	-

**Metals**

Mercury	0.1 ug/L	<0.1	-	-	-
Antimony	0.5 ug/L	3.5	-	-	-
Arsenic	1 ug/L	1	-	-	-
Barium	1 ug/L	30	-	-	-
Beryllium	0.5 ug/L	<0.5	-	-	-
Boron	10 ug/L	60	-	-	-
Cadmium	0.1 ug/L	<0.1	-	-	-
Chromium	1 ug/L	2	-	-	-
Chromium (VI)	10 ug/L	<10	-	-	-
Cobalt	0.5 ug/L	1.1	-	-	-
Copper	0.5 ug/L	4.0	-	-	-
Lead	0.1 ug/L	0.5	-	-	-
Molybdenum	0.5 ug/L	11.6	-	-	-
Nickel	1 ug/L	3	-	-	-
Selenium	1 ug/L	2	-	-	-
Silver	0.1 ug/L	<0.1	-	-	-
Sodium	200 ug/L	24400	-	-	-
Thallium	0.1 ug/L	<0.1	-	-	-
Uranium	0.1 ug/L	1.9	-	-	-
Vanadium	0.5 ug/L	2.9	-	-	-
Zinc	5 ug/L	7	-	-	-

**Semi-Volatiles**

Acenaphthene	0.05 ug/L	<0.05	-	-	-
Acenaphthylene	0.05 ug/L	0.09	-	-	-
Anthracene	0.01 ug/L	0.07	-	-	-
Benzo [a] anthracene	0.01 ug/L	0.15	-	-	-
Benzo [a] pyrene	0.01 ug/L	0.12	-	-	-
Benzo [b] fluoranthene	0.05 ug/L	0.14	-	-	-
Benzo [g,h,i] perylene	0.05 ug/L	<0.05	-	-	-
Benzo [k] fluoranthene	0.05 ug/L	0.10	-	-	-
Biphenyl	0.05 ug/L	<0.05	-	-	-
Chrysene	0.05 ug/L	0.16	-	-	-
Dibenzo [a,h] anthracene	0.05 ug/L	<0.05	-	-	-



**Certificate of Analysis**

Report Date: 25-Apr-2014

Client: **Stantec Consulting Ltd. (Ottawa)**

Order Date: 24-Apr-2014

Client PO: 45064625

Project Description: 122510670/ Boteler

	Client ID:	MW13-13	-	-	-
	Sample Date:	24-Apr-14	-	-	-
	Sample ID:	1417234-01	-	-	-
	MDL/Units	Water	-	-	-
Fluoranthene	0.01 ug/L	0.19	-	-	-
Fluorene	0.05 ug/L	<0.05	-	-	-
Indeno [1,2,3-cd] pyrene	0.05 ug/L	<0.05	-	-	-
1-Methylnaphthalene	0.05 ug/L	<0.05	-	-	-
2-Methylnaphthalene	0.05 ug/L	<0.05	-	-	-
Methylnaphthalene (1&2)	0.10 ug/L	<0.10	-	-	-
Naphthalene	0.05 ug/L	<0.05	-	-	-
Phenanthrene	0.05 ug/L	0.09	-	-	-
Pyrene	0.01 ug/L	0.17	-	-	-
2-Fluorobiphenyl	Surrogate	65.0%	-	-	-
Terphenyl-d14	Surrogate	104%	-	-	-

**Certificate of Analysis**

Report Date: 25-Apr-2014

Client: **Stantec Consulting Ltd. (Ottawa)**

Order Date: 24-Apr-2014

Client PO: 45064625

Project Description: 122510670/ Boteler

**Method Quality Control: Blank**

Analyte	Result	Reporting Limit	Units	Source Result	%REC	%REC Limit	RPD	RPD Limit	Notes
<b>Metals</b>									
Mercury	ND	0.1	ug/L						
Antimony	ND	0.5	ug/L						
Arsenic	ND	1	ug/L						
Barium	ND	1	ug/L						
Beryllium	ND	0.5	ug/L						
Boron	ND	10	ug/L						
Cadmium	ND	0.1	ug/L						
Chromium (VI)	ND	10	ug/L						
Chromium	ND	1	ug/L						
Cobalt	ND	0.5	ug/L						
Copper	ND	0.5	ug/L						
Lead	ND	0.1	ug/L						
Molybdenum	ND	0.5	ug/L						
Nickel	ND	1	ug/L						
Selenium	ND	1	ug/L						
Silver	ND	0.1	ug/L						
Sodium	ND	200	ug/L						
Thallium	ND	0.1	ug/L						
Uranium	ND	0.1	ug/L						
Vanadium	ND	0.5	ug/L						
Zinc	ND	5	ug/L						
<b>Semi-Volatiles</b>									
Acenaphthene	ND	0.05	ug/L						
Acenaphthylene	ND	0.05	ug/L						
Anthracene	ND	0.01	ug/L						
Benzo [a] anthracene	ND	0.01	ug/L						
Benzo [a] pyrene	ND	0.01	ug/L						
Benzo [b] fluoranthene	ND	0.05	ug/L						
Benzo [g,h,i] perylene	ND	0.05	ug/L						
Benzo [k] fluoranthene	ND	0.05	ug/L						
Biphenyl	ND	0.05	ug/L						
Chrysene	ND	0.05	ug/L						
Dibenzo [a,h] anthracene	ND	0.05	ug/L						
Fluoranthene	ND	0.01	ug/L						
Fluorene	ND	0.05	ug/L						
Indeno [1,2,3-cd] pyrene	ND	0.05	ug/L						
1-Methylnaphthalene	ND	0.05	ug/L						
2-Methylnaphthalene	ND	0.05	ug/L						
Methylnaphthalene (1&2)	ND	0.10	ug/L						
Naphthalene	ND	0.05	ug/L						
Phenanthrene	ND	0.05	ug/L						
Pyrene	ND	0.01	ug/L						
Surrogate: 2-Fluorobiphenyl	15.1		ug/L		75.7	50-140			
Surrogate: Terphenyl-d14	24.3		ug/L		122	50-140			

**Certificate of Analysis**

Report Date: 25-Apr-2014

Client: **Stantec Consulting Ltd. (Ottawa)**

Order Date: 24-Apr-2014

Client PO: 45064625

Project Description: 122510670/ Boteler

**Method Quality Control: Duplicate**

Analyte	Result	Reporting Limit	Units	Source Result	%REC	%REC Limit	RPD	RPD Limit	Notes
<b>Metals</b>									
Mercury	ND	0.1	ug/L	ND			0.0	20	
Antimony	2.70	0.5	ug/L	4.15			42.6	20	QR-01
Arsenic	ND	1	ug/L	ND			0.0	20	
Barium	25.8	1	ug/L	25.8			0.3	20	
Beryllium	ND	0.5	ug/L	ND			0.0	20	
Boron	32	10	ug/L	35			8.3	20	
Cadmium	ND	0.1	ug/L	ND			0.0	20	
Chromium (VI)	ND	10	ug/L	ND				20	
Chromium	18.8	1	ug/L	20.2			7.1	20	
Cobalt	ND	0.5	ug/L	ND			0.0	20	
Copper	2.27	0.5	ug/L	2.20			2.9	20	
Lead	ND	0.1	ug/L	ND			0.0	20	
Molybdenum	1.09	0.5	ug/L	1.30			18.1	20	
Nickel	1.4	1	ug/L	1.4			3.4	20	
Selenium	3.9	1	ug/L	4.4			12.4	20	
Silver	ND	0.1	ug/L	ND			0.0	20	
Sodium	22400	200	ug/L	23400			4.0	20	
Thallium	ND	0.1	ug/L	ND			0.0	20	
Uranium	0.3	0.1	ug/L	0.3			23.1	20	QR-01
Vanadium	5.17	0.5	ug/L	5.56			7.3	20	
Zinc	14	5	ug/L	13			0.9	20	

**Certificate of Analysis**

Client: **Stantec Consulting Ltd. (Ottawa)**  
Client PO: 45064625

Report Date: 25-Apr-2014  
Order Date: 24-Apr-2014

Project Description: 122510670/ Boteler

**Method Quality Control: Spike**

Analyte	Result	Reporting Limit	Units	Source Result	%REC	%REC Limit	RPD	RPD Limit	Notes
<b>Metals</b>									
Mercury	2.98	0.1	ug/L	ND	99.4	78-137			
Antimony	50.8		ug/L	4.15	93.4	80-120			
Arsenic	62.7		ug/L	0.8	124	80-120			QM-07
Barium	75.8		ug/L	25.8	100	80-120			
Beryllium	58.8		ug/L	0.01	118	80-120			
Boron	79		ug/L	35	87.2	80-120			
Cadmium	51.9		ug/L	ND	104	80-120			
Chromium (VI)	190	10	ug/L	ND	95.0	70-130			
Chromium	68.4		ug/L	20.2	96.5	80-120			
Cobalt	55.5		ug/L	0.11	111	80-120			
Copper	56.9		ug/L	2.20	109	80-120			
Lead	57.1		ug/L	0.03	114	80-120			
Molybdenum	49.3		ug/L	1.30	96.0	80-120			
Nickel	57.4		ug/L	1.4	112	80-120			
Selenium	51.5		ug/L	0.6	102	80-120			
Silver	45.1		ug/L	0.17	89.9	80-120			
Sodium	1270		ug/L	298	96.8	80-120			
Thallium	56.5		ug/L	0.05	113	80-120			
Uranium	60.3		ug/L	0.3	120	80-120			
Vanadium	56.0		ug/L	5.56	101	80-120			
Zinc	68		ug/L	13	110	80-120			
<b>Semi-Volatiles</b>									
Acenaphthene	4.42	0.05	ug/L	ND	88.4	50-140			
Acenaphthylene	4.46	0.05	ug/L	ND	89.3	50-140			
Anthracene	4.48	0.01	ug/L	ND	89.5	50-140			
Benzo [a] anthracene	4.42	0.01	ug/L	ND	88.5	50-140			
Benzo [a] pyrene	5.15	0.01	ug/L	ND	103	50-140			
Benzo [b] fluoranthene	4.18	0.05	ug/L	ND	83.5	50-140			
Benzo [g,h,i] perylene	2.85	0.05	ug/L	ND	57.1	50-140			
Benzo [k] fluoranthene	4.61	0.05	ug/L	ND	92.1	50-140			
Biphenyl	3.78	0.05	ug/L	ND	75.5	50-140			
Chrysene	4.78	0.05	ug/L	ND	95.6	50-140			
Dibenzo [a,h] anthracene	2.80	0.05	ug/L	ND	56.1	50-140			
Fluoranthene	4.87	0.01	ug/L	ND	97.4	50-140			
Fluorene	4.23	0.05	ug/L	ND	84.7	50-140			
Indeno [1,2,3-cd] pyrene	2.88	0.05	ug/L	ND	57.6	50-140			
1-Methylnaphthalene	4.31	0.05	ug/L	ND	86.2	50-140			
2-Methylnaphthalene	4.42	0.05	ug/L	ND	88.4	50-140			
Naphthalene	4.03	0.05	ug/L	ND	80.6	50-140			
Phenanthrene	4.51	0.05	ug/L	ND	90.2	50-140			
Pyrene	5.07	0.01	ug/L	ND	101	50-140			
Surrogate: 2-Fluorobiphenyl	15.6		ug/L		78.2	50-140			

**Certificate of Analysis**

Client: **Stantec Consulting Ltd. (Ottawa)**  
Client PO: 45064625

Project Description: 122510670/ Boteler

Report Date: 25-Apr-2014  
Order Date: 24-Apr-2014

**Qualifier Notes:**

**QC Qualifiers :**

- QM-07 : The spike recovery was outside acceptance limits for the MS and/or MSD. The batch was accepted based on other acceptable QC.
- QR-01 : Duplicate RPD is high, however, the sample result is less than 10x the MDL.
- QS-02 : Spike level outside of control limits. Analysis batch accepted based on other QC included in the batch.

**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.

OTTAWA • KINGSTON • NIAGARA • MISSISSAUGA • SARNIA

Page 1 of 1

Client Name: <u>Stake Consulting Ltd</u>	Project Reference: <u>12251470 - Btcler</u>	TAT: <input type="checkbox"/> Regular <input type="checkbox"/> 3 Day
Contact Name: <u>Jill Peters - Dechman / Breakation</u>	Quote # <u>City of Ottawa S2A-01910-91843-501</u>	<input type="checkbox"/> 2 Day <input checked="" type="checkbox"/> 1 Day
Address: <u>Suite 400, 1331 Clyde Avenue Ottawa, ON K2C 3G4</u>	PO # <u>122510670, 1225</u>	Date Required: <u>24 hr CASH TAT</u>
Telephone: <u>613-722-4420</u>	Email Address: <u>jill.peters-dechman@stake.com breakation@stake.com</u>	

Criteria:  O. Reg. 153/04 (As Amended) Table 3  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**

Sample ID/Location Name	Matrix	Air Volume	# of Containers	Sample Taken		PHCs F1-F4+BTEX	VOCs	PAHs	Metals by ICP	Hg	CrVI	B (HWS)							
				Date	Time														
1 MW13-13 BCF263	GW	X	4	2-14/4/24	14:10			✓	✓	✓									
2																			
3																			
4																			
5																			
6																			
7																			
8																			
9																			
10																			

Comments: - all metals bottles field filtered. Method of Delivery: WALKIN

Relinquished By (Sign): <u>[Signature]</u>	Received by Driver/Depot:	Received At: <u>Stake</u>	Verified By: <u>[Signature]</u>
Relinquished By (Print): <u>J. W. Ken</u>	Date/Time:	Date/Time: <u>24/11/24</u>	Date/Time: <u>Apr 24/14 3:29</u>
Date/Time: <u>21/4/24 15:00</u>	Temperature: _____ °C	Temperature: <u>11.4</u> °C	pH Verified: <u>✓</u> By: <u>[Signature]</u>



Your Project #: 22029003  
 Site Location: QATAR EMBASSY  
 Your C.O.C. #: n/a

**Attention: Mark McCalla**

exp Services Inc  
 Ottawa Branch  
 100-2650 Queensview Drive  
 Ottawa, ON  
 CANADA K2B 8H6

**Report Date: 2023/02/10**  
 Report #: R7504814  
 Version: 1 - Final

**CERTIFICATE OF ANALYSIS**

**BUREAU VERITAS JOB #: C332988**

**Received: 2023/02/02, 16:34**

Sample Matrix: Soil  
 # Samples Received: 11

<b>Analyses</b>	<b>Quantity</b>	<b>Date Extracted</b>	<b>Date Analyzed</b>	<b>Laboratory Method</b>	<b>Analytical Method</b>
Methylnaphthalene Sum (1)	8	N/A	2023/02/09	CAM SOP-00301	EPA 8270D m
Hot Water Extractable Boron (1)	8	2023/02/08	2023/02/08	CAM SOP-00408	R153 Ana. Prot. 2011
1,3-Dichloropropene Sum (1)	3	N/A	2023/02/08		EPA 8260C m
Free (WAD) Cyanide (1)	5	2023/02/07	2023/02/08	CAM SOP-00457	OMOE E3015 m
Free (WAD) Cyanide (1)	3	2023/02/08	2023/02/08	CAM SOP-00457	OMOE E3015 m
Conductivity (1)	8	2023/02/08	2023/02/08	CAM SOP-00414	OMOE E3530 v1 m
Hexavalent Chromium in Soil by IC (1, 2)	8	2023/02/08	2023/02/09	CAM SOP-00436	EPA 3060/7199 m
Petroleum Hydro. CCME F1 & BTEX in Soil (1, 3)	5	N/A	2023/02/06	CAM SOP-00315	CCME PHC-CWS m
Petroleum Hydrocarbons F2-F4 in Soil (1, 4)	8	2023/02/07	2023/02/08	CAM SOP-00316	CCME CWS m
Acid Extractable Metals by ICPMS (1)	8	2023/02/08	2023/02/08	CAM SOP-00447	EPA 6020B m
Total Metals in SPLP Leachate by ICPMS (1)	6	2023/02/09	2023/02/10	CAM SOP-00447	EPA 6020B m
Moisture (1)	8	N/A	2023/02/06	CAM SOP-00445	Carter 2nd ed 51.2 m
Modified SPLP extraction - Weight (1)	6	N/A	2023/02/09	CAM SOP-00941	OMOECP LaSB E9003 R3
PAH Compounds in Soil by GC/MS (SIM) (1)	1	2023/02/07	2023/02/07	CAM SOP-00318	EPA 8270E
PAH Compounds in Soil by GC/MS (SIM) (1)	7	2023/02/07	2023/02/08	CAM SOP-00318	EPA 8270E
Polychlorinated Biphenyl in Soil (1)	7	2023/02/07	2023/02/08	CAM SOP-00309	EPA 8082A m
Polychlorinated Biphenyl in Soil (1)	1	2023/02/08	2023/02/08	CAM SOP-00309	EPA 8082A m
pH CaCl2 EXTRACT (1)	5	2023/02/07	2023/02/07	CAM SOP-00413	EPA 9045 D m
pH CaCl2 EXTRACT (1)	3	2023/02/08	2023/02/08	CAM SOP-00413	EPA 9045 D m
Sodium Adsorption Ratio (SAR) (1)	8	N/A	2023/02/09	CAM SOP-00102	EPA 6010C
Volatile Organic Compounds and F1 PHCs (1)	2	N/A	2023/02/07	CAM SOP-00230	EPA 8260C m
Volatile Organic Compounds and F1 PHCs (1)	1	N/A	2023/02/08	CAM SOP-00230	EPA 8260C m

**Remarks:**

Bureau Veritas is accredited to ISO/IEC 17025 for specific parameters on scopes of accreditation. Unless otherwise noted, procedures used by Bureau Veritas are based upon recognized Provincial, Federal or US method compendia such as CCME, MELCC, EPA, APHA.

All work recorded herein has been done in accordance with procedures and practices ordinarily exercised by professionals in Bureau Veritas' profession using accepted testing methodologies, quality assurance and quality control procedures (except where otherwise agreed by the client and Bureau Veritas in writing). All data is in statistical control and has met quality control and method performance criteria unless otherwise noted. All method blanks are reported; unless indicated otherwise, associated sample data are not blank corrected. Where applicable, unless otherwise noted, Measurement Uncertainty has not been accounted for when stating conformity to the referenced standard.



Your Project #: 22029003  
Site Location: QATAR EMBASSY  
Your C.O.C. #: n/a

**Attention: Mark McCalla**

exp Services Inc  
Ottawa Branch  
100-2650 Queensview Drive  
Ottawa, ON  
CANADA K2B 8H6

**Report Date: 2023/02/10**  
Report #: R7504814  
Version: 1 - Final

**CERTIFICATE OF ANALYSIS**

**BUREAU VERITAS JOB #: C332988**

**Received: 2023/02/02, 16:34**

Bureau Veritas liability is limited to the actual cost of the requested analyses, unless otherwise agreed in writing. There is no other warranty expressed or implied. Bureau Veritas has been retained to provide analysis of samples provided by the Client using the testing methodology referenced in this report. Interpretation and use of test results are the sole responsibility of the Client and are not within the scope of services provided by Bureau Veritas, unless otherwise agreed in writing. Bureau Veritas is not responsible for the accuracy or any data impacts, that result from the information provided by the customer or their agent.

Solid sample results, except biota, are based on dry weight unless otherwise indicated. Organic analyses are not recovery corrected except for isotope dilution methods.

Results relate to samples tested. When sampling is not conducted by Bureau Veritas, results relate to the supplied samples tested. This Certificate shall not be reproduced except in full, without the written approval of the laboratory.

Reference Method suffix "m" indicates test methods incorporate validated modifications from specific reference methods to improve performance.

\* RPDs calculated using raw data. The rounding of final results may result in the apparent difference.

(1) This test was performed by Bureau Veritas Mississauga, 6740 Campobello Rd , Mississauga, ON, L5N 2L8

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

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

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

**Encryption Key**

Please direct all questions regarding this Certificate of Analysis to:

Katherine Szozda, Project Manager  
Email: Katherine.Szozda@bureauveritas.com  
Phone# (613)274-0573 Ext:7063633

=====  
This report has been generated and distributed using a secure automated process.

Bureau Veritas has procedures in place to guard against improper use of the electronic signature and have the required "signatories", as per ISO/IEC 17025, signing the reports. For Service Group specific validation, please refer to the Validation Signatures page if included, otherwise available by request. For Department specific Analyst/Supervisor validation names, please refer to the Test Summary section if included, otherwise available by request. This report is authorized by Rodney Major, General Manager responsible for Ontario Environmental laboratory operations.





BUREAU  
VERITAS

Bureau Veritas Job #: C332988  
Report Date: 2023/02/10

exp Services Inc  
Client Project #: 22029003  
Site Location: QATAR EMBASSY  
Sampler Initials: PO

**O.REG 406 EXCESS SOIL BULK INORGANICS (SOIL)**

Bureau Veritas ID		UYX903		UYX904		UYX905		UYX906		
Sampling Date		2023/01/30 10:15		2023/01/30 14:10		2023/01/30 14:45		2023/01/31 09:30		
COC Number		n/a		n/a		n/a		n/a		
	<b>UNITS</b>	<b>MW13-2A</b>	<b>QC Batch</b>	<b>MW13-1A</b>	<b>QC Batch</b>	<b>MW13-13A</b>	<b>QC Batch</b>	<b>MW13-14A</b>	<b>RDL</b>	<b>QC Batch</b>

<b>Calculated Parameters</b>										
Sodium Adsorption Ratio	N/A	0.69	8486683	0.24 (1)	8486180	0.25 (1)	8486180	4.1		8486683
<b>Inorganics</b>										
Conductivity	mS/cm	0.19	8493678	0.20	8493678	0.18	8493609	0.26	0.002	8493678
Available (CaCl2) pH	pH	7.74	8493019	8.01	8491972	7.69	8491972	7.74		8493019
WAD Cyanide (Free)	ug/g	<0.01	8492631	<0.01	8491620	<0.01	8491620	<0.01	0.01	8492631
Chromium (VI)	ug/g	<0.18	8492718	<0.18	8493070	<0.18	8493070	<0.18	0.18	8492718
<b>Metals</b>										
Hot Water Ext. Boron (B)	ug/g	0.057	8493883	0.065	8493883	0.14	8493883	0.052	0.050	8493883
Acid Extractable Antimony (Sb)	ug/g	<0.20	8493834	<0.20	8493834	0.67	8493834	<0.20	0.20	8493834
Acid Extractable Arsenic (As)	ug/g	<1.0	8493834	1.4	8493834	1.5	8493834	<1.0	1.0	8493834
Acid Extractable Barium (Ba)	ug/g	65	8493834	35	8493834	220	8493834	62	0.50	8493834
Acid Extractable Beryllium (Be)	ug/g	0.36	8493834	0.21	8493834	0.39	8493834	0.29	0.20	8493834
Acid Extractable Boron (B)	ug/g	<5.0	8493834	<5.0	8493834	<5.0	8493834	<5.0	5.0	8493834
Acid Extractable Cadmium (Cd)	ug/g	<0.10	8493834	<0.10	8493834	0.12	8493834	<0.10	0.10	8493834
Acid Extractable Chromium (Cr)	ug/g	20	8493834	9.3	8493834	45	8493834	19	1.0	8493834
Acid Extractable Cobalt (Co)	ug/g	6.0	8493834	4.2	8493834	10	8493834	7.4	0.10	8493834
Acid Extractable Copper (Cu)	ug/g	13	8493834	7.2	8493834	37	8493834	15	0.50	8493834
Acid Extractable Lead (Pb)	ug/g	3.7	8493834	4.9	8493834	51	8493834	3.1	1.0	8493834
Acid Extractable Molybdenum (Mo)	ug/g	<0.50	8493834	<0.50	8493834	<0.50	8493834	0.73	0.50	8493834
Acid Extractable Nickel (Ni)	ug/g	11	8493834	6.7	8493834	26	8493834	12	0.50	8493834
Acid Extractable Selenium (Se)	ug/g	<0.50	8493834	<0.50	8493834	<0.50	8493834	<0.50	0.50	8493834
Acid Extractable Silver (Ag)	ug/g	<0.20	8493834	<0.20	8493834	<0.20	8493834	<0.20	0.20	8493834
Acid Extractable Thallium (Tl)	ug/g	0.13	8493834	0.095	8493834	0.22	8493834	0.17	0.050	8493834
Acid Extractable Uranium (U)	ug/g	0.60	8493834	0.42	8493834	0.48	8493834	0.56	0.050	8493834
Acid Extractable Vanadium (V)	ug/g	36	8493834	16	8493834	48	8493834	37	5.0	8493834
Acid Extractable Zinc (Zn)	ug/g	29	8493834	16	8493834	73	8493834	29	5.0	8493834
Acid Extractable Mercury (Hg)	ug/g	<0.050	8493834	<0.050	8493834	0.11	8493834	<0.050	0.050	8493834

RDL = Reportable Detection Limit  
 QC Batch = Quality Control Batch  
 (1) Sodium was not detected. To report SAR the sodium detection limit was used in the calculation. This value represents a maximum ratio.



**O.REG 406 EXCESS SOIL BULK INORGANICS (SOIL)**

Bureau Veritas ID		UYX906			UYX907		UYX908		
Sampling Date		2023/01/31 09:30			2023/01/31 11:40		2023/01/31 15:00		
COC Number		n/a			n/a		n/a		
	<b>UNITS</b>	<b>MW13-14A Lab-Dup</b>	<b>RDL</b>	<b>QC Batch</b>	<b>MW13-12A</b>	<b>QC Batch</b>	<b>MW14-2A</b>	<b>RDL</b>	<b>QC Batch</b>

**Calculated Parameters**

Sodium Adsorption Ratio	N/A				0.29 (1)	8486180	0.22 (1)		8486683
-------------------------	-----	--	--	--	----------	---------	----------	--	---------

**Inorganics**

Conductivity	mS/cm				0.15	8493678	0.21	0.002	8493678
Available (CaCl <sub>2</sub> ) pH	pH				7.78	8491972	7.63		8493019
WAD Cyanide (Free)	ug/g				<0.01	8491620	<0.01	0.01	8492631
Chromium (VI)	ug/g				<0.18	8493070	<0.18	0.18	8492718

**Metals**

Hot Water Ext. Boron (B)	ug/g				0.099	8493883	0.66	0.050	8493883
Acid Extractable Antimony (Sb)	ug/g	<0.20	0.20	8493834	<0.20	8493834	2.1	0.20	8493834
Acid Extractable Arsenic (As)	ug/g	<1.0	1.0	8493834	<1.0	8493834	4.0	1.0	8493834
Acid Extractable Barium (Ba)	ug/g	64	0.50	8493834	100	8493834	120	0.50	8493834
Acid Extractable Beryllium (Be)	ug/g	0.29	0.20	8493834	0.33	8493834	0.25	0.20	8493834
Acid Extractable Boron (B)	ug/g	<5.0	5.0	8493834	<5.0	8493834	5.9	5.0	8493834
Acid Extractable Cadmium (Cd)	ug/g	<0.10	0.10	8493834	<0.10	8493834	0.20	0.10	8493834
Acid Extractable Chromium (Cr)	ug/g	20	1.0	8493834	20	8493834	16	1.0	8493834
Acid Extractable Cobalt (Co)	ug/g	7.3	0.10	8493834	6.0	8493834	4.8	0.10	8493834
Acid Extractable Copper (Cu)	ug/g	16	0.50	8493834	14	8493834	160	0.50	8493834
Acid Extractable Lead (Pb)	ug/g	3.1	1.0	8493834	5.3	8493834	340	1.0	8493834
Acid Extractable Molybdenum (Mo)	ug/g	0.63	0.50	8493834	0.58	8493834	0.70	0.50	8493834
Acid Extractable Nickel (Ni)	ug/g	13	0.50	8493834	12	8493834	11	0.50	8493834
Acid Extractable Selenium (Se)	ug/g	<0.50	0.50	8493834	<0.50	8493834	<0.50	0.50	8493834
Acid Extractable Silver (Ag)	ug/g	<0.20	0.20	8493834	<0.20	8493834	0.22	0.20	8493834
Acid Extractable Thallium (Tl)	ug/g	0.18	0.050	8493834	0.13	8493834	0.10	0.050	8493834
Acid Extractable Uranium (U)	ug/g	0.56	0.050	8493834	0.94	8493834	0.56	0.050	8493834
Acid Extractable Vanadium (V)	ug/g	37	5.0	8493834	30	8493834	18	5.0	8493834
Acid Extractable Zinc (Zn)	ug/g	31	5.0	8493834	29	8493834	130	5.0	8493834
Acid Extractable Mercury (Hg)	ug/g	<0.050	0.050	8493834	<0.050	8493834	0.90	0.050	8493834

RDL = Reportable Detection Limit  
 QC Batch = Quality Control Batch  
 Lab-Dup = Laboratory Initiated Duplicate  
 (1) Sodium was not detected. To report SAR the sodium detection limit was used in the calculation. This value represents a maximum ratio.



**O.REG 406 EXCESS SOIL BULK INORGANICS (SOIL)**

Bureau Veritas ID		UYX909		UYX910		
Sampling Date		2023/02/01 13:30		2023/02/02 09:30		
COC Number		n/a		n/a		
	<b>UNITS</b>	<b>MW13-11A</b>	<b>QC Batch</b>	<b>MW13-10A</b>	<b>RDL</b>	<b>QC Batch</b>
<b>Calculated Parameters</b>						
Sodium Adsorption Ratio	N/A	0.26 (1)	8486180	83		8486683
<b>Inorganics</b>						
Conductivity	mS/cm	0.17	8493678	0.32	0.002	8493678
Available (CaCl2) pH	pH	7.75	8491972	7.53		8491972
WAD Cyanide (Free)	ug/g	<0.01	8491620	<0.01	0.01	8491620
Chromium (VI)	ug/g	<0.18	8493070	<0.18	0.18	8493070
<b>Metals</b>						
Hot Water Ext. Boron (B)	ug/g	0.24	8493883	0.77	0.050	8493883
Acid Extractable Antimony (Sb)	ug/g	0.27	8493834	0.69	0.20	8493834
Acid Extractable Arsenic (As)	ug/g	2.2	8493834	3.7	1.0	8493834
Acid Extractable Barium (Ba)	ug/g	85	8493834	110	0.50	8493834
Acid Extractable Beryllium (Be)	ug/g	0.30	8493834	0.43	0.20	8493834
Acid Extractable Boron (B)	ug/g	<5.0	8493834	6.7	5.0	8493834
Acid Extractable Cadmium (Cd)	ug/g	<0.10	8493834	0.17	0.10	8493834
Acid Extractable Chromium (Cr)	ug/g	16	8493834	23	1.0	8493834
Acid Extractable Cobalt (Co)	ug/g	5.2	8493834	7.1	0.10	8493834
Acid Extractable Copper (Cu)	ug/g	16	8493834	35	0.50	8493834
Acid Extractable Lead (Pb)	ug/g	35	8493834	78	1.0	8493834
Acid Extractable Molybdenum (Mo)	ug/g	0.70	8493834	0.93	0.50	8493834
Acid Extractable Nickel (Ni)	ug/g	11	8493834	17	0.50	8493834
Acid Extractable Selenium (Se)	ug/g	<0.50	8493834	<0.50	0.50	8493834
Acid Extractable Silver (Ag)	ug/g	<0.20	8493834	<0.20	0.20	8493834
Acid Extractable Thallium (Tl)	ug/g	0.13	8493834	0.15	0.050	8493834
Acid Extractable Uranium (U)	ug/g	0.86	8493834	0.66	0.050	8493834
Acid Extractable Vanadium (V)	ug/g	24	8493834	29	5.0	8493834
Acid Extractable Zinc (Zn)	ug/g	42	8493834	73	5.0	8493834
Acid Extractable Mercury (Hg)	ug/g	0.11	8493834	0.25	0.050	8493834
RDL = Reportable Detection Limit QC Batch = Quality Control Batch (1) Sodium was not detected. To report SAR the sodium detection limit was used in the calculation. This value represents a maximum ratio.						



**O.REG 406 EXCESS SOIL BULK PAHS (SOIL)**

Bureau Veritas ID		UYX903		UYX904	UYX905		UYX906		
Sampling Date		2023/01/30 10:15		2023/01/30 14:10	2023/01/30 14:45		2023/01/31 09:30		
COC Number		n/a		n/a	n/a		n/a		
	<b>UNITS</b>	<b>MW13-2A</b>	<b>QC Batch</b>	<b>MW13-1A</b>	<b>MW13-13A</b>	<b>QC Batch</b>	<b>MW13-14A</b>	<b>RDL</b>	<b>QC Batch</b>

**Calculated Parameters**

Methylnaphthalene, 2-(1-)	ug/g	<0.0071	8486685	0.14	0.020	8485975	<0.0071	0.0071	8486685
---------------------------	------	---------	---------	------	-------	---------	---------	--------	---------

**Polyaromatic Hydrocarbons**

Acenaphthene	ug/g	<0.0050	8491562	0.34	0.012	8491562	<0.0050	0.0050	8491562
Acenaphthylene	ug/g	<0.0050	8491562	0.0089	0.061	8491562	<0.0050	0.0050	8491562
Anthracene	ug/g	<0.0050	8491562	0.64	0.055	8491562	<0.0050	0.0050	8491562
Benzo(a)anthracene	ug/g	<0.0050	8491562	0.86	0.28	8491562	<0.0050	0.0050	8491562
Benzo(a)pyrene	ug/g	<0.0050	8491562	0.69	0.30	8491562	<0.0050	0.0050	8491562
Benzo(b/j)fluoranthene	ug/g	<0.0050	8491562	0.87	0.41	8491562	<0.0050	0.0050	8491562
Benzo(g,h,i)perylene	ug/g	<0.0050	8491562	0.44	0.22	8491562	<0.0050	0.0050	8491562
Benzo(k)fluoranthene	ug/g	<0.0050	8491562	0.37	0.16	8491562	<0.0050	0.0050	8491562
Chrysene	ug/g	<0.0050	8491562	0.70	0.26	8491562	<0.0050	0.0050	8491562
Dibenzo(a,h)anthracene	ug/g	<0.0050	8491562	0.15	0.064	8491562	<0.0050	0.0050	8491562
Fluoranthene	ug/g	<0.0050	8491562	2.1	0.51	8491562	0.0057	0.0050	8491562
Fluorene	ug/g	<0.0050	8491562	0.39	0.016	8491562	<0.0050	0.0050	8491562
Indeno(1,2,3-cd)pyrene	ug/g	<0.0050	8491562	0.46	0.23	8491562	<0.0050	0.0050	8491562
1-Methylnaphthalene	ug/g	<0.0050	8491562	0.064	0.0097	8491562	<0.0050	0.0050	8491562
2-Methylnaphthalene	ug/g	<0.0050	8491562	0.080	0.010	8491562	<0.0050	0.0050	8491562
Naphthalene	ug/g	<0.0050	8491562	0.13	0.013	8491562	<0.0050	0.0050	8491562
Phenanthrene	ug/g	<0.0050	8491562	2.2	0.19	8491562	<0.0050	0.0050	8491562
Pyrene	ug/g	<0.0050	8491562	1.5	0.45	8491562	<0.0050	0.0050	8491562
Biphenyl	ug/g	<0.0050	8491562	0.029	<0.0050	8491562	<0.0050	0.0050	8491562

**Surrogate Recovery (%)**

D10-Anthracene	%	107	8491562	108	107	8491562	108		8491562
D14-Terphenyl (FS)	%	119	8491562	125	125	8491562	125		8491562
D8-Acenaphthylene	%	86	8491562	97	95	8491562	93		8491562

RDL = Reportable Detection Limit  
 QC Batch = Quality Control Batch



**O.REG 406 EXCESS SOIL BULK PAHS (SOIL)**

Bureau Veritas ID		UYX907			UYX907			UYX908		
Sampling Date		2023/01/31 11:40			2023/01/31 11:40			2023/01/31 15:00		
COC Number		n/a			n/a			n/a		
	<b>UNITS</b>	<b>MW13-12A</b>	<b>RDL</b>	<b>QC Batch</b>	<b>MW13-12A Lab-Dup</b>	<b>RDL</b>	<b>QC Batch</b>	<b>MW14-2A</b>	<b>RDL</b>	<b>QC Batch</b>

**Calculated Parameters**

Methylnaphthalene, 2-(1-)	ug/g	<0.0071	0.0071	8485975				0.015	0.0071	8486685
---------------------------	------	---------	--------	---------	--	--	--	-------	--------	---------

**Polyaromatic Hydrocarbons**

Acenaphthene	ug/g	<0.0050	0.0050	8491562	<0.0050	0.0050	8491562	0.014	0.0050	8491562
Acenaphthylene	ug/g	0.011	0.0050	8491562	0.0082	0.0050	8491562	0.053	0.0050	8491562
Anthracene	ug/g	0.011	0.0050	8491562	0.0082	0.0050	8491562	0.073	0.0050	8491562
Benzo(a)anthracene	ug/g	0.045	0.0050	8491562	0.036	0.0050	8491562	0.35	0.0050	8491562
Benzo(a)pyrene	ug/g	0.045	0.0050	8491562	0.038	0.0050	8491562	0.33	0.0050	8491562
Benzo(b/j)fluoranthene	ug/g	0.060	0.0050	8491562	0.048	0.0050	8491562	0.43	0.0050	8491562
Benzo(g,h,i)perylene	ug/g	0.032	0.0050	8491562	0.027	0.0050	8491562	0.20	0.0050	8491562
Benzo(k)fluoranthene	ug/g	0.022	0.0050	8491562	0.018	0.0050	8491562	0.16	0.0050	8491562
Chrysene	ug/g	0.039	0.0050	8491562	0.031	0.0050	8491562	0.32	0.0050	8491562
Dibenzo(a,h)anthracene	ug/g	0.0083	0.0050	8491562	0.0069	0.0050	8491562	0.066	0.0050	8491562
Fluoranthene	ug/g	0.081	0.0050	8491562	0.064	0.0050	8491562	0.58	0.0050	8491562
Fluorene	ug/g	<0.0050	0.0050	8491562	<0.0050	0.0050	8491562	0.024	0.0050	8491562
Indeno(1,2,3-cd)pyrene	ug/g	0.035	0.0050	8491562	0.027	0.0050	8491562	0.21	0.0050	8491562
1-Methylnaphthalene	ug/g	<0.0050	0.0050	8491562	<0.0050	0.0050	8491562	0.0076	0.0050	8491562
2-Methylnaphthalene	ug/g	<0.0050	0.0050	8491562	<0.0050	0.0050	8491562	0.0075	0.0050	8491562
Naphthalene	ug/g	<0.0050	0.0050	8491562	<0.0050	0.0050	8491562	0.016	0.0050	8491562
Phenanthrene	ug/g	0.035	0.0050	8491562	0.028	0.0050	8491562	0.28	0.0050	8491562
Pyrene	ug/g	0.071	0.0050	8491562	0.055	0.0050	8491562	0.56	0.0050	8491562
Biphenyl	ug/g	<0.0050	0.0050	8491562	<0.0050	0.0050	8491562	<0.0050	0.0050	8491562

**Surrogate Recovery (%)**

D10-Anthracene	%	107		8491562	110		8491562	102		8491562
D14-Terphenyl (FS)	%	117		8491562	118		8491562	120		8491562
D8-Acenaphthylene	%	88		8491562	90		8491562	91		8491562

RDL = Reportable Detection Limit  
QC Batch = Quality Control Batch  
Lab-Dup = Laboratory Initiated Duplicate



**O.REG 406 EXCESS SOIL BULK PAHS (SOIL)**

Bureau Veritas ID		UYX909		UYX910		
Sampling Date		2023/02/01 13:30		2023/02/02 09:30		
COC Number		n/a		n/a		
	<b>UNITS</b>	<b>MW13-11A</b>	<b>QC Batch</b>	<b>MW13-10A</b>	<b>RDL</b>	<b>QC Batch</b>
<b>Calculated Parameters</b>						
Methylnaphthalene, 2-(1-)	ug/g	0.021	8485975	0.16	0.0071	8486685
<b>Polyaromatic Hydrocarbons</b>						
Acenaphthene	ug/g	0.032	8491562	0.12	0.0050	8491562
Acenaphthylene	ug/g	0.20	8491562	0.27	0.0050	8491562
Anthracene	ug/g	0.29	8491562	0.41	0.0050	8491562
Benzo(a)anthracene	ug/g	0.96	8491562	1.3	0.0050	8491562
Benzo(a)pyrene	ug/g	0.89	8491562	1.3	0.0050	8491562
Benzo(b/j)fluoranthene	ug/g	1.2	8491562	1.7	0.0050	8491562
Benzo(g,h,i)perylene	ug/g	0.52	8491562	0.79	0.0050	8491562
Benzo(k)fluoranthene	ug/g	0.44	8491562	0.64	0.0050	8491562
Chrysene	ug/g	0.81	8491562	1.1	0.0050	8491562
Dibenzo(a,h)anthracene	ug/g	0.18	8491562	0.26	0.0050	8491562
Fluoranthene	ug/g	2.0	8491562	3.1	0.0050	8491562
Fluorene	ug/g	0.076	8491562	0.24	0.0050	8491562
Indeno(1,2,3-cd)pyrene	ug/g	0.58	8491562	0.87	0.0050	8491562
1-Methylnaphthalene	ug/g	0.011	8491562	0.086	0.0050	8491562
2-Methylnaphthalene	ug/g	0.010	8491562	0.075	0.0050	8491562
Naphthalene	ug/g	0.011	8491562	0.11	0.0050	8491562
Phenanthrene	ug/g	0.93	8491562	1.7	0.0050	8491562
Pyrene	ug/g	1.7	8491562	2.2	0.0050	8491562
Biphenyl	ug/g	<0.0050	8491562	0.026	0.0050	8491562
<b>Surrogate Recovery (%)</b>						
D10-Anthracene	%	104	8491562	100		8491562
D14-Terphenyl (FS)	%	120	8491562	116		8491562
D8-Acenaphthylene	%	94	8491562	94		8491562
RDL = Reportable Detection Limit QC Batch = Quality Control Batch						



**O.REG 406 EXCESS SOIL BULK PCBs (SOIL)**

Bureau Veritas ID		UYX903		UYX904	UYX905	UYX906	UYX907	UYX908		
Sampling Date		2023/01/30 10:15		2023/01/30 14:10	2023/01/30 14:45	2023/01/31 09:30	2023/01/31 11:40	2023/01/31 15:00		
COC Number		n/a		n/a	n/a	n/a	n/a	n/a		
	<b>UNITS</b>	<b>MW13-2A</b>	<b>QC Batch</b>	<b>MW13-1A</b>	<b>MW13-13A</b>	<b>MW13-14A</b>	<b>MW13-12A</b>	<b>MW14-2A</b>	<b>RDL</b>	<b>QC Batch</b>
<b>PCBs</b>										
Aroclor 1242	ug/g	<0.010	8492170	<0.010	<0.010	<0.010	<0.010	<0.010	0.010	8491678
Aroclor 1248	ug/g	<0.010	8492170	<0.010	<0.010	<0.010	<0.010	<0.010	0.010	8491678
Aroclor 1254	ug/g	<0.010	8492170	<0.010	<0.010	<0.010	<0.010	<0.010	0.010	8491678
Aroclor 1260	ug/g	<0.010	8492170	<0.010	<0.010	<0.010	<0.010	<0.010	0.010	8491678
Total PCB	ug/g	<0.010	8492170	<0.010	<0.010	<0.010	<0.010	<0.010	0.010	8491678
<b>Surrogate Recovery (%)</b>										
Decachlorobiphenyl	%	86	8492170	88	81	85	80	81		8491678
RDL = Reportable Detection Limit QC Batch = Quality Control Batch										

Bureau Veritas ID		UYX909	UYX909		UYX910		
Sampling Date		2023/02/01 13:30	2023/02/01 13:30		2023/02/02 09:30		
COC Number		n/a	n/a		n/a		
	<b>UNITS</b>	<b>MW13-11A</b>	<b>MW13-11A Lab-Dup</b>	<b>QC Batch</b>	<b>MW13-10A</b>	<b>RDL</b>	<b>QC Batch</b>
<b>PCBs</b>							
Aroclor 1242	ug/g	<0.010	<0.010	8492663	<0.010	0.010	8491678
Aroclor 1248	ug/g	<0.010	<0.010	8492663	<0.010	0.010	8491678
Aroclor 1254	ug/g	<0.010	<0.010	8492663	<0.010	0.010	8491678
Aroclor 1260	ug/g	<0.010	<0.010	8492663	<0.010	0.010	8491678
Total PCB	ug/g	<0.010	<0.010	8492663	<0.010	0.010	8491678
<b>Surrogate Recovery (%)</b>							
Decachlorobiphenyl	%	98	84	8492663	92		8491678
RDL = Reportable Detection Limit QC Batch = Quality Control Batch Lab-Dup = Laboratory Initiated Duplicate							



**O.REG 406 EXCESS SOIL BULK BTEX/F1-F4 (SOIL)**

Bureau Veritas ID		UYX904	UYX905	UYX907			UYX907		
Sampling Date		2023/01/30 14:10	2023/01/30 14:45	2023/01/31 11:40			2023/01/31 11:40		
COC Number		n/a	n/a	n/a			n/a		
	<b>UNITS</b>	<b>MW13-1A</b>	<b>MW13-13A</b>	<b>MW13-12A</b>	<b>RDL</b>	<b>QC Batch</b>	<b>MW13-12A Lab-Dup</b>	<b>RDL</b>	<b>QC Batch</b>
<b>Inorganics</b>									
Moisture	%	11	13	18	1.0	8489235			
<b>BTEX &amp; F1 Hydrocarbons</b>									
Benzene	ug/g	<0.020	<0.020	<0.020	0.020	8488540			
Toluene	ug/g	<0.020	<0.020	<0.020	0.020	8488540			
Ethylbenzene	ug/g	<0.020	<0.020	<0.020	0.020	8488540			
o-Xylene	ug/g	<0.020	<0.020	<0.020	0.020	8488540			
p+m-Xylene	ug/g	<0.040	<0.040	<0.040	0.040	8488540			
Total Xylenes	ug/g	<0.040	<0.040	<0.040	0.040	8488540			
F1 (C6-C10)	ug/g	<10	<10	<10	10	8488540			
F1 (C6-C10) - BTEX	ug/g	<10	<10	<10	10	8488540			
<b>F2-F4 Hydrocarbons</b>									
F2 (C10-C16 Hydrocarbons)	ug/g	<10	<10	<10	10	8491253	<10	10	8491253
F3 (C16-C34 Hydrocarbons)	ug/g	<50	260	<50	50	8491253	<50	50	8491253
F4 (C34-C50 Hydrocarbons)	ug/g	<50	210	<50	50	8491253	<50	50	8491253
Reached Baseline at C50	ug/g	Yes	Yes	Yes		8491253	Yes		8491253
<b>Surrogate Recovery (%)</b>									
1,4-Difluorobenzene	%	102	102	101		8488540			
4-Bromofluorobenzene	%	102	100	100		8488540			
D10-o-Xylene	%	118	120	119		8488540			
D4-1,2-Dichloroethane	%	99	95	100		8488540			
o-Terphenyl	%	97	91	100		8491253	99		8491253
RDL = Reportable Detection Limit QC Batch = Quality Control Batch Lab-Dup = Laboratory Initiated Duplicate									





**O.REG 406 EXCESS SOIL BULK BTEX/F1-F4 (SOIL)**

Bureau Veritas ID		UYX909	UYX910		
Sampling Date		2023/02/01 13:30	2023/02/02 09:30		
COC Number		n/a	n/a		
	<b>UNITS</b>	<b>MW13-11A</b>	<b>MW13-10A</b>	<b>RDL</b>	<b>QC Batch</b>
<b>Inorganics</b>					
Moisture	%	9.4	9.6	1.0	8489235
<b>BTEX &amp; F1 Hydrocarbons</b>					
Benzene	ug/g	<0.020	<0.020	0.020	8488540
Toluene	ug/g	<0.020	<0.020	0.020	8488540
Ethylbenzene	ug/g	<0.020	<0.020	0.020	8488540
o-Xylene	ug/g	<0.020	<0.020	0.020	8488540
p+m-Xylene	ug/g	<0.040	<0.040	0.040	8488540
Total Xylenes	ug/g	<0.040	<0.040	0.040	8488540
F1 (C6-C10)	ug/g	<10	<10	10	8488540
F1 (C6-C10) - BTEX	ug/g	<10	<10	10	8488540
<b>F2-F4 Hydrocarbons</b>					
F2 (C10-C16 Hydrocarbons)	ug/g	<10	13	10	8491253
F3 (C16-C34 Hydrocarbons)	ug/g	69	140	50	8491253
F4 (C34-C50 Hydrocarbons)	ug/g	<50	84	50	8491253
Reached Baseline at C50	ug/g	Yes	Yes		8491253
<b>Surrogate Recovery (%)</b>					
1,4-Difluorobenzene	%	99	100		8488540
4-Bromofluorobenzene	%	101	101		8488540
D10-o-Xylene	%	113	113		8488540
D4-1,2-Dichloroethane	%	100	100		8488540
o-Terphenyl	%	107	87		8491253
RDL = Reportable Detection Limit					
QC Batch = Quality Control Batch					



**O.REG 406 EXCESS SOIL BULK VOCS/F1-F4 (SOIL)**

Bureau Veritas ID		UYX903	UYX906			UYX906		
Sampling Date		2023/01/30 10:15	2023/01/31 09:30			2023/01/31 09:30		
COC Number		n/a	n/a			n/a		
	UNITS	MW13-2A	MW13-14A	RDL	QC Batch	MW13-14A Lab-Dup	RDL	QC Batch
<b>Inorganics</b>								
Moisture	%	18	23	1.0	8489235			
<b>Calculated Parameters</b>								
1,3-Dichloropropene (cis+trans)	ug/g	<0.050	<0.050	0.050	8485971			
<b>Volatile Organics</b>								
Acetone (2-Propanone)	ug/g	<0.49	<0.49	0.49	8488729	<0.49	0.49	8488729
Benzene	ug/g	<0.0060	<0.0060	0.0060	8488729	<0.0060	0.0060	8488729
Bromodichloromethane	ug/g	<0.040	<0.040	0.040	8488729	<0.040	0.040	8488729
Bromoform	ug/g	<0.040	<0.040	0.040	8488729	<0.040	0.040	8488729
Bromomethane	ug/g	<0.040	<0.040	0.040	8488729	<0.040	0.040	8488729
Carbon Tetrachloride	ug/g	<0.040	<0.040	0.040	8488729	<0.040	0.040	8488729
Chlorobenzene	ug/g	<0.040	<0.040	0.040	8488729	<0.040	0.040	8488729
Chloroform	ug/g	<0.040	<0.040	0.040	8488729	<0.040	0.040	8488729
Dibromochloromethane	ug/g	<0.040	<0.040	0.040	8488729	<0.040	0.040	8488729
1,2-Dichlorobenzene	ug/g	<0.040	<0.040	0.040	8488729	<0.040	0.040	8488729
1,3-Dichlorobenzene	ug/g	<0.040	<0.040	0.040	8488729	<0.040	0.040	8488729
1,4-Dichlorobenzene	ug/g	<0.040	<0.040	0.040	8488729	<0.040	0.040	8488729
Dichlorodifluoromethane (FREON 12)	ug/g	<0.040	<0.040	0.040	8488729	<0.040	0.040	8488729
1,1-Dichloroethane	ug/g	<0.040	<0.040	0.040	8488729	<0.040	0.040	8488729
1,2-Dichloroethane	ug/g	<0.049	<0.049	0.049	8488729	<0.049	0.049	8488729
1,1-Dichloroethylene	ug/g	<0.040	<0.040	0.040	8488729	<0.040	0.040	8488729
cis-1,2-Dichloroethylene	ug/g	<0.040	<0.040	0.040	8488729	<0.040	0.040	8488729
trans-1,2-Dichloroethylene	ug/g	<0.040	<0.040	0.040	8488729	<0.040	0.040	8488729
1,2-Dichloropropane	ug/g	<0.040	<0.040	0.040	8488729	<0.040	0.040	8488729
cis-1,3-Dichloropropene	ug/g	<0.030	<0.030	0.030	8488729	<0.030	0.030	8488729
trans-1,3-Dichloropropene	ug/g	<0.040	<0.040	0.040	8488729	<0.040	0.040	8488729
Ethylbenzene	ug/g	<0.010	<0.010	0.010	8488729	<0.010	0.010	8488729
Ethylene Dibromide	ug/g	<0.040	<0.040	0.040	8488729	<0.040	0.040	8488729
Hexane	ug/g	<0.040	<0.040	0.040	8488729	<0.040	0.040	8488729
Methylene Chloride(Dichloromethane)	ug/g	<0.049	<0.049	0.049	8488729	<0.049	0.049	8488729
Methyl Ethyl Ketone (2-Butanone)	ug/g	<0.40	<0.40	0.40	8488729	<0.40	0.40	8488729
Methyl Isobutyl Ketone	ug/g	<0.40	<0.40	0.40	8488729	<0.40	0.40	8488729
Methyl t-butyl ether (MTBE)	ug/g	<0.040	<0.040	0.040	8488729	<0.040	0.040	8488729
Styrene	ug/g	<0.040	<0.040	0.040	8488729	<0.040	0.040	8488729
RDL = Reportable Detection Limit QC Batch = Quality Control Batch Lab-Dup = Laboratory Initiated Duplicate								



**O.REG 406 EXCESS SOIL BULK VOCS/F1-F4 (SOIL)**

Bureau Veritas ID		UYX903	UYX906			UYX906		
Sampling Date		2023/01/30 10:15	2023/01/31 09:30			2023/01/31 09:30		
COC Number		n/a	n/a			n/a		
	UNITS	MW13-2A	MW13-14A	RDL	QC Batch	MW13-14A Lab-Dup	RDL	QC Batch
1,1,1,2-Tetrachloroethane	ug/g	<0.040	<0.040	0.040	8488729	<0.040	0.040	8488729
1,1,2,2-Tetrachloroethane	ug/g	<0.040	<0.040	0.040	8488729	<0.040	0.040	8488729
Tetrachloroethylene	ug/g	<0.040	<0.040	0.040	8488729	<0.040	0.040	8488729
Toluene	ug/g	<0.020	<0.020	0.020	8488729	<0.020	0.020	8488729
1,1,1-Trichloroethane	ug/g	<0.040	<0.040	0.040	8488729	<0.040	0.040	8488729
1,1,2-Trichloroethane	ug/g	<0.040	<0.040	0.040	8488729	<0.040	0.040	8488729
Trichloroethylene	ug/g	<0.010	<0.010	0.010	8488729	<0.010	0.010	8488729
Trichlorofluoromethane (FREON 11)	ug/g	<0.040	<0.040	0.040	8488729	<0.040	0.040	8488729
Vinyl Chloride	ug/g	<0.019	<0.019	0.019	8488729	<0.019	0.019	8488729
p+m-Xylene	ug/g	<0.020	<0.020	0.020	8488729	<0.020	0.020	8488729
o-Xylene	ug/g	<0.020	<0.020	0.020	8488729	<0.020	0.020	8488729
Total Xylenes	ug/g	<0.020	<0.020	0.020	8488729	<0.020	0.020	8488729
F1 (C6-C10)	ug/g	<10	<10	10	8488729	<10	10	8488729
F1 (C6-C10) - BTEX	ug/g	<10	<10	10	8488729	<10	10	8488729
<b>F2-F4 Hydrocarbons</b>								
F2 (C10-C16 Hydrocarbons)	ug/g	<10	<10	10	8491253			
F3 (C16-C34 Hydrocarbons)	ug/g	<50	<50	50	8491253			
F4 (C34-C50 Hydrocarbons)	ug/g	<50	<50	50	8491253			
Reached Baseline at C50	ug/g	Yes	Yes		8491253			
<b>Surrogate Recovery (%)</b>								
o-Terphenyl	%	99	99		8491253			
4-Bromofluorobenzene	%	91	90		8488729	90		8488729
D10-o-Xylene	%	101	113		8488729	113		8488729
D4-1,2-Dichloroethane	%	98	100		8488729	103		8488729
D8-Toluene	%	99	98		8488729	98		8488729
RDL = Reportable Detection Limit QC Batch = Quality Control Batch Lab-Dup = Laboratory Initiated Duplicate								



**O.REG 406 EXCESS SOIL BULK VOCS/F1-F4 (SOIL)**

Bureau Veritas ID		UYX908		
Sampling Date		2023/01/31 15:00		
COC Number		n/a		
	<b>UNITS</b>	<b>MW14-2A</b>	<b>RDL</b>	<b>QC Batch</b>
<b>Inorganics</b>				
Moisture	%	21	1.0	8489235
<b>Calculated Parameters</b>				
1,3-Dichloropropene (cis+trans)	ug/g	<0.050	0.050	8485971
<b>Volatile Organics</b>				
Acetone (2-Propanone)	ug/g	<0.49	0.49	8488729
Benzene	ug/g	<0.0060	0.0060	8488729
Bromodichloromethane	ug/g	<0.040	0.040	8488729
Bromoform	ug/g	<0.040	0.040	8488729
Bromomethane	ug/g	<0.040	0.040	8488729
Carbon Tetrachloride	ug/g	<0.040	0.040	8488729
Chlorobenzene	ug/g	<0.040	0.040	8488729
Chloroform	ug/g	<0.040	0.040	8488729
Dibromochloromethane	ug/g	<0.040	0.040	8488729
1,2-Dichlorobenzene	ug/g	<0.040	0.040	8488729
1,3-Dichlorobenzene	ug/g	<0.040	0.040	8488729
1,4-Dichlorobenzene	ug/g	<0.040	0.040	8488729
Dichlorodifluoromethane (FREON 12)	ug/g	<0.040	0.040	8488729
1,1-Dichloroethane	ug/g	<0.040	0.040	8488729
1,2-Dichloroethane	ug/g	<0.049	0.049	8488729
1,1-Dichloroethylene	ug/g	<0.040	0.040	8488729
cis-1,2-Dichloroethylene	ug/g	<0.040	0.040	8488729
trans-1,2-Dichloroethylene	ug/g	<0.040	0.040	8488729
1,2-Dichloropropane	ug/g	<0.040	0.040	8488729
cis-1,3-Dichloropropene	ug/g	<0.030	0.030	8488729
trans-1,3-Dichloropropene	ug/g	<0.040	0.040	8488729
Ethylbenzene	ug/g	<0.010	0.010	8488729
Ethylene Dibromide	ug/g	<0.040	0.040	8488729
Hexane	ug/g	<0.040	0.040	8488729
Methylene Chloride(Dichloromethane)	ug/g	<0.049	0.049	8488729
Methyl Ethyl Ketone (2-Butanone)	ug/g	<0.40	0.40	8488729
Methyl Isobutyl Ketone	ug/g	<0.40	0.40	8488729
Methyl t-butyl ether (MTBE)	ug/g	<0.040	0.040	8488729
Styrene	ug/g	<0.040	0.040	8488729
RDL = Reportable Detection Limit QC Batch = Quality Control Batch				



**O.REG 406 EXCESS SOIL BULK VOCS/F1-F4 (SOIL)**

Bureau Veritas ID		UYX908		
Sampling Date		2023/01/31 15:00		
COC Number		n/a		
	<b>UNITS</b>	<b>MW14-2A</b>	<b>RDL</b>	<b>QC Batch</b>
1,1,1,2-Tetrachloroethane	ug/g	<0.040	0.040	8488729
1,1,2,2-Tetrachloroethane	ug/g	<0.040	0.040	8488729
Tetrachloroethylene	ug/g	<0.040	0.040	8488729
Toluene	ug/g	<0.020	0.020	8488729
1,1,1-Trichloroethane	ug/g	<0.040	0.040	8488729
1,1,2-Trichloroethane	ug/g	<0.040	0.040	8488729
Trichloroethylene	ug/g	<0.010	0.010	8488729
Trichlorofluoromethane (FREON 11)	ug/g	<0.040	0.040	8488729
Vinyl Chloride	ug/g	<0.019	0.019	8488729
p+m-Xylene	ug/g	<0.020	0.020	8488729
o-Xylene	ug/g	<0.020	0.020	8488729
Total Xylenes	ug/g	<0.020	0.020	8488729
F1 (C6-C10)	ug/g	<10	10	8488729
F1 (C6-C10) - BTEX	ug/g	<10	10	8488729
<b>F2-F4 Hydrocarbons</b>				
F2 (C10-C16 Hydrocarbons)	ug/g	<10	10	8491253
F3 (C16-C34 Hydrocarbons)	ug/g	<50	50	8491253
F4 (C34-C50 Hydrocarbons)	ug/g	<50	50	8491253
Reached Baseline at C50	ug/g	Yes		8491253
<b>Surrogate Recovery (%)</b>				
o-Terphenyl	%	101		8491253
4-Bromofluorobenzene	%	91		8488729
D10-o-Xylene	%	107		8488729
D4-1,2-Dichloroethane	%	106		8488729
D8-Toluene	%	96		8488729
RDL = Reportable Detection Limit QC Batch = Quality Control Batch				



BUREAU  
VERITAS

Bureau Veritas Job #: C332988  
Report Date: 2023/02/10

exp Services Inc  
Client Project #: 22029003  
Site Location: QATAR EMBASSY  
Sampler Initials: PO

**O.REG 406 EXCESS SOIL SPLP METALS (SOIL)**

Bureau Veritas ID		UYX903	UYX906	UYX908	UYX911	UYX912	UYX913		
Sampling Date		2023/01/30 10:15	2023/01/31 09:30	2023/01/31 15:00					
COC Number		n/a	n/a	n/a	n/a	n/a	n/a		
	<b>UNITS</b>	<b>MW13-2A</b>	<b>MW13-14A</b>	<b>MW14-2A</b>	<b>SPLP 1</b>	<b>SPLP 2</b>	<b>SPLP 3</b>	<b>RDL</b>	<b>QC Batch</b>

<b>Metals</b>									
Leachable (SPLP) Antimony (Sb)	ug/L	<0.5	<0.5	1.4	<0.5	<0.5	<0.5	0.5	8496539
Leachable (SPLP) Arsenic (As)	ug/L	<1	<1	2	<1	1	<1	1	8496539
Leachable (SPLP) Barium (Ba)	ug/L	<5	11	20	<5	74	7	5	8496539
Leachable (SPLP) Beryllium (Be)	ug/L	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	0.5	8496539
Leachable (SPLP) Boron (B)	ug/L	<10	<10	<10	<10	<10	18	10	8496539
Leachable (SPLP) Cadmium (Cd)	ug/L	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	0.1	8496539
Leachable (SPLP) Chromium (Cr)	ug/L	<5	<5	<5	<5	8	<5	5	8496539
Leachable (SPLP) Cobalt (Co)	ug/L	<0.5	<0.5	<0.5	<0.5	1.4	<0.5	0.5	8496539
Leachable (SPLP) Copper (Cu)	ug/L	4	7	28	2	18	2	1	8496539
Leachable (SPLP) Lead (Pb)	ug/L	<0.5	0.6	43	<0.5	2.1	<0.5	0.5	8496539
Leachable (SPLP) Molybdenum (Mo)	ug/L	2	1	2	2	5	2	1	8496539
Leachable (SPLP) Nickel (Ni)	ug/L	<1	1	2	<1	6	<1	1	8496539
Leachable (SPLP) Selenium (Se)	ug/L	<2	<2	<2	<2	<2	<2	2	8496539
Leachable (SPLP) Silver (Ag)	ug/L	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	0.1	8496539
Leachable (SPLP) Thallium (Tl)	ug/L	<0.05	<0.05	<0.05	<0.05	0.09	<0.05	0.05	8496539
Leachable (SPLP) Uranium (U)	ug/L	<0.1	<0.1	0.2	<0.1	0.2	<0.1	0.1	8496539
Leachable (SPLP) Vanadium (V)	ug/L	3	12	3	3	42	2	1	8496539
Leachable (SPLP) Zinc (Zn)	ug/L	<5	<5	25	<5	13	<5	5	8496539

RDL = Reportable Detection Limit

QC Batch = Quality Control Batch



Bureau Veritas Job #: C332988  
 Report Date: 2023/02/10

exp Services Inc  
 Client Project #: 22029003  
 Site Location: QATAR EMBASSY  
 Sampler Initials: PO

**O.REG 406 EXCESS SOIL MSPLP PREP (SOIL)**

Bureau Veritas ID		UYX903	UYX906	UYX908	UYX911	UYX912	UYX913	
Sampling Date		2023/01/30 10:15	2023/01/31 09:30	2023/01/31 15:00				
COC Number		n/a	n/a	n/a	n/a	n/a	n/a	
	<b>UNITS</b>	<b>MW13-2A</b>	<b>MW13-14A</b>	<b>MW14-2A</b>	<b>SPLP 1</b>	<b>SPLP 2</b>	<b>SPLP 3</b>	<b>QC Batch</b>
<b>Inorganics</b>								
Dry Weight	g	100	100	100	100	100	100	8494185
QC Batch = Quality Control Batch								



Bureau Veritas Job #: C332988  
Report Date: 2023/02/10

exp Services Inc  
Client Project #: 22029003  
Site Location: QATAR EMBASSY  
Sampler Initials: PO

### TEST SUMMARY

**Bureau Veritas ID:** UYX903  
**Sample ID:** MW13-2A  
**Matrix:** Soil

**Collected:** 2023/01/30  
**Shipped:**  
**Received:** 2023/02/02

Test Description	Instrumentation	Batch	Extracted	Date Analyzed	Analyst
Methylnaphthalene Sum	CALC	8486685	N/A	2023/02/09	Automated Statchk
Hot Water Extractable Boron	ICP	8493883	2023/02/08	2023/02/08	Medhat Nasr
1,3-Dichloropropene Sum	CALC	8485971	N/A	2023/02/08	Automated Statchk
Free (WAD) Cyanide	TECH	8492631	2023/02/08	2023/02/08	Chloe Pollock
Conductivity	AT	8493678	2023/02/08	2023/02/08	Surinder Rai
Hexavalent Chromium in Soil by IC	IC/SPEC	8492718	2023/02/08	2023/02/09	Violeta Porcila
Petroleum Hydrocarbons F2-F4 in Soil	GC/FID	8491253	2023/02/07	2023/02/08	Dennis Ngundu
Acid Extractable Metals by ICPMS	ICP/MS	8493834	2023/02/08	2023/02/08	Daniel Teclu
Total Metals in SPLP Leachate by ICPMS	ICP/MS	8496539	2023/02/09	2023/02/10	Nan Raykha
Moisture	BAL	8489235	N/A	2023/02/06	Simrat Bhathal
Modified SPLP extraction - Weight		8494185	N/A	2023/02/09	Jian (Ken) Wang
PAH Compounds in Soil by GC/MS (SIM)	GC/MS	8491562	2023/02/07	2023/02/08	Jonghan Yoon
Polychlorinated Biphenyl in Soil	GC/ECD	8492170	2023/02/07	2023/02/08	Svitlana Shaula
pH CaCl2 EXTRACT	AT	8493019	2023/02/08	2023/02/08	Taslina Aktar
Sodium Adsorption Ratio (SAR)	CALC/MET	8486683	N/A	2023/02/09	Automated Statchk
Volatile Organic Compounds and F1 PHCs	GC/MSFD	8488729	N/A	2023/02/07	Denis Reid

**Bureau Veritas ID:** UYX904  
**Sample ID:** MW13-1A  
**Matrix:** Soil

**Collected:** 2023/01/30  
**Shipped:**  
**Received:** 2023/02/02

Test Description	Instrumentation	Batch	Extracted	Date Analyzed	Analyst
Methylnaphthalene Sum	CALC	8485975	N/A	2023/02/09	Automated Statchk
Hot Water Extractable Boron	ICP	8493883	2023/02/08	2023/02/08	Medhat Nasr
Free (WAD) Cyanide	TECH	8491620	2023/02/07	2023/02/08	Kruti Jitesh Patel
Conductivity	AT	8493678	2023/02/08	2023/02/08	Surinder Rai
Hexavalent Chromium in Soil by IC	IC/SPEC	8493070	2023/02/08	2023/02/09	Sousan Besharatlou
Petroleum Hydro. CCME F1 & BTEX in Soil	HSGC/MSFD	8488540	N/A	2023/02/06	Haibin Wu
Petroleum Hydrocarbons F2-F4 in Soil	GC/FID	8491253	2023/02/07	2023/02/08	Dennis Ngundu
Acid Extractable Metals by ICPMS	ICP/MS	8493834	2023/02/08	2023/02/08	Daniel Teclu
Moisture	BAL	8489235	N/A	2023/02/06	Simrat Bhathal
PAH Compounds in Soil by GC/MS (SIM)	GC/MS	8491562	2023/02/07	2023/02/08	Jonghan Yoon
Polychlorinated Biphenyl in Soil	GC/ECD	8491678	2023/02/07	2023/02/08	Sarah Huang
pH CaCl2 EXTRACT	AT	8491972	2023/02/07	2023/02/07	Taslina Aktar
Sodium Adsorption Ratio (SAR)	CALC/MET	8486180	N/A	2023/02/09	Automated Statchk

**Bureau Veritas ID:** UYX905  
**Sample ID:** MW13-13A  
**Matrix:** Soil

**Collected:** 2023/01/30  
**Shipped:**  
**Received:** 2023/02/02

Test Description	Instrumentation	Batch	Extracted	Date Analyzed	Analyst
Methylnaphthalene Sum	CALC	8485975	N/A	2023/02/09	Automated Statchk
Hot Water Extractable Boron	ICP	8493883	2023/02/08	2023/02/08	Medhat Nasr
Free (WAD) Cyanide	TECH	8491620	2023/02/07	2023/02/08	Kruti Jitesh Patel
Conductivity	AT	8493609	2023/02/08	2023/02/08	Surinder Rai





Bureau Veritas Job #: C332988  
Report Date: 2023/02/10

exp Services Inc  
Client Project #: 22029003  
Site Location: QATAR EMBASSY  
Sampler Initials: PO

### TEST SUMMARY

**Bureau Veritas ID:** UYX905  
**Sample ID:** MW13-13A  
**Matrix:** Soil

**Collected:** 2023/01/30  
**Shipped:**  
**Received:** 2023/02/02

Test Description	Instrumentation	Batch	Extracted	Date Analyzed	Analyst
Hexavalent Chromium in Soil by IC	IC/SPEC	8493070	2023/02/08	2023/02/09	Sousan Besharatlou
Petroleum Hydro. CCME F1 & BTEX in Soil	HSGC/MSFD	8488540	N/A	2023/02/06	Haibin Wu
Petroleum Hydrocarbons F2-F4 in Soil	GC/FID	8491253	2023/02/07	2023/02/08	Dennis Ngondou
Acid Extractable Metals by ICPMS	ICP/MS	8493834	2023/02/08	2023/02/08	Daniel Teclu
Moisture	BAL	8489235	N/A	2023/02/06	Simrat Bhathal
PAH Compounds in Soil by GC/MS (SIM)	GC/MS	8491562	2023/02/07	2023/02/08	Jonghan Yoon
Polychlorinated Biphenyl in Soil	GC/ECD	8491678	2023/02/07	2023/02/08	Sarah Huang
pH CaCl2 EXTRACT	AT	8491972	2023/02/07	2023/02/07	Taslina Aktar
Sodium Adsorption Ratio (SAR)	CALC/MET	8486180	N/A	2023/02/09	Automated Statchk

**Bureau Veritas ID:** UYX906  
**Sample ID:** MW13-14A  
**Matrix:** Soil

**Collected:** 2023/01/31  
**Shipped:**  
**Received:** 2023/02/02

Test Description	Instrumentation	Batch	Extracted	Date Analyzed	Analyst
Methylnaphthalene Sum	CALC	8486685	N/A	2023/02/09	Automated Statchk
Hot Water Extractable Boron	ICP	8493883	2023/02/08	2023/02/08	Medhat Nasr
1,3-Dichloropropene Sum	CALC	8485971	N/A	2023/02/08	Automated Statchk
Free (WAD) Cyanide	TECH	8492631	2023/02/08	2023/02/08	Chloe Pollock
Conductivity	AT	8493678	2023/02/08	2023/02/08	Surinder Rai
Hexavalent Chromium in Soil by IC	IC/SPEC	8492718	2023/02/08	2023/02/09	Violeta Porcila
Petroleum Hydrocarbons F2-F4 in Soil	GC/FID	8491253	2023/02/07	2023/02/08	Dennis Ngondou
Acid Extractable Metals by ICPMS	ICP/MS	8493834	2023/02/08	2023/02/08	Daniel Teclu
Total Metals in SPLP Leachate by ICPMS	ICP/MS	8496539	2023/02/09	2023/02/10	Nan Raykha
Moisture	BAL	8489235	N/A	2023/02/06	Simrat Bhathal
Modified SPLP extraction - Weight		8494185	N/A	2023/02/09	Jian (Ken) Wang
PAH Compounds in Soil by GC/MS (SIM)	GC/MS	8491562	2023/02/07	2023/02/08	Jonghan Yoon
Polychlorinated Biphenyl in Soil	GC/ECD	8491678	2023/02/07	2023/02/08	Sarah Huang
pH CaCl2 EXTRACT	AT	8493019	2023/02/08	2023/02/08	Taslina Aktar
Sodium Adsorption Ratio (SAR)	CALC/MET	8486683	N/A	2023/02/09	Automated Statchk
Volatile Organic Compounds and F1 PHCs	GC/MSFD	8488729	N/A	2023/02/07	Denis Reid

**Bureau Veritas ID:** UYX906 Dup  
**Sample ID:** MW13-14A  
**Matrix:** Soil

**Collected:** 2023/01/31  
**Shipped:**  
**Received:** 2023/02/02

Test Description	Instrumentation	Batch	Extracted	Date Analyzed	Analyst
Acid Extractable Metals by ICPMS	ICP/MS	8493834	2023/02/08	2023/02/08	Daniel Teclu
Volatile Organic Compounds and F1 PHCs	GC/MSFD	8488729	N/A	2023/02/07	Denis Reid



Bureau Veritas Job #: C332988  
Report Date: 2023/02/10

exp Services Inc  
Client Project #: 22029003  
Site Location: QATAR EMBASSY  
Sampler Initials: PO

### TEST SUMMARY

**Bureau Veritas ID:** UYX907  
**Sample ID:** MW13-12A  
**Matrix:** Soil

**Collected:** 2023/01/31  
**Shipped:**  
**Received:** 2023/02/02

Test Description	Instrumentation	Batch	Extracted	Date Analyzed	Analyst
Methylnaphthalene Sum	CALC	8485975	N/A	2023/02/09	Automated Statchk
Hot Water Extractable Boron	ICP	8493883	2023/02/08	2023/02/08	Medhat Nasr
Free (WAD) Cyanide	TECH	8491620	2023/02/07	2023/02/08	Kruti Jitesh Patel
Conductivity	AT	8493678	2023/02/08	2023/02/08	Surinder Rai
Hexavalent Chromium in Soil by IC	IC/SPEC	8493070	2023/02/08	2023/02/09	Sousan Besharatlou
Petroleum Hydro. CCME F1 & BTEX in Soil	HSGC/MSFD	8488540	N/A	2023/02/06	Haibin Wu
Petroleum Hydrocarbons F2-F4 in Soil	GC/FID	8491253	2023/02/07	2023/02/08	Dennis Ngondou
Acid Extractable Metals by ICPMS	ICP/MS	8493834	2023/02/08	2023/02/08	Daniel Teclu
Moisture	BAL	8489235	N/A	2023/02/06	Simrat Bhathal
PAH Compounds in Soil by GC/MS (SIM)	GC/MS	8491562	2023/02/07	2023/02/07	Jonghan Yoon
Polychlorinated Biphenyl in Soil	GC/ECD	8491678	2023/02/07	2023/02/08	Sarah Huang
pH CaCl2 EXTRACT	AT	8491972	2023/02/07	2023/02/07	Taslina Aktar
Sodium Adsorption Ratio (SAR)	CALC/MET	8486180	N/A	2023/02/09	Automated Statchk

**Bureau Veritas ID:** UYX907 Dup  
**Sample ID:** MW13-12A  
**Matrix:** Soil

**Collected:** 2023/01/31  
**Shipped:**  
**Received:** 2023/02/02

Test Description	Instrumentation	Batch	Extracted	Date Analyzed	Analyst
Petroleum Hydrocarbons F2-F4 in Soil	GC/FID	8491253	2023/02/07	2023/02/08	Dennis Ngondou
PAH Compounds in Soil by GC/MS (SIM)	GC/MS	8491562	2023/02/07	2023/02/07	Jonghan Yoon

**Bureau Veritas ID:** UYX908  
**Sample ID:** MW14-2A  
**Matrix:** Soil

**Collected:** 2023/01/31  
**Shipped:**  
**Received:** 2023/02/02

Test Description	Instrumentation	Batch	Extracted	Date Analyzed	Analyst
Methylnaphthalene Sum	CALC	8486685	N/A	2023/02/09	Automated Statchk
Hot Water Extractable Boron	ICP	8493883	2023/02/08	2023/02/08	Medhat Nasr
1,3-Dichloropropene Sum	CALC	8485971	N/A	2023/02/08	Automated Statchk
Free (WAD) Cyanide	TECH	8492631	2023/02/08	2023/02/08	Chloe Pollock
Conductivity	AT	8493678	2023/02/08	2023/02/08	Surinder Rai
Hexavalent Chromium in Soil by IC	IC/SPEC	8492718	2023/02/08	2023/02/09	Violeta Porcila
Petroleum Hydrocarbons F2-F4 in Soil	GC/FID	8491253	2023/02/07	2023/02/08	Dennis Ngondou
Acid Extractable Metals by ICPMS	ICP/MS	8493834	2023/02/08	2023/02/08	Daniel Teclu
Total Metals in SPLP Leachate by ICPMS	ICP/MS	8496539	2023/02/09	2023/02/10	Nan Raykha
Moisture	BAL	8489235	N/A	2023/02/06	Simrat Bhathal
Modified SPLP extraction - Weight		8494185	N/A	2023/02/09	Jian (Ken) Wang
PAH Compounds in Soil by GC/MS (SIM)	GC/MS	8491562	2023/02/07	2023/02/08	Jonghan Yoon
Polychlorinated Biphenyl in Soil	GC/ECD	8491678	2023/02/07	2023/02/08	Sarah Huang
pH CaCl2 EXTRACT	AT	8493019	2023/02/08	2023/02/08	Taslina Aktar
Sodium Adsorption Ratio (SAR)	CALC/MET	8486683	N/A	2023/02/09	Automated Statchk
Volatile Organic Compounds and F1 PHCs	GC/MSFD	8488729	N/A	2023/02/08	Denis Reid



Bureau Veritas Job #: C332988  
Report Date: 2023/02/10

exp Services Inc  
Client Project #: 22029003  
Site Location: QATAR EMBASSY  
Sampler Initials: PO

### TEST SUMMARY

**Bureau Veritas ID:** UYX909  
**Sample ID:** MW13-11A  
**Matrix:** Soil

**Collected:** 2023/02/01  
**Shipped:**  
**Received:** 2023/02/02

Test Description	Instrumentation	Batch	Extracted	Date Analyzed	Analyst
Methylnaphthalene Sum	CALC	8485975	N/A	2023/02/09	Automated Statchk
Hot Water Extractable Boron	ICP	8493883	2023/02/08	2023/02/08	Medhat Nasr
Free (WAD) Cyanide	TECH	8491620	2023/02/07	2023/02/08	Kruti Jitesh Patel
Conductivity	AT	8493678	2023/02/08	2023/02/08	Surinder Rai
Hexavalent Chromium in Soil by IC	IC/SPEC	8493070	2023/02/08	2023/02/09	Sousan Besharatlou
Petroleum Hydro. CCME F1 & BTEX in Soil	HSGC/MSFD	8488540	N/A	2023/02/06	Haibin Wu
Petroleum Hydrocarbons F2-F4 in Soil	GC/FID	8491253	2023/02/07	2023/02/08	Dennis Ngondou
Acid Extractable Metals by ICPMS	ICP/MS	8493834	2023/02/08	2023/02/08	Daniel Teclu
Moisture	BAL	8489235	N/A	2023/02/06	Simrat Bhathal
PAH Compounds in Soil by GC/MS (SIM)	GC/MS	8491562	2023/02/07	2023/02/08	Jonghan Yoon
Polychlorinated Biphenyl in Soil	GC/ECD	8492663	2023/02/08	2023/02/08	Farag Mansour
pH CaCl2 EXTRACT	AT	8491972	2023/02/07	2023/02/07	Taslina Aktar
Sodium Adsorption Ratio (SAR)	CALC/MET	8486180	N/A	2023/02/09	Automated Statchk

**Bureau Veritas ID:** UYX909 Dup  
**Sample ID:** MW13-11A  
**Matrix:** Soil

**Collected:** 2023/02/01  
**Shipped:**  
**Received:** 2023/02/02

Test Description	Instrumentation	Batch	Extracted	Date Analyzed	Analyst
Polychlorinated Biphenyl in Soil	GC/ECD	8492663	2023/02/08	2023/02/08	Farag Mansour

**Bureau Veritas ID:** UYX910  
**Sample ID:** MW13-10A  
**Matrix:** Soil

**Collected:** 2023/02/02  
**Shipped:**  
**Received:** 2023/02/02

Test Description	Instrumentation	Batch	Extracted	Date Analyzed	Analyst
Methylnaphthalene Sum	CALC	8486685	N/A	2023/02/09	Automated Statchk
Hot Water Extractable Boron	ICP	8493883	2023/02/08	2023/02/08	Medhat Nasr
Free (WAD) Cyanide	TECH	8491620	2023/02/07	2023/02/08	Kruti Jitesh Patel
Conductivity	AT	8493678	2023/02/08	2023/02/08	Surinder Rai
Hexavalent Chromium in Soil by IC	IC/SPEC	8493070	2023/02/08	2023/02/09	Sousan Besharatlou
Petroleum Hydro. CCME F1 & BTEX in Soil	HSGC/MSFD	8488540	N/A	2023/02/06	Haibin Wu
Petroleum Hydrocarbons F2-F4 in Soil	GC/FID	8491253	2023/02/07	2023/02/08	Dennis Ngondou
Acid Extractable Metals by ICPMS	ICP/MS	8493834	2023/02/08	2023/02/08	Daniel Teclu
Moisture	BAL	8489235	N/A	2023/02/06	Simrat Bhathal
PAH Compounds in Soil by GC/MS (SIM)	GC/MS	8491562	2023/02/07	2023/02/08	Jonghan Yoon
Polychlorinated Biphenyl in Soil	GC/ECD	8491678	2023/02/07	2023/02/08	Sarah Huang
pH CaCl2 EXTRACT	AT	8491972	2023/02/07	2023/02/07	Taslina Aktar
Sodium Adsorption Ratio (SAR)	CALC/MET	8486683	N/A	2023/02/09	Automated Statchk



Bureau Veritas Job #: C332988  
 Report Date: 2023/02/10

exp Services Inc  
 Client Project #: 22029003  
 Site Location: QATAR EMBASSY  
 Sampler Initials: PO

### TEST SUMMARY

**Bureau Veritas ID:** UYX911  
**Sample ID:** SPLP 1  
**Matrix:** Soil

**Collected:**  
**Shipped:**  
**Received:** 2023/02/02

Test Description	Instrumentation	Batch	Extracted	Date Analyzed	Analyst
Total Metals in SPLP Leachate by ICPMS	ICP/MS	8496539	2023/02/09	2023/02/10	Nan Raykha
Modified SPLP extraction - Weight		8494185	N/A	2023/02/09	Jian (Ken) Wang

**Bureau Veritas ID:** UYX912  
**Sample ID:** SPLP 2  
**Matrix:** Soil

**Collected:**  
**Shipped:**  
**Received:** 2023/02/02

Test Description	Instrumentation	Batch	Extracted	Date Analyzed	Analyst
Total Metals in SPLP Leachate by ICPMS	ICP/MS	8496539	2023/02/09	2023/02/10	Nan Raykha
Modified SPLP extraction - Weight		8494185	N/A	2023/02/09	Jian (Ken) Wang

**Bureau Veritas ID:** UYX913  
**Sample ID:** SPLP 3  
**Matrix:** Soil

**Collected:**  
**Shipped:**  
**Received:** 2023/02/02

Test Description	Instrumentation	Batch	Extracted	Date Analyzed	Analyst
Total Metals in SPLP Leachate by ICPMS	ICP/MS	8496539	2023/02/09	2023/02/10	Nan Raykha
Modified SPLP extraction - Weight		8494185	N/A	2023/02/09	Jian (Ken) Wang



### GENERAL COMMENTS

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

Package 1	8.0°C
-----------	-------

Sample UYX904 [MW13-1A] : F1/BTEX Analysis: Soil weight exceeds the protocol specification of approximately 5g in the field preserved vial. Additional methanol was added to the vial to ensure extraction efficiency.

Sample UYX907 [MW13-12A] : F1/BTEX Analysis: Soil weight exceeds the protocol specification of approximately 5g in the field preserved vial. Additional methanol was added to the vial to ensure extraction efficiency.

Sample UYX909 [MW13-11A] : F1/BTEX Analysis: Soil weight exceeds the protocol specification of approximately 5g in the field preserved vial. Additional methanol was added to the vial to ensure extraction efficiency.

Sample UYX910 [MW13-10A] : F1/BTEX Analysis: Soil weight exceeds the protocol specification of approximately 5g in the field preserved vial. Additional methanol was added to the vial to ensure extraction efficiency.

**Results relate only to the items tested.**



BUREAU  
VERITAS

Bureau Veritas Job #: C332988

Report Date: 2023/02/10

### QUALITY ASSURANCE REPORT

exp Services Inc

Client Project #: 22029003

Site Location: QATAR EMBASSY

Sampler Initials: PO

QC Batch	Parameter	Date	Matrix Spike		SPIKED BLANK		Method Blank		RPD		Leachate Blank	
			% Recovery	QC Limits	% Recovery	QC Limits	Value	UNITS	Value (%)	QC Limits	Value	UNITS
8488540	1,4-Difluorobenzene	2023/02/06	100	60 - 140	100	60 - 140	102	%				
8488540	4-Bromofluorobenzene	2023/02/06	101	60 - 140	101	60 - 140	100	%				
8488540	D10-o-Xylene	2023/02/06	115	60 - 140	112	60 - 140	114	%				
8488540	D4-1,2-Dichloroethane	2023/02/06	99	60 - 140	98	60 - 140	98	%				
8488729	4-Bromofluorobenzene	2023/02/07	97	60 - 140	98	60 - 140	90	%				
8488729	D10-o-Xylene	2023/02/07	111	60 - 130	99	60 - 130	94	%				
8488729	D4-1,2-Dichloroethane	2023/02/07	102	60 - 140	109	60 - 140	101	%				
8488729	D8-Toluene	2023/02/07	103	60 - 140	101	60 - 140	99	%				
8491253	o-Terphenyl	2023/02/08	93	60 - 130	93	60 - 130	93	%				
8491562	D10-Anthracene	2023/02/07	102	50 - 130	117	50 - 130	118	%				
8491562	D14-Terphenyl (FS)	2023/02/07	111	50 - 130	125	50 - 130	121	%				
8491562	D8-Acenaphthylene	2023/02/07	88	50 - 130	103	50 - 130	100	%				
8491678	Decachlorobiphenyl	2023/02/07	84	60 - 130	96	60 - 130	86	%				
8492170	Decachlorobiphenyl	2023/02/08	97	60 - 130	101	60 - 130	117	%				
8492663	Decachlorobiphenyl	2023/02/08	80	60 - 130	83	60 - 130	87	%				
8488540	Benzene	2023/02/06	98	50 - 140	95	50 - 140	<0.020	ug/g	NC	50		
8488540	Ethylbenzene	2023/02/06	104	50 - 140	100	50 - 140	<0.020	ug/g	NC	50		
8488540	F1 (C6-C10) - BTEX	2023/02/06					<10	ug/g	NC	30		
8488540	F1 (C6-C10)	2023/02/06	105	60 - 140	95	80 - 120	<10	ug/g	NC	30		
8488540	o-Xylene	2023/02/06	102	50 - 140	98	50 - 140	<0.020	ug/g	0.62	50		
8488540	p+m-Xylene	2023/02/06	98	50 - 140	96	50 - 140	<0.040	ug/g	0.89	50		
8488540	Toluene	2023/02/06	93	50 - 140	90	50 - 140	<0.020	ug/g	0.60	50		
8488540	Total Xylenes	2023/02/06					<0.040	ug/g	0.48	50		
8488729	1,1,1,2-Tetrachloroethane	2023/02/07	105	60 - 140	105	60 - 130	<0.040	ug/g	NC	50		
8488729	1,1,1-Trichloroethane	2023/02/07	99	60 - 140	96	60 - 130	<0.040	ug/g	NC	50		
8488729	1,1,2,2-Tetrachloroethane	2023/02/07	98	60 - 140	107	60 - 130	<0.040	ug/g	NC	50		
8488729	1,1,2-Trichloroethane	2023/02/07	100	60 - 140	107	60 - 130	<0.040	ug/g	NC	50		
8488729	1,1-Dichloroethane	2023/02/07	91	60 - 140	90	60 - 130	<0.040	ug/g	NC	50		
8488729	1,1-Dichloroethylene	2023/02/07	96	60 - 140	91	60 - 130	<0.040	ug/g	NC	50		
8488729	1,2-Dichlorobenzene	2023/02/07	97	60 - 140	96	60 - 130	<0.040	ug/g	NC	50		
8488729	1,2-Dichloroethane	2023/02/07	92	60 - 140	98	60 - 130	<0.049	ug/g	NC	50		
8488729	1,2-Dichloropropane	2023/02/07	92	60 - 140	94	60 - 130	<0.040	ug/g	NC	50		



BUREAU  
VERITAS

Bureau Veritas Job #: C332988

Report Date: 2023/02/10

### QUALITY ASSURANCE REPORT(CONT'D)

exp Services Inc

Client Project #: 22029003

Site Location: QATAR EMBASSY

Sampler Initials: PO

QC Batch	Parameter	Date	Matrix Spike		SPIKED BLANK		Method Blank		RPD		Leachate Blank	
			% Recovery	QC Limits	% Recovery	QC Limits	Value	UNITS	Value (%)	QC Limits	Value	UNITS
8488729	1,3-Dichlorobenzene	2023/02/07	99	60 - 140	96	60 - 130	<0.040	ug/g	NC	50		
8488729	1,4-Dichlorobenzene	2023/02/07	111	60 - 140	109	60 - 130	<0.040	ug/g	NC	50		
8488729	Acetone (2-Propanone)	2023/02/07	98	60 - 140	99	60 - 140	<0.49	ug/g	NC	50		
8488729	Benzene	2023/02/07	89	60 - 140	88	60 - 130	<0.0060	ug/g	NC	50		
8488729	Bromodichloromethane	2023/02/07	102	60 - 140	105	60 - 130	<0.040	ug/g	NC	50		
8488729	Bromoform	2023/02/07	116	60 - 140	125	60 - 130	<0.040	ug/g	NC	50		
8488729	Bromomethane	2023/02/07	96	60 - 140	96	60 - 140	<0.040	ug/g	NC	50		
8488729	Carbon Tetrachloride	2023/02/07	106	60 - 140	101	60 - 130	<0.040	ug/g	NC	50		
8488729	Chlorobenzene	2023/02/07	95	60 - 140	94	60 - 130	<0.040	ug/g	NC	50		
8488729	Chloroform	2023/02/07	95	60 - 140	95	60 - 130	<0.040	ug/g	NC	50		
8488729	cis-1,2-Dichloroethylene	2023/02/07	96	60 - 140	97	60 - 130	<0.040	ug/g	NC	50		
8488729	cis-1,3-Dichloropropene	2023/02/07	88	60 - 140	96	60 - 130	<0.030	ug/g	NC	50		
8488729	Dibromochloromethane	2023/02/07	137	60 - 140	144 (1)	60 - 130	<0.040	ug/g	NC	50		
8488729	Dichlorodifluoromethane (FREON 12)	2023/02/07	112	60 - 140	106	60 - 140	<0.040	ug/g	NC	50		
8488729	Ethylbenzene	2023/02/07	83	60 - 140	80	60 - 130	<0.010	ug/g	NC	50		
8488729	Ethylene Dibromide	2023/02/07	93	60 - 140	100	60 - 130	<0.040	ug/g	NC	50		
8488729	F1 (C6-C10) - BTEX	2023/02/07					<10	ug/g	NC	30		
8488729	F1 (C6-C10)	2023/02/07	108	60 - 140	90	80 - 120	<10	ug/g	NC	30		
8488729	Hexane	2023/02/07	92	60 - 140	88	60 - 130	<0.040	ug/g	NC	50		
8488729	Methyl Ethyl Ketone (2-Butanone)	2023/02/07	90	60 - 140	98	60 - 140	<0.40	ug/g	NC	50		
8488729	Methyl Isobutyl Ketone	2023/02/07	96	60 - 140	109	60 - 130	<0.40	ug/g	NC	50		
8488729	Methyl t-butyl ether (MTBE)	2023/02/07	82	60 - 140	83	60 - 130	<0.040	ug/g	NC	50		
8488729	Methylene Chloride(Dichloromethane)	2023/02/07	99	60 - 140	101	60 - 130	<0.049	ug/g	NC	50		
8488729	o-Xylene	2023/02/07	87	60 - 140	85	60 - 130	<0.020	ug/g	NC	50		
8488729	p+m-Xylene	2023/02/07	87	60 - 140	83	60 - 130	<0.020	ug/g	NC	50		
8488729	Styrene	2023/02/07	97	60 - 140	98	60 - 130	<0.040	ug/g	NC	50		
8488729	Tetrachloroethylene	2023/02/07	90	60 - 140	85	60 - 130	<0.040	ug/g	NC	50		
8488729	Toluene	2023/02/07	92	60 - 140	88	60 - 130	<0.020	ug/g	NC	50		
8488729	Total Xylenes	2023/02/07					<0.020	ug/g	NC	50		
8488729	trans-1,2-Dichloroethylene	2023/02/07	96	60 - 140	93	60 - 130	<0.040	ug/g	NC	50		
8488729	trans-1,3-Dichloropropene	2023/02/07	96	60 - 140	105	60 - 130	<0.040	ug/g	NC	50		
8488729	Trichloroethylene	2023/02/07	97	60 - 140	95	60 - 130	<0.010	ug/g	NC	50		



Bureau Veritas Job #: C332988  
 Report Date: 2023/02/10

**QUALITY ASSURANCE REPORT(CONT'D)**

exp Services Inc  
 Client Project #: 22029003  
 Site Location: QATAR EMBASSY  
 Sampler Initials: PO

QC Batch	Parameter	Date	Matrix Spike		SPIKED BLANK		Method Blank		RPD		Leachate Blank	
			% Recovery	QC Limits	% Recovery	QC Limits	Value	UNITS	Value (%)	QC Limits	Value	UNITS
8488729	Trichlorofluoromethane (FREON 11)	2023/02/07	98	60 - 140	93	60 - 130	<0.040	ug/g	NC	50		
8488729	Vinyl Chloride	2023/02/07	87	60 - 140	84	60 - 130	<0.019	ug/g	NC	50		
8489235	Moisture	2023/02/06							3.3	20		
8491253	F2 (C10-C16 Hydrocarbons)	2023/02/08	96	60 - 130	97	80 - 120	<10	ug/g	NC	30		
8491253	F3 (C16-C34 Hydrocarbons)	2023/02/08	96	60 - 130	97	80 - 120	<50	ug/g	NC	30		
8491253	F4 (C34-C50 Hydrocarbons)	2023/02/08	98	60 - 130	99	80 - 120	<50	ug/g	NC	30		
8491562	1-Methylnaphthalene	2023/02/07	86	50 - 130	100	50 - 130	<0.0050	ug/g	NC	40		
8491562	2-Methylnaphthalene	2023/02/07	92	50 - 130	108	50 - 130	<0.0050	ug/g	NC	40		
8491562	Acenaphthene	2023/02/07	97	50 - 130	113	50 - 130	<0.0050	ug/g	NC	40		
8491562	Acenaphthylene	2023/02/07	90	50 - 130	107	50 - 130	<0.0050	ug/g	28	40		
8491562	Anthracene	2023/02/07	105	50 - 130	116	50 - 130	<0.0050	ug/g	27	40		
8491562	Benzo(a)anthracene	2023/02/07	102	50 - 130	115	50 - 130	<0.0050	ug/g	22	40		
8491562	Benzo(a)pyrene	2023/02/07	100	50 - 130	114	50 - 130	<0.0050	ug/g	17	40		
8491562	Benzo(b/j)fluoranthene	2023/02/07	93	50 - 130	103	50 - 130	<0.0050	ug/g	22	40		
8491562	Benzo(g,h,i)perylene	2023/02/07	113	50 - 130	129	50 - 130	<0.0050	ug/g	17	40		
8491562	Benzo(k)fluoranthene	2023/02/07	89	50 - 130	108	50 - 130	<0.0050	ug/g	18	40		
8491562	Biphenyl	2023/02/07	91	50 - 130	108	50 - 130	<0.0050	ug/g	NC	40		
8491562	Chrysene	2023/02/07	106	50 - 130	116	50 - 130	<0.0050	ug/g	21	40		
8491562	Dibenzo(a,h)anthracene	2023/02/07	117	50 - 130	129	50 - 130	<0.0050	ug/g	19	40		
8491562	Fluoranthene	2023/02/07	110	50 - 130	118	50 - 130	<0.0050	ug/g	23	40		
8491562	Fluorene	2023/02/07	102	50 - 130	115	50 - 130	<0.0050	ug/g	NC	40		
8491562	Indeno(1,2,3-cd)pyrene	2023/02/07	109	50 - 130	125	50 - 130	<0.0050	ug/g	23	40		
8491562	Naphthalene	2023/02/07	95	50 - 130	111	50 - 130	<0.0050	ug/g	NC	40		
8491562	Phenanthrene	2023/02/07	107	50 - 130	115	50 - 130	<0.0050	ug/g	20	40		
8491562	Pyrene	2023/02/07	106	50 - 130	116	50 - 130	<0.0050	ug/g	24	40		
8491620	WAD Cyanide (Free)	2023/02/08	104	75 - 125	104	80 - 120	<0.01	ug/g	NC	35		
8491678	Aroclor 1242	2023/02/08					<0.010	ug/g	NC	50		
8491678	Aroclor 1248	2023/02/08					<0.010	ug/g	NC	50		
8491678	Aroclor 1254	2023/02/08					<0.010	ug/g	NC	50		
8491678	Aroclor 1260	2023/02/08	86	30 - 130	104	30 - 130	<0.010	ug/g	NC	50		
8491678	Total PCB	2023/02/08	86	30 - 130	104	30 - 130	<0.010	ug/g	NC	50		
8491972	Available (CaCl2) pH	2023/02/07			101	97 - 103			0.045	N/A		





BUREAU  
VERITAS

Bureau Veritas Job #: C332988

Report Date: 2023/02/10

### QUALITY ASSURANCE REPORT(CONT'D)

exp Services Inc

Client Project #: 22029003

Site Location: QATAR EMBASSY

Sampler Initials: PO

QC Batch	Parameter	Date	Matrix Spike		SPIKED BLANK		Method Blank		RPD		Leachate Blank	
			% Recovery	QC Limits	% Recovery	QC Limits	Value	UNITS	Value (%)	QC Limits	Value	UNITS
8492170	Aroclor 1242	2023/02/08					<0.010	ug/g	NC	50		
8492170	Aroclor 1248	2023/02/08					<0.010	ug/g	NC	50		
8492170	Aroclor 1254	2023/02/08					<0.010	ug/g	NC	50		
8492170	Aroclor 1260	2023/02/08	101	30 - 130	99	30 - 130	<0.010	ug/g	NC	50		
8492170	Total PCB	2023/02/08	101	30 - 130	99	30 - 130	<0.010	ug/g	NC	50		
8492631	WAD Cyanide (Free)	2023/02/08	96	75 - 125	101	80 - 120	<0.01	ug/g	NC	35		
8492663	Aroclor 1242	2023/02/08					<0.010	ug/g	NC	50		
8492663	Aroclor 1248	2023/02/08					<0.010	ug/g	NC	50		
8492663	Aroclor 1254	2023/02/08					<0.010	ug/g	NC	50		
8492663	Aroclor 1260	2023/02/08	80	30 - 130	91	30 - 130	<0.010	ug/g	NC	50		
8492663	Total PCB	2023/02/08	80	30 - 130	91	30 - 130	<0.010	ug/g	NC	50		
8492718	Chromium (VI)	2023/02/09	87	70 - 130	93	80 - 120	<0.18	ug/g	NC	35		
8493019	Available (CaCl2) pH	2023/02/08			100	97 - 103			0.37	N/A		
8493070	Chromium (VI)	2023/02/09	84	70 - 130	96	80 - 120	<0.18	ug/g	NC	35		
8493609	Conductivity	2023/02/08			106	90 - 110	<0.002	mS/cm	0.98	10		
8493678	Conductivity	2023/02/08			105	90 - 110	<0.002	mS/cm	7.6	10		
8493834	Acid Extractable Antimony (Sb)	2023/02/08	102	75 - 125	101	80 - 120	<0.20	ug/g	NC	30		
8493834	Acid Extractable Arsenic (As)	2023/02/08	106	75 - 125	97	80 - 120	<1.0	ug/g	NC	30		
8493834	Acid Extractable Barium (Ba)	2023/02/08	NC	75 - 125	95	80 - 120	<0.50	ug/g	4.4	30		
8493834	Acid Extractable Beryllium (Be)	2023/02/08	106	75 - 125	94	80 - 120	<0.20	ug/g	1.1	30		
8493834	Acid Extractable Boron (B)	2023/02/08	106	75 - 125	96	80 - 120	<5.0	ug/g	NC	30		
8493834	Acid Extractable Cadmium (Cd)	2023/02/08	108	75 - 125	98	80 - 120	<0.10	ug/g	NC	30		
8493834	Acid Extractable Chromium (Cr)	2023/02/08	115	75 - 125	98	80 - 120	<1.0	ug/g	4.5	30		
8493834	Acid Extractable Cobalt (Co)	2023/02/08	108	75 - 125	100	80 - 120	<0.10	ug/g	0.95	30		
8493834	Acid Extractable Copper (Cu)	2023/02/08	108	75 - 125	102	80 - 120	<0.50	ug/g	3.2	30		
8493834	Acid Extractable Lead (Pb)	2023/02/08	112	75 - 125	102	80 - 120	<1.0	ug/g	1.5	30		
8493834	Acid Extractable Mercury (Hg)	2023/02/08	116	75 - 125	102	80 - 120	<0.050	ug/g	NC	30		
8493834	Acid Extractable Molybdenum (Mo)	2023/02/08	110	75 - 125	101	80 - 120	<0.50	ug/g	14	30		
8493834	Acid Extractable Nickel (Ni)	2023/02/08	112	75 - 125	98	80 - 120	<0.50	ug/g	4.3	30		
8493834	Acid Extractable Selenium (Se)	2023/02/08	113	75 - 125	100	80 - 120	<0.50	ug/g	NC	30		
8493834	Acid Extractable Silver (Ag)	2023/02/08	110	75 - 125	101	80 - 120	<0.20	ug/g	NC	30		
8493834	Acid Extractable Thallium (Tl)	2023/02/08	113	75 - 125	103	80 - 120	<0.050	ug/g	4.7	30		



BUREAU  
VERITAS

Bureau Veritas Job #: C332988

Report Date: 2023/02/10

### QUALITY ASSURANCE REPORT(CONT'D)

exp Services Inc

Client Project #: 22029003

Site Location: QATAR EMBASSY

Sampler Initials: PO

QC Batch	Parameter	Date	Matrix Spike		SPIKED BLANK		Method Blank		RPD		Leachate Blank	
			% Recovery	QC Limits	% Recovery	QC Limits	Value	UNITS	Value (%)	QC Limits	Value	UNITS
8493834	Acid Extractable Uranium (U)	2023/02/08	110	75 - 125	101	80 - 120	<0.050	ug/g	0.25	30		
8493834	Acid Extractable Vanadium (V)	2023/02/08	NC	75 - 125	96	80 - 120	<5.0	ug/g	1.6	30		
8493834	Acid Extractable Zinc (Zn)	2023/02/08	NC	75 - 125	96	80 - 120	<5.0	ug/g	7.4	30		
8493883	Hot Water Ext. Boron (B)	2023/02/08	106	75 - 125	103	75 - 125	<0.050	ug/g	2.9	40		
8496539	Leachable (SPLP) Antimony (Sb)	2023/02/10	107	80 - 120	107	80 - 120	<0.5	ug/L	NC	35	<0.5	ug/L
8496539	Leachable (SPLP) Arsenic (As)	2023/02/10	104	80 - 120	103	80 - 120	<1	ug/L	NC	35	<1	ug/L
8496539	Leachable (SPLP) Barium (Ba)	2023/02/10	104	80 - 120	101	80 - 120	<5	ug/L	1.4	35	<5	ug/L
8496539	Leachable (SPLP) Beryllium (Be)	2023/02/10	108	80 - 120	109	80 - 120	<0.5	ug/L	NC	35	<0.5	ug/L
8496539	Leachable (SPLP) Boron (B)	2023/02/10	99	80 - 120	100	80 - 120	<10	ug/L	NC	35	<10	ug/L
8496539	Leachable (SPLP) Cadmium (Cd)	2023/02/10	104	80 - 120	104	80 - 120	<0.1	ug/L	NC	35	<0.1	ug/L
8496539	Leachable (SPLP) Chromium (Cr)	2023/02/10	101	80 - 120	100	80 - 120	<5	ug/L	NC	35	<5	ug/L
8496539	Leachable (SPLP) Cobalt (Co)	2023/02/10	102	80 - 120	101	80 - 120	<0.5	ug/L	NC	35	<0.5	ug/L
8496539	Leachable (SPLP) Copper (Cu)	2023/02/10	105	80 - 120	106	80 - 120	<1	ug/L	18	35	<1	ug/L
8496539	Leachable (SPLP) Lead (Pb)	2023/02/10	102	80 - 120	104	80 - 120	<0.5	ug/L	NC	35	<0.5	ug/L
8496539	Leachable (SPLP) Molybdenum (Mo)	2023/02/10	109	80 - 120	106	80 - 120	<1	ug/L	0.64	35	<1	ug/L
8496539	Leachable (SPLP) Nickel (Ni)	2023/02/10	100	80 - 120	101	80 - 120	<1	ug/L	NC	35	<1	ug/L
8496539	Leachable (SPLP) Selenium (Se)	2023/02/10	108	80 - 120	108	80 - 120	<2	ug/L	NC	35	<2	ug/L
8496539	Leachable (SPLP) Silver (Ag)	2023/02/10	107	80 - 120	105	80 - 120	<0.1	ug/L	NC	35	<0.1	ug/L
8496539	Leachable (SPLP) Thallium (Tl)	2023/02/10	103	80 - 120	106	80 - 120	<0.05	ug/L	NC	35	<0.05	ug/L
8496539	Leachable (SPLP) Uranium (U)	2023/02/10	101	80 - 120	102	80 - 120	<0.1	ug/L	4.2	35	<0.1	ug/L
8496539	Leachable (SPLP) Vanadium (V)	2023/02/10	101	80 - 120	100	80 - 120	<1	ug/L	NC	35	<1	ug/L



BUREAU  
VERITAS

Bureau Veritas Job #: C332988

Report Date: 2023/02/10

### QUALITY ASSURANCE REPORT(CONT'D)

exp Services Inc

Client Project #: 22029003

Site Location: QATAR EMBASSY

Sampler Initials: PO

QC Batch	Parameter	Date	Matrix Spike		SPIKED BLANK		Method Blank		RPD		Leachate Blank	
			% Recovery	QC Limits	% Recovery	QC Limits	Value	UNITS	Value (%)	QC Limits	Value	UNITS
8496539	Leachable (SPLP) Zinc (Zn)	2023/02/10	106	80 - 120	106	80 - 120	<5	ug/L	NC	35	<5	ug/L

N/A = Not Applicable

Duplicate: Paired analysis of a separate portion of the same sample. Used to evaluate the variance in the measurement.

Matrix Spike: A sample to which a known amount of the analyte of interest has been added. Used to evaluate sample matrix interference.

Leachate Blank: A blank matrix containing all reagents used in the leaching procedure. Used to determine any process contamination.

Spiked Blank: A blank matrix sample to which a known amount of the analyte, usually from a second source, has been added. Used to evaluate method accuracy.

Method Blank: A blank matrix containing all reagents used in the analytical procedure. Used to identify laboratory contamination.

Surrogate: A pure or isotopically labeled compound whose behavior mirrors the analytes of interest. Used to evaluate extraction efficiency.

NC (Matrix Spike): The recovery in the matrix spike was not calculated. The relative difference between the concentration in the parent sample and the spike amount was too small to permit a reliable recovery calculation (matrix spike concentration was less than the native sample concentration)

NC (Duplicate RPD): The duplicate RPD was not calculated. The concentration in the sample and/or duplicate was too low to permit a reliable RPD calculation (absolute difference <= 2x RDL).

(1) The recovery was above the upper control limit. This may represent a high bias in some results for this specific analyte. For results that were not detected (ND), this potential bias has no impact.



Bureau Veritas Job #: C332988  
Report Date: 2023/02/10

exp Services Inc  
Client Project #: 22029003  
Site Location: QATAR EMBASSY  
Sampler Initials: PO

### VALIDATION SIGNATURE PAGE

The analytical data and all QC contained in this report were reviewed and validated by:

A handwritten signature in black ink, appearing to read 'Anastassia Hamanov', written over a horizontal line.

Anastassia Hamanov, Scientific Specialist

---

Bureau Veritas has procedures in place to guard against improper use of the electronic signature and have the required "signatories", as per ISO/IEC 17025, signing the reports. For Service Group specific validation, please refer to the Validation Signatures page if included, otherwise available by request. For Department specific Analyst/Supervisor validation names, please refer to the Test Summary section if included, otherwise available by request. This report is authorized by {0}, {1} responsible for {2} {3} laboratory operations.



6740 Campbell Road, Mississauga, Ontario L5N 2T8  
 Phone: 905-817-5700 Fax: 905-817-5779 Toll Free: 800-563-6266

CHAIN OF CUSTODY RECORD  
 ENV COC - 00014v3

Page \_\_\_\_\_ of \_\_\_\_\_

Invoice Information		Report Information (if differs from invoice)			Project Information	
Invoice to (requires report) <input type="checkbox"/>					Quotation #:	
Company:	EXP Services	Company:				P.O. # / AFER:
Contact Name:	Mark McCalla	Contact Name:				Project #:
Street Address:	2650 Queensview dr	Street Address:				Site #:
City:	Ottawa	City:				Site Location:
Prov.:	ON	Prov.:				Site Location Province:
Postal Code:		Postal Code:				Sampled By:
Phone:	613 688 1829	Phone:				
Email:	mark.mccalla@exp.com	Email:				
Copies:		Copies:				

03-Feb-23 16:34  
 Katherine Szozda  
 0332988

AKS ENV-1222

**Regulatory Criteria**

Table 1     Res/Par/     Med/Fine  
 Table 2     Ind/Comm     Course  
 Table 3     Agr/Other     For-RSC  
 Table

Reg 406, Table 3  
 Reg 558\*     Sanitary Sewer Bylaw  
 \*min 3 day TAT     Storm Sewer Bylaw  
 MISA     Municipality  
 PWGO     Other: Streams 3

Include Criteria on Certificate of Analysis (check if yes):

SAMPLES MUST BE KEPT COOL (4°C) FROM TIME OF SAMPLING UNTIL DELIVERY TO BUREAU VERITAS

Sample Identification	Date Sampled					Time (24hr)	Matrix	FIELD PRESERVED	FIELD PRESERVED	LAB PREPARATION REQUIRED	MUTAGEN	TOXIC	Trace metals and inorganics	Heavy metals (ICPMS mp/da)	Trace metals (ULI, CU, LEAD, MANGANESE, NICKEL, ZINC)	PAH	EC/SAR	PCB	Metals (SPLP)	NOT CONTAINERS SUBMITTED	FIELD - DO NOT ANALYZE
	YY	MM	DD	HH	MM																
MW13-2A	23	01	30	10	15	Soil															6
MW13-1A	23	01	30	14	10	Soil															4
MW13-13A	23	01	30	14	45	Soil															4
MW13-14A	23	01	31	9	30	Soil															6
MW13-12A	23	01	31	11	40	Soil															4
MW14-2A	23	01	31	15	00	Soil															6
MW13-11A	23	02	01	13	30	Soil															4
MW13-10A	23	02	02	9	30	Soil															4

Regular Turnaround Time (TAT)

5 to 7 Day     10 Day

Same Day Turnaround Time (TAT)

Same Day     1 Day

2 Day     3 Day

4 Day

Date:    YY    MM    DD

Comments:

UNLESS OTHERWISE AGREED TO IN WRITING, WORK SUBMITTED ON THIS CHAIN OF CUSTODY IS SUBJECT TO BUREAU VERITAS STANDARD TERMS AND CONDITIONS. SIGNING OF THIS CHAIN OF CUSTODY DOCUMENT IS ACKNOWLEDGMENT AND ACCEPTANCE OF OUR TERMS AND CONDITIONS WHICH ARE AVAILABLE FOR VIEWING AT WWW.BVNA.COM/TERMS-AND-CONDITIONS OR BY CALLING THE LABORATORY LISTED ABOVE TO OBTAIN A COPY

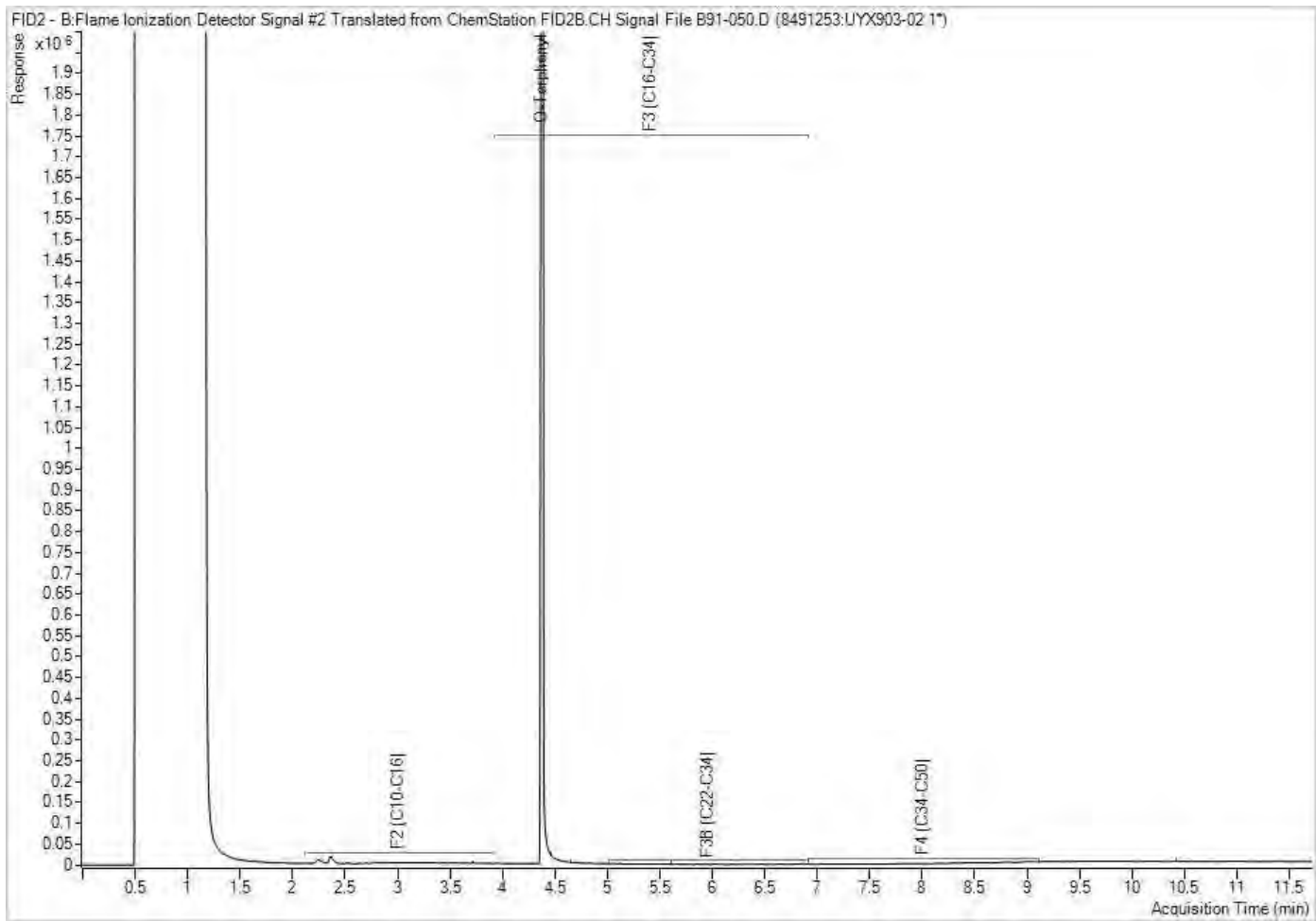
LAB USE ONLY		LAB USE ONLY		LAB USE ONLY		LAB USE ONLY		LAB USE ONLY		LAB USE ONLY		LAB USE ONLY		LAB USE ONLY		LAB USE ONLY		LAB USE ONLY		
Seal present	Yes	No	Seal present	Yes	No	Seal present	Yes	No	Seal present	Yes	No	Seal present	Yes	No	Seal present	Yes	No	Seal present	Yes	No
Seal intact	✓		Seal intact			Seal intact			Seal intact			Seal intact			Seal intact			Seal intact		
Cooling media present	✓		Cooling media present			Cooling media present			Cooling media present			Cooling media present			Cooling media present			Cooling media present		
Relinquished by: (Signature/Print)		Date		Time		Received by: (Signature/Print)		Date		Time		Special instructions		Temperature reading by:						
Mark R / Mackenzie Russell		23 02 02		16 30		Katherine Amyson Lawrence		2023 02 02		16 34										
						Annie ANERI		2023 02 03		08 15										

2/1/3

Received in Ottawa

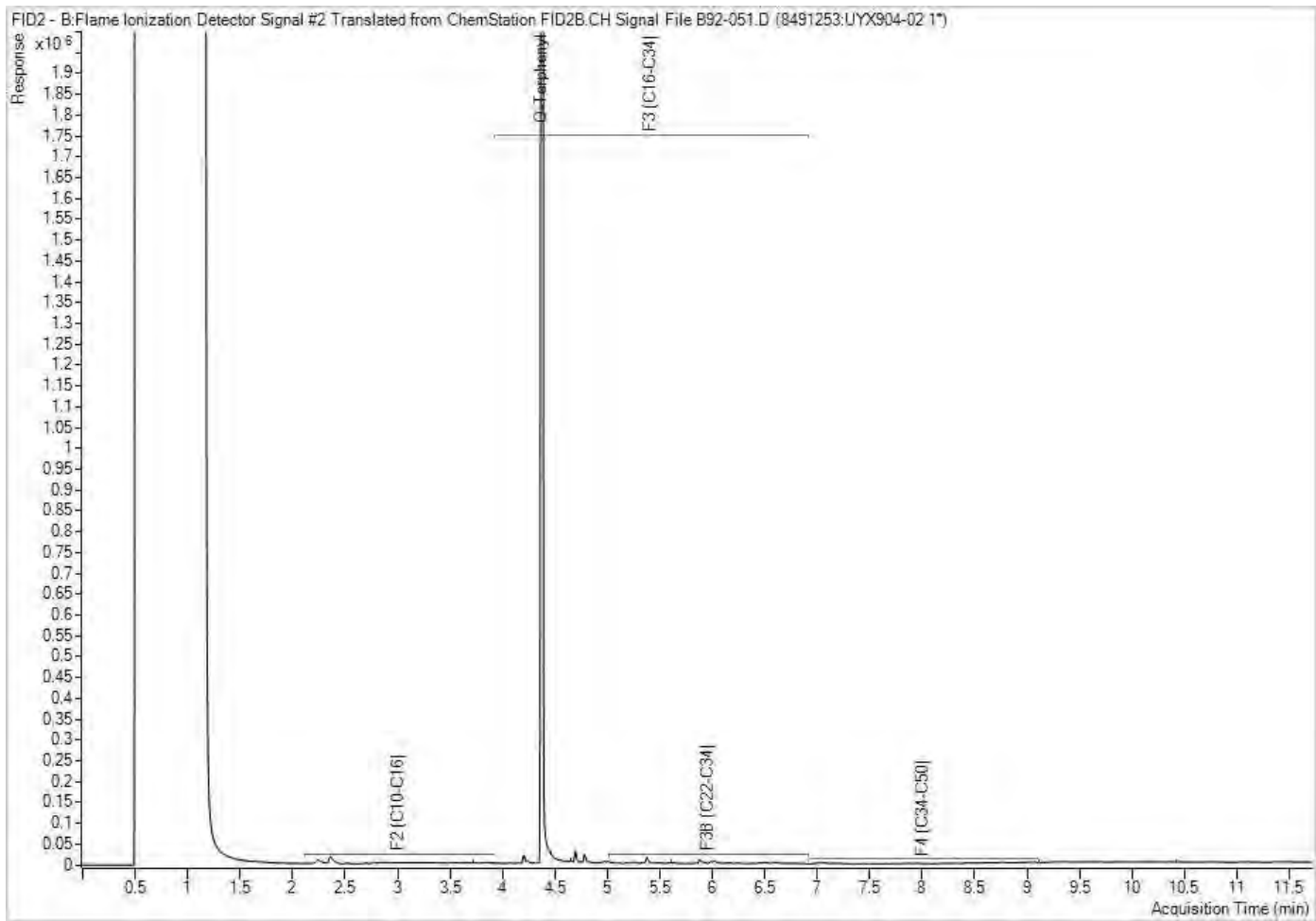


Petroleum Hydrocarbons F2-F4 in Soil Chromatogram



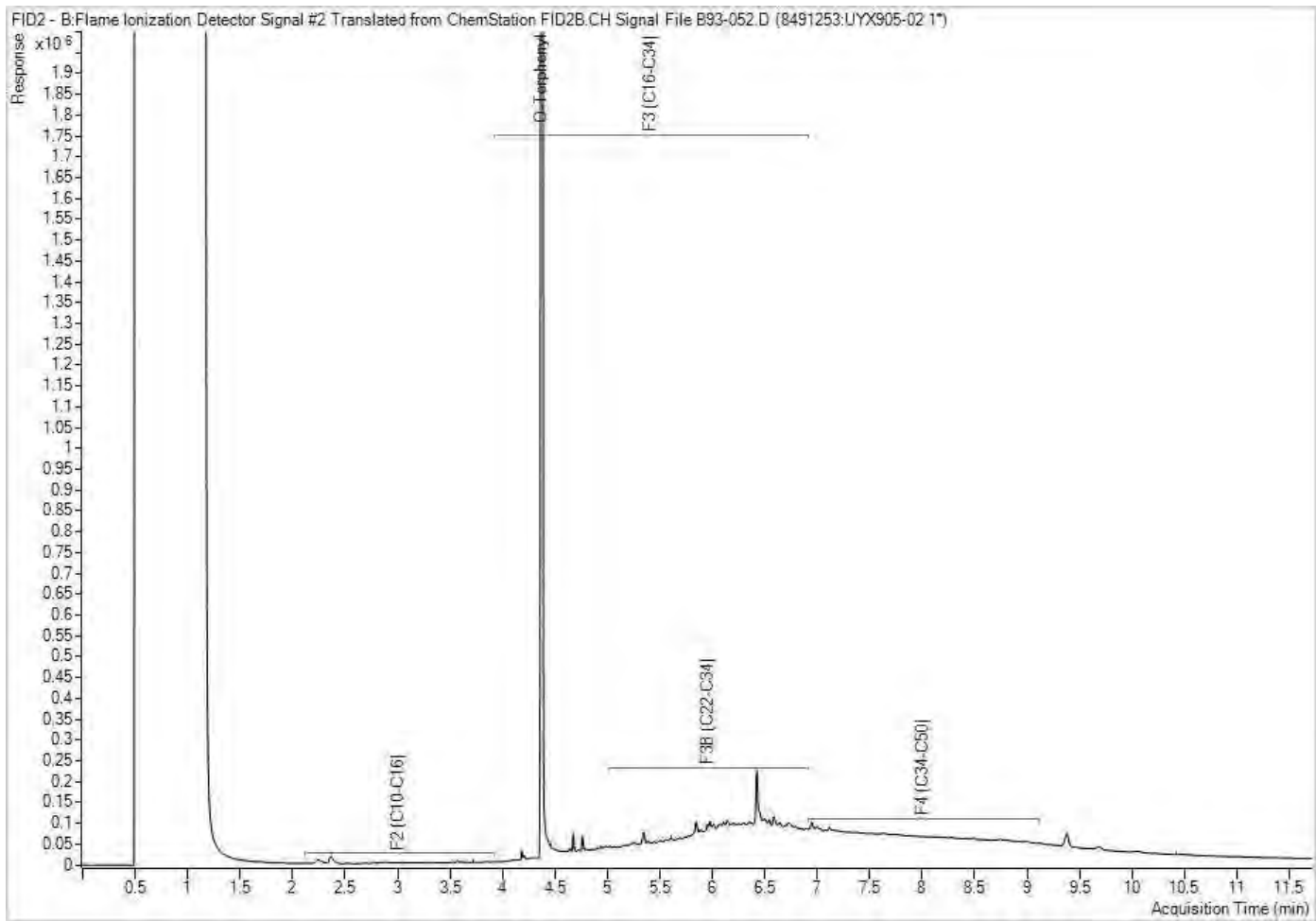
Note: This information is provided for reference purposes only. Should detailed chemist interpretation or fingerprinting be required, please contact the laboratory.

Petroleum Hydrocarbons F2-F4 in Soil Chromatogram



Note: This information is provided for reference purposes only. Should detailed chemist interpretation or fingerprinting be required, please contact the laboratory.

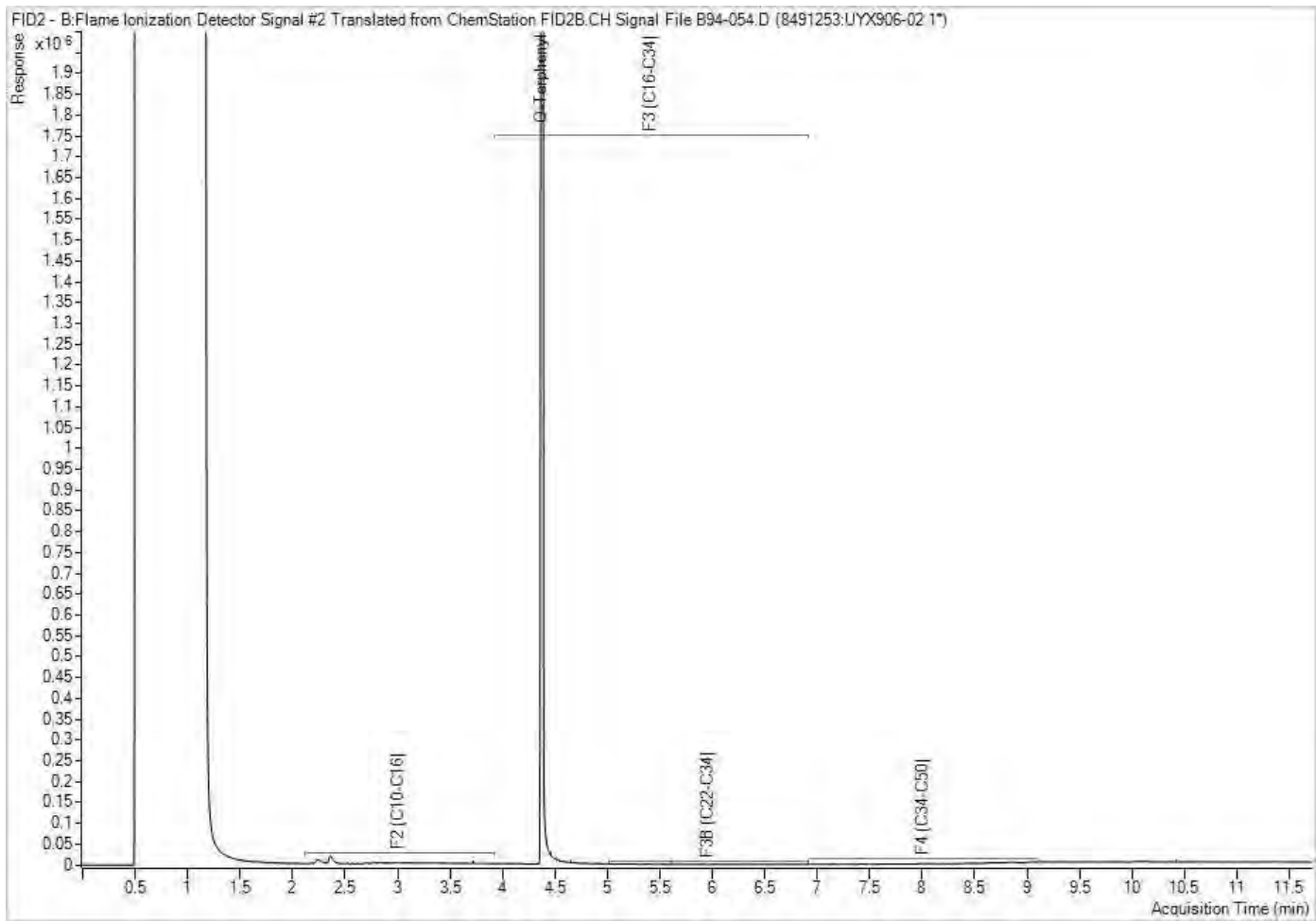
Petroleum Hydrocarbons F2-F4 in Soil Chromatogram



Note: This information is provided for reference purposes only. Should detailed chemist interpretation or fingerprinting be required, please contact the laboratory.



Petroleum Hydrocarbons F2-F4 in Soil Chromatogram

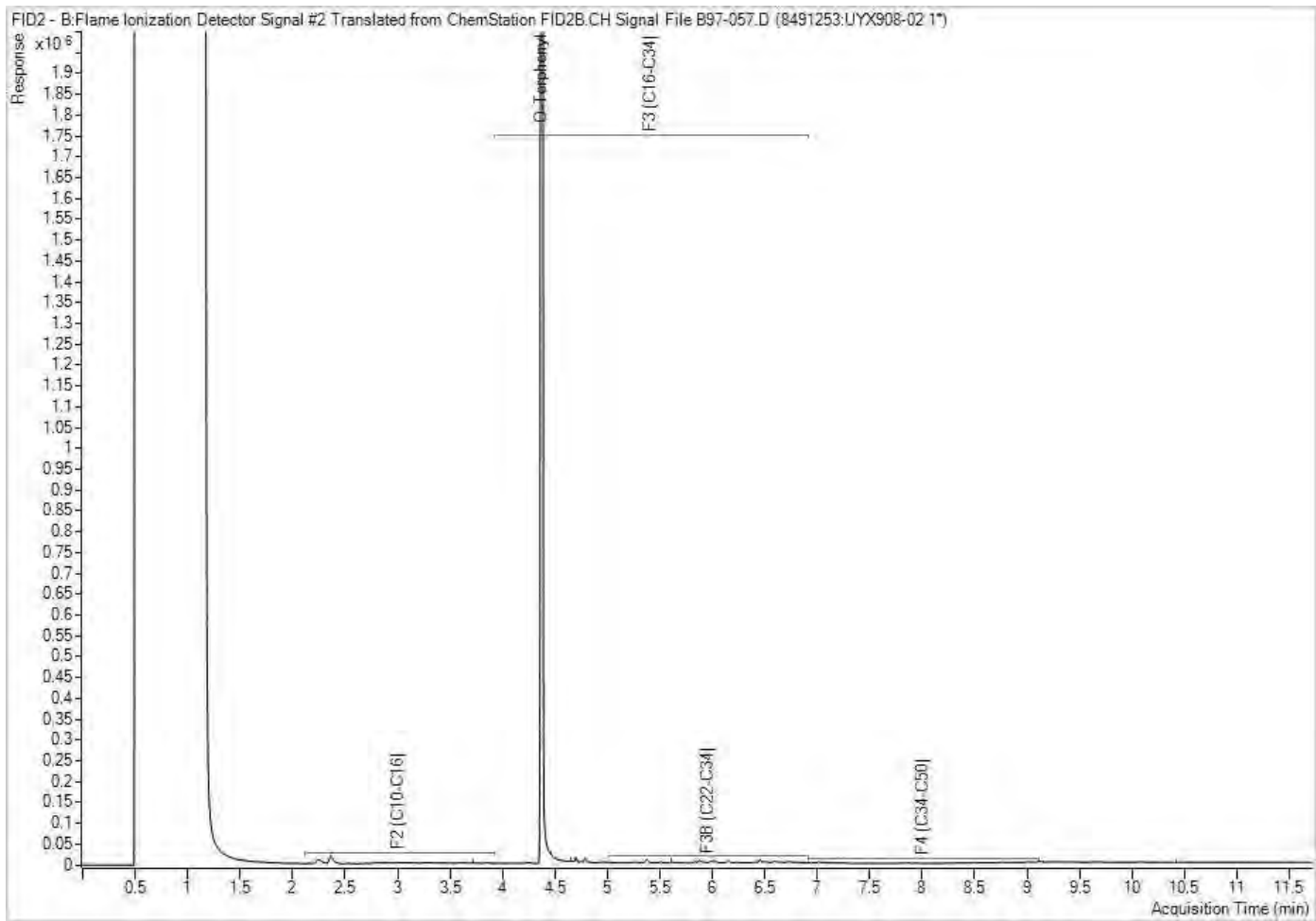


Note: This information is provided for reference purposes only. Should detailed chemist interpretation or fingerprinting be required, please contact the laboratory.



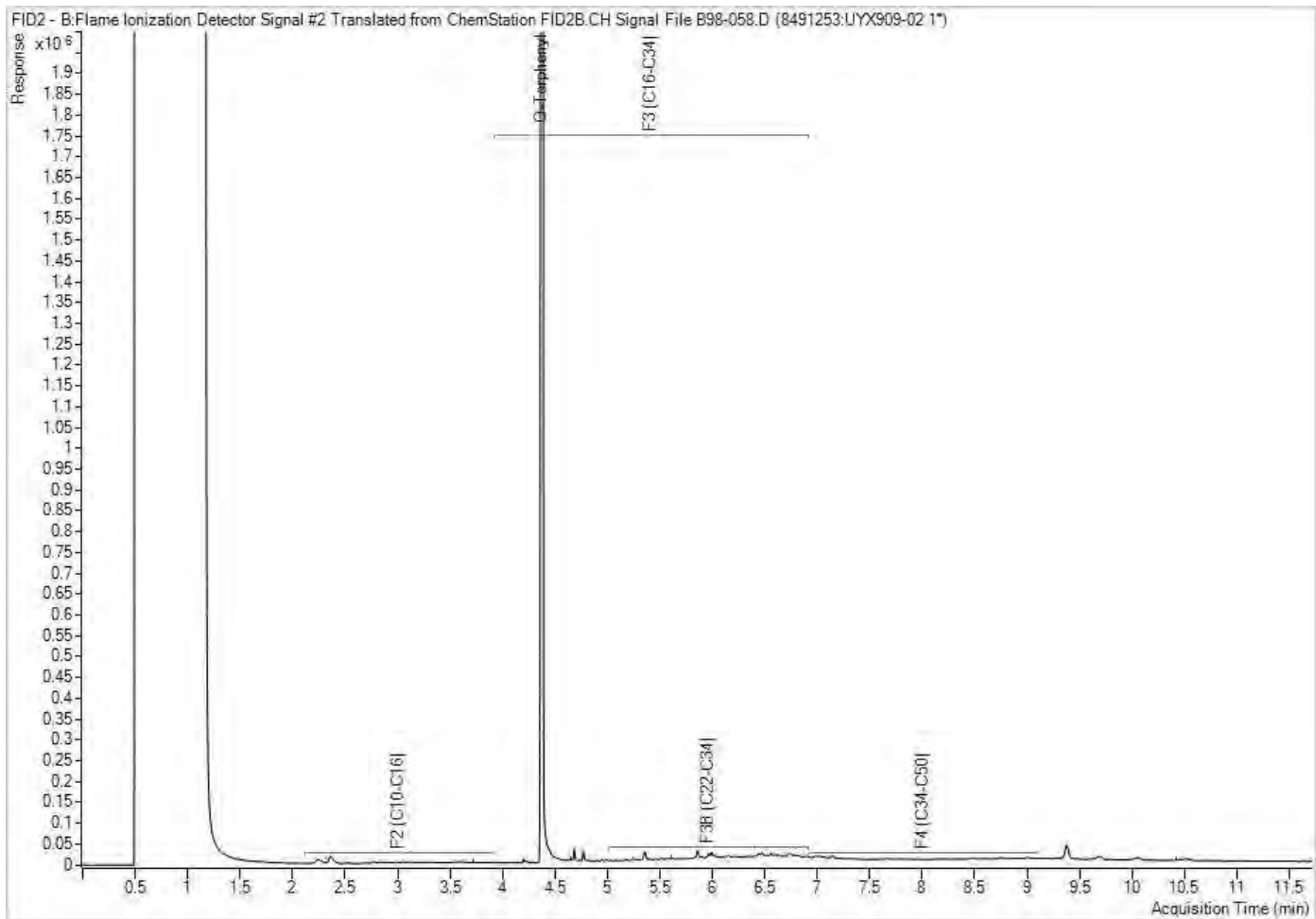


Petroleum Hydrocarbons F2-F4 in Soil Chromatogram



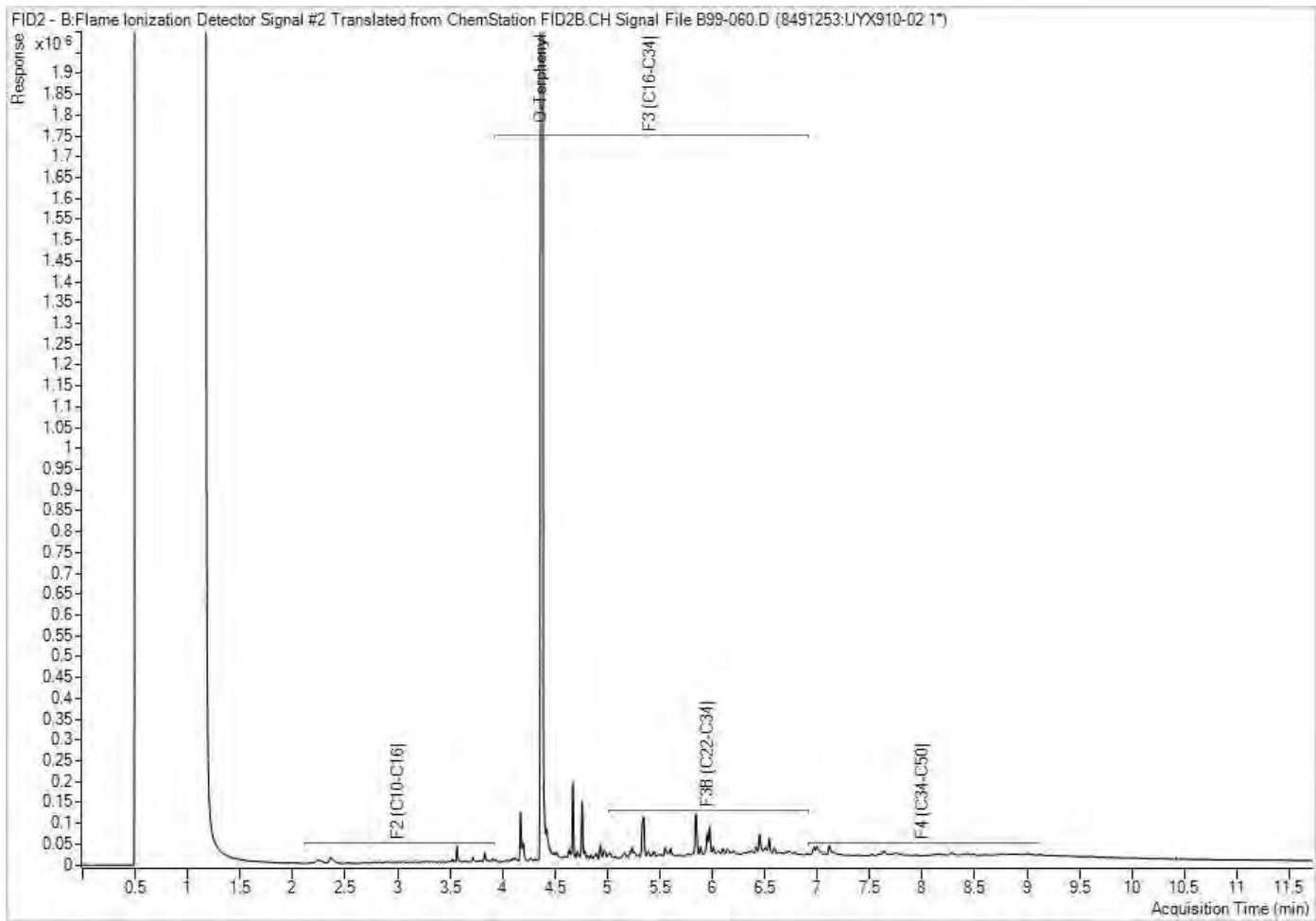
Note: This information is provided for reference purposes only. Should detailed chemist interpretation or fingerprinting be required, please contact the laboratory.

Petroleum Hydrocarbons F2-F4 in Soil Chromatogram



Note: This information is provided for reference purposes only. Should detailed chemist interpretation or fingerprinting be required, please contact the laboratory.

Petroleum Hydrocarbons F2-F4 in Soil Chromatogram



Note: This information is provided for reference purposes only. Should detailed chemist interpretation or fingerprinting be required, please contact the laboratory.

**PHASE TWO ENVIRONMENTAL SITE ASSESSMENT – 187 BOTELER STREET, OTTAWA,  
ONTARIO**

Appendix F Residue Management

## **APPENDIX F RESIDUE MANAGEMENT**



**PHASE TWO ENVIRONMENTAL SITE ASSESSMENT – 187 BOTELER STREET, OTTAWA,  
ONTARIO**

Appendix G Survey of Phase Two Property (Not Included)

**APPENDIX G SURVEY OF PHASE TWO PROPERTY (NOT  
INCLUDED)**





**PHASE TWO ENVIRONMENTAL SITE ASSESSMENT – 187 BOTELER STREET, OTTAWA,  
ONTARIO**

Appendix H Remediation

## **APPENDIX H REMEDIATION**



## Certificate of Analysis

### Stantec Consulting Ltd. (Ottawa)

1331 Clyde Avenue Suite 400

Ottawa, ON K2C 3G4

Attn: Jill Peters-Dechman

Client PO: 45064625

Project: 122510670.225/ Boteler

Custody: 17318

Phone: (613) 722-4420

Fax: (613) 738-0721

Report Date: 10-Apr-2014

Order Date: 9-Apr-2014

**Order #: 1415136**

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

Parcel ID	Client ID
1415136-01	W1
1415136-02	W2
1415136-03	W3
1415136-04	W4
1415136-05	W5
1415136-06	F1
1415136-07	F2
1415136-08	F3
1415136-09	F4

Approved By:



Mark Foto, M.Sc. For 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 circumstances be liable to you in connection with this work

**Certificate of Analysis**

Client: **Stantec Consulting Ltd. (Ottawa)**

Client PO: 45064625

Project Description: 122510670.225/ Boteler

Report Date: 10-Apr-2014

Order Date: 9-Apr-2014

**Analysis Summary Table**

Analysis	Method Reference/Description	Extraction Date	Analysis Date
Mercury	EPA 7471B - CVAA, digestion	10-Apr-14	10-Apr-14
Solids, %	Gravimetric, calculation	10-Apr-14	10-Apr-14

P: 1-800-749-1947  
E: PARACEL@PARACELLABS.COM

WWW.PARACELLABS.COM

**OTTAWA**  
300-2319 St. Laurent Blvd.  
Ottawa, ON K1G 4J8

**MISSISSAUGA**  
6645 Kitimat Rd, Unit #27  
Mississauga, ON L5N 6J3

**NIAGARA FALLS**  
5415 Morning Glory Cr.  
Niagara Falls, ON L2J 0A3

**SARNIA**  
123 Christina St. N.  
Sarnia, ON N7T 5T7

**Certificate of Analysis**

Report Date: 10-Apr-2014

Client: **Stantec Consulting Ltd. (Ottawa)**

Order Date: 9-Apr-2014

Client PO: 45064625

Project Description: 122510670.225/ Boteler

<b>Client ID:</b>	W1	W2	W3	W4
<b>Sample Date:</b>	09-Apr-14	09-Apr-14	09-Apr-14	09-Apr-14
<b>Sample ID:</b>	1415136-01	1415136-02	1415136-03	1415136-04
<b>MDL/Units</b>	Soil	Soil	Soil	Soil

**Physical Characteristics**

% Solids	0.1 % by Wt.	79.8	85.8	83.4	86.0
----------	--------------	------	------	------	------

**Metals**

Mercury	0.1 ug/g dry	0.6	0.5	0.1	0.1
---------	--------------	-----	-----	-----	-----

<b>Client ID:</b>	W5	F1	F2	F3
<b>Sample Date:</b>	09-Apr-14	09-Apr-14	09-Apr-14	09-Apr-14
<b>Sample ID:</b>	1415136-05	1415136-06	1415136-07	1415136-08
<b>MDL/Units</b>	Soil	Soil	Soil	Soil

**Physical Characteristics**

% Solids	0.1 % by Wt.	79.5	83.5	80.4	82.0
----------	--------------	------	------	------	------

**Metals**

Mercury	0.1 ug/g dry	<0.1	<0.1	<0.1	<0.1
---------	--------------	------	------	------	------

<b>Client ID:</b>	F4	-	-	-
<b>Sample Date:</b>	09-Apr-14	-	-	-
<b>Sample ID:</b>	1415136-09	-	-	-
<b>MDL/Units</b>	Soil	-	-	-

**Physical Characteristics**

% Solids	0.1 % by Wt.	79.5	-	-	-
----------	--------------	------	---	---	---

**Metals**

Mercury	0.1 ug/g dry	<0.1	-	-	-
---------	--------------	------	---	---	---

**Certificate of Analysis**

Client: **Stantec Consulting Ltd. (Ottawa)**

Client PO: 45064625

Project Description: 122510670.225/ Boteler

Report Date: 10-Apr-2014

Order Date: 9-Apr-2014

**Method Quality Control: Blank**

Analyte	Result	Reporting Limit	Units	Source Result	%REC	%REC Limit	RPD	RPD Limit	Notes
---------	--------	-----------------	-------	---------------	------	------------	-----	-----------	-------

**Metals**

Mercury	ND	0.1	ug/g						
---------	----	-----	------	--	--	--	--	--	--

**Certificate of Analysis**

Report Date: 10-Apr-2014  
Order Date: 9-Apr-2014

Client: **Stantec Consulting Ltd. (Ottawa)**

Client PO: 45064625

Project Description: 122510670.225/ Boteler

**Method Quality Control: Duplicate**

Analyte	Result	Reporting Limit	Units	Source Result	%REC	%REC Limit	RPD	RPD Limit	Notes
<b>Metals</b>									
Mercury	0.615	0.1	ug/g dry	0.600			2.4	35	
<b>Physical Characteristics</b>									
% Solids	83.0	0.1	% by Wt.	79.8			4.0	25	

**Certificate of Analysis**

Client: **Stantec Consulting Ltd. (Ottawa)**  
Client PO: 45064625

Project Description: 122510670.225/ Boteler

Report Date: 10-Apr-2014  
Order Date: 9-Apr-2014

**Method Quality Control: Spike**

Analyte	Result	Reporting Limit	Units	Source Result	%REC	%REC Limit	RPD	RPD Limit	Notes
---------	--------	-----------------	-------	---------------	------	------------	-----	-----------	-------

**Metals**

Mercury	2.16	0.1	ug/g	0.600	104	72-128			
---------	------	-----	------	-------	-----	--------	--	--	--

**Certificate of Analysis**

Client: **Stantec Consulting Ltd. (Ottawa)**

Client PO: 45064625

Project Description: 122510670.225/ Boteler

Report Date: 10-Apr-2014

Order Date: 9-Apr-2014

**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.



OTTAWA • KINGSTON • NIAGARA • MISSISSAUGA • SARNIA

Page 1 of 1

Client Name: <u>Stantec Consulting Ltd.</u>	Project Reference: <u>122510670 - Bldg</u>	TAT: <input type="checkbox"/> Regular <input type="checkbox"/> 3 Day
Contact Name: <u>Jill Peters-Dechman / Brenda Thom</u>	Quote # <u>City of Ottawa SA # 01910-91843-501</u>	<input type="checkbox"/> 2 Day <input checked="" type="checkbox"/> 1 Day
Address: <u>Suite 400, 1351 Clyde Avenue Ottawa, ON K2C 3G4</u>	PO # <u>122510670, 225</u>	Date Required: <u>RUSH - 24 hr TAT</u>
Telephone: <u>613-722-4420</u>	Email Address: <u>jill.peters-dechman@stantec.com brenda.thom@stantec.com</u>	

Criteria:  O. Reg. 153/04 (As Amended) Table 1  RSC Filing  O. Reg. 558/00  PWOO  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:		Matrix	Air Volume	# of Containers	Sample Taken		Method	Required Analyses															
Sample ID/Location Name					Date	Time																	
<u>1415136</u>																							
1	<u>W1 BCF186</u>	<u>Soil</u>	<u>X</u>	<u>1</u>	<u>2014/04/09</u>	<u>12:45</u>	<u>✓</u>																<u>120 ml</u>
2	<u>W2 BCF187</u>	<u>Soil</u>	<u>X</u>	<u>1</u>	<u>2014/04/09</u>	<u>12:55</u>	<u>✓</u>																
3	<u>W3 BCF188</u>	<u>Soil</u>	<u>X</u>	<u>1</u>	<u>2014/04/09</u>	<u>13:05</u>	<u>✓</u>																
4	<u>W4 BCF189</u>	<u>Soil</u>	<u>X</u>	<u>1</u>	<u>2014/04/09</u>	<u>13:15</u>	<u>✓</u>																
5	<u>W5 BCF190</u>	<u>Soil</u>	<u>X</u>	<u>1</u>	<u>2014/04/09</u>	<u>13:25</u>	<u>✓</u>																
6	<u>F1 BCF191</u>	<u>Soil</u>	<u>X</u>	<u>1</u>	<u>2014/04/09</u>	<u>13:30</u>	<u>✓</u>																
7	<u>F2 BCF192</u>	<u>Soil</u>	<u>X</u>	<u>1</u>	<u>2014/04/09</u>	<u>13:35</u>	<u>✓</u>																
8	<u>F3 BCF193</u>	<u>Soil</u>	<u>X</u>	<u>1</u>	<u>2014/04/09</u>	<u>13:40</u>	<u>✓</u>																
9	<u>F4 BCF194</u>	<u>Soil</u>	<u>X</u>	<u>1</u>	<u>2014/04/09</u>	<u>13:35</u>	<u>✓</u>																
10																							

Comments: RUSH - 24 hr TAT Method of Delivery: Walk-in

Relinquished By (Sign): <u>[Signature]</u>	Received by Driver/Depot:	Received at Lab: <u>[Signature]</u>	Verified By: <u>[Signature]</u>
Relinquished By (Print): <u>Jonathan Urban</u>	Date/Time: _____	Date/Time: <u>Apr 9/14</u>	Date/Time: <u>Apr 9/14 3:15</u>
Date/Time: <u>2014/04/09 14:47</u>	Temperature: _____ °C	Temperature: <u>8.0 °C 2:53p</u>	pH Verified: <input type="checkbox"/> By: <u>N/A</u>





V:\01225\active\1225106\XX\122510670\_City of Ottawa\_Boteler Berm\GIS\MXD\REM\122510670\_Fig01\_SitePlan.mxd  
 Revised: 2014-06-27 By: ncnukshank



- Legend**
- ◆ Confirmatory Soil Sample
  - Borehole
  - ⊕ Monitoring Well
  - ⊕ Monitoring Well (Decommissioned)
  - Test Pit
  - ✂ Mercury Excavation Limits
  - Approximate Phase Two Property Boundary

**Notes**

1. Coordinate System: NAD 1983 UTM Zone 18N
2. Site Airphoto: City of Ottawa, 2013.
3. Orthoimagery © First Base Solutions, Ottawa Division 2008.

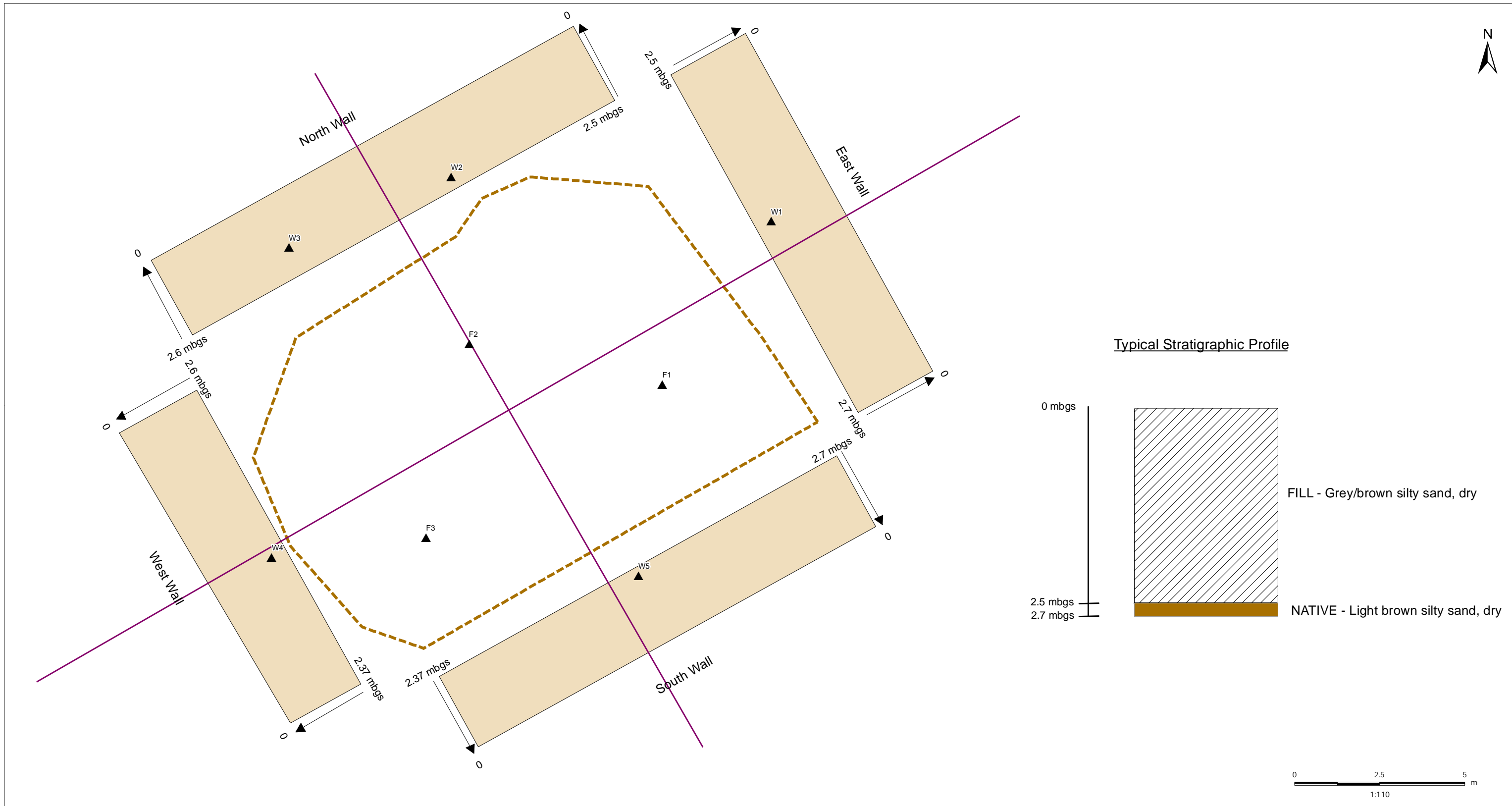
Client/Project  
 MINISTRY OF FOREIGN AFFAIRS OF THE STATE OF QATAR  
 C/O EMBASSY OF QATAR IN OTTAWA  
 PHASE TWO ENVIRONMENTAL SITE ASSESSMENT  
 187 BOTELER STREET, OTTAWA, ON, K1N 0A4

Figure No.  
**H1**  
 Title  
**Site Plan**

June 2014  
 Project No. 122510670



V:\01225\active\1225106\XX\122510670\_City of Ottawa\_Boteler Berm\_GIS\MXD\REM\122510670\_FigR02\_Excavation.mxd  
 Revised: 2014-06-27 By: nciukshank



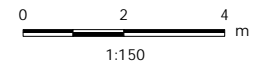
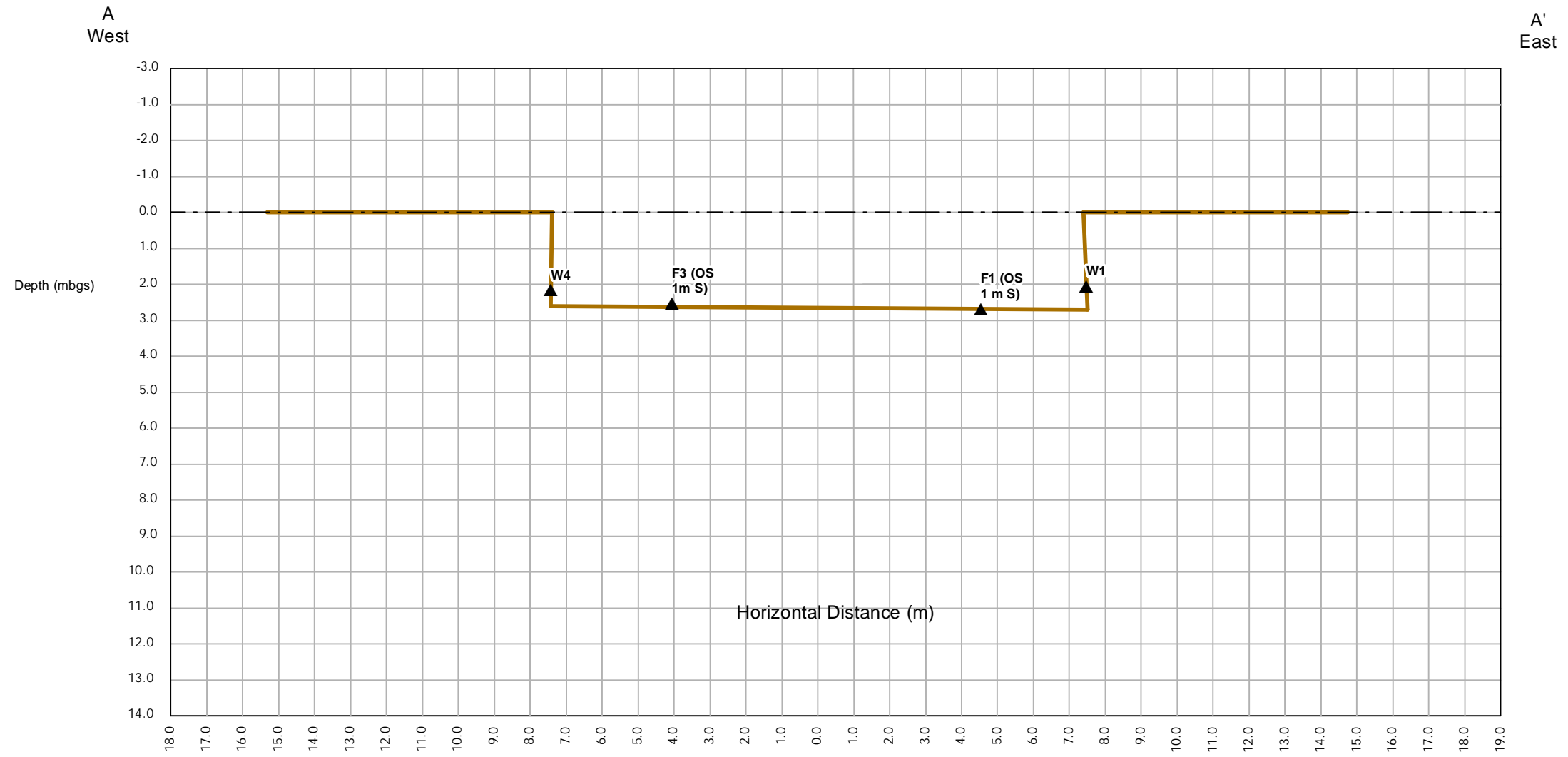
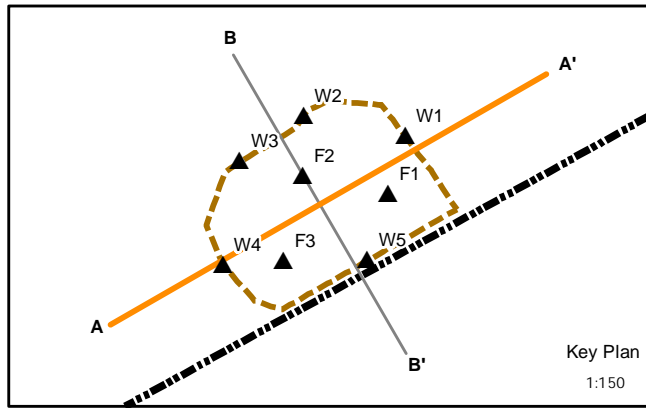
- Legend
- ▲ Sample Submitted for Laboratory Analysis
  - ▭ Excavation Base
  - ▭ Excavation Wall (Approximated)

Notes  
 1. Coordinate System: NAD 1983 UTM Zone 18N

Client/Project  
 June 2014  
 Project No. 122510670

MINISTRY OF FOREIGN AFFAIRS OF THE STATE OF QATAR  
 C/O EMBASSY OF QATAR IN OTTAWA  
 PHASE TWO ENVIRONMENTAL SITE ASSESSMENT  
 187 BOTELER STREET, OTTAWA, ON, K1N 0A4

Figure No.  
**H2**  
 Title  
**Soil Excavation and Sample Locations**



V:\0122510670\122510670\_City of Ottawa\_Boteler Berm\GIS\MXD\REM\122510670\_FigR03\_CrossSection\_AA.mxd  
Revised: 2014-06-27 By: ncnukshank



- Legend
- ▲ Confirmatory Soil Sample Location
  - Base of Excavation
  - Cross-Section Location
  - - - Ground Surface

Notes

1. Coordinate System: NAD 1983 UTM Zone 18N

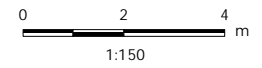
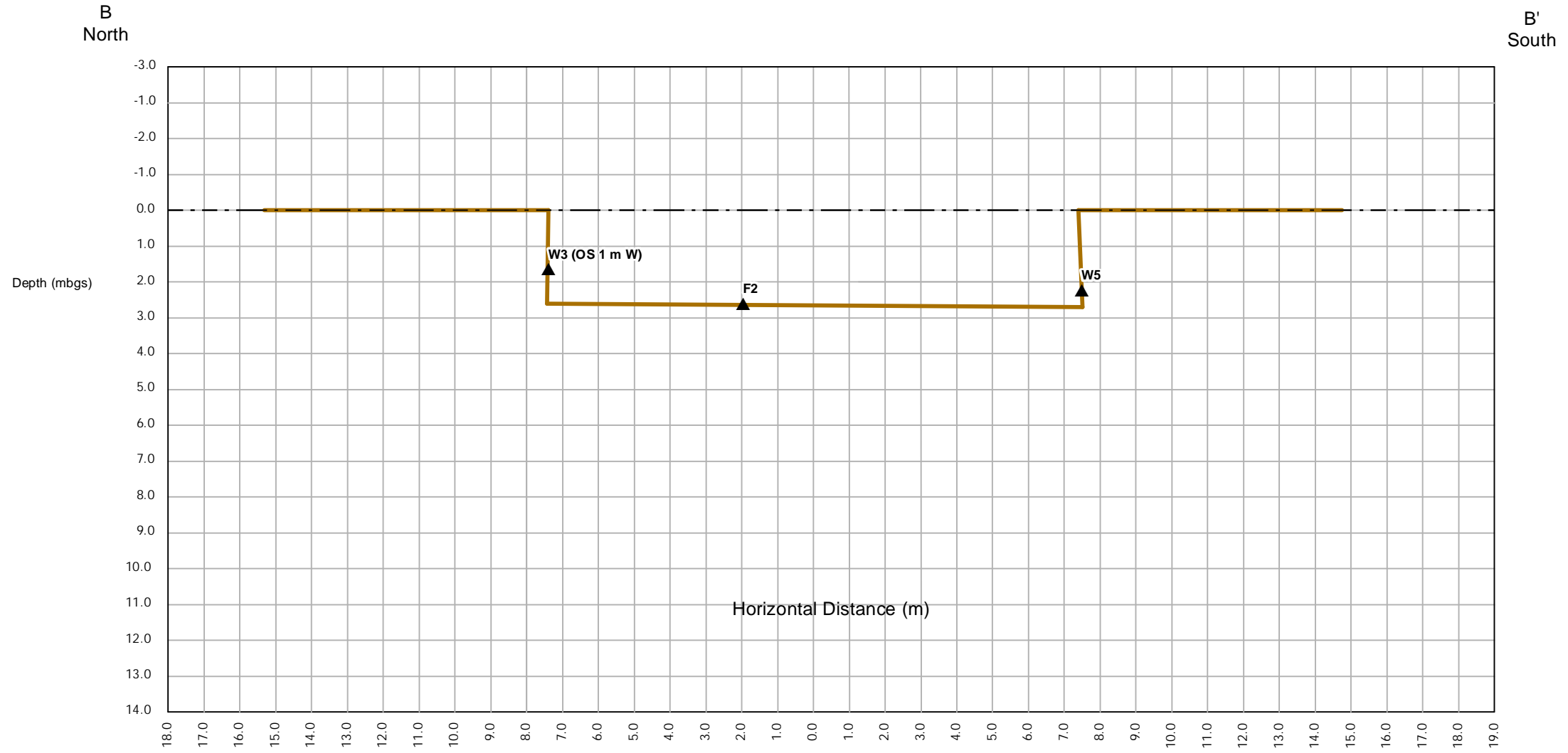
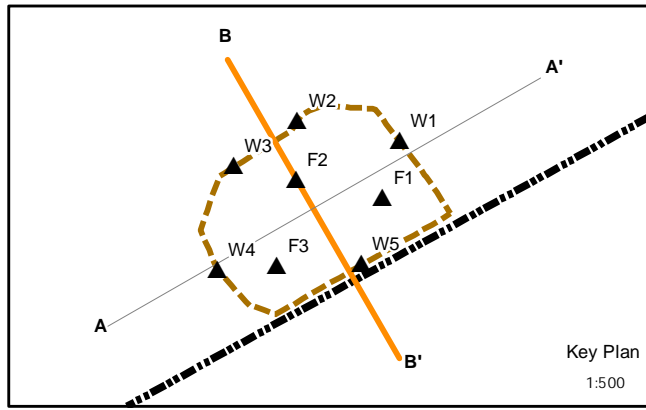
June 2014  
Project No. 122510670

Client/Project  
MINISTRY OF FOREIGN AFFAIRS OF THE STATE OF QATAR  
C/O EMBASSY OF QATAR IN OTTAWA  
PHASE TWO ENVIRONMENTAL SITE ASSESSMENT  
187 BOTELER STREET, OTTAWA, ON, K1N 0A4

Figure No.  
**H3**

Title  
**Cross-Section A-A' (West-East)  
Looking North**

V:\01225\active\122510670\_City of Ottawa\_Boteler Berm\GIS\MXD\REM\122510670\_FigR04\_CrossSection\_BB.mxd  
Revised: 2014-06-27 By: ncnukshank



- Legend
- ▲ Confirmatory Soil Sample Location
  - Base of Excavation
  - Cross-Section Location
  - - - Ground Surface

Notes

1. Coordinate System: NAD 1983 UTM Zone 18N

June 2014  
Project No. 122510670

Client/Project  
MINISTRY OF FOREIGN AFFAIRS OF THE STATE OF QATAR  
C/O EMBASSY OF QATAR IN OTTAWA  
PHASE TWO ENVIRONMENTAL SITE ASSESSMENT  
187 BOTELER STREET, OTTAWA, ON, K1N 0A4

Figure No.  
**H4**

Title  
**Cross-Section B-B' (North-South)  
Looking East**

Stantec Consulting Ltd. (Stantec) was retained to complete soil remediation at 187 Boteler Street in Ottawa, Ontario (hereinafter the “Phase Two Property”) by the City of Ottawa (hereinafter the “City”), the owner of the Phase Two Property at the time. The soil remediation was completed to address specific contaminants of concern (COCs) related to the historical land-use at the Phase Two Property.

## 1.0 REMEDIAL ACTIONS

### 1.1 REMEDIAL OBJECTIVES

The remedial objective was to remove the mercury exceedance in soil, relative to the applicable site condition standard (SCS) (Table 3 SCS; industrial/commercial/community property use; coarse textured soil). Mercury exceeding the applicable SCS was found in TP13 at a depth of 1.5 to 2.0 metres (m) below ground surface (BGS).

### 1.2 REMEDIAL EXCAVATION

The excavation limits (**Figure No. H1**) were determined by half the distance to the closest non-impacted location (7.5 m) as a radius around the location of TP13. As the “hot spot” was sampled at approximately 1.5 to 2.0 m BGS, the excavation was advanced to a depth of approximately 2.5 m BGS to ensure removal of the impacted soil. As the southern boundary of the Phase Two Property was closer than 7.5 m from the impacted sample location, the south wall of the excavation was along the southern property line.

Stantec field personnel were on-site on April 9, 2014, to observe and document soil conditions during the remedial excavation. The excavation was extended to depths ranging from 2.37 m BGS in the southwest corner to 2.7 m BGS at the southeast corner (**Figure No. H2**). No groundwater was encountered during excavation activities. Approximately 642 metric tonnes (MT) of soil were removed from the Phase Two Property and disposed of at the BFI Landfill in Navan, Ontario.

Locations of all remedial excavation verification samples submitted for laboratory analysis are shown on **Figure No. H1** and **Figure No. H2**.

Backfill material was obtained from a grade difference at the Phase Two Property, northwest of the excavation (see Section 1.7).

### 1.3 REMEDIAL AMENDMENTS

No remedial amendments were applied during remedial actions.

### 1.4 FIELD SCREENING MEASUREMENTS

Based on the COC (mercury), field screening of headspace combustible gas concentrations was not completed.



## 1.5 SOIL SAMPLING

Soil samples were collected from the final walls and floor of the excavation. The number of soil samples conformed with the requirements of Table 3 of Schedule E, Part V of Ontario Regulation (O.Reg.) 153/04.

Observations of soil type, grain size, moisture, and visual or olfactory evidence of environmental impacts were noted in the field.

Soil samples were handled with disposable nitrile gloves and were recovered from the excavation or the excavator bucket (with care to not collect soils in contact with the excavator bucket). Samples were placed directly into laboratory supplied containers with necessary preservative (if applicable).

## 1.6 ANALYTICAL TESTING

The soil samples were submitted to Paracel Laboratories Ltd. (Paracel) in Ottawa, Ontario, for analysis of mercury.

Paracel is accredited by the Standards Council of Canada (SCC) in cooperation with Canadian Association for Laboratory Accreditation Inc. (CALA); therefore, it is concluded that the accreditation requirements outlined in Section 47 of O.Reg. 153/04 were met.

## 1.7 BACKFILL

During backfilling activities, each lift of backfill material obtained from the surface of the Phase Two Property, northwest of the remedial excavation, was sampled and analyzed for metals and polycyclic aromatic hydrocarbons (PAHs). Concentrations of lead and PAHs were identified above the applicable SCS in the backfill material (as well as multiple locations across the Phase Two Property). The backfill samples were collected to characterize the concentrations being placed into the excavation.

Backfill sampling is documented in **Appendix I**.

## 2.0 FREE FLOWING PRODUCT

No free flowing product was encountered during remedial actions.

## 3.0 CONFIRMATION SAMPLING AND ANALYSIS

### 3.1 FIELD SCREENING MEASUREMENTS

No headspace vapour screening was completed during remedial actions due to the nature of the COC (mercury).



## 3.2 SOIL QUALITY

The analytical results of the verification soil samples recovered from the final walls and floor of the remedial excavations are presented in **Table H1**. No concentrations of mercury in the verification samples exceeded the applicable SCS.

## 3.3 QUALITY ASSURANCE AND QUALITY CONTROL RESULTS

The overall data quality objective for the investigation was to collect data that were precise, accurate, reproducible, complete, and suitable for comparison with the applicable SCS.

In order to meet the data quality objectives, quality assurance/quality control (QA/QC) procedures were incorporated into both field and laboratory methods. Efforts were made during sampling to reduce the potential for contamination so as to obtain representative samples. Accordingly:

- Samples were labeled with a unique ID, packed into coolers with ice, and transported to the analytical laboratory under chain-of-custody documentation
- Sampling was completed using a new pair of disposable nitrile gloves for each sample
- Non-dedicated equipment was decontaminated with Alconox and distilled water prior to reuse at each sampling location

As a check on the laboratory analytical methods and on sample precision, the following QA/QC samples were submitted:

- One blind field duplicate soil sample for the analysis of mercury

The blind field duplicate samples were used to assess the precision of the sampling and analytical procedures. Typically, a relative percent difference (RPD) is calculated for the concentrations in the parent sample and its duplicate. The RPD is calculated using the following formula:

$$RPD = \left| \frac{C_1 - C_2}{(C_1 + C_2)/2} \right| \times 100$$

Where:  $C_1$  is the concentration in the original sample

$C_2$  is the concentration in the sample replicate

Note that RPDs are only calculated in the event that the analytical result is greater than five times the reportable detection limits (RDL), in accordance with the BV's *Ontario QA/QC Interpretation Guide – Environmental Services* (BV, 2014). In addition, if the results for both the parent sample and the duplicate were below the RDL, the analytical results were assumed to have a high degree of similarity.

BV's *Ontario QA/QC Interpretation Guide – Environmental Services* (BV, 2014) indicates that RPDs for metals (including mercury) in soils should not exceed 30%. The RPD was not calculated for the blind field duplicate soil sample and its parent sample as the results of both analyses were below the RDL.





## **4.0 CONCLUSIONS**

The remedial excavation was developed to address a specific mercury exceedance. The remedial excavation was completed on April 9, 2014.

Soil characterization completed during the remedial excavation has confirmed that concentrations of mercury are below the applicable SCS at the Phase Two Property. Additionally, the maximum soil concentration for mercury may be updated to 3.9 microgram per gram ( $\mu\text{g/g}$ ) (TP17; 1.5 - 2.0 m BGS).



**Table H1**  
**Excavation Soil Analytical Results**  
**Phase Two Environmental Site Assessment**  
**187 Boteler Street, Ottawa ON, K1N 0A4**  
**Ministry of Foreign Affairs of the State of Qatar c/o Embassy of Qatar in Ottawa**

Sample Location			East Wall	North Wall			West Wall	South Wall	Floor			
Sample Date			9-Apr-14	9-Apr-14	9-Apr-14	9-Apr-14	9-Apr-14	9-Apr-14	9-Apr-14	9-Apr-14	9-Apr-14	9-Apr-14
Sample ID			W1	W2	W3	W4	W5	F1	F2	F4		F3
Sample Depth			1.75-2.4 m	2.0-2.5 m	1.5-2.15 m	1.9-2.3 m	2.5-2.5 m	2.6 m	2.7 m	2.7 m		2.4 m
Sampling Company			STANTEC	STANTEC	STANTEC	STANTEC	STANTEC	STANTEC	STANTEC	STANTEC	RPD	STANTEC
Laboratory			PARACEL	PARACEL	PARACEL	PARACEL	PARACEL	PARACEL	PARACEL	PARACEL	(%)	PARACEL
Laboratory Work Order			1415136	1415136	1415136	1415136	1415136	1415136	1415136	1415136		1415136
Laboratory Sample ID			1415136-01	1415136-02	1415136-03	1415136-04	1415136-05	1415136-06	1415136-07	1415136-09		1415136-08
Sample Type	Units	Ontario SCS								Field Duplicate		
<b>Metals</b>												
Mercury	µg/g	3.9 <sup>A</sup>	0.6	0.5	0.1	0.1	<0.1	<0.1	<0.1	<0.1	nc	<0.1

**Notes:**

Ontario SCS Soil, Ground Water and Sediment Standards for Use under Part XV.I of the Environmental Protection Act (MOE, 2011) Site Condition Standards (SCS)

<sup>A</sup> Table 3 - Industrial / Commercial / Community Property Use - Coarse Textured Soils

**3.9<sup>A</sup>** Concentration exceeds the indicated standard.

0.6 Concentration was detected but did not exceed applicable standards.

< 0.1 The analyte was not detected above the laboratory estimated quantitation limit.

RPD Relative percent difference

nc RPD is not calculated if one or more values is non-detect.

**PHASE TWO ENVIRONMENTAL SITE ASSESSMENT – 187 BOTELER STREET, OTTAWA,  
ONTARIO**

Appendix I Soil Excavated at or Brought to the Phase Two Property

**APPENDIX I SOIL EXCAVATED AT OR BROUGHT TO THE  
PHASE TWO PROPERTY**



## Certificate of Analysis

### Stantec Consulting Ltd. (Ottawa)

1331 Clyde Avenue Suite 400  
Ottawa, ON K2C 3G4  
Attn: Jill Peters-Dechman

Phone: (613) 722-4420  
Fax: (613) 738-0721

Client PO: 45064625  
Project: 122510670/ Boteler  
Custody: 17334

Report Date: 24-Apr-2014  
Order Date: 15-Apr-2014

**Order #: 1416085**

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

Parcel ID	Client ID
1416085-01	Lift 1
1416085-02	Lift 2
1416085-03	Lift 3
1416085-04	Lift 4
1416085-05	Lift 5
1416085-06	Lift 6
1416085-07	Lift 7
1416085-08	Lift 8
1416085-09	Lift 9

Approved By:



Mark Foto, M.Sc. For Dale Robertson, BSc  
Laboratory Director

**Certificate of Analysis**

Client: **Stantec Consulting Ltd. (Ottawa)**

Client PO: 45064625

Project Description: 122510670/ Boteler

Report Date: 24-Apr-2014

Order Date: 15-Apr-2014

**Analysis Summary Table**

Analysis	Method Reference/Description	Extraction Date	Analysis Date
Boron, available	MOE (HWE), EPA 200.7 - ICP-OES	16-Apr-14	16-Apr-14
Chromium, hexavalent	MOE E3056 - Extraction, colourimetric	15-Apr-14	16-Apr-14
Mercury	EPA 7471B - CVAA, digestion	16-Apr-14	16-Apr-14
MOE Metals by ICP-OES, soil Reg 153	based on MOE E3470, ICP-OES	16-Apr-14	17-Apr-14
PAHs by GC-MS	EPA 8270 - GC-MS, extraction	15-Apr-14	24-Apr-14
Solids, %	Gravimetric, calculation	16-Apr-14	16-Apr-14

P: 1-800-749-1947  
E: PARACEL@PARACELLABS.COM

WWW.PARACELLABS.COM

**OTTAWA**  
300-2319 St. Laurent Blvd.  
Ottawa, ON K1G 4J8

**MISSISSAUGA**  
6645 Kitimat Rd. Unit #27  
Mississauga, ON L5N 6J3

**NIAGARA FALLS**  
5415 Morning Glory Cr.  
Niagara Falls, ON L2J 0A3

**SARNIA**  
123 Christina St. N.  
Sarnia, ON N7T 5T7

**Certificate of Analysis**

Report Date: 24-Apr-2014

 Client: **Stantec Consulting Ltd. (Ottawa)**

Order Date: 15-Apr-2014

Client PO: 45064625

Project Description: 122510670/ Boteler

Client ID:	Lift 1	Lift 2	Lift 3	Lift 4
Sample Date:	14-Apr-14	14-Apr-14	14-Apr-14	14-Apr-14
Sample ID:	1416085-01	1416085-02	1416085-03	1416085-04
MDL/Units	Soil	Soil	Soil	Soil

**Physical Characteristics**

% Solids	0.1 % by Wt.	91.1	87.2	90.9	89.6
----------	--------------	------	------	------	------

**Metals**

Antimony	1.0 ug/g dry	<1.0	<1.0	<1.0	<1.0
Arsenic	1.0 ug/g dry	4.5	2.5	<1.0	8.2
Barium	1.0 ug/g dry	286	100	111	284
Beryllium	1.0 ug/g dry	<1.0	<1.0	<1.0	<1.0
Boron	1.0 ug/g dry	6.1	4.9	4.4	8.6
Boron, available	0.5 ug/g dry	0.6	<0.5	<0.5	0.9
Cadmium	0.5 ug/g dry	<0.5	<0.5	<0.5	<0.5
Chromium	1.0 ug/g dry	17.4	5.2	6.5	18.4
Chromium (VI)	0.2 ug/g dry	<0.2	<0.2	<0.2	<0.2
Cobalt	1.0 ug/g dry	6.1	2.8	3.2	6.3
Copper	1.0 ug/g dry	20.1	7.4	8.2	31.9
Lead	1.0 ug/g dry	245	18.8	23.6	402
Mercury	0.1 ug/g dry	3.9	<0.1	<0.1	1.1
Molybdenum	1.0 ug/g dry	1.3	<1.0	<1.0	<1.0
Nickel	1.0 ug/g dry	12.6	6.5	7.1	13.3
Selenium	1.0 ug/g dry	<1.0	<1.0	<1.0	<1.0
Silver	0.5 ug/g dry	<0.5	<0.5	<0.5	<0.5
Thallium	1.0 ug/g dry	<1.0	<1.0	<1.0	<1.0
Uranium	1.0 ug/g dry	<1.0	<1.0	<1.0	<1.0
Vanadium	1.0 ug/g dry	22.5	8.0	10.2	19.8
Zinc	1.0 ug/g dry	57.0	18.3	20.0	119

**Semi-Volatiles**

Acenaphthene	0.02 ug/g dry	0.04	<0.02	<0.02	0.08
Acenaphthylene	0.02 ug/g dry	0.43	0.07	0.08	0.13
Anthracene	0.02 ug/g dry	0.31	0.06	0.07	<0.02
Benzo [a] anthracene	0.02 ug/g dry	0.95	0.16	0.14	0.24
Benzo [a] pyrene	0.02 ug/g dry	0.85	0.12	0.12	0.36
Benzo [b] fluoranthene	0.02 ug/g dry	1.25	0.18	0.18	0.80
Benzo [g,h,i] perylene	0.02 ug/g dry	0.17	0.03	0.03	0.08
Benzo [k] fluoranthene	0.02 ug/g dry	0.63	0.11	0.08	0.79
Biphenyl	0.02 ug/g dry	<0.02	<0.02	<0.02	<0.02

**Certificate of Analysis**

Report Date: 24-Apr-2014

 Client: **Stantec Consulting Ltd. (Ottawa)**

Order Date: 15-Apr-2014

Client PO: 45064625

Project Description: 122510670/ Boteler

	Client ID:	Lift 1	Lift 2	Lift 3	Lift 4
	Sample Date:	14-Apr-14	14-Apr-14	14-Apr-14	14-Apr-14
	Sample ID:	1416085-01	1416085-02	1416085-03	1416085-04
	MDL/Units	Soil	Soil	Soil	Soil
Chrysene	0.02 ug/g dry	1.00	0.18	0.17	0.49
Dibenzo [a,h] anthracene	0.02 ug/g dry	0.06	<0.02	<0.02	0.02
Fluoranthene	0.02 ug/g dry	1.96	0.24	0.29	1.23
Fluorene	0.02 ug/g dry	0.08	<0.02	<0.02	0.09
Indeno [1,2,3-cd] pyrene	0.02 ug/g dry	0.21	0.03	0.03	0.09
1-Methylnaphthalene	0.02 ug/g dry	0.03	<0.02	<0.02	0.03
2-Methylnaphthalene	0.02 ug/g dry	0.04	<0.02	<0.02	0.03
Methylnaphthalene (1&2)	0.04 ug/g dry	0.07	<0.04	<0.04	0.06
Naphthalene	0.01 ug/g dry	0.05	<0.01	<0.01	0.06
Phenanthrene	0.02 ug/g dry	0.90	0.08	0.12	0.90
Pyrene	0.02 ug/g dry	1.72	0.25	0.26	1.03
2-Fluorobiphenyl	Surrogate	82.3%	94.0%	76.2%	61.1%
Terphenyl-d14	Surrogate	95.9%	135%	113%	85.0%

**Certificate of Analysis**

Report Date: 24-Apr-2014

 Client: **Stantec Consulting Ltd. (Ottawa)**

Order Date: 15-Apr-2014

Client PO: 45064625

Project Description: 122510670/ Boteler

	Client ID:	Lift 5	Lift 6	Lift 7	Lift 8
	Sample Date:	14-Apr-14	14-Apr-14	14-Apr-14	14-Apr-14
	Sample ID:	1416085-05	1416085-06	1416085-07	1416085-08
	MDL/Units	Soil	Soil	Soil	Soil

**Physical Characteristics**

% Solids	0.1 % by Wt.	83.9	92.8	90.3	94.1
----------	--------------	------	------	------	------

**Metals**

Antimony	1.0 ug/g dry	<1.0	<1.0	<1.0	<1.0
Arsenic	1.0 ug/g dry	4.1	2.0	<1.0	2.0
Barium	1.0 ug/g dry	128	107	132	113
Beryllium	1.0 ug/g dry	<1.0	<1.0	<1.0	<1.0
Boron	1.0 ug/g dry	5.5	4.9	3.0	2.7
Boron, available	0.5 ug/g dry	<0.5	<0.5	<0.5	<0.5
Cadmium	0.5 ug/g dry	<0.5	<0.5	<0.5	<0.5
Chromium	1.0 ug/g dry	20.3	10.5	2.5	2.0
Chromium (VI)	0.2 ug/g dry	<0.2	<0.2	<0.2	<0.2
Cobalt	1.0 ug/g dry	7.3	4.3	1.4	1.3
Copper	1.0 ug/g dry	24.9	13.4	3.3	2.9
Lead	1.0 ug/g dry	58.5	31.9	8.6	6.7
Mercury	0.1 ug/g dry	0.2	<0.1	<0.1	<0.1
Molybdenum	1.0 ug/g dry	<1.0	<1.0	<1.0	<1.0
Nickel	1.0 ug/g dry	15.0	9.1	4.5	3.9
Selenium	1.0 ug/g dry	<1.0	<1.0	<1.0	<1.0
Silver	0.5 ug/g dry	<0.5	<0.5	<0.5	<0.5
Thallium	1.0 ug/g dry	<1.0	<1.0	<1.0	<1.0
Uranium	1.0 ug/g dry	<1.0	<1.0	<1.0	<1.0
Vanadium	1.0 ug/g dry	30.2	15.6	5.2	4.6
Zinc	1.0 ug/g dry	60.6	29.8	5.9	4.3

**Semi-Volatiles**

Acenaphthene	0.02 ug/g dry	7.79	<0.02	<0.02	<0.02
Acenaphthylene	0.02 ug/g dry	3.96	0.20	0.02	<0.02
Anthracene	0.02 ug/g dry	40.8	0.17	<0.02	<0.02
Benzo [a] anthracene	0.02 ug/g dry	31.6	0.39	0.03	<0.02
Benzo [a] pyrene	0.02 ug/g dry	22.8	0.33	0.03	<0.02
Benzo [b] fluoranthene	0.02 ug/g dry	30.2	0.51	0.04	<0.02
Benzo [g,h,i] perylene	0.02 ug/g dry	4.28	0.08	<0.02	<0.02
Benzo [k] fluoranthene	0.02 ug/g dry	15.9	0.24	<0.02	<0.02
Biphenyl	0.02 ug/g dry	1.01	<0.02	<0.02	<0.02



**Certificate of Analysis**

Report Date: 24-Apr-2014

Order Date: 15-Apr-2014

 Client: **Stantec Consulting Ltd. (Ottawa)**

Client PO: 45064625

Project Description: 122510670/ Boteler

	Client ID:	Lift 5	Lift 6	Lift 7	Lift 8
	Sample Date:	14-Apr-14	14-Apr-14	14-Apr-14	14-Apr-14
	Sample ID:	1416085-05	1416085-06	1416085-07	1416085-08
	MDL/Units	Soil	Soil	Soil	Soil
Chrysene	0.02 ug/g dry	30.9	0.43	0.03	<0.02
Dibenzo [a,h] anthracene	0.02 ug/g dry	1.26	<0.02	<0.02	<0.02
Fluoranthene	0.02 ug/g dry	120	0.78	0.04	<0.02
Fluorene	0.02 ug/g dry	17.1	0.04	<0.02	<0.02
Indeno [1,2,3-cd] pyrene	0.02 ug/g dry	4.99	0.09	<0.02	<0.02
1-Methylnaphthalene	0.02 ug/g dry	3.63	<0.02	<0.02	<0.02
2-Methylnaphthalene	0.02 ug/g dry	3.85	<0.02	<0.02	<0.02
Methylnaphthalene (1&2)	0.04 ug/g dry	7.48	<0.04	<0.04	<0.04
Naphthalene	0.01 ug/g dry	4.45	0.02	<0.01	<0.01
Phenanthrene	0.02 ug/g dry	152	0.37	0.03	<0.02
Pyrene	0.02 ug/g dry	95.3	0.70	0.04	<0.02
2-Fluorobiphenyl	Surrogate	73.1%	81.5%	81.5%	81.5%
Terphenyl-d14	Surrogate	129%	108%	129%	106%

**Certificate of Analysis**

Report Date: 24-Apr-2014

 Client: **Stantec Consulting Ltd. (Ottawa)**

Order Date: 15-Apr-2014

Client PO: 45064625

Project Description: 122510670/ Boteler

<b>Client ID:</b>	Lift 9	-	-	-
<b>Sample Date:</b>	14-Apr-14	-	-	-
<b>Sample ID:</b>	1416085-09	-	-	-
<b>MDL/Units</b>	Soil	-	-	-

**Physical Characteristics**

% Solids	0.1 % by Wt.	92.9	-	-	-
----------	--------------	------	---	---	---

**Metals**

Antimony	1.0 ug/g dry	<1.0	-	-	-
Arsenic	1.0 ug/g dry	2.1	-	-	-
Barium	1.0 ug/g dry	88.5	-	-	-
Beryllium	1.0 ug/g dry	<1.0	-	-	-
Boron	1.0 ug/g dry	4.5	-	-	-
Boron, available	0.5 ug/g dry	<0.5	-	-	-
Cadmium	0.5 ug/g dry	<0.5	-	-	-
Chromium	1.0 ug/g dry	6.0	-	-	-
Chromium (VI)	0.2 ug/g dry	<0.2	-	-	-
Cobalt	1.0 ug/g dry	2.7	-	-	-
Copper	1.0 ug/g dry	9.5	-	-	-
Lead	1.0 ug/g dry	19.0	-	-	-
Mercury	0.1 ug/g dry	<0.1	-	-	-
Molybdenum	1.0 ug/g dry	<1.0	-	-	-
Nickel	1.0 ug/g dry	6.4	-	-	-
Selenium	1.0 ug/g dry	<1.0	-	-	-
Silver	0.5 ug/g dry	<0.5	-	-	-
Thallium	1.0 ug/g dry	<1.0	-	-	-
Uranium	1.0 ug/g dry	<1.0	-	-	-
Vanadium	1.0 ug/g dry	10.1	-	-	-
Zinc	1.0 ug/g dry	16.2	-	-	-

**Semi-Volatiles**

Acenaphthene	0.02 ug/g dry	<0.02	-	-	-
Acenaphthylene	0.02 ug/g dry	0.08	-	-	-
Anthracene	0.02 ug/g dry	0.06	-	-	-
Benzo [a] anthracene	0.02 ug/g dry	0.03	-	-	-
Benzo [a] pyrene	0.02 ug/g dry	0.13	-	-	-
Benzo [b] fluoranthene	0.02 ug/g dry	0.15	-	-	-
Benzo [g,h,i] perylene	0.02 ug/g dry	0.03	-	-	-
Benzo [k] fluoranthene	0.02 ug/g dry	0.09	-	-	-
Biphenyl	0.02 ug/g dry	<0.02	-	-	-

**Certificate of Analysis**

Report Date: 24-Apr-2014

Order Date: 15-Apr-2014

 Client: **Stantec Consulting Ltd. (Ottawa)**

Project Description: 122510670/ Boteler

Client PO: 45064625

	Client ID:	Lift 9	-	-	-
	Sample Date:	14-Apr-14	-	-	-
	Sample ID:	1416085-09	-	-	-
	MDL/Units	Soil	-	-	-
Chrysene	0.02 ug/g dry	0.17	-	-	-
Dibenzo [a,h] anthracene	0.02 ug/g dry	<0.02	-	-	-
Fluoranthene	0.02 ug/g dry	0.30	-	-	-
Fluorene	0.02 ug/g dry	<0.02	-	-	-
Indeno [1,2,3-cd] pyrene	0.02 ug/g dry	0.03	-	-	-
1-Methylnaphthalene	0.02 ug/g dry	<0.02	-	-	-
2-Methylnaphthalene	0.02 ug/g dry	<0.02	-	-	-
Methylnaphthalene (1&2)	0.04 ug/g dry	<0.04	-	-	-
Naphthalene	0.01 ug/g dry	<0.01	-	-	-
Phenanthrene	0.02 ug/g dry	0.14	-	-	-
Pyrene	0.02 ug/g dry	0.29	-	-	-
2-Fluorobiphenyl	Surrogate	81.0%	-	-	-
Terphenyl-d14	Surrogate	111%	-	-	-

**Certificate of Analysis**

Report Date: 24-Apr-2014

Client: **Stantec Consulting Ltd. (Ottawa)**

Order Date: 15-Apr-2014

Client PO: 45064625

Project Description: 122510670/ Boteler

**Method Quality Control: Blank**

Analyte	Result	Reporting Limit	Units	Source Result	%REC	%REC Limit	RPD	RPD Limit	Notes
<b>Metals</b>									
Antimony	ND	1.0	ug/g						
Arsenic	ND	1.0	ug/g						
Barium	ND	1.0	ug/g						
Beryllium	ND	1.0	ug/g						
Boron, available	ND	0.5	ug/g						
Boron	ND	1.0	ug/g						
Cadmium	ND	0.5	ug/g						
Chromium (VI)	ND	0.2	ug/g						
Chromium	ND	1.0	ug/g						
Cobalt	ND	1.0	ug/g						
Copper	ND	1.0	ug/g						
Lead	ND	1.0	ug/g						
Mercury	ND	0.1	ug/g						
Molybdenum	ND	1.0	ug/g						
Nickel	ND	1.0	ug/g						
Selenium	ND	1.0	ug/g						
Silver	ND	0.5	ug/g						
Thallium	ND	1.0	ug/g						
Uranium	ND	1.0	ug/g						
Vanadium	ND	1.0	ug/g						
Zinc	ND	1.0	ug/g						
<b>Semi-Volatiles</b>									
Acenaphthene	ND	0.02	ug/g						
Acenaphthylene	ND	0.02	ug/g						
Anthracene	ND	0.02	ug/g						
Benzo [a] anthracene	ND	0.02	ug/g						
Benzo [a] pyrene	ND	0.02	ug/g						
Benzo [b] fluoranthene	ND	0.02	ug/g						
Benzo [g,h,i] perylene	ND	0.02	ug/g						
Benzo [k] fluoranthene	ND	0.02	ug/g						
Biphenyl	ND	0.02	ug/g						
Chrysene	ND	0.02	ug/g						
Dibenzo [a,h] anthracene	ND	0.02	ug/g						
Fluoranthene	ND	0.02	ug/g						
Fluorene	ND	0.02	ug/g						
Indeno [1,2,3-cd] pyrene	ND	0.02	ug/g						
1-Methylnaphthalene	ND	0.02	ug/g						
2-Methylnaphthalene	ND	0.02	ug/g						
Methylnaphthalene (1&2)	ND	0.04	ug/g						
Naphthalene	ND	0.01	ug/g						
Phenanthrene	ND	0.02	ug/g						
Pyrene	ND	0.02	ug/g						
Surrogate: 2-Fluorobiphenyl	0.872		ug/g		65.4	50-140			
Surrogate: Terphenyl-d14	0.860		ug/g		64.5	50-140			

**Certificate of Analysis**

Report Date: 24-Apr-2014

Client: **Stantec Consulting Ltd. (Ottawa)**

Order Date: 15-Apr-2014

Client PO: 45064625

Project Description: 122510670/ Boteler

**Method Quality Control: Duplicate**

Analyte	Result	Reporting Limit	Units	Source Result	%REC	%REC Limit	RPD	RPD Limit	Notes
<b>Metals</b>									
Antimony	ND	1.0	ug/g dry	1.18			0.0	30	
Arsenic	ND	1.0	ug/g dry	ND				30	
Barium	23.0	1.0	ug/g dry	22.4			2.6	30	
Beryllium	ND	1.0	ug/g dry	ND				30	
Boron, available	ND	0.5	ug/g dry	ND			0.0	35	
Boron	2.96	1.0	ug/g dry	2.73			8.2	30	
Cadmium	ND	0.5	ug/g dry	ND			0.0	30	
Chromium (VI)	ND	0.2	ug/g dry	ND				35	
Chromium	7.96	1.0	ug/g dry	7.82			1.8	30	
Cobalt	3.15	1.0	ug/g dry	3.19			1.3	30	
Copper	7.41	1.0	ug/g dry	7.29			1.7	30	
Lead	12.9	1.0	ug/g dry	10.6			19.2	30	
Mercury	ND	0.1	ug/g dry	ND			0.0	35	
Molybdenum	ND	1.0	ug/g dry	ND			0.0	30	
Nickel	6.07	1.0	ug/g dry	5.74			5.6	30	
Selenium	ND	1.0	ug/g dry	ND				30	
Silver	ND	0.5	ug/g dry	ND				30	
Thallium	ND	1.0	ug/g dry	ND				30	
Uranium	ND	1.0	ug/g dry	ND				30	
Vanadium	17.3	1.0	ug/g dry	17.4			0.7	30	
Zinc	29.9	1.0	ug/g dry	28.6			4.5	30	
<b>Physical Characteristics</b>									
% Solids	80.3	0.1	% by Wt.	79.4			1.2	25	
<b>Semi-Volatiles</b>									
Acenaphthene	0.042	0.02	ug/g dry	0.022			62.0	40	QR-01
Acenaphthylene	ND	0.02	ug/g dry	ND			0.0	40	
Anthracene	0.078	0.02	ug/g dry	0.052			39.7	40	
Benzo [a] anthracene	0.187	0.02	ug/g dry	0.127			38.2	40	
Benzo [a] pyrene	0.132	0.02	ug/g dry	0.082			46.9	40	QR-01
Benzo [b] fluoranthene	0.203	0.02	ug/g dry	0.117			53.5	40	QR-01
Benzo [g,h,i] perylene	0.083	0.02	ug/g dry	0.054			42.8	40	QR-01
Benzo [k] fluoranthene	0.121	0.02	ug/g dry	0.060			67.0	40	QR-01
Biphenyl	ND	0.02	ug/g dry	ND			0.0	40	
Chrysene	0.183	0.02	ug/g dry	0.120			41.1	40	QR-01
Dibenzo [a,h] anthracene	0.025	0.02	ug/g dry	ND			0.0	40	
Fluoranthene	0.482	0.02	ug/g dry	0.272			55.6	40	QR-01
Fluorene	0.050	0.02	ug/g dry	0.028			56.4	40	QR-01
Indeno [1,2,3-cd] pyrene	0.073	0.02	ug/g dry	0.043			51.7	40	QR-01
1-Methylnaphthalene	ND	0.02	ug/g dry	ND			0.0	40	
2-Methylnaphthalene	ND	0.02	ug/g dry	ND			0.0	40	
Naphthalene	0.032	0.01	ug/g dry	0.014			77.4	40	QR-01
Phenanthrene	0.450	0.02	ug/g dry	0.233			63.4	40	QR-01
Pyrene	0.383	0.02	ug/g dry	0.221			53.7	40	QR-01
Surrogate: 2-Fluorobiphenyl	1.05		ug/g dry	ND	71.6	50-140			
Surrogate: Terphenyl-d14	0.992		ug/g dry	ND	67.5	50-140			

**Certificate of Analysis**

Client: **Stantec Consulting Ltd. (Ottawa)**  
Client PO: 45064625

Report Date: 24-Apr-2014  
Order Date: 15-Apr-2014

Project Description: 122510670/ Boteler

**Method Quality Control: Spike**

Analyte	Result	Reporting Limit	Units	Source Result	%REC	%REC Limit	RPD	RPD Limit	Notes
<b>Metals</b>									
Antimony	279		ug/L	23.6	102	70-130			
Arsenic	275		ug/L	ND	110	70-130			
Barium	691		ug/L	447	97.4	70-130			
Beryllium	260		ug/L	ND	104	70-130			
Boron, available	4.68	0.5	ug/g	ND	93.7	70-122			
Boron	309		ug/L	54.5	102	70-130			
Cadmium	253		ug/L	2.15	100	70-130			
Chromium (VI)	4.7	0.2	ug/g	ND	86.0	70-130			
Chromium	378		ug/L	156	88.7	70-130			
Cobalt	288		ug/L	63.8	89.9	70-130			
Copper	413		ug/L	146	107	70-130			
Lead	440		ug/L	212	91.1	70-130			
Mercury	1.42	0.1	ug/g	ND	94.5	72-128			
Molybdenum	240		ug/L	3.53	94.5	70-130			
Nickel	347		ug/L	115	92.7	70-130			
Selenium	235		ug/L	ND	94.0	70-130			
Silver	207		ug/L	ND	82.9	70-130			
Thallium	204		ug/L	ND	81.7	70-130			
Uranium	245		ug/L	ND	98.0	70-130			
Vanadium	580		ug/L	349	92.4	70-130			
Zinc	784		ug/L	573	84.5	70-130			
<b>Semi-Volatiles</b>									
Acenaphthene	0.186	0.02	ug/g	0.022	89.3	50-140			
Acenaphthylene	0.144	0.02	ug/g	ND	78.6	50-140			
Anthracene	0.181	0.02	ug/g	0.052	70.3	50-140			
Benzo [a] anthracene	0.201	0.02	ug/g	0.127	40.2	50-140			QM-06
Benzo [a] pyrene	0.171	0.02	ug/g	0.082	48.8	50-140			QM-06
Benzo [b] fluoranthene	0.197	0.02	ug/g	0.117	43.3	50-140			QM-06
Benzo [g,h,i] perylene	0.168	0.02	ug/g	0.054	62.5	50-140			
Benzo [k] fluoranthene	0.186	0.02	ug/g	0.060	68.5	50-140			
Biphenyl	0.158	0.02	ug/g	ND	86.2	50-140			
Chrysene	0.211	0.02	ug/g	0.120	49.2	50-140			QM-06
Dibenzo [a,h] anthracene	0.134	0.02	ug/g	ND	73.1	50-140			
Fluoranthene	0.274	0.02	ug/g	0.272	1.12	50-140			QM-06
Fluorene	0.136	0.02	ug/g	0.028	58.8	50-140			
Indeno [1,2,3-cd] pyrene	0.164	0.02	ug/g	0.043	65.8	50-140			
1-Methylnaphthalene	0.144	0.02	ug/g	ND	78.3	50-140			
2-Methylnaphthalene	0.135	0.02	ug/g	ND	73.5	50-140			
Naphthalene	0.172	0.01	ug/g	0.014	86.0	50-140			
Phenanthrene	0.269	0.02	ug/g	0.233	19.4	50-140			QM-06
Pyrene	0.250	0.02	ug/g	0.221	15.8	50-140			QM-06
Surrogate: 2-Fluorobiphenyl	0.996		ug/g		67.8	50-140			

**Certificate of Analysis**

Client: **Stantec Consulting Ltd. (Ottawa)**  
Client PO: 45064625

Project Description: 122510670/ Boteler

Report Date: 24-Apr-2014  
Order Date: 15-Apr-2014

**Qualifier Notes:**

**QC Qualifiers :**

QM-06 : Due to noted non-homogeneity of the QC sample matrix, the spike recoveries were out side the accepted range. Batch data accepted based on other QC.

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

**Sample Data Revisions**

None

**Work Order Revisions / Comments:**

None

**Other Report Notes:**

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

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

OTTAWA • KINGSTON • NIAGARA • MISSISSAUGA • SARNIA

Page 1 of 1

Client Name: <u>Stantec</u>	Project Reference: <u>Boteler Backfill 122510670.225</u>	TAT: <input checked="" type="checkbox"/> Regular <input type="checkbox"/> 3 Day
Contact Name: <u>Jill Peters-Dechman</u>	Quote # <u>City of Ottawa SDA # 01910-91843-501</u>	<input type="checkbox"/> 2 Day <input type="checkbox"/> 1 Day
Address: <u>1331 Clyde Ave Suite 400</u>	PO # <u>225</u>	Date Required: _____
Telephone: <u>613-722-4420</u>	Email Address: <u>jill.peters-dechman@stantec.com</u>	

Criteria:  O. Reg. 153/04 (As Amended) Table 1  RSC Filing  O. Reg. 558/00  PW00  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

Sample ID/Location Name		Matrix	Air Volume	# of Containers	Sample Taken		PA #5	Metals by ICP/MS	Hg	Cr VI	B(GWS)						
					Date	Time											
1	Lift 1 BCF214	S	n/a	1	14.04.14	8:20	X	X	X	X	X						
2	Lift 2 BCF215	S		1	14.04.14	9:00	X	X	X	X	X						
3	Lift 3 BCF216	S		1	14.04.14	9:20	X	X	X	X	X						
4	Lift 4 BCF217	S		1	14.04.14	10:00	X	X	X	X	X						
5	Lift 5 BCF218	S		1	14.04.14	11:20	X	X	X	X	X						
6	Lift 6 BCF219	S		1	14.04.14	12:00	X	X	X	X	X						
7	Lift 7 BCF220	S		1	14.04.14	13:00	X	X	X	X	X						
8	Lift 8 BCF221	S		1	14.04.14	14:00	X	X	X	X	X						
9	<del>Lift</del> Lift 9 BCF222	S		1	14.04.14	14:30	X	X	X	X	X						
10																	

Comments: please also send results to brenda.thom@stantec.com Method of Delivery: Walk-in

Relinquished By (Sign): <u>B Thom</u>	Received by Driver/Depot:	Received at Lab: <u>[Signature]</u>	Verified By: <u>M/C [Signature]</u>
Relinquished By (Print): <u>Brenda Thom</u>	Date/Time: _____	Date/Time: <u>Apr 15/14</u>	Date/Time: <u>Apr 18/14 12:08</u>
Date/Time: <u>15.04.14 11:06</u>	Temperature: _____ °C	Temperature: <u>14 °C</u>	pH Verified <input type="checkbox"/> By: <u>N/A</u>



## Review Items

Lab Number	Analysis	Analyte	Exception
			Default Report (not modified) VERSION 6.12:2007
1406679-DUP1	PAHs by GC-MS - standard scar	Acenaphthene	Exceeds RPD control limit
1406679-DUP1	PAHs by GC-MS - standard scar	Benzo [a] pyrene	Exceeds RPD control limit
1406679-DUP1	PAHs by GC-MS - standard scar	Benzo [b] fluoranthene	Exceeds RPD control limit
1406679-DUP1	PAHs by GC-MS - standard scar	Benzo [g,h,i] perylene	Exceeds RPD control limit
1406679-DUP1	PAHs by GC-MS - standard scar	Benzo [k] fluoranthene	Exceeds RPD control limit
1406679-DUP1	PAHs by GC-MS - standard scar	Chrysene	Exceeds RPD control limit
1406679-DUP1	PAHs by GC-MS - standard scar	Fluoranthene	Exceeds RPD control limit
1406679-DUP1	PAHs by GC-MS - standard scar	Fluorene	Exceeds RPD control limit
1406679-DUP1	PAHs by GC-MS - standard scar	Indeno [1,2,3-cd] pyrene	Exceeds RPD control limit
1406679-DUP1	PAHs by GC-MS - standard scar	Naphthalene	Exceeds RPD control limit
1406679-DUP1	PAHs by GC-MS - standard scar	Phenanthrene	Exceeds RPD control limit
1406679-DUP1	PAHs by GC-MS - standard scar	Pyrene	Exceeds RPD control limit
1406679-DUP1	PAHs by GC-MS - standard scar	Acenaphthene	QR-01: Duplicate RPD is high, however, the sample result is less than 10x the MDL.
1406679-DUP1	PAHs by GC-MS - standard scar	Benzo [a] pyrene	QR-01: Duplicate RPD is high, however, the sample result is less than 10x the MDL.
1406679-DUP1	PAHs by GC-MS - standard scar	Benzo [b] fluoranthene	QR-01: Duplicate RPD is high, however, the sample result is less than 10x the MDL.
1406679-DUP1	PAHs by GC-MS - standard scar	Benzo [g,h,i] perylene	QR-01: Duplicate RPD is high, however, the sample result is less than 10x the MDL.
1406679-DUP1	PAHs by GC-MS - standard scar	Benzo [k] fluoranthene	QR-01: Duplicate RPD is high, however, the sample result is less than 10x the MDL.
1406679-DUP1	PAHs by GC-MS - standard scar	Chrysene	QR-01: Duplicate RPD is high, however, the sample result is less than 10x the MDL.
1406679-DUP1	PAHs by GC-MS - standard scar	Fluoranthene	QR-01: Duplicate RPD is high, however, the sample result is less than 10x the MDL.
1406679-DUP1	PAHs by GC-MS - standard scar	Fluorene	QR-01: Duplicate RPD is high, however, the sample result is less than 10x the MDL.
1406679-DUP1	PAHs by GC-MS - standard scar	Indeno [1,2,3-cd] pyrene	QR-01: Duplicate RPD is high, however, the sample result is less than 10x the MDL.
1406679-DUP1	PAHs by GC-MS - standard scar	Naphthalene	QR-01: Duplicate RPD is high, however, the sample result is less than 10x the MDL.
1406679-DUP1	PAHs by GC-MS - standard scar	Phenanthrene	QR-01: Duplicate RPD is high, however, the sample result is less than 10x the MDL.
1406679-DUP1	PAHs by GC-MS - standard scar	Pyrene	QR-01: Duplicate RPD is high, however, the sample result is less than 10x the MDL.
1406679-MS1	PAHs by GC-MS - standard scar	Benzo [a] anthracene	Exceeds lower control limit
1406679-MS1	PAHs by GC-MS - standard scar	Benzo [a] pyrene	Exceeds lower control limit
1406679-MS1	PAHs by GC-MS - standard scar	Benzo [b] fluoranthene	Exceeds lower control limit
1406679-MS1	PAHs by GC-MS - standard scar	Chrysene	Exceeds lower control limit
1406679-MS1	PAHs by GC-MS - standard scar	Fluoranthene	Exceeds lower control limit
1406679-MS1	PAHs by GC-MS - standard scar	Phenanthrene	Exceeds lower control limit
1406679-MS1	PAHs by GC-MS - standard scar	Pyrene	Exceeds lower control limit
1406679-MS1	PAHs by GC-MS - standard scar	Benzo [a] anthracene	QM-06: Due to noted non-homogeneity of the QC sample matrix, the spike recoveries were out side the accepted range. Batch data accepted based on other QC.
1406679-MS1	PAHs by GC-MS - standard scar	Benzo [a] pyrene	QM-06: Due to noted non-homogeneity of the QC sample matrix, the spike recoveries were out side the accepted range. Batch data accepted based on other QC.
1406679-MS1	PAHs by GC-MS - standard scar	Benzo [b] fluoranthene	QM-06: Due to noted non-homogeneity of the QC sample matrix, the spike recoveries were out side the accepted range. Batch data accepted based on other QC.





V:\01225\active\1225106\XX\122510670\_City of Ottawa\_Boteler Berm\GIS\MXD\REV\122510670\_FigG01\_SitePlan.mxd  
 Revised: 2014-06-27 By: ncnukshank



- Legend**
- Approximate Site Property Boundary
  - Approximate Source Location of Backfill Material
  - Remediation Excavation Limits

**Notes**

1. Coordinate System: NAD 1983 UTM Zone 18N
2. Site Airphoto: City of Ottawa, 2013.
3. Orthoimagery © First Base Solutions, Ottawa Division 2008.

June 2014  
Project No. 122510670

Client/Project  
 MINISTRY OF FOREIGN AFFAIRS OF THE STATE OF QATAR  
 C/O EMBASSY OF QATAR IN OTTAWA  
 PHASE TWO ENVIRONMENTAL SITE ASSESSMENT  
 187 BOTELER STREET, OTTAWA, ON, K1N 0A4

Figure No.  
**11**  
 Title

Site Plan & Backfill Source Location



## DRAFT REPORT - PHASE TWO ENVIRONMENTAL SITE ASSESSMENT

### Appendix I Soil Excavated at or Brought to the Phase Two Property

Soil used to backfill the remedial excavation completed at 187 Boteler Street in Ottawa, Ontario (hereinafter the "Phase Two Property") in April 2014, was acquired from excess soil on the surface north of the excavation at the Phase Two Property, as shown on **Figure No. I1**.

The City of Ottawa (hereinafter the "City"), the owner of the Phase Two Property at the time, identified excess soil material present on-site due to a grade adjustment that could be used as backfill material. The soil was collected from the ground surface northwest of the excavation. One soil sample was collected from each lift of the backfill material for classification purposes and submitted for laboratory analysis of metals and polycyclic aromatic hydrocarbons (PAHs).

PAHs and metals were previously identified in the soil across the Phase Two Property during the subsurface investigations completed between April 2013 and April 2014 [original Phase Two Environmental Site Assessment (ESA)].

The backfill material was formerly part of a soil berm composed of excess soil from the rehabilitation of King Edward Avenue. The berm was a temporary storage solution for the excess soil of unknown quality.

Approximately 300 cubic metres (m<sup>3</sup>) of soil was scraped from the surface and deposited into the excavation (see **Appendix H**) in 0.3-metre (m) lifts. The first two lifts were compacted with the excavator bucket, as the excavation was not safe to enter. The subsequent lifts were compacted using a diesel plate compactor prior to compaction testing. The soil compaction field report is attached.

One soil sample was collected from each lift of soil prior to compaction activities from the bucket of the excavator. A total of nine soil samples were collected and placed into laboratory supplied containers. The glass containers were placed in coolers on ice for transport to Paracel Laboratories Ltd. (Paracel) for analysis.

The laboratory results of the backfill material are presented in **Table I1**. The analytical results of the backfill samples for metals were less than the applicable site condition standards (SCS) (Table 3 SCS; industrial/commercial/community property use; coarse textured soil) with the exception of lead in Lift 1 and Lift 4. The concentrations of PAHs in the backfill samples were less than the applicable SCS, with the exception of Lifts 1, 4, 5 and 6 which had concentrations exceeding the applicable SCS for one or more of the following: acenaphthylene, anthracene, benzo(a)anthracene, benzo(a)pyrene, benzo(b)fluoranthene, benzo(k)fluoranthene, chrysene, dibenzo(a,h)anthracene, fluoranthene, fluorene, indeno(1,2,3-cd)pyrene, and phenanthrene.

Concentrations of acenaphthene, anthracene, fluorene, and phenanthrene were greater than the previous maximum concentrations found at the Phase Two Property (Lift 5; 1.52-1.22 m BGS).





Stantec

Client: City of Ottawa  
Project: Boteler Berm Mercury Excavation  
Location: 183 Boteler St

Report No.: \_\_\_\_\_  
Project No.: 122510670  
Date: April 14, 2013

**MATERIAL AND PROCTOR DATA**

Material Type Existing Fill Sampled From \_\_\_\_\_  
Proctor Type  Standard ASTM D698  Modified ASTM D1557 Date Sampled \_\_\_\_\_  
Maximum Dry Density N/A kg/m<sup>3</sup> Opt. Moisture Content \_\_\_\_\_ (%)  
Target Density (from control strip) 2379 kg/m<sup>3</sup>

**DENSITY GAUGE INFORMATION**

Make 3411-b Model Taylor Gauge No. 9033 Standard Count 1403, 631 Date Apr. 14

**FIELD TEST DATA**

Test No.	Test Location	Approx. Elevation	Dry Density	Moisture Content	Percent Proctor	Remarks (pass/fail)
1	Lift 1 - 8 <sup>th</sup> from finish grade					
2	Lift 2 - 7 <sup>th</sup> from finish					
3	Lift 3 - 6 <sup>th</sup> from finish		2306	4.8	97.0	Acceptable
4	Lift 4 - 5 <sup>th</sup> from finish		2362	5.5	99.3	Pass
5	Lift 5 - 4 <sup>th</sup> from finish		2334	4.9	98.1	Pass
6	Lift 6 - 3 <sup>th</sup> from finish		2300	4.1	96.7	-
6	after more compaction		2339	4.4	98.3	Pass
7	Lift 7 - 2 <sup>th</sup> from finish		2289	5.0	96.2	-
7	Re-compacted		2371	5.6	99.7	Pass
8	Lift 8 - 1 <sup>st</sup> from finish		2344	5.4	98.5	Pass
9	Final lift		2337	5.0	98.2	Pass
Percentage of Target Density Required					<u>98</u>	%

**REMARKS**

No compaction inspection on the first 2 lifts. It appeared to be unsafe to enter the excavation. Material was evenly placed in lifts of 300mm and packed down with the shovel  
Fill Compaction Meets Specifications  Yes  No

Client Representative  
Signature: \_\_\_\_\_  
Print: \_\_\_\_\_

Stantec Representative  
Signature: KTH  
Print: Karl Thom

Hours

Note: A compaction test only provides data for the specific test location and to a depth of 6 to 12 inches below the surface at the time of doing the test. Total approval of a fill project requires continuous inspection and a brief report written by a geotechnical engineer.

SENDER: YELLOW COPY

CLIENT: WHITE COPY

SITE REPRESENTATIVE: PINK COPY

**Table I1**  
**Excavation Soil Analytical Results**  
**Phase Two Environmental Site Assessment**  
**187 Boteler Street, Ottawa ON, K1N 0A4**  
**Ministry of Foreign Affairs of the State of Qatar c/o Embassy of Qatar in Ottawa**

Sample Location			Lift 1	Lift 2	Lift 3	Lift 4	Lift 5	Lift 6	Lift 7	Lift 8	Lift 9
Sample Date			14-Apr-14	14-Apr-14	14-Apr-14	14-Apr-14	14-Apr-14	14-Apr-14	14-Apr-14	14-Apr-14	14-Apr-14
Sample ID			Lift 1	Lift 2	Lift 3	Lift 4	Lift 5	Lift 6	Lift 7	Lift 8	Lift 9
Sample Depth			2.74-2.44 m	2.44-2.13 m	2.13-1.83 m	1.83-1.52 m	1.52-1.22 m	1.22-0.91 m	0.91-0.61 m	0.61-0.30 m	0.30-0 m
Sampling Company			STANTEC	STANTEC	STANTEC	STANTEC	STANTEC	STANTEC	STANTEC	STANTEC	STANTEC
Laboratory			PARACEL	PARACEL	PARACEL	PARACEL	PARACEL	PARACEL	PARACEL	PARACEL	PARACEL
Laboratory Work Order			1416085	1416085	1416085	1416085	1416085	1416085	1416085	1416085	1416085
Laboratory Sample ID			1416085-01	1416085-02	1416085-03	1416085-04	1416085-05	1416085-06	1416085-07	1416085-08	1416085-09
Sample Type	Units	Ontario SCS									

**Metals**

Antimony	µg/g	40 <sup>A</sup>	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0
Arsenic	µg/g	18 <sup>A</sup>	4.5	2.5	<1.0	8.2	4.1	2	<1.0	2	2.1
Barium	µg/g	670 <sup>A</sup>	286	100	111	284	128	107	132	113	88.5
Beryllium	µg/g	8 <sup>A</sup>	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0
Boron	µg/g	120 <sub>s16</sub> <sup>A</sup>	6.1	4.9	4.4	8.6	5.5	4.9	3	2.7	4.5
Boron (Available)	µg/g	2 <sub>s16</sub> <sup>A</sup>	0.6	<0.5	<0.5	0.9	<0.5	<0.5	<0.5	<0.5	<0.5
Cadmium	µg/g	1.9 <sup>A</sup>	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5
Chromium (Total)	µg/g	160 <sup>A</sup>	17.4	5.2	6.5	18.4	20.3	10.5	2.5	2	6
Chromium (Hexavalent)	µg/g	8 <sup>A</sup>	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2
Cobalt	µg/g	80 <sup>A</sup>	6.1	2.8	3.2	6.3	7.3	4.3	1.4	1.3	2.7
Copper	µg/g	230 <sup>A</sup>	20.1	7.4	8.2	31.9	24.9	13.4	3.3	2.9	9.5
Lead	µg/g	120 <sup>A</sup>	245 <sup>AB</sup>	18.8	23.6	402 <sup>AB</sup>	58.5	31.9	8.6	6.7	19
Mercury	µg/g	3.9 <sup>A</sup>	3.9	<0.1	<0.1	1.1	0.2	<0.1	<0.1	<0.1	<0.1
Molybdenum	µg/g	40 <sup>A</sup>	1.3	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0
Nickel	µg/g	270 <sup>A</sup>	12.6	6.5	7.1	13.3	15	9.1	4.5	3.9	6.4
Selenium	µg/g	5.5 <sup>A</sup>	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0
Silver	µg/g	40 <sup>A</sup>	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5
Thallium	µg/g	3.3 <sup>A</sup>	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0
Uranium	µg/g	33 <sup>A</sup>	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0
Vanadium	µg/g	86 <sup>A</sup>	22.5	8	10.2	19.8	30.2	15.6	5.2	4.6	10.1
Zinc	µg/g	340 <sup>A</sup>	57	18.3	20	119	60.6	29.8	5.9	4.3	16.2

**Polycyclic Aromatic Hydrocarbons**

Acenaphthene	µg/g	96 <sup>A</sup>	0.04	<0.02	<0.02	0.08	7.79	<0.02	<0.02	<0.02	<0.02
Acenaphthylene	µg/g	0.15 <sup>A</sup>	0.43 <sup>A</sup>	0.07	0.08	0.13 <sup>A</sup>	3.96 <sup>A</sup>	0.2 <sup>A</sup>	0.02	<0.02	0.08
Anthracene	µg/g	0.67 <sup>A</sup>	0.31 <sup>A</sup>	0.06	0.07	<0.02	40.8 <sup>A</sup>	0.17 <sup>A</sup>	<0.02	<0.02	0.06
Benzo(a)anthracene	µg/g	0.96 <sup>A</sup>	0.95	0.16	0.14	0.24	31.6 <sup>A</sup>	0.39	0.03	<0.02	0.03
Benzo(a)pyrene	µg/g	0.3 <sup>A</sup>	0.85 <sup>A</sup>	0.12	0.12	0.36 <sup>A</sup>	22.8 <sup>A</sup>	0.33 <sup>A</sup>	0.03	<0.02	0.13
Benzo(b)fluoranthene	µg/g	0.96 <sup>A</sup>	1.25 <sup>A</sup>	0.18	0.18	0.80	30.2 <sup>A</sup>	0.51	0.04	<0.02	0.15
Benzo(g,h,i)perylene	µg/g	9.6 <sup>A</sup>	0.17	0.03	0.03	0.08	4.28	0.08	<0.02	<0.02	0.03
Benzo(k)fluoranthene	µg/g	0.96 <sup>A</sup>	0.63	0.11	0.08	0.79	15.9 <sup>A</sup>	0.24	<0.02	<0.02	0.09
Biphenyl	µg/g	52 <sup>A</sup>	<0.02	<0.02	<0.02	<0.02	1.01	<0.02	<0.02	<0.02	<0.02
Chrysene	µg/g	9.6 <sup>A</sup>	1	0.18	0.17	0.49	30.9 <sup>A</sup>	0.43	0.03	<0.02	0.17
Dibenzo(a,h)anthracene	µg/g	0.1 <sup>A</sup>	0.06	<0.02	<0.02	0.02	1.26 <sup>A</sup>	<0.02	<0.02	<0.02	<0.02
Fluoranthene	µg/g	9.6 <sup>A</sup>	1.96	0.24	0.29	1.23	120 <sup>A</sup>	0.78	0.04	<0.02	0.3
Fluorene	µg/g	62 <sup>A</sup>	0.08	<0.02	<0.02	0.09	17.1 <sup>A</sup>	0.04	<0.02	<0.02	<0.02
Indeno(1,2,3-cd)pyrene	µg/g	0.76 <sup>A</sup>	0.21	0.03	0.03	0.09	4.99 <sup>A</sup>	0.09	<0.02	<0.02	0.03
Methylnaphthalene, 1-	µg/g	s <sub>3</sub> <sup>A</sup>	0.03	<0.02	<0.02	0.03	3.63	<0.02	<0.02	<0.02	<0.02
Methylnaphthalene, 2-	µg/g	s <sub>3</sub> <sup>A</sup>	0.04	<0.02	<0.02	0.03	3.85	<0.02	<0.02	<0.02	<0.02
Methylnaphthalene (Total)	µg/g	76 <sub>s3</sub> <sup>A</sup>	0.07	<0.04	<0.04	0.06	7.48	<0.04	<0.04	<0.04	<0.04
Naphthalene	µg/g	9.6 <sup>A</sup>	0.05	<0.01	<0.01	0.06	4.45	0.02	<0.01	<0.01	<0.01
Phenanthrene	µg/g	12 <sup>A</sup>	0.90	0.08	0.12	0.90	152 <sup>A</sup>	0.37	0.03	<0.02	0.14
Pyrene	µg/g	96 <sup>A</sup>	1.72	0.25	0.26	1.03	95.3	0.7	0.04	<0.02	0.29

**Notes:**

Ontario SCS Soil, Ground Water and Sediment Standards for Use under Part XV.1 of the Environmental Protection Act (MOE, 2011) Site Condition Standards (SCS)

<sup>A</sup> Table 3 - Industrial / Commercial / Community Property Use - Coarse Textured Soils

**3.9<sup>A</sup>** Concentration exceeds the indicated standard.

0.6 Concentration was detected but did not exceed applicable standards.

< 0.1 The analyte was not detected above the laboratory estimated quantitation limit.

s<sub>3</sub> Standard is applicable to both 1-methylnaphthalene and 2-methylnaphthalene, with the provision that if both are detected the sum of the two must not exceed the standard.

s<sub>16</sub> For surface soil, the boron standard is for hot water soluble extract. For subsurface soil, the standard is for total boron (mixed strong acid digest), as ecological criteria are not considered.