



Soil Sampling Program

Richmond Landing Pathways
Ottawa, Ontario
(Property Asset #96189)

Prepared For:
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Executive Summary

Trow Associates Inc. (Trow) was retained by the National Capital Commission (NCC), under Standing Offer Agreement # 567905 to conduct a soil sampling program at the above-noted location hereinafter referred to as the 'site'. The sampling program was completed in accordance with the scope of work as defined in the NCC Terms of Reference dated September 14, 2009 and Trow's proposal of September 29, 2009.

The purpose of the work was to document the soil conditions on the subject site for the contaminants of concern listed below so that a soil management plan could be developed for the planned site renovations.

The scope of work for the current program involved drilling six boreholes and collecting shallow soil samples from the locations on the site where excavation is expected. BH1 to BH6 were drilled on November 20, 2009. The soil samples were submitted for analysis of the following contaminants of potential concern: metals, petroleum hydrocarbons (PHC), volatile organic compounds (VOC), and polycyclic aromatic hydrocarbons (PAH). A near surface soil sample and a surface soil sample from each borehole was submitted for laboratory analysis.

The Canadian Council of Ministers of the Environment (CCME) *Canadian Soil Quality Guidelines for the Protection of Environmental and Human Health* (revised 2008) for residential/park land use with coarse-textured soil were used as the primary guideline to compare analytical data. The CCME Canada-Wide Standards (CWS) for Petroleum Hydrocarbons (PHC) in Soil (2008) were used to compare the PHC results in the submitted soil samples. In addition to the CCME federal criteria, the soil results were compared to the Ontario Ministry of Environment (MOE) Table 3 standards for residential/parkland property use in a non-potable ground water setting. Since excess soil will likely be generated at the site, the soil results were also compared to MOE Table 1 background concentrations to determine off-site disposal options.

The following are the significant conclusions resulting from the soil sampling program, recommendations are provided in italics:

- Based on field observations from the boreholes, the soil stratigraphy generally consisted of topsoil overlying silty sand or silty sand fill with some gravel. Bedrock was not encountered during drilling. Field evidence of petroleum hydrocarbon impact (staining and odours) was not observed in any of the split spoon soil samples. No evidence of waste in the form of wood, glass, coal, brick, mortar and various other fragments was observed in the boreholes drilled at the site.
- There were no exceedences of the federal or provincial criteria for petroleum hydrocarbons and volatile organic compounds in the soil samples collected at the site at depths up to 1.2 m. There was one soil sample that was collected at a depth of 0.6 - 1.2 m sample (BH6 SS2) that exceeded the provincial background concentrations for several polycyclic aromatic hydrocarbon (PAH) parameters.
- There was another soil sample (BH5 SS1) that had exceeded the Canadian Council of Ministers of the Environment (CCME) guidelines and the Ontario Ministry of

Environment (MOE) Table 1 background concentrations for copper and zinc. The concentration of molybdenum also exceeded the MOE Table 1 criteria in this soil sample. All other soil samples had concentrations of the analyzed parameters that satisfied the MOE Table 1 background concentrations.

- The upper soil sample from borehole BH5 had concentrations of copper and zinc that exceeded the federal soil quality criteria. *Therefore, the soil that is excavated from this area of the site can be re-used on the site, however it will have to be covered with at least 0.3 m of clean soil. If the material is temporarily stockpiled, it should be covered with plastic sheeting overnight to prevent generation of dust and also run-off from rain. Although it is not expected, if debris (wood, glass, steel, etc.) is encountered during excavation, it should be segregated from the backfill material and disposed of as waste to a licensed landfill.*
- The soil in the north part of the area of the proposed pathways (BH5 and BH6) had exceedences of MOE Table 1 background concentrations of PAH and metal parameters. *Therefore, if the soil from this area is deemed to be excess soil (i.e., it cannot be re-used on the site), it will have to be disposed of at a licensed landfill.*

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1.0 Introduction

Trow Associates Inc. (Trow) was retained by the National Capital Commission (NCC), under Standing Offer Agreement SOA #567905, to conduct a shallow soil sampling program along the southeast embankment of the Portage Bridge in Ottawa, hereinafter referred to as the 'site'. The sampling program was completed in accordance with the scope of work as defined in the NCC Terms of Reference dated September 14, 2009 and Trow's proposal of September 29, 2009.

1.1. Objectives

As stated in the NCC Terms of Reference, the purpose of the work is to document the soil conditions on the subject site for the contaminants of concern previously identified at the site so that a soil management plan can be developed for the planned site renovations.

1.2. Scope of Work

In order to satisfy the project objectives, Trow proposes to perform the following tasks:

- 1) Review existing environmental reports for the neighbouring site to prepare a workplan;
- 2) Collect soil samples from several locations on the site where excavation is expected;
- 3) Submit the soil samples for laboratory analysis of the contaminants of concern; and
- 4) Summarize the results in a comprehensive report.

2.0 Project Background

2.1. Site Description

The site has an area of approximately 1.6 hectares and is just east of the Portage Bridge in Ottawa near Richmond Landing (Figure 1 in Appendix A). The site consists of several concrete stairways and walkways along the east embankment of the Portage Bridge. Some of these stairways and walkways are being removed and additional stairways and walkways are being installed.

2.2. Background

In January and February 2009, Trow completed a Phase II Environmental Site Assessment at the neighbouring site to the north (Richmond Landing) that included collecting soil and groundwater samples for analysis of polycyclic aromatic hydrocarbons (PAH), volatile organic compounds (VOC), metals, and petroleum hydrocarbons (PHC (F1 to F4)). Surface soil sampling was performed in this investigation and impacted soil was identified on that site.

3.0 Methodology

3.1. Field Preparation

Prior to commencing the intrusive work, a health and safety plan was prepared and was implemented during all field activities. The locations of underground utilities including telephone, natural gas and electrical lines were then marked out by local locating companies. A private utility locating service also cleared the individual borehole locations. Trow also had a copy of a NCC work entry permit on hand during all field work at the site.

3.2. Drilling and Soil Sampling

The drilling program was conducted on November 20, 2009, when six boreholes (BH1 to BH6) were advanced on the site under the full time supervision of Trow staff. The boreholes were advanced using a portable split spoon sampler. No petroleum-based greases or solvents were used during the drilling activities. The boreholes were advanced to completion depths of 1.2 metres below ground surface (mbgs) by advancing two consecutive split spoons.

The borehole locations were measured using a GPS (Global Positioning System) unit and they were surveyed to determine ground surface elevations. The approximate locations of the boreholes are shown on Figure 1 in Appendix A. Trow staff continuously monitored the drilling activities to log the recovered soil cores and record the depth of the soil sample and the total depth of boring. Field observations are summarized on the borehole logs provided in Appendix B. Representative soil samples were collected from the boreholes at regular intervals using a split-spoon sampler driven in accordance with standard penetration test procedures. The soil samples were collected in general accordance with the following federal document: *Guidance Manual on Sampling Analysis, and Data Management for Contaminated Sites – Volume I: Main Report* [Canadian Council of Ministers of the Environment (CCME) 1993] and *Subsurface Assessment Handbook for Contaminated Sites* [CCME, 1994]. One duplicate soil sample was submitted for quality assurance purposes. Please refer to Section 5.1 for more information on the subsurface conditions.

During soil sampling, the stainless steel sampling equipment was cleaned between sampling intervals by washing with a potable water/phosphate-free detergent solution followed by a rinse with distilled water to reduce the potential for cross-contamination.

Disposable nitrile gloves (i.e., one pair per sample) were used during sample handling. Each soil core was placed directly into pre-cleaned, laboratory-supplied glass sample jars. The jars that contained samples intended for analysis for VOCs and/or the lighter hydrocarbon fractions were filled so as to minimize head-space and reduce the potential for induced volatilization during storage/transport prior to analysis. All soil samples were placed in clean ice-packed coolers prior to and during transportation to the laboratory. Two soil samples from intervals 0.0 – 0.6 m and 0.6 to 1.2 m were collected from each borehole. All of the samples were transported/submitted under Chain of Custody documentation to Paracel Laboratories Ltd. (Paracel) of Ottawa.

A total of thirteen soil samples (including one duplicate sample) were submitted for analysis of PHC, PAH, VOC and metals.

3.2.1. Field QA/QC Program

A quality assurance (QA) and quality control (QC) program was implemented to ensure that the analytical results received are accurate and dependable. The QA/QC program incorporated the following components:

- Collection of one blind duplicate soil sample for PHC, PAH, VOC and metals;
- Prevention of cross-contamination;
- Proper field note-taking procedures;
- Sampling containers, preservation and hold times;
- Sampling, packaging and transport;
- Sample identification requirements;
- Chain custody;
- Sample transmittal documentation;
- Initial check of samples and documentation;
- Verification of the integrity and condition of all sample coolers.

3.2.2. Laboratory QA/QC Program

All samples were shipped to Paracel, which is certified by the Canadian Association for Laboratory Accreditation Inc. (CALA). The laboratory QA/QC program involved the systematic analysis of control standards for the purpose of optimizing the measuring system as well as establishing system precision and accuracy and included the following: calibration standards, method blanks, reference standards, spiked samples, surrogates and duplicates.

4.0 Regulatory Framework

4.1. Soil

The CCME *Canadian Soil Quality Guidelines for the Protection of Environmental and Human Health* (revised 2008) for residential/park land use was used as the primary guideline to compare analytical data. New CCME guidelines for PAH were used to compare the PAH concentrations in soil at the site. The CCME has developed B(a)P Total Potency Equivalent (TPE) which is calculated for potentially carcinogenic PAH by multiplying various PAH parameter concentrations by potency equivalent factors and then summing the products. The soil B(a)P TPE is intended to ensure that the incremental lifetime cancer risk from ingestion, inhalation and dermal contact does not exceed one in 1×10^{-5} . If coal tar or creosote are present in the soil, the B(a)P TPE concentration should be multiplied by 3 prior to comparison with guideline to account for the risks associated with other potentially carcinogenic PAH that may be present. Coal tar and creosote were not observed at the subject site and therefore the B(a)P TPE was not multiplied by 3.

The CCME *Canada-Wide Standards (CWS) for Petroleum Hydrocarbons (PHC) in Soil* (January 2008), for coarse-grained soil, were used to compare the PHC results in the submitted soil samples. In addition to the CCME federal criteria, Trow selected the soil criteria provided in Ontario Regulation 153/04 (O. Reg. 153/04) and the MOE document entitled *Soil, Ground Water and Sediment Standards for Use Under Part XV.1 of the Environmental Protection Act* dated March 9, 2004 for comparison purposes. If the soil is to be disposed of to another site, it must meet the MOE Table 1 concentrations or be disposed of at a licensed landfill. The soil quality was also compared to the MOE Table 3 standards for residential/parkland property use in a non-potable ground water setting.

5.0 Results

5.1. Field Observations

Based on field observations from the boreholes, the soil stratigraphy generally consisted of topsoil overlying silty sand or silty sand fill with some gravel. Bedrock was not encountered during drilling. The borehole logs are presented in Appendix B. The borehole locations are shown on Figure 1 in Appendix A. Field evidence of petroleum hydrocarbon impact (staining and odours) was not observed in any of the split spoon soil samples.

5.2. Analytical Findings

5.2.1. Interpretation of QC Data

To ensure that laboratory QA/QC checks were acceptable, a blind duplicate soil sample was submitted for laboratory analysis of PHC, PAH, VOC and metals. As indicated in Tables 1 to 4 in Appendix C, PHC or VOC parameters were not detected in the primary or duplicate soil samples. The RPD for metals parameters in the two soil samples was 12% compared to 35% RPD upset limit. The relative percent difference (RPD) for PAH in the soil sample was 87% compared to 50% RPD upset limit for PAH parameters. The primary soil sample had consistently higher concentrations of PAH parameters than the duplicate soil sample. This indicates that the sample was not homogeneous, however, the concentrations were not significantly higher than the MOE background concentrations and therefore there is no concern about the data quality.

Given the field and laboratory QA/QC noted above, it is Trow's professional opinion that the data collected is of a known quality and representative of the site conditions. As such, it can be relied upon for further interpretation in this report with respect to assessing site conditions.

5.2.2. Results

The analytical results, along with the recommended CCME and MOE criteria are presented in Tables 1 to 4 in Appendix C. The laboratory Certificates of Analysis are presented in Appendix D.

There were no exceedences of the CCME guidelines or MOE Table 1 background concentrations for PHC and VOC in the soil samples collected at the site at depths up to 1.2 m. There was one soil sample that was collected at a depth of 0.6 - 1.2 m sample (BH6 SS2) that exceeded the MOE Table 1 background concentration criteria for several PAH parameters.

There was another soil sample (BH5 SS1) that exceeded the CCME guidelines and MOE Table 1 background concentrations for copper and zinc. The concentration of molybdenum also exceeded the MOE Table 1 criteria in this soil sample. All other soil samples had concentrations of the analyzed parameters that satisfied the MOE Table 1 background concentrations.

6.0 Soil Management Plan

6.1. Introduction

This soil management plan has been developed to aid in the planning for the rehabilitation of several concrete stairways and walkways along the east embankment of the Portage Bridge in Ottawa. Trow understands that the construction of the pathways may require excavation to a depth of approximately 1.2 m below the ground surface.

6.2. Soil Conditions

The soil stratigraphy generally consisted of topsoil overlying silty sand or silty sand fill with some gravel. No evidence of waste in the form of wood, glass, coal, brick, mortar and various other fragments was observed in the boreholes drilled at the site.

6.3. Re-Use on Site as Backfill Material

The upper soil sample from borehole BH5 had concentrations of copper and zinc that exceeded the CCME criteria. *Therefore, the soil that is excavated from this area of the site can be re-used on the site, however it will have to be covered with at least 0.3 m of clean soil. If the material is temporarily stockpiled, it should be covered with plastic sheeting overnight to prevent generation of dust and also run-off from rain. Although it is not expected, if debris (wood, glass, steel, etc.) is encountered during excavation, it should be segregated from the backfill material and disposed of as waste to a licensed landfill.*

6.4. Off-Site Disposal of Waste Soil

The soil in the north part of the area of the proposed pathways (BH5 and BH6) had exceedences of MOE Table 1 background concentrations for PAH and metal parameters. Therefore, if the soil from this area is deemed to be excess soil (i.e., it cannot be re-used on the site), it will have to be disposed of at a licensed landfill.

The landfill that is selected to receive the soil will require a letter stating the source of the waste, the laboratory results compared to O. Reg. 558-00 criteria, and a copy of the laboratory certificate of analysis for a leachate test. The landfill will not accept waste with a high percentage of large pieces of concrete or other deleterious material. If slabs of concrete or boulders are encountered, they should be broken up prior to being placed in the dump truck.

6.5. Health and Safety Plan

A Health and Safety Plan (HASP) should be developed to address contaminants of concern that may be encountered during the construction activities. The HASP includes general health, safety and emergency response requirements necessary when conducting activities that may require contact with the subsurface materials. The HASP also provides information on the anticipated hazards that may be encountered and the minimum safe working practices and procedures to be

followed during any subsurface site work. The HASP does not replace any Health & Safety protocols, procedures, etc. already established by the NCC, but rather is intended to be complimentary to existing protocols.

Situations may arise during site work, which are beyond the scope of the safety procedures in the HASP. In such a situation, it may be necessary to stop on-site work until a revised procedure or HASP is prepared to reflect the changing conditions. It is required that all persons involved with on-site operations read the HASP and acknowledge that they have read and understand all aspects of the HASP.

The HASP will require a description of the proposed work, assignment of responsibilities to supervisors and workers, an assessment of hazards and related risks, and action levels that would trigger the use of upgraded personal protective equipment (PPE) that will be used to ensure that all on-site personnel are adequately protected from potential contaminant exposure.

As a minimum, there should be at least one person on the site with Standard First Aid training during all construction activities. In the event that any on-site worker or visitor becomes injured or ill, the site supervisor should to be notified immediately. Response to the injured or ill party will depend on the severity of the situation and should be considered on an individual basis following Standard First Aid procedures. The HASP should also include a list of emergency contacts, including 911.

7.0 Conclusions and Summary of Recommendations

The following are the significant conclusions resulting from the Shallow Soil Sampling Program, recommendations are provided in italics:

- Based on field observations from the boreholes, the soil stratigraphy generally consisted of topsoil overlying silty sand or silty sand fill with some gravel. Bedrock was not encountered during drilling. Field evidence of petroleum hydrocarbon impact (staining and odours) was not observed in any of the split spoon soil samples. No evidence of waste in the form of wood, glass, coal, brick, mortar and various other fragments was observed in the boreholes drilled at the site.
- There were no exceedences of the federal or provincial criteria for petroleum hydrocarbons and volatile organic compounds in the soil samples collected at the site at depths up to 1.2 m. There was one soil sample that was collected at a depth of 0.6 - 1.2 m sample (BH6 SS2) that exceeded the provincial background concentrations for several polycyclic aromatic hydrocarbon (PAH) parameters.
- There was another soil sample (BH5 SS1) that had exceeded the CCME guidelines and the MOE Table 1 background concentrations for copper and zinc. The concentration of molybdenum also exceeded the MOE Table 1 criteria in this soil sample. All other soil samples had concentrations of the analyzed parameters that satisfied the MOE Table 1 background concentrations.
- The upper soil sample from borehole BH5 had concentrations of copper and zinc that exceeded the federal soil quality criteria. *Therefore, the soil that is excavated from this area of the site can be re-used on the site, however it will have to be covered with at least 0.3 m of clean soil. If the material is temporarily stockpiled, it should be covered with plastic sheeting overnight to prevent generation of dust and also run-off from rain. Although it is not expected, if debris (wood, glass, steel, etc.) is encountered during excavation, it should be segregated from the backfill material and disposed of as waste to a licensed landfill.*
- The soil in the north part of the area of the proposed pathways (BH5 and BH6) had exceedences of MOE Table 1 background concentrations of PAH and metal parameters. *Therefore, if the soil from this area is deemed to be excess soil (i.e., it cannot be re-used on the site), it will have to be disposed of at a licensed landfill.*

8.0 References

1. Atlantic Partners in Risk Based Corrective Action (RBCA), September 2003. *Implementation (PIRI November 2003) Tier I levels for petroleum hydrocarbons (residential/parkland land use in a non-potable groundwater scenario).*
2. CCME. 1993. *Guidance Manual on Sampling, Analysis, and Data Management for Contaminated Sites.*
3. CCME. September 2007. *Canadian Soil Quality Guidelines for the Protection of Environmental and Human Health.*
4. CCME. December 2007. *Canadian Water Quality Guidelines for the Protection of Aquatic Life.*
5. CCME. January 2008. *Canada-Wide Standards for Petroleum Hydrocarbons (PHC) in Soil.*
6. MOE. 2004. *Soil, Ground Water, and Sediment Standards of Use Under Part XV.I of the Environmental Protection Act.*
7. Trow Associates Inc., July 2009, *Phase II ESA Richmond Landing, Ottawa, Ontario, (Property Asset #96189).*

9.0 Limitations

This report has been prepared for and is intended for the exclusive use of the NCC. The contents of this report should not be relied upon by any other party without the expressed written consent of Trow. The findings are considered to be representative of site conditions at the time of our site investigation.

It should also be noted that current environmental guidelines and regulations are subject to change, and such changes, when put into effect, could alter the conclusions and recommendations noted throughout this report. The conclusions and recommendations noted in this report reflect existing site conditions with respect to the current environmental condition of the subject site at the time of this assessment summary.

The results of this evaluation are qualified by the fact that only limited soil sampling and chemical testing were conducted at the site. The concentrations of parameters measured may not be representative of conditions at locations intermediate to those locations sampled. Further, conditions may change at any particular location as a function of time in response to natural conditions, chemical reactions and other events. Notwithstanding the above, the data obtained as part of this study is considered to be reasonably representative of environmental conditions at areas of environmental concern identified by Trow. Further, the interpretation of this data is considered to be of sufficient reliability to reasonably support the conclusions and recommendations respecting the presence of, and preferred management alternative for, contamination at the property.

Conclusions regarding the condition of the site do not represent a warranty that all areas within the site and beneath structures are of the same quality as those sampled. Further, contamination could also exist in forms not indicated by the limited investigations conducted. Additionally, the scope contained herein is based, in part, on rules and regulations that we understand to be current or expected at the time of the proposal. Changes in regulations, interpretations and/or enforcement policies may occur at any time in the future. Such changes could be reflected in the degree of remedial measures actually required at the time of the action.

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

Trow Associates Inc.



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Appendix A: Figures



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DATE
DEC 2009

CLIENT



Canada

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KL

CHECKED
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DRAWN
MN

BOREHOLE LOCATIONS
RICHMOND LANDING PATHWAYS, OTTAWA, ON.

JOB No.
OTEN00020038R

SCALE
1:1000±

FIG 1

Appendix B: Borehole Logs

Borehole Logs

Richmond Landing Pathways Assessment, Ottawa, Ontario

Test Pit	Depth (m)	Description
BH1	0 – 0.3	Topsoil
	0.3 – 1.2	Brown, medium to fine, silty sand, some gravel, dry. Soil samples submitted from 0 – 0.6 m and 0.6 – 1.2 m for laboratory analysis of PHC, VOC, PAH, and metals.
BH2	0 – 0.3	Topsoil
	0.3 – 1.2	Brown, medium to fine, silty sand, some gravel, dry. Soil samples submitted from 0 – 0.6 m and 0.6 – 1.2 m for laboratory analysis of PHC, VOC, PAH, and metals.
BH3	0 – 0.2	Topsoil
	0.2	50 mm of gravel
	0.2 – 1.2	Brown, medium to fine, silty sand, some gravel, dry. Soil samples submitted from 0 – 0.6 m and 0.6 – 1.2 m for laboratory analysis of PHC, VOC, PAH, and metals.
BH4	0 – 0.2	Topsoil
	0.2 – 1.2	Brown, medium to fine, silty sand, some gravel, dry. Soil samples submitted from 0 – 0.6 m and 0.6 – 1.2 m for laboratory analysis of PHC, VOC, PAH, and metals.
BH5	0 – 0.1	Topsoil
	0.1 – 1.2	Brown, medium to fine, silty sand, some gravel, dry. Soil samples submitted from 0 – 0.6 m and 0.6 – 1.2 m for laboratory analysis of PHC, VOC, PAH, and metals.
BH6	0 – 0.2	Topsoil
	0.2 – 1.2	Brown, medium to fine, silty sand, some gravel and stones, dry. Soil samples submitted from 0 – 0.6 m and 0.6 – 1.2 m for laboratory analysis of PHC, VOC, PAH, and metals.

Appendix C: Analytical Summary Tables

Table 1 - Soil Analytical Results - Petroleum Hydrocarbons
NCC - Property Asset #96189 Richmond Landing, Ottawa

Sample ID				BH1 SS1	BH1 SS2	BH2 SS1	BH2 SS2	BH3 SS1	BH3 SS2	BH4 SS1	BH4 SS2
Sample Date				20-Nov-09	20-Nov-09	20-Nov-09	20-Nov-09	20-Nov-09	20-Nov-09	20-Nov-09	20-Nov-09
Sample Depth (m)				0 - 0.6	0.6 - 1.2	0 - 0.6	0.6 - 1.2	0 - 0.6	0.6 - 1.2	0 - 0.6	0.6 - 1.2
Parameter (ug/g)	CCME Criteria ^{1,2}	MOE Criteria Table 1 ³	MOE Criteria Table 3 ⁴								
Benzene	0.03	0.002	5.3	<0.002	<0.002	<0.002	<0.002	<0.002	<0.002	<0.002	<0.002
Ethylbenzene	0.082	0.002	290	<0.002	<0.002	<0.002	<0.002	<0.002	<0.002	<0.002	<0.002
Toluene	0.37	0.002	34	<0.002	<0.002	<0.002	<0.002	<0.002	<0.002	<0.002	<0.002
Xylenes	11	0.002	34	<0.004	<0.004	<0.004	<0.004	<0.004	<0.004	<0.004	<0.004
F ₁ (C ₆ -C ₁₀)	30	NV	30	<10	<10	<10	<10	<10	<10	<10	<10
F ₂ (C ₁₀ -C ₁₆)	150	NV	150	<10	<10	<10	<10	<10	<10	<10	<10
F ₃ (C ₁₆ -C ₃₄)	300	NV	400	<10	<10	<10	<10	<10	<10	<10	<10
F ₄ (C ₃₄ -C ₅₀)	2800	NV	2800	<10	<10	<10	<10	<10	<10	<10	<10

Notes:

1) CCME Canadian Soil Quality Guidelines for the Protection of Environmental and Human Health. 2008 - residential/parkland land use, coarse grained soil

2) CCME Canada-Wide Standards for Petroleum Hydrocarbons (PHC) in Soil, Jan. 2008 - residential/parkland land use, coarse textured soil.

3) MOE Table 1: Full Depth Background Site Condition Standards, March 2004

4) MOE Table 3: Full Depth Generic Site Standards in a Non-Potable Ground Water Condition Soil Residential/Parkland Property Use, March 2004

Shaded values exceed Federal Criteria

Underline - concentration exceeds MOE Table 1 criteria

Bold - concentration exceeds MOE Table 3 criteria

NV - no value

Table 1 - Soil Analytical Results - Petroleum Hydrocarbons
NCC - Property Asset #96189 Richmond Landing, Ottawa

Sample ID				BH5 SS1	BH5 SS2	BH6 SS1	BH6 SS2	BH6 SS20
Sample Date				20-Nov-09	20-Nov-09	20-Nov-09	20-Nov-09	20-Nov-09
Sample Depth (m)				0 - 0.6	0.6 - 1.2	0 - 0.6	0.6 - 1.2	0.6 - 1.2
Parameter (ug/g)	CCME Criteria ^{1,2}	MOE Criteria Table 1 ³	MOE Criteria Table 3 ⁴					Duplicate of BH6 SS2
Benzene	0.03	0.002	5.3	<0.002	<0.002	<0.002	<0.002	<0.002
Ethylbenzene	0.082	0.002	290	<0.002	<0.002	<0.002	<0.002	<0.002
Toluene	0.37	0.002	34	<0.002	<0.002	<0.002	<0.002	<0.002
Xylenes	11	0.002	34	<0.004	<0.004	<0.004	<0.004	<0.004
F ₁ (C ₆ -C ₁₀)	30	NV	30	<10	<10	<10	<10	<10
F ₂ (C ₁₀ -C ₁₆)	150	NV	150	<10	<10	<10	<10	<10
F ₃ (C ₁₆ -C ₃₄)	300	NV	400	<10	<10	<10	65	<10
F ₄ (C ₃₄ -C ₅₀)	2800	NV	2800	<10	<10	<10	<10	<10

Notes:

1) CCME Canadian Soil Quality Guidelines for the Protection of Environmental and Human Health. 2008 - residential/parkland land use, coarse grained soil

2) CCME Canada-Wide Standards for Petroleum Hydrocarbons (PHC) in Soil, Jan. 2008 - residential/parkland land use, coarse textured soil.

3) MOE Table 1: Full Depth Background Site Condition Standards, March 2004

4) MOE Table 3: Full Depth Generic Site Standards in a Non-Potable Ground Water Condition Soil Residential/Parkland Property Use, March 2004

Shaded values exceed Federal Criteria

Underline - concentration exceeds MOE Table 1 criteria

Bold - concentration exceeds MOE Table 3 criteria

NV - no value

Table 2 - Soil Analytical Results - Volatile Organic Compounds
NCC - Property Asset #96189 Richmond Landing, Ottawa

Sample ID				BH1 SS1	BH1 SS2	BH2 SS1	BH2 SS2	BH3 SS1	BH3 SS2	BH4 SS1	BH4 SS2
Sample Date				20-Nov-09	20-Nov-09	20-Nov-09	20-Nov-09	20-Nov-09	20-Nov-09	20-Nov-09	20-Nov-09
Sample Depth (m)				0 - 0.6	0.6 - 1.2	0 - 0.6	0.6 - 1.2	0 - 0.6	0.6 - 1.2	0 - 0.6	0.6 - 1.2
Parameter (ug/g)	CCME Criteria ¹	MOE Criteria Table 1 ²	MOE Criteria Table 3 ³								
Benzene	0.03	0.002	5.3	<0.002	<0.002	<0.002	<0.002	<0.002	<0.002	<0.002	<0.002
Bromodichloromethane	NV	NV	14	<0.002	<0.002	<0.002	<0.002	<0.002	<0.002	<0.002	<0.002
Bromoform	NV	0.002	2.3	<0.002	<0.002	<0.002	<0.002	<0.002	<0.002	<0.002	<0.002
Bromomethane	NV	0.003	0.061	<0.003	<0.003	<0.003	<0.003	<0.003	<0.003	<0.003	<0.003
Carbon Tetrachloride	5	0.002	0.10	<0.002	<0.002	<0.002	<0.002	<0.002	<0.002	<0.002	<0.002
Chlorobenzene	1	0.002	8	<0.002	<0.002	<0.002	<0.002	<0.002	<0.002	<0.002	<0.002
Chloroethane	NV	NV	NV	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005
Chloroform	5	0.006	0.79	<0.003	<0.003	<0.003	<0.003	<0.003	<0.003	<0.003	<0.003
Chloromethane	NV	NV	NV	<0.020	<0.020	<0.020	<0.020	<0.020	<0.020	<0.020	<0.020
Dibromochloromethane	NV	0.003	10	<0.002	<0.002	<0.002	<0.002	<0.002	<0.002	<0.002	<0.002
1,2-Dibromoethane	NV	NV	NV	<0.002	<0.002	<0.002	<0.002	<0.002	<0.002	<0.002	<0.002
1,2-Dichlorobenzene	1	0.002	30	<0.002	<0.002	<0.002	<0.002	<0.002	<0.002	<0.002	<0.002
1,3-Dichlorobenzene	1	0.002	30	<0.002	<0.002	<0.002	<0.002	<0.002	<0.002	<0.002	<0.002
1,4-Dichlorobenzene	1	0.002	30	<0.002	<0.002	<0.002	<0.002	<0.002	<0.002	<0.002	<0.002
1,1-Dichloroethane	5	0.002	22	<0.002	<0.002	<0.002	<0.002	<0.002	<0.002	<0.002	<0.002
1,2-Dichloroethane	5	0.002	0.022	<0.002	<0.002	<0.002	<0.002	<0.002	<0.002	<0.002	<0.002
1,1-Dichloroethylene	NV	0.002	0.0024	<0.002	<0.002	<0.002	<0.002	<0.002	<0.002	<0.002	<0.002
cis-1,2-Dichloroethylene	NV	NV	2.3	<0.002	<0.002	<0.002	<0.002	<0.002	<0.002	<0.002	<0.002
trans-1,2-Dichloroethylene	NV	0.003	4.1	<0.003	<0.003	<0.003	<0.003	<0.003	<0.003	<0.003	<0.003
1,2-Dichloropropane	5	0.002	0.019	<0.002	<0.002	<0.002	<0.002	<0.002	<0.002	<0.002	<0.002
cis-1,3-Dichloropropylene	NV	0.003	0.0066	<0.002	<0.002	<0.002	<0.002	<0.002	<0.002	<0.002	<0.002
trans-1,3-Dichloropropylene	NV	0.003	0.0066	<0.002	<0.002	<0.002	<0.002	<0.002	<0.002	<0.002	<0.002
Ethylbenzene	0.082	0.002	290	<0.002	<0.002	<0.002	<0.002	<0.002	<0.002	<0.002	<0.002
Methylene Chloride	5	0.003	120	<0.003	<0.003	<0.003	<0.003	<0.003	<0.003	<0.003	<0.003
Styrene	5	0.002	1.2	<0.002	<0.002	<0.002	<0.002	<0.002	<0.002	<0.002	<0.002
1,1,1,2-Tetrachloroethane	5	NV	0.019	<0.003	<0.003	<0.003	<0.003	<0.003	<0.003	<0.003	<0.003
1,1,2,2-Tetrachloroethane	5	0.004	0.037	<0.003	<0.003	<0.003	<0.003	<0.003	<0.003	<0.003	<0.003
Tetrachloroethylene	0.2	0.002	0.45	<0.002	<0.002	<0.002	<0.002	<0.002	<0.002	<0.002	<0.002
Toluene	0.37	0.002	34	<0.002	<0.002	<0.002	<0.002	<0.002	<0.002	<0.002	<0.002
1,1,1-Trichloroethane	5	0.009	26	<0.002	<0.002	<0.002	<0.002	<0.002	<0.002	<0.002	<0.002
1,1,2-Trichloroethane	5	0.002	2.3	<0.002	<0.002	<0.002	<0.002	<0.002	<0.002	<0.002	<0.002
Trichloroethylene	3	0.004	1.1	<0.003	<0.003	<0.003	<0.003	<0.003	<0.003	<0.003	<0.003
Trichlorofluoromethane	NV	NV	NV	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005
1,3,5-Trimethylbenzene	NV	NV	NV	<0.003	<0.003	<0.003	<0.003	<0.003	<0.003	<0.003	<0.003
Vinyl chloride	NV	0.003	0.003	<0.002	<0.002	<0.002	<0.002	<0.002	<0.002	<0.002	<0.002
o-Xylene	11	0.002	34	<0.002	<0.002	<0.002	<0.002	<0.002	<0.002	<0.002	<0.002
m,p-Xylenes				<0.002	<0.002	<0.002	<0.002	<0.002	<0.002	<0.002	<0.002

Notes:

1) CCME Canadian Soil Quality Guidelines for the Protection of Environmental and Human Health. 2008 - residential/parkland land use, coarse grained soil

2) MOE Table 1: Full Depth Background Site Condition Standards, March 2004

3) MOE Table 3: Full Depth Generic Site Standards in a Non-Potable Ground Water Condition Soil Residential/Parkland Property Use March 2004

Shaded values exceed Federal Criteria

Underline - concentration exceeds MOE Table 1 criteria

Bold - concentration exceeds MOE Table 3 criteria

NV - no value

Table 2 - Soil Analytical Results - Volatile Organic Compounds
NCC - Property Asset #96189 Richmond Landing, Ottawa

Sample ID				BH5 SS1	BH5 SS2	BH6 SS1	BH6 SS2	BH6 SS20
Sample Date				20-Nov-09	20-Nov-09	20-Nov-09	20-Nov-09	20-Nov-09
Sample Depth (m)				0 - 0.6	0.6 - 1.2	0 - 0.6	0.6 - 1.2	0.6 - 1.2
Parameter (ug/g)	CCME Criteria ¹	MOE Criteria Table 1 ²	MOE Criteria Table 3 ³					Duplicate of BH6 SS2
Benzene	0.03	0.002	5.3	<0.002	<0.002	<0.002	<0.002	<0.002
Bromodichloromethane	NV	NV	14	<0.002	<0.002	<0.002	<0.002	<0.002
Bromoform	NV	0.002	2.3	<0.002	<0.002	<0.002	<0.002	<0.002
Bromomethane	NV	0.003	0.061	<0.003	<0.003	<0.003	<0.003	<0.003
Carbon Tetrachloride	5	0.002	0.10	<0.002	<0.002	<0.002	<0.002	<0.002
Chlorobenzene	1	0.002	8	<0.002	<0.002	<0.002	<0.002	<0.002
Chloroethane	NV	NV	NV	<0.005	<0.005	<0.005	<0.005	<0.005
Chloroform	5	0.006	0.79	<0.003	<0.003	<0.003	<0.003	<0.003
Chloromethane	NV	NV	NV	<0.020	<0.020	<0.020	<0.020	<0.020
Dibromochloromethane	NV	0.003	10	<0.002	<0.002	<0.002	<0.002	<0.002
1,2-Dibromoethane	NV	NV	NV	<0.002	<0.002	<0.002	<0.002	<0.002
1,2-Dichlorobenzene	1	0.002	30	<0.002	<0.002	<0.002	<0.002	<0.002
1,3-Dichlorobenzene	1	0.002	30	<0.002	<0.002	<0.002	<0.002	<0.002
1,4-Dichlorobenzene	1	0.002	30	<0.002	<0.002	<0.002	<0.002	<0.002
1,1-Dichloroethane	5	0.002	22	<0.002	<0.002	<0.002	<0.002	<0.002
1,2-Dichloroethane	5	0.002	0.022	<0.002	<0.002	<0.002	<0.002	<0.002
1,1-Dichloroethylene	NV	0.002	0.0024	<0.002	<0.002	<0.002	<0.002	<0.002
cis-1,2-Dichloroethylene	NV	NV	2.3	<0.002	<0.002	<0.002	<0.002	<0.002
trans-1,2-Dichloroethylene	NV	0.003	4.1	<0.003	<0.003	<0.003	<0.003	<0.003
1,2-Dichloropropane	5	0.002	0.019	<0.002	<0.002	<0.002	<0.002	<0.002
cis-1,3-Dichloropropylene	NV	0.003	0.0066	<0.002	<0.002	<0.002	<0.002	<0.002
trans-1,3-Dichloropropylene	NV	0.003	0.0066	<0.002	<0.002	<0.002	<0.002	<0.002
Ethylbenzene	0.082	0.002	290	<0.002	<0.002	<0.002	<0.002	<0.002
Methylene Chloride	5	0.003	120	<0.003	<0.003	<0.003	<0.003	<0.003
Styrene	5	0.002	1.2	<0.002	<0.002	<0.002	<0.002	<0.002
1,1,1,2-Tetrachloroethane	5	NV	0.019	<0.003	<0.003	<0.003	<0.003	<0.003
1,1,2,2-Tetrachloroethane	5	0.004	0.037	<0.003	<0.003	<0.003	<0.003	<0.003
Tetrachloroethylene	0.2	0.002	0.45	<0.002	<0.002	<0.002	<0.002	<0.002
Toluene	0.37	0.002	34	<0.002	<0.002	<0.002	<0.002	<0.002
1,1,1-Trichloroethane	5	0.009	26	<0.002	<0.002	<0.002	<0.002	<0.002
1,1,2-Trichloroethane	5	0.002	2.3	<0.002	<0.002	<0.002	<0.002	<0.002
Trichloroethylene	3	0.004	1.1	<0.003	<0.003	<0.003	<0.003	<0.003
Trichlorofluoromethane	NV	NV	NV	<0.005	<0.005	<0.005	<0.005	<0.005
1,3,5-Trimethylbenzene	NV	NV	NV	<0.003	<0.003	<0.003	<0.003	<0.003
Vinyl chloride	NV	0.003	0.003	<0.002	<0.002	<0.002	<0.002	<0.002
o-Xylene	11	0.002	34	<0.002	<0.002	<0.002	<0.002	<0.002
m,p-Xylenes				<0.002	<0.002	<0.002	<0.002	<0.002

Notes:

1) CCME Canadian Soil Quality Guidelines for the Protection of Environmental and Human Health. 2008 - residential/parkland land use, coarse grained soil

2) MOE Table 1: Full Depth Background Site Condition Standards, March 2004

3) MOE Table 3: Full Depth Generic Site Standards in a Non-Potable Ground Water Condition Soil Residential/Parkland Property Use March 2004

Shaded values exceed Federal Criteria

Underline - concentration exceeds MOE Table 1 criteria

Bold - concentration exceeds MOE Table 3 criteria

NV - no value

Table 3 - Soil Analytical Results - Polycyclic Aromatic Hydrocarbons & PCBs
NCC - Property Asset #96189 Richmond Landing, Ottawa

Sample ID				BH1 SS1	BH1 SS2	BH2 SS1	BH2 SS2	BH3 SS1	BH3 SS2	BH4 SS1	BH4 SS2
Sample Date				20-Nov-09	20-Nov-09	20-Nov-09	20-Nov-09	20-Nov-09	20-Nov-09	20-Nov-09	20-Nov-09
Sample Depth (m)				0 - 0.6	0.6 - 1.2	0 - 0.6	0.6 - 1.2	0 - 0.6	0.6 - 1.2	0 - 0.6	0.6 - 1.2
Parameter (ug/g)	CCME Criteria ¹	MOE Criteria Table 1 ²	MOE Criteria Table 3 ³								
Acenaphthene	NV	0.08	10	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02
Acenaphthylene	NV	0.07	10	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02
Anthracene	2.5	0.16	10	<0.02	<0.02	<0.02	0.02	0.02	<0.02	<0.02	<0.02
Benzo[a]anthracene	NV	0.74	1	0.02	<0.02	<0.02	0.05	0.05	<0.02	<0.02	0.03
Benzo[a]pyrene*	5.3	0.49	1	<0.02	<0.02	<0.02	0.04	0.03	<0.02	<0.02	0.02
Benzo[a]pyrene (TPE)	5.3	NV	NV	0.002	ND	ND	0.055	0.043	ND	ND	0.026
Benzo[b]fluoranthene	NV	0.47	1	<0.02	<0.02	<0.02	0.05	0.04	<0.02	<0.02	0.03
Benzo[ghi]perylene	NV	0.68	1	<0.02	<0.02	<0.02	0.02	0.02	<0.02	<0.02	<0.02
Benzo[k]fluoranthene	NV	0.48	1	<0.02	<0.02	<0.02	0.02	0.03	<0.02	<0.02	<0.02
Biphenyl	NV	NV	NV	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02
Chrysene	NV	0.69	1	0.02	<0.02	<0.02	0.05	0.05	<0.02	<0.02	0.03
Dibenzo[ah]anthracene	NV	0.16	1	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02
Fluoranthene	50	1.1	10	<0.02	<0.02	<0.02	0.09	0.1	<0.02	<0.02	0.05
Fluorene	NV	0.12	10	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02
Indeno[1,2,3-cd]pyrene	NV	0.38	1	<0.02	<0.02	<0.02	0.02	<0.02	<0.02	<0.02	<0.02
1-Methylnaphthalene	NV	0.26	1	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02
2-Methylnaphthalene	NV	0.29	1	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02
Naphthalene	NV	0.09	5	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02
Phenanthrene	NV	0.69	5	0.02	<0.02	<0.02	0.07	0.07	<0.02	<0.02	0.04
Pyrene	NV	1.0	10	<0.02	<0.02	0.02	0.08	0.08	<0.02	0.02	0.05

Notes:

1) CCME Canadian Soil Quality Guidelines for the Protection of Environmental and Human Health. 2008 - residential/parkland land use, coarse grained soil

2) MOE Table 1: Full Depth Background Site Condition Standards, March 2004

3) MOE Table 3: Full Depth Generic Site Standards in a Non-Potable Ground Water Condition Soil Residential/Parkland Property Use March 2004

* The guideline for benzo[a]pyrene is a human health guideline based on a 10⁻⁶ incremental lifetime cancer risk

Benzo[a]pyrene (TPE) total potency equivalents using on-site soil data for for other PAH parameters

Shaded values exceed Federal Criteria

Underline - concentration exceeds MOE Table 1 criteria

Bold - concentration exceeds MOE Table 3 criteria

NV - no value

Table 3 - Soil Analytical Results - Polycyclic Aromatic Hydrocarbons & PCBs
NCC - Property Asset #96189 Richmond Landing, Ottawa

Sample ID				BH5 SS1	BH5 SS2	BH6 SS1	BH6 SS2	BH6 SS20
Sample Date				20-Nov-09	20-Nov-09	20-Nov-09	20-Nov-09	20-Nov-09
Sample Depth (m)				0 - 0.6	0.6 - 1.2	0 - 0.6	0.6 - 1.2	0.6 - 1.2
Parameter (ug/g)	CCME Criteria ¹	MOE Criteria Table 1 ²	MOE Criteria Table 3 ³					Duplicate of BH6 SS2
Acenaphthene	NV	0.08	1000	<0.02	<0.02	0.03	<u>0.12</u>	0.03
Acenaphthylene	NV	0.07	100	<0.02	0.03	0.02	<u>0.09</u>	0.06
Anthracene	2.5	0.16	28	<0.02	0.06	0.06	<u>0.37</u>	0.12
Benzo[a]anthracene	NV	0.74	40	<0.02	0.12	0.13	0.53	0.23
Benzo[a]pyrene*	5.3	0.49	1.2	<0.02	0.11	0.11	0.43	0.21
Benzo[a]pyrene (TPE)	5.3	NV	NV	ND	0.149	0.151	0.659	0.308
Benzo[b]fluoranthene	NV	0.47	12	<0.02	0.13	0.15	<u>0.58</u>	0.3
Benzo[ghi]perylene	NV	0.68	40	<0.02	0.05	0.05	0.2	0.11
Benzo[k]fluoranthene	NV	0.48	12	<0.02	0.08	0.06	0.32	0.12
Biphenyl	NV	NV	NV	<0.02	<0.02	<0.02	0.03	<0.02
Chrysene	NV	0.69	12	<0.02	0.13	0.13	0.58	0.25
Dibenzo[ah]anthracene	NV	0.16	1.2	<0.02	<0.02	<0.02	0.06	0.02
Fluoranthene	50	1.1	40	<0.02	0.23	0.28	<u>1.14</u>	0.45
Fluorene	NV	0.12	350	<0.02	0.02	0.03	<u>0.2</u>	0.04
Indeno[1,2,3-cd]pyrene	NV	0.38	12	<0.02	0.04	0.05	0.18	0.09
1-Methylnaphthalene	NV	0.26	280	<0.02	0.02	<0.02	0.11	0.04
2-Methylnaphthalene	NV	0.29	280	<0.02	0.02	0.02	0.14	0.06
Naphthalene	NV	0.09	40	<0.02	0.02	0.02	<u>0.21</u>	0.05
Phenanthrene	NV	0.69	40	0.02	0.14	0.22	<u>1.2</u>	0.32
Pyrene	NV	1.0	250	0.03	0.2	0.23	0.93	0.41

Notes:

1) CCME Canadian Soil Quality Guidelines for the Protection of Environmental and Human Health. 2008 - residential/parkland land use, coarse grained soil

2) MOE Table 1: Full Depth Background Site Condition Standards, March 2004

3) MOE Table 3: Full Depth Generic Site Standards in a Non-Potable Ground Water Condition Soil Residential/Parkland Property Use March 2004

* The guideline for benzo[a]pyrene is a human health guideline based on a 1st incremental lifetime cancer risk

Benzo[a]pyrene (TPE) total potency equivalents using on-site soil data for for other PAH parameters

Shaded values exceed Federal Criteria

Underline - concentration exceeds MOE Table 1 criteria

Bold - concentration exceeds MOE Table 3 criteria

NV - no value

Table 4 - Soil Analytical Results - Metals
NCC - Property Asset #96189 Richmond Landing, Ottawa

Sample ID				BH1 SS1	BH1 SS2	BH2 SS1	BH2 SS2	BH3 SS1	BH3 SS2	BH4 SS1	BH4 SS2
Sample Date				20-Nov-09	20-Nov-09	20-Nov-09	20-Nov-09	20-Nov-09	20-Nov-09	20-Nov-09	20-Nov-09
Sample Depth (m)				0 - 0.6	0.6 - 1.2	0 - 0.6	0.6 - 1.2	0 - 0.6	0.6 - 1.2	0 - 0.6	0.6 - 1.2
Parameter (ug/g)	CCME Criteria ¹	MOE Criteria Table 1 ²	MOE Criteria Table 3 ³								
Antimony	20	1	13	<1	<u>2</u>	<1	<1	<1	<1	<1	<1
Arsenic	12	17	20	6	<1	2	<1	<1	<1	1	<1
Barium	500	210	750	51	25	57	31	51	24	89	32
Beryllium	4	1.2	1.2	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5
Boron	NV	NV	1.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5
Cadmium	10	1	12	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5
Chromium (total)	64	71	750	13	9	12	10	11	8	13	11
Chromium VI	0.4	2.5	8	<0.4	<0.4	<0.4	<0.4	<0.4	<0.4	<0.4	<0.4
Cobalt	50	21	40	3	3	3	3	3	3	4	3
Copper	63	85	225	18	5	7	6	8	5	8	6
Lead	140	120	200	26	4	14	4	9	2	13	8
Mercury	6.6	0.23	10	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1
Molybdenum	10	2.5	40	<1	<1	<1	<1	<1	<1	<1	<1
Nickel	50	43	150	6	5	5	5	6	<5	6	5
Selenium	1	1.9	10	<1	<1	<1	<1	<1	<1	<1	<1
Silver	20	0.42	20	<0.3	<0.3	<0.3	<0.3	<0.3	<0.3	<0.3	<0.3
Thallium	1	2.5	4.1	<1	<1	<1	<1	<1	<1	<1	<1
Vanadium	130	91	200	27	22	23	24	22	18	24	27
Zinc	200	160	600	21	<20	<20	<20	<20	<20	24	<20

Notes:

1) CCME Canadian Soil Quality Guidelines for the Protection of Environmental and Human Health. 2008 - residential/parkland land use, coarse grained soil

2) MOE Table 1: Full Depth Background Site Condition Standards, March 2004

3) MOE Table 3: Full Depth Generic Site Standards in a Non-Potable Ground Water Condition Soil Residential/Parkland Property Use March 2004

Shaded values exceed Federal Criteria

Underline - concentration exceeds MOE Table 1 criteria

Bold - concentration exceeds MOE Table 3 criteria

NV - no value

Table 4 - Soil Analytical Results - Metals
NCC - Property Asset #96189 Richmond Landing, Ottawa

Sample ID				BH5 SS1	BH5 SS2	BH6 SS1	BH6 SS2	BH6 SS20
Sample Date				20-Nov-09	20-Nov-09	20-Nov-09	20-Nov-09	20-Nov-09
Sample Depth (m)				0 - 0.6	0.6 - 1.2	0 - 0.6	0.6 - 1.2	0.6 - 1.2
Parameter (ug/g)	CCME Criteria ¹	MOE Criteria Table 1 ²	MOE Criteria Table 3 ³					Duplicate of BH6 SS2
Antimony	20	1	13	<1	<1	<1	<1	<1
Arsenic	12	17	20	9	1	1	<1	<1
Barium	500	210	750	46	57	128	36	33
Beryllium	4	1.2	1.2	<0.5	<0.5	<0.5	<0.5	<0.5
Boron	NV	NV	1.5	<0.5	<0.5	<0.5	<0.5	<0.5
Cadmium	10	1	12	0.5	<0.5	<0.5	<0.5	<0.5
Chromium (total)	64	71	750	16	13	16	10	9
Chromium VI	0.4	2.5	8	<0.4	<0.4	<0.4	<0.4	<0.4
Cobalt	50	21	40	14	4	4	3	3
Copper	63	85	225	<u>216</u>	16	11	8	7
Lead	140	120	200	55	25	23	12	11
Mercury	6.6	0.23	10	<0.1	<0.1	<0.1	<0.1	<0.1
Molybdenum	10	2.5	40	5	<1	<1	<1	<1
Nickel	50	43	150	8	7	8	6	5
Selenium	1	1.9	10	<1	<1	<1	<1	<1
Silver	20	0.42	20	<0.3	<0.3	<0.3	<0.3	<0.3
Thallium	1	2.5	4.1	<1	<1	<1	<1	<1
Vanadium	130	91	200	25	28	28	24	19
Zinc	200	160	600	<u>468</u>	31	31	<20	<20

Notes:

1) CCME Canadian Soil Quality Guidelines for the Protection of Environmental and Human Health. 2008 - residential/parkland land use, coarse grained soil

2) MOE Table 1: Full Depth Background Site Condition Standards, March 2004

3) MOE Table 3: Full Depth Generic Site Standards in a Non-Potable Ground Water Condition Soil Residential/Parkland Property Use March 2004

Shaded values exceed Federal Criteria

Underline - concentration exceeds MOE Table 1 criteria

Bold - concentration exceeds MOE Table 3 criteria

NV - no value

Appendix D: Laboratory Certificates of Analysis

Certificate of Analysis

Trow Associates Inc. (Ottawa)

154 Colonnade Rd. S
Ottawa, ON K2E 7J5
Attn: Mark McCalla

Phone: (613) 225-9940
Fax: (613) 225-7337

Client PO:
Project: OTEN00020038R
Custody: 62026,65291

Report Date: 1-Dec-2009
Order Date: 20-Nov-2009

Order #: 0947190

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

Paracel ID	Client ID
0947190-01	BH1 SS1
0947190-02	BH1 SS2
0947190-03	BH2 SS1
0947190-04	BH2 SS2
0947190-05	BH3 SS1
0947190-06	BH3 SS2
0947190-07	BH4 SS1
0947190-08	BH4 SS2
0947190-09	BH5 SS1
0947190-10	BH5 SS2
0947190-11	BH6 SS1
0947190-12	BH6 SS2
0947190-13	BH6 SS20

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: 01-Dec-2009

Order Date: 20-Nov-2009

Client: **Trow Associates Inc. (Ottawa)**

Client PO:

Project Description: OTEN00020038R

Analysis Summary Table

Analysis	Method Reference/Description	Extraction Date	Analysis Date
Boron, available	MOE (HWE), EPA 200.8 - ICP-MS	25-Nov-09	27-Nov-09
CCME PHC F1	CWS Tier 1 - P&T GC-FID	20-Nov-09	20-Nov-09
CCME PHC F2 - F4	CWS Tier 1 - GC-FID, extraction	25-Nov-09	26-Nov-09
Chromium, hexavalent	MOE E3056 - Extraction, colourimetric	25-Nov-09	26-Nov-09
Mercury	EPA 7471A - CVAA, digestion	30-Nov-09	30-Nov-09
Metals	EPA 6020 - Digestion - ICP-MS	27-Nov-09	30-Nov-09
PAHs by GC-MS, standard scan	EPA 8270 - GC-MS, extraction	24-Nov-09	26-Nov-09
Solids, %	Gravimetric, calculation	20-Nov-09	26-Nov-09
VOCs	EPA 8260 - P&T GC-MS	20-Nov-09	30-Nov-09

Certificate of Analysis

Report Date: 01-Dec-2009

Order Date: 20-Nov-2009

Client: **Trow Associates Inc. (Ottawa)**

Client PO:

Project Description: OTEN00020038R

Client ID:	BH1 SS1	BH1 SS2	BH2 SS1	BH2 SS2
Sample Date:	20-Nov-09	20-Nov-09	20-Nov-09	20-Nov-09
Sample ID:	0947190-01	0947190-02	0947190-03	0947190-04
MDL/Units	Soil	Soil	Soil	Soil

Physical Characteristics

% Solids	0.1 % by Wt.	78.0	85.0	88.9	94.7
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Metals

Antimony	1 ug/g dry	<1	2	<1	<1
Arsenic	1 ug/g dry	6	<1	2	<1
Barium	10 ug/g dry	51	25	57	31
Beryllium	0.5 ug/g dry	<0.5	<0.5	<0.5	<0.5
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	5 ug/g dry	13	9	12	10
Chromium (VI)	0.4 ug/g dry	<0.4	<0.4	<0.4	<0.4
Cobalt	1 ug/g dry	3	3	3	3
Copper	5 ug/g dry	18	5	7	6
Lead	1 ug/g dry	26	4	14	4
Mercury	0.1 ug/g dry	<0.1	<0.1	<0.1	<0.1
Molybdenum	1 ug/g dry	<1	<1	<1	<1
Nickel	5 ug/g dry	6	5	5	5
Selenium	1 ug/g dry	<1	<1	<1	<1
Silver	0.3 ug/g dry	<0.3	<0.3	<0.3	<0.3
Thallium	1 ug/g dry	<1	<1	<1	<1
Vanadium	10 ug/g dry	27	22	23	24
Zinc	20 ug/g dry	21	<20	<20	<20

Volatiles

Benzene	0.002 ug/g dry	<0.002	<0.002	<0.002	<0.002
Bromodichloromethane	0.002 ug/g dry	<0.002	<0.002	<0.002	<0.002
Bromoform	0.002 ug/g dry	<0.002	<0.002	<0.002	<0.002
Bromomethane	0.003 ug/g dry	<0.003	<0.003	<0.003	<0.003
Carbon Tetrachloride	0.002 ug/g dry	<0.002	<0.002	<0.002	<0.002
Chlorobenzene	0.002 ug/g dry	<0.002	<0.002	<0.002	<0.002
Chloroethane	0.005 ug/g dry	<0.005	<0.005	<0.005	<0.005
Chloroform	0.003 ug/g dry	<0.003	<0.003	<0.003	<0.003
Chloromethane	0.020 ug/g dry	<0.020	<0.020	<0.020	<0.020

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

Certificate of Analysis

Report Date: 01-Dec-2009

Order Date: 20-Nov-2009

Client: **Trow Associates Inc. (Ottawa)**

Client PO:

Project Description: OTEN00020038R

	Client ID: Sample Date: Sample ID:	BH1 SS1 20-Nov-09 0947190-01 Soil	BH1 SS2 20-Nov-09 0947190-02 Soil	BH2 SS1 20-Nov-09 0947190-03 Soil	BH2 SS2 20-Nov-09 0947190-04 Soil
	MDL/Units				
Dibromochloromethane	0.002 ug/g dry	<0.002	<0.002	<0.002	<0.002
1,2-Dibromoethane	0.002 ug/g dry	<0.002	<0.002	<0.002	<0.002
1,2-Dichlorobenzene	0.002 ug/g dry	<0.002	<0.002	<0.002	<0.002
1,3-Dichlorobenzene	0.002 ug/g dry	<0.002	<0.002	<0.002	<0.002
1,4-Dichlorobenzene	0.002 ug/g dry	<0.002	<0.002	<0.002	<0.002
1,1-Dichloroethane	0.002 ug/g dry	<0.002	<0.002	<0.002	<0.002
1,2-Dichloroethane	0.002 ug/g dry	<0.002	<0.002	<0.002	<0.002
1,1-Dichloroethylene	0.002 ug/g dry	<0.002	<0.002	<0.002	<0.002
cis-1,2-Dichloroethylene	0.002 ug/g dry	<0.002	<0.002	<0.002	<0.002
trans-1,2-Dichloroethylene	0.003 ug/g dry	<0.003	<0.003	<0.003	<0.003
1,2-Dichloropropane	0.002 ug/g dry	<0.002	<0.002	<0.002	<0.002
cis-1,3-Dichloropropylene	0.002 ug/g dry	<0.002	<0.002	<0.002	<0.002
trans-1,3-Dichloropropylene	0.002 ug/g dry	<0.002	<0.002	<0.002	<0.002
Ethylbenzene	0.002 ug/g dry	<0.002	<0.002	<0.002	<0.002
Methylene Chloride	0.003 ug/g dry	<0.003	<0.003	<0.003	<0.003
Styrene	0.002 ug/g dry	<0.002	<0.002	<0.002	<0.002
1,1,1,2-Tetrachloroethane	0.003 ug/g dry	<0.003	<0.003	<0.003	<0.003
1,1,2,2-Tetrachloroethane	0.003 ug/g dry	<0.003	<0.003	<0.003	<0.003
Tetrachloroethylene	0.002 ug/g dry	<0.002	<0.002	<0.002	<0.002
Toluene	0.002 ug/g dry	<0.002	<0.002	<0.002	<0.002
1,1,1-Trichloroethane	0.002 ug/g dry	<0.002	<0.002	<0.002	<0.002
1,1,2-Trichloroethane	0.002 ug/g dry	<0.002	<0.002	<0.002	<0.002
Trichloroethylene	0.003 ug/g dry	<0.003	<0.003	<0.003	<0.003
Trichlorofluoromethane	0.005 ug/g dry	<0.005	<0.005	<0.005	<0.005
1,3,5-Trimethylbenzene	0.003 ug/g dry	<0.003	<0.003	<0.003	<0.003
Vinyl chloride	0.002 ug/g dry	<0.002	<0.002	<0.002	<0.002
m,p-Xylenes	0.002 ug/g dry	<0.002	<0.002	<0.002	<0.002
o-Xylene	0.002 ug/g dry	<0.002	<0.002	<0.002	<0.002
4-Bromofluorobenzene	Surrogate	122%	125%	125%	127%
Dibromofluoromethane	Surrogate	106%	107%	110%	107%
Toluene-d8	Surrogate	105%	106%	99.3%	106%

Hydrocarbons

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123 Christina St. N.
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Certificate of Analysis

Report Date: 01-Dec-2009

Order Date: 20-Nov-2009

Client: **Trow Associates Inc. (Ottawa)**

Client PO:

Project Description: OTEN00020038R

	Client ID: Sample Date: Sample ID:	BH1 SS1 20-Nov-09 0947190-01 Soil	BH1 SS2 20-Nov-09 0947190-02 Soil	BH2 SS1 20-Nov-09 0947190-03 Soil	BH2 SS2 20-Nov-09 0947190-04 Soil
	MDL/Units				
F1 PHCs (C6-C10)	10 ug/g dry	<10	<10	<10	<10
F2 PHCs (C10-C16)	10 ug/g dry	<10	<10	<10	<10
F3 PHCs (C16-C34)	10 ug/g dry	<10	<10	<10	<10
F4 PHCs (C34-C50)	10 ug/g dry	<10	<10	<10	<10

Semi-Volatiles

Acenaphthene	0.02 ug/g dry	<0.02	<0.02	<0.02	<0.02
Acenaphthylene	0.02 ug/g dry	<0.02	<0.02	<0.02	<0.02
Anthracene	0.02 ug/g dry	<0.02	<0.02	<0.02	0.02
Benzo[a]anthracene	0.02 ug/g dry	0.02	<0.02	<0.02	0.05
Benzo[a]pyrene	0.02 ug/g dry	<0.02	<0.02	<0.02	0.04
Benzo[b]fluoranthene	0.02 ug/g dry	<0.02	<0.02	<0.02	0.05
Benzo[g,h,i]perylene	0.02 ug/g dry	<0.02	<0.02	<0.02	0.02
Benzo[k]fluoranthene	0.02 ug/g dry	<0.02	<0.02	<0.02	0.02
Biphenyl	0.02 ug/g dry	<0.02	<0.02	<0.02	<0.02
Chrysene	0.02 ug/g dry	0.02	<0.02	<0.02	0.05
Dibenzo[a,h]anthracene	0.02 ug/g dry	<0.02	<0.02	<0.02	<0.02
Fluoranthene	0.02 ug/g dry	<0.02	<0.02	<0.02	0.09
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	<0.02	<0.02	<0.02	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
Naphthalene	0.02 ug/g dry	<0.02	<0.02	<0.02	<0.02
Phenanthrene	0.02 ug/g dry	0.02	<0.02	<0.02	0.07
Pyrene	0.02 ug/g dry	<0.02	<0.02	0.02	0.08
2-Fluorobiphenyl	Surrogate	75.0%	87.6%	77.3%	80.8%
Terphenyl-d14	Surrogate	76.4%	90.0%	85.5%	84.4%

Certificate of Analysis

Report Date: 01-Dec-2009

Order Date: 20-Nov-2009

Client: **Trow Associates Inc. (Ottawa)**

Client PO:

Project Description: OTEN00020038R

Client ID:	BH3 SS1	BH3 SS2	BH4 SS1	BH4 SS2
Sample Date:	20-Nov-09	20-Nov-09	20-Nov-09	20-Nov-09
Sample ID:	0947190-05	0947190-06	0947190-07	0947190-08
MDL/Units	Soil	Soil	Soil	Soil

Physical Characteristics

% Solids	0.1 % by Wt.	91.5	95.6	88.2	95.1
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Metals

Antimony	1 ug/g dry	<1	<1	<1	<1
Arsenic	1 ug/g dry	<1	<1	1	<1
Barium	10 ug/g dry	51	24	89	32
Beryllium	0.5 ug/g dry	<0.5	<0.5	<0.5	<0.5
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	5 ug/g dry	11	8	13	11
Chromium (VI)	0.4 ug/g dry	<0.4	<0.4	<0.4	<0.4
Cobalt	1 ug/g dry	3	3	4	3
Copper	5 ug/g dry	8	5	8	6
Lead	1 ug/g dry	9	2	13	8
Mercury	0.1 ug/g dry	<0.1	<0.1	<0.1	<0.1
Molybdenum	1 ug/g dry	<1	<1	<1	<1
Nickel	5 ug/g dry	6	<5	6	5
Selenium	1 ug/g dry	<1	<1	<1	<1
Silver	0.3 ug/g dry	<0.3	<0.3	<0.3	<0.3
Thallium	1 ug/g dry	<1	<1	<1	<1
Vanadium	10 ug/g dry	22	18	24	27
Zinc	20 ug/g dry	<20	<20	24	<20

Volatiles

Benzene	0.002 ug/g dry	<0.002	<0.002	<0.002	<0.002
Bromodichloromethane	0.002 ug/g dry	<0.002	<0.002	<0.002	<0.002
Bromoform	0.002 ug/g dry	<0.002	<0.002	<0.002	<0.002
Bromomethane	0.003 ug/g dry	<0.003	<0.003	<0.003	<0.003
Carbon Tetrachloride	0.002 ug/g dry	<0.002	<0.002	<0.002	<0.002
Chlorobenzene	0.002 ug/g dry	<0.002	<0.002	<0.002	<0.002
Chloroethane	0.005 ug/g dry	<0.005	<0.005	<0.005	<0.005
Chloroform	0.003 ug/g dry	<0.003	<0.003	<0.003	<0.003
Chloromethane	0.020 ug/g dry	<0.020	<0.020	<0.020	<0.020
Dibromochloromethane	0.002 ug/g dry	<0.002	<0.002	<0.002	<0.002

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Certificate of Analysis

Report Date: 01-Dec-2009

Order Date: 20-Nov-2009

Client: **Trow Associates Inc. (Ottawa)**

Client PO:

Project Description: OTEN00020038R

	Client ID: Sample Date: Sample ID:	BH3 SS1 20-Nov-09 0947190-05 Soil	BH3 SS2 20-Nov-09 0947190-06 Soil	BH4 SS1 20-Nov-09 0947190-07 Soil	BH4 SS2 20-Nov-09 0947190-08 Soil
	MDL/Units				
1,2-Dibromoethane	0.002 ug/g dry	<0.002	<0.002	<0.002	<0.002
1,2-Dichlorobenzene	0.002 ug/g dry	<0.002	<0.002	<0.002	<0.002
1,3-Dichlorobenzene	0.002 ug/g dry	<0.002	<0.002	<0.002	<0.002
1,4-Dichlorobenzene	0.002 ug/g dry	<0.002	<0.002	<0.002	<0.002
1,1-Dichloroethane	0.002 ug/g dry	<0.002	<0.002	<0.002	<0.002
1,2-Dichloroethane	0.002 ug/g dry	<0.002	<0.002	<0.002	<0.002
1,1-Dichloroethylene	0.002 ug/g dry	<0.002	<0.002	<0.002	<0.002
cis-1,2-Dichloroethylene	0.002 ug/g dry	<0.002	<0.002	<0.002	<0.002
trans-1,2-Dichloroethylene	0.003 ug/g dry	<0.003	<0.003	<0.003	<0.003
1,2-Dichloropropane	0.002 ug/g dry	<0.002	<0.002	<0.002	<0.002
cis-1,3-Dichloropropylene	0.002 ug/g dry	<0.002	<0.002	<0.002	<0.002
trans-1,3-Dichloropropylene	0.002 ug/g dry	<0.002	<0.002	<0.002	<0.002
Ethylbenzene	0.002 ug/g dry	<0.002	<0.002	<0.002	<0.002
Methylene Chloride	0.003 ug/g dry	<0.003	<0.003	<0.003	<0.003
Styrene	0.002 ug/g dry	<0.002	<0.002	<0.002	<0.002
1,1,1,2-Tetrachloroethane	0.003 ug/g dry	<0.003	<0.003	<0.003	<0.003
1,1,1,2-Tetrachloroethane	0.003 ug/g dry	<0.003	<0.003	<0.003	<0.003
Tetrachloroethylene	0.002 ug/g dry	<0.002	<0.002	<0.002	<0.002
Toluene	0.002 ug/g dry	<0.002	<0.002	<0.002	<0.002
1,1,1-Trichloroethane	0.002 ug/g dry	<0.002	<0.002	<0.002	<0.002
1,1,2-Trichloroethane	0.002 ug/g dry	<0.002	<0.002	<0.002	<0.002
Trichloroethylene	0.003 ug/g dry	<0.003	<0.003	<0.003	<0.003
Trichlorofluoromethane	0.005 ug/g dry	<0.005	<0.005	<0.005	<0.005
1,3,5-Trimethylbenzene	0.003 ug/g dry	<0.003	<0.003	<0.003	<0.003
Vinyl chloride	0.002 ug/g dry	<0.002	<0.002	<0.002	<0.002
m,p-Xylenes	0.002 ug/g dry	<0.002	<0.002	<0.002	<0.002
o-Xylene	0.002 ug/g dry	<0.002	<0.002	<0.002	<0.002
4-Bromofluorobenzene	Surrogate	128%	126%	127%	128%
Dibromofluoromethane	Surrogate	106%	107%	108%	114%
Toluene-d8	Surrogate	105%	104%	104%	99.7%

Hydrocarbons

F1 PHCs (C6-C10)	10 ug/g dry	<10	<10	<10	<10
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Certificate of Analysis

Report Date: 01-Dec-2009

Order Date: 20-Nov-2009

Client: **Trow Associates Inc. (Ottawa)**

Client PO:

Project Description: OTEN00020038R

	Client ID: Sample Date: Sample ID:	BH3 SS1 20-Nov-09 0947190-05 Soil	BH3 SS2 20-Nov-09 0947190-06 Soil	BH4 SS1 20-Nov-09 0947190-07 Soil	BH4 SS2 20-Nov-09 0947190-08 Soil
	MDL/Units				
F2 PHCs (C10-C16)	10 ug/g dry	<10	<10	<10	<10
F3 PHCs (C16-C34)	10 ug/g dry	<10	<10	<10	<10
F4 PHCs (C34-C50)	10 ug/g dry	<10	<10	<10	<10

Semi-Volatiles

Acenaphthene	0.02 ug/g dry	<0.02	<0.02	<0.02	<0.02
Acenaphthylene	0.02 ug/g dry	<0.02	<0.02	<0.02	<0.02
Anthracene	0.02 ug/g dry	0.02	<0.02	<0.02	<0.02
Benzo[a]anthracene	0.02 ug/g dry	0.05	<0.02	<0.02	0.03
Benzo[a]pyrene	0.02 ug/g dry	0.03	<0.02	<0.02	0.02
Benzo[b]fluoranthene	0.02 ug/g dry	0.04	<0.02	<0.02	0.03
Benzo[g,h,i]perylene	0.02 ug/g dry	0.02	<0.02	<0.02	<0.02
Benzo[k]fluoranthene	0.02 ug/g dry	0.03	<0.02	<0.02	<0.02
Biphenyl	0.02 ug/g dry	<0.02	<0.02	<0.02	<0.02
Chrysene	0.02 ug/g dry	0.05	<0.02	<0.02	0.03
Dibenzo[a,h]anthracene	0.02 ug/g dry	<0.02	<0.02	<0.02	<0.02
Fluoranthene	0.02 ug/g dry	0.10	<0.02	<0.02	0.05
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	<0.02	<0.02	<0.02	<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
Naphthalene	0.02 ug/g dry	<0.02	<0.02	<0.02	<0.02
Phenanthrene	0.02 ug/g dry	0.07	<0.02	<0.02	0.04
Pyrene	0.02 ug/g dry	0.08	<0.02	0.02	0.05
2-Fluorobiphenyl	Surrogate	100%	106%	113%	107%
Terphenyl-d14	Surrogate	101%	107%	114%	120%

Certificate of Analysis

Report Date: 01-Dec-2009

Order Date: 20-Nov-2009

Client: **Trow Associates Inc. (Ottawa)**

Client PO:

Project Description: OTEN00020038R

Client ID:	BH5 SS1	BH5 SS2	BH6 SS1	BH6 SS2
Sample Date:	20-Nov-09	20-Nov-09	20-Nov-09	20-Nov-09
Sample ID:	0947190-09	0947190-10	0947190-11	0947190-12
MDL/Units	Soil	Soil	Soil	Soil

Physical Characteristics

% Solids	0.1 % by Wt.	88.4	94.2	87.9	94.1
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Metals

Antimony	1 ug/g dry	<1	<1	<1	<1
Arsenic	1 ug/g dry	9	1	1	<1
Barium	10 ug/g dry	46	57	128	36
Beryllium	0.5 ug/g dry	<0.5	<0.5	<0.5	<0.5
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	5 ug/g dry	16	13	16	10
Chromium (VI)	0.4 ug/g dry	<0.4	<0.4	<0.4	<0.4
Cobalt	1 ug/g dry	14	4	4	3
Copper	5 ug/g dry	216	16	11	8
Lead	1 ug/g dry	55	25	23	12
Mercury	0.1 ug/g dry	<0.1	<0.1	<0.1	<0.1
Molybdenum	1 ug/g dry	5	<1	<1	<1
Nickel	5 ug/g dry	8	7	8	6
Selenium	1 ug/g dry	<1	<1	<1	<1
Silver	0.3 ug/g dry	<0.3	<0.3	<0.3	<0.3
Thallium	1 ug/g dry	<1	<1	<1	<1
Vanadium	10 ug/g dry	25	28	28	24
Zinc	20 ug/g dry	468	31	31	<20

Volatiles

Benzene	0.002 ug/g dry	<0.002	<0.002	<0.002	<0.002
Bromodichloromethane	0.002 ug/g dry	<0.002	<0.002	<0.002	<0.002
Bromoform	0.002 ug/g dry	<0.002	<0.002	<0.002	<0.002
Bromomethane	0.003 ug/g dry	<0.003	<0.003	<0.003	<0.003
Carbon Tetrachloride	0.002 ug/g dry	<0.002	<0.002	<0.002	<0.002
Chlorobenzene	0.002 ug/g dry	<0.002	<0.002	<0.002	<0.002
Chloroethane	0.005 ug/g dry	<0.005	<0.005	<0.005	<0.005
Chloroform	0.003 ug/g dry	<0.003	<0.003	<0.003	<0.003
Chloromethane	0.020 ug/g dry	<0.020	<0.020	<0.020	<0.020
Dibromochloromethane	0.002 ug/g dry	<0.002	<0.002	<0.002	<0.002

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Certificate of Analysis

Report Date: 01-Dec-2009

Order Date: 20-Nov-2009

Client: **Trow Associates Inc. (Ottawa)**

Client PO:

Project Description: OTEN00020038R

	Client ID: Sample Date: Sample ID:	BH5 SS1 20-Nov-09 0947190-09 Soil	BH5 SS2 20-Nov-09 0947190-10 Soil	BH6 SS1 20-Nov-09 0947190-11 Soil	BH6 SS2 20-Nov-09 0947190-12 Soil
	MDL/Units				
1,2-Dibromoethane	0.002 ug/g dry	<0.002	<0.002	<0.002	<0.002
1,2-Dichlorobenzene	0.002 ug/g dry	<0.002	<0.002	<0.002	<0.002
1,3-Dichlorobenzene	0.002 ug/g dry	<0.002	<0.002	<0.002	<0.002
1,4-Dichlorobenzene	0.002 ug/g dry	<0.002	<0.002	<0.002	<0.002
1,1-Dichloroethane	0.002 ug/g dry	<0.002	<0.002	<0.002	<0.002
1,2-Dichloroethane	0.002 ug/g dry	<0.002	<0.002	<0.002	<0.002
1,1-Dichloroethylene	0.002 ug/g dry	<0.002	<0.002	<0.002	<0.002
cis-1,2-Dichloroethylene	0.002 ug/g dry	<0.002	<0.002	<0.002	<0.002
trans-1,2-Dichloroethylene	0.003 ug/g dry	<0.003	<0.003	<0.003	<0.003
1,2-Dichloropropane	0.002 ug/g dry	<0.002	<0.002	<0.002	<0.002
cis-1,3-Dichloropropylene	0.002 ug/g dry	<0.002	<0.002	<0.002	<0.002
trans-1,3-Dichloropropylene	0.002 ug/g dry	<0.002	<0.002	<0.002	<0.002
Ethylbenzene	0.002 ug/g dry	<0.002	<0.002	<0.002	<0.002
Methylene Chloride	0.003 ug/g dry	<0.003	<0.003	<0.003	<0.003
Styrene	0.002 ug/g dry	<0.002	<0.002	<0.002	<0.002
1,1,1,2-Tetrachloroethane	0.003 ug/g dry	<0.003	<0.003	<0.003	<0.003
1,1,2,2-Tetrachloroethane	0.003 ug/g dry	<0.003	<0.003	<0.003	<0.003
Tetrachloroethylene	0.002 ug/g dry	<0.002	<0.002	<0.002	<0.002
Toluene	0.002 ug/g dry	<0.002	<0.002	<0.002	<0.002
1,1,1-Trichloroethane	0.002 ug/g dry	<0.002	<0.002	<0.002	<0.002
1,1,2-Trichloroethane	0.002 ug/g dry	<0.002	<0.002	<0.002	<0.002
Trichloroethylene	0.003 ug/g dry	<0.003	<0.003	<0.003	<0.003
Trichlorofluoromethane	0.005 ug/g dry	<0.005	<0.005	<0.005	<0.005
1,3,5-Trimethylbenzene	0.003 ug/g dry	<0.003	<0.003	<0.003	<0.003
Vinyl chloride	0.002 ug/g dry	<0.002	<0.002	<0.002	<0.002
m,p-Xylenes	0.002 ug/g dry	<0.002	<0.002	<0.002	<0.002
o-Xylene	0.002 ug/g dry	<0.002	<0.002	<0.002	<0.002
4-Bromofluorobenzene	Surrogate	126%	125%	125%	125%
Dibromofluoromethane	Surrogate	109%	108%	108%	113%
Toluene-d8	Surrogate	104%	103%	103%	100%

Hydrocarbons

F1 PHCs (C6-C10)	10 ug/g dry	<10	<10	<10	<10
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Certificate of Analysis

Report Date: 01-Dec-2009

Order Date: 20-Nov-2009

Client: **Trow Associates Inc. (Ottawa)**

Client PO:

Project Description: OTEN00020038R

	Client ID: Sample Date: Sample ID:	BH5 SS1 20-Nov-09 0947190-09 Soil	BH5 SS2 20-Nov-09 0947190-10 Soil	BH6 SS1 20-Nov-09 0947190-11 Soil	BH6 SS2 20-Nov-09 0947190-12 Soil
	MDL/Units				
F2 PHCs (C10-C16)	10 ug/g dry	<10	<10	<10	<10
F3 PHCs (C16-C34)	10 ug/g dry	<10	<10	<10	65
F4 PHCs (C34-C50)	10 ug/g dry	<10	<10	<10	<10

Semi-Volatiles

Acenaphthene	0.02 ug/g dry	<0.02	<0.02	0.03	0.12
Acenaphthylene	0.02 ug/g dry	<0.02	0.03	0.02	0.09
Anthracene	0.02 ug/g dry	<0.02	0.06	0.06	0.37
Benzo[a]anthracene	0.02 ug/g dry	<0.02	0.12	0.13	0.53
Benzo[a]pyrene	0.02 ug/g dry	<0.02	0.11	0.11	0.43
Benzo[b]fluoranthene	0.02 ug/g dry	<0.02	0.13	0.15	0.58
Benzo[g,h,i]perylene	0.02 ug/g dry	<0.02	0.05	0.05	0.20
Benzo[k]fluoranthene	0.02 ug/g dry	<0.02	0.08	0.06	0.32
Biphenyl	0.02 ug/g dry	<0.02	<0.02	<0.02	0.03
Chrysene	0.02 ug/g dry	<0.02	0.13	0.13	0.58
Dibenzo[a,h]anthracene	0.02 ug/g dry	<0.02	<0.02	<0.02	0.06
Fluoranthene	0.02 ug/g dry	<0.02	0.23	0.28	1.14
Fluorene	0.02 ug/g dry	<0.02	0.02	0.03	0.20
Indeno[1,2,3-cd]pyrene	0.02 ug/g dry	<0.02	0.04	0.05	0.18
1-Methylnaphthalene	0.02 ug/g dry	<0.02	0.02	<0.02	0.11
2-Methylnaphthalene	0.02 ug/g dry	<0.02	0.02	0.02	0.14
Naphthalene	0.02 ug/g dry	<0.02	0.02	0.02	0.21
Phenanthrene	0.02 ug/g dry	0.02	0.14	0.22	1.20
Pyrene	0.02 ug/g dry	0.03	0.20	0.23	0.93
2-Fluorobiphenyl	Surrogate	85.0%	91.8%	96.9%	96.3%
Terphenyl-d14	Surrogate	103%	104%	104%	93.6%

Certificate of Analysis

Report Date: 01-Dec-2009

Order Date: 20-Nov-2009

Client: **Trow Associates Inc. (Ottawa)**

Client PO:

Project Description: OTEN00020038R

Client ID:	BH6 SS20	-	-	-
Sample Date:	20-Nov-09	-	-	-
Sample ID:	0947190-13	-	-	-
MDL/Units	Soil	-	-	-

Physical Characteristics

% Solids	0.1 % by Wt.	95.3	-	-	-
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Metals

Antimony	1 ug/g dry	<1	-	-	-
Arsenic	1 ug/g dry	<1	-	-	-
Barium	10 ug/g dry	33	-	-	-
Beryllium	0.5 ug/g dry	<0.5	-	-	-
Boron, available	0.5 ug/g dry	<0.5	-	-	-
Cadmium	0.5 ug/g dry	<0.5	-	-	-
Chromium	5 ug/g dry	9	-	-	-
Chromium (VI)	0.4 ug/g dry	<0.4	-	-	-
Cobalt	1 ug/g dry	3	-	-	-
Copper	5 ug/g dry	7	-	-	-
Lead	1 ug/g dry	11	-	-	-
Mercury	0.1 ug/g dry	<0.1	-	-	-
Molybdenum	1 ug/g dry	<1	-	-	-
Nickel	5 ug/g dry	5	-	-	-
Selenium	1 ug/g dry	<1	-	-	-
Silver	0.3 ug/g dry	<0.3	-	-	-
Thallium	1 ug/g dry	<1	-	-	-
Vanadium	10 ug/g dry	19	-	-	-
Zinc	20 ug/g dry	<20	-	-	-

Volatiles

Benzene	0.002 ug/g dry	<0.002	-	-	-
Bromodichloromethane	0.002 ug/g dry	<0.002	-	-	-
Bromoform	0.002 ug/g dry	<0.002	-	-	-
Bromomethane	0.003 ug/g dry	<0.003	-	-	-
Carbon Tetrachloride	0.002 ug/g dry	<0.002	-	-	-
Chlorobenzene	0.002 ug/g dry	<0.002	-	-	-
Chloroethane	0.005 ug/g dry	<0.005	-	-	-
Chloroform	0.003 ug/g dry	<0.003	-	-	-
Chloromethane	0.020 ug/g dry	<0.020	-	-	-
Dibromochloromethane	0.002 ug/g dry	<0.002	-	-	-

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Certificate of Analysis

Report Date: 01-Dec-2009

Order Date: 20-Nov-2009

Client: **Trow Associates Inc. (Ottawa)**

Client PO:

Project Description: OTEN00020038R

	MDL/Units	Client ID: Sample Date: Sample ID:	BH6 SS20 20-Nov-09 0947190-13 Soil	-	-	-
				-	-	-
1,2-Dibromoethane	0.002 ug/g dry		<0.002	-	-	-
1,2-Dichlorobenzene	0.002 ug/g dry		<0.002	-	-	-
1,3-Dichlorobenzene	0.002 ug/g dry		<0.002	-	-	-
1,4-Dichlorobenzene	0.002 ug/g dry		<0.002	-	-	-
1,1-Dichloroethane	0.002 ug/g dry		<0.002	-	-	-
1,2-Dichloroethane	0.002 ug/g dry		<0.002	-	-	-
1,1-Dichloroethylene	0.002 ug/g dry		<0.002	-	-	-
cis-1,2-Dichloroethylene	0.002 ug/g dry		<0.002	-	-	-
trans-1,2-Dichloroethylene	0.003 ug/g dry		<0.003	-	-	-
1,2-Dichloropropane	0.002 ug/g dry		<0.002	-	-	-
cis-1,3-Dichloropropylene	0.002 ug/g dry		<0.002	-	-	-
trans-1,3-Dichloropropylene	0.002 ug/g dry		<0.002	-	-	-
Ethylbenzene	0.002 ug/g dry		<0.002	-	-	-
Methylene Chloride	0.003 ug/g dry		<0.003	-	-	-
Styrene	0.002 ug/g dry		<0.002	-	-	-
1,1,1,2-Tetrachloroethane	0.003 ug/g dry		<0.003	-	-	-
1,1,1,2,2-Tetrachloroethane	0.003 ug/g dry		<0.003	-	-	-
Tetrachloroethylene	0.002 ug/g dry		<0.002	-	-	-
Toluene	0.002 ug/g dry		<0.002	-	-	-
1,1,1-Trichloroethane	0.002 ug/g dry		<0.002	-	-	-
1,1,2-Trichloroethane	0.002 ug/g dry		<0.002	-	-	-
Trichloroethylene	0.003 ug/g dry		<0.003	-	-	-
Trichlorofluoromethane	0.005 ug/g dry		<0.005	-	-	-
1,3,5-Trimethylbenzene	0.003 ug/g dry		<0.003	-	-	-
Vinyl chloride	0.002 ug/g dry		<0.002	-	-	-
m,p-Xylenes	0.002 ug/g dry		<0.002	-	-	-
o-Xylene	0.002 ug/g dry		<0.002	-	-	-
4-Bromofluorobenzene	Surrogate		121%	-	-	-
Dibromofluoromethane	Surrogate		109%	-	-	-
Toluene-d8	Surrogate		103%	-	-	-

Hydrocarbons

F1 PHCs (C6-C10)	10 ug/g dry	<10	-	-	-
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Certificate of Analysis

Report Date: 01-Dec-2009

Order Date: 20-Nov-2009

Client: **Trow Associates Inc. (Ottawa)**

Client PO:

Project Description: OTEN00020038R

	Client ID:	BH6 SS20	-	-	-
	Sample Date:	20-Nov-09	-	-	-
	Sample ID:	0947190-13	-	-	-
	MDL/Units	Soil	-	-	-
F2 PHCs (C10-C16)	10 ug/g dry	<10	-	-	-
F3 PHCs (C16-C34)	10 ug/g dry	<10	-	-	-
F4 PHCs (C34-C50)	10 ug/g dry	<10	-	-	-

Semi-Volatiles

Acenaphthene	0.02 ug/g dry	0.03	-	-	-
Acenaphthylene	0.02 ug/g dry	0.06	-	-	-
Anthracene	0.02 ug/g dry	0.12	-	-	-
Benzo[a]anthracene	0.02 ug/g dry	0.23	-	-	-
Benzo[a]pyrene	0.02 ug/g dry	0.21	-	-	-
Benzo[b]fluoranthene	0.02 ug/g dry	0.30	-	-	-
Benzo[g,h,i]perylene	0.02 ug/g dry	0.11	-	-	-
Benzo[k]fluoranthene	0.02 ug/g dry	0.12	-	-	-
Biphenyl	0.02 ug/g dry	<0.02	-	-	-
Chrysene	0.02 ug/g dry	0.25	-	-	-
Dibenzo[a,h]anthracene	0.02 ug/g dry	0.02	-	-	-
Fluoranthene	0.02 ug/g dry	0.45	-	-	-
Fluorene	0.02 ug/g dry	0.04	-	-	-
Indeno[1,2,3-cd]pyrene	0.02 ug/g dry	0.09	-	-	-
1-Methylnaphthalene	0.02 ug/g dry	0.04	-	-	-
2-Methylnaphthalene	0.02 ug/g dry	0.06	-	-	-
Naphthalene	0.02 ug/g dry	0.05	-	-	-
Phenanthrene	0.02 ug/g dry	0.32	-	-	-
Pyrene	0.02 ug/g dry	0.41	-	-	-
2-Fluorobiphenyl	Surrogate	108%	-	-	-
Terphenyl-d14	Surrogate	107%	-	-	-

Certificate of Analysis

Report Date: 01-Dec-2009

Order Date: 20-Nov-2009

Client: **Trow Associates Inc. (Ottawa)**

Client PO:

Project Description: OTEN00020038R

Method Quality Control: Blank

Analyte	Result	Reporting Limit	Units	Source Result	%REC	%REC Limit	RPD	RPD Limit	Notes
Hydrocarbons									
F1 PHCs (C6-C10)	ND	10	ug/g						
F2 PHCs (C10-C16)	ND	10	ug/g						
F3 PHCs (C16-C34)	ND	10	ug/g						
F4 PHCs (C34-C50)	ND	10	ug/g						
Metals									
Antimony	ND	1	ug/g						
Arsenic	ND	1	ug/g						
Barium	ND	10	ug/g						
Beryllium	ND	0.5	ug/g						
Boron, available	ND	0.5	ug/g						
Cadmium	ND	0.5	ug/g						
Chromium (VI)	ND	0.4	ug/g						
Chromium	ND	5	ug/g						
Cobalt	ND	1	ug/g						
Copper	ND	5	ug/g						
Lead	ND	1	ug/g						
Mercury	ND	0.1	ug/g						
Molybdenum	ND	1	ug/g						
Nickel	ND	5	ug/g						
Selenium	ND	1	ug/g						
Silver	ND	0.3	ug/g						
Thallium	ND	1	ug/g						
Vanadium	ND	10	ug/g						
Zinc	ND	20	ug/g						
Semi-Volatiles									
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						
Naphthalene	ND	0.02	ug/g						
Phenanthrene	ND	0.02	ug/g						
Pyrene	ND	0.02	ug/g						
Surrogate: 2-Fluorobiphenyl	1.25	0.01	ug/g		94.1	32-156			
Surrogate: Terphenyl-d14	1.40	0.01	ug/g		105	39-146			
Volatiles									
Benzene	ND	0.002	ug/g						
Bromodichloromethane	ND	0.002	ug/g						
Bromoform	ND	0.002	ug/g						
Bromomethane	ND	0.003	ug/g						
Carbon Tetrachloride	ND	0.002	ug/g						
Chlorobenzene	ND	0.002	ug/g						

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5415 Morning Glory Crt.
Niagara Falls, ON L2J 0A3

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

Certificate of Analysis

Report Date: 01-Dec-2009

Order Date: 20-Nov-2009

Client: **Trow Associates Inc. (Ottawa)**

Client PO:

Project Description: OTEN00020038R

Method Quality Control: Blank

Analyte	Result	Reporting Limit	Units	Source Result	%REC	%REC Limit	RPD	RPD Limit	Notes
Chloroethane	ND	0.005	ug/g						
Chloroform	ND	0.003	ug/g						
Chloromethane	ND	0.020	ug/g						
Dibromochloromethane	ND	0.002	ug/g						
1,2-Dibromoethane	ND	0.002	ug/g						
1,2-Dichlorobenzene	ND	0.002	ug/g						
1,3-Dichlorobenzene	ND	0.002	ug/g						
1,4-Dichlorobenzene	ND	0.002	ug/g						
1,1-Dichloroethane	ND	0.002	ug/g						
1,2-Dichloroethane	ND	0.002	ug/g						
1,1-Dichloroethylene	ND	0.002	ug/g						
cis-1,2-Dichloroethylene	ND	0.002	ug/g						
trans-1,2-Dichloroethylene	ND	0.003	ug/g						
1,2-Dichloropropane	ND	0.002	ug/g						
cis-1,3-Dichloropropylene	ND	0.002	ug/g						
trans-1,3-Dichloropropylene	ND	0.002	ug/g						
Ethylbenzene	ND	0.002	ug/g						
Methylene Chloride	ND	0.003	ug/g						
Styrene	ND	0.002	ug/g						
1,1,1,2-Tetrachloroethane	ND	0.003	ug/g						
1,1,2,2-Tetrachloroethane	ND	0.003	ug/g						
Tetrachloroethylene	ND	0.002	ug/g						
Toluene	ND	0.002	ug/g						
1,1,1-Trichloroethane	ND	0.002	ug/g						
1,1,2-Trichloroethane	ND	0.002	ug/g						
Trichloroethylene	ND	0.003	ug/g						
Trichlorofluoromethane	ND	0.005	ug/g						
1,3,5-Trimethylbenzene	ND	0.003	ug/g						
Vinyl chloride	ND	0.002	ug/g						
m,p-Xylenes	ND	0.002	ug/g						
o-Xylene	ND	0.002	ug/g						
Surrogate: 4-Bromofluorobenzene	0.155		ug/g		114	83-134			
Surrogate: Dibromofluoromethane	0.154		ug/g		113	78-124			
Surrogate: Toluene-d8	0.135		ug/g		99.5	76-118			

Certificate of Analysis

Report Date: 01-Dec-2009

Order Date: 20-Nov-2009

Client: **Trow Associates Inc. (Ottawa)**

Client PO:

Project Description: OTEN00020038R

Method Quality Control: Duplicate

Analyte	Result	Reporting Limit	Units	Source Result	%REC	%REC Limit	RPD	RPD Limit	Notes
Hydrocarbons									
F1 PHCs (C6-C10)	ND	10	ug/g dry	ND				32	
F2 PHCs (C10-C16)	ND	10	ug/g dry	ND				50	
F3 PHCs (C16-C34)	ND	10	ug/g dry	ND				50	
F4 PHCs (C34-C50)	ND	10	ug/g dry	ND				50	
Metals									
Antimony	ND	1	ug/g dry	ND				26	
Arsenic	6.6	1	ug/g dry	6.4			3.0	35	
Barium	53.2	10	ug/g dry	51.3			3.6	34	
Beryllium	ND	0.5	ug/g dry	ND				25	
Boron, available	0.58	0.5	ug/g dry	ND				35	QR-01
Cadmium	ND	0.5	ug/g dry	ND				33	
Chromium (VI)	ND	0.4	ug/g dry	ND				35	
Chromium	14.3	5	ug/g dry	13.0			9.7	32	
Cobalt	3.3	1	ug/g dry	3.1			5.9	32	
Copper	19.5	5	ug/g dry	18.2			6.8	32	
Lead	29.9	1	ug/g dry	25.7			15.4	44	
Mercury	ND	0.1	ug/g dry	ND				35	
Molybdenum	ND	1	ug/g dry	ND				29	
Nickel	6.8	5	ug/g dry	6.2			9.4	29	
Selenium	ND	1	ug/g dry	ND				28	
Silver	ND	0.3	ug/g dry	ND				28	
Thallium	ND	1	ug/g dry	ND				27	
Vanadium	29.4	10	ug/g dry	27.2			7.9	27	
Zinc	21.0	20	ug/g dry	21.2			0.6	27	
Physical Characteristics									
% Solids	92.6	0.1	% by Wt.	91.6			1.1	25	
Semi-Volatiles									
Acenaphthene	0.050	0.02	ug/g dry	0.029			52.3	50	QR-01
Acenaphthylene	0.074	0.02	ug/g dry	0.059			22.6	50	
Anthracene	0.173	0.02	ug/g dry	0.116			39.2	50	
Benzo[a]anthracene	0.328	0.02	ug/g dry	0.230			35.1	50	
Benzo[a]pyrene	0.292	0.02	ug/g dry	0.208			33.7	50	
Benzo[b]fluoranthene	0.363	0.02	ug/g dry	0.299			19.3	50	
Benzo[g,h,i]perylene	0.141	0.02	ug/g dry	0.106			28.9	50	
Benzo[k]fluoranthene	0.146	0.02	ug/g dry	0.124			15.9	50	
Biphenyl	ND	0.02	ug/g dry	ND				50	
Chrysene	0.338	0.02	ug/g dry	0.246			31.4	50	
Dibenzo[a,h]anthracene	0.039	0.02	ug/g dry	ND				50	QR-01
Fluoranthene	0.627	0.02	ug/g dry	0.447			33.5	50	
Fluorene	0.069	0.02	ug/g dry	0.039			54.5	50	QR-01
Indeno[1,2,3-cd]pyrene	0.126	0.02	ug/g dry	0.093			30.5	50	
1-Methylnaphthalene	0.061	0.02	ug/g dry	0.044			32.5	50	
2-Methylnaphthalene	0.076	0.02	ug/g dry	0.057			28.1	50	
Naphthalene	0.069	0.02	ug/g dry	0.050			32.3	50	
Phenanthrene	0.494	0.02	ug/g dry	0.320			42.7	50	
Pyrene	0.545	0.02	ug/g dry	0.409			28.6	50	
Surrogate: 2-Fluorobiphenyl	1.51	0.01	ug/g dry	ND	108	32-156			
Surrogate: Terphenyl-d14	1.48	0.01	ug/g dry	ND	106	39-146			
Volatiles									
Benzene	ND	0.002	ug/g dry	ND				50	
Bromodichloromethane	ND	0.002	ug/g dry	ND				50	

Certificate of Analysis

Report Date: 01-Dec-2009

Order Date: 20-Nov-2009

Client: **Trow Associates Inc. (Ottawa)**

Client PO:

Project Description: OTEN00020038R

Method Quality Control: Duplicate

Analyte	Result	Reporting Limit	Units	Source Result	%REC	%REC Limit	RPD	RPD Limit	Notes
Bromoform	ND	0.002	ug/g dry	ND				50	
Bromomethane	ND	0.003	ug/g dry	ND				50	
Carbon Tetrachloride	ND	0.002	ug/g dry	ND				50	
Chlorobenzene	ND	0.002	ug/g dry	ND				50	
Chloroethane	ND	0.005	ug/g dry	ND				50	
Chloroform	ND	0.003	ug/g dry	ND				32	
Chloromethane	ND	0.020	ug/g dry	ND				50	
Dibromochloromethane	ND	0.002	ug/g dry	ND				50	
1,2-Dibromoethane	ND	0.002	ug/g dry	ND				50	
1,2-Dichlorobenzene	ND	0.002	ug/g dry	ND				50	
1,3-Dichlorobenzene	ND	0.002	ug/g dry	ND				50	
1,4-Dichlorobenzene	ND	0.002	ug/g dry	ND				50	
1,1-Dichloroethane	ND	0.002	ug/g dry	ND				27	
1,2-Dichloroethane	ND	0.002	ug/g dry	ND				50	
1,1-Dichloroethylene	ND	0.002	ug/g dry	ND				50	
cis-1,2-Dichloroethylene	ND	0.002	ug/g dry	ND				33	
trans-1,2-Dichloroethylene	ND	0.003	ug/g dry	ND				50	
1,2-Dichloropropane	ND	0.002	ug/g dry	ND				50	
cis-1,3-Dichloropropylene	ND	0.002	ug/g dry	ND				50	
trans-1,3-Dichloropropylene	ND	0.002	ug/g dry	ND				50	
Ethylbenzene	ND	0.002	ug/g dry	ND				34	
Methylene Chloride	ND	0.003	ug/g dry	ND				50	
Styrene	ND	0.002	ug/g dry	ND				50	
1,1,1,2-Tetrachloroethane	ND	0.003	ug/g dry	ND				50	
1,1,2,2-Tetrachloroethane	ND	0.003	ug/g dry	ND				50	
Tetrachloroethylene	ND	0.002	ug/g dry	ND				32	
Toluene	ND	0.002	ug/g dry	ND				32	
1,1,1-Trichloroethane	ND	0.002	ug/g dry	ND				50	
1,1,2-Trichloroethane	ND	0.002	ug/g dry	ND				50	
Trichloroethylene	ND	0.003	ug/g dry	ND				31	
Trichlorofluoromethane	ND	0.005	ug/g dry	ND				50	
1,3,5-Trimethylbenzene	ND	0.003	ug/g dry	ND				43	
Vinyl chloride	ND	0.002	ug/g dry	ND				50	
m,p-Xylenes	ND	0.002	ug/g dry	ND				35	
o-Xylene	ND	0.002	ug/g dry	ND				50	
Surrogate: 4-Bromofluorobenzene	0.204		ug/g dry	ND	119	83-134			
Surrogate: Dibromofluoromethane	0.172		ug/g dry	ND	100	78-124			
Surrogate: Toluene-d8	0.181		ug/g dry	ND	106	76-118			

Certificate of Analysis

Report Date: 01-Dec-2009

Order Date: 20-Nov-2009

Client: **Trow Associates Inc. (Ottawa)**

Client PO:

Project Description: OTEN00020038R

Method Quality Control: Spike

Analyte	Result	Reporting Limit	Units	Source Result	%REC	%REC Limit	RPD	RPD Limit	Notes
Hydrocarbons									
F1 PHCs (C6-C10)	98	10	ug/g	ND	98.3	80-120			
F2 PHCs (C10-C16)	65	10	ug/g	ND	81.3	61-129			
F3 PHCs (C16-C34)	213	10	ug/g	ND	106	61-129			
F4 PHCs (C34-C50)	118	10	ug/g	ND	98.2	61-129			
Metals									
Antimony	41.1		ug/L	ND	82.2	80-120			
Arsenic	46.4		ug/L	ND	92.9	80-120			
Barium	50.5		ug/L	ND	101	80-120			
Beryllium	49.4		ug/L	ND	98.8	80-120			
Boron, available	4.91	0.5	ug/g	ND	98.1	70-122			
Cadmium	47.1		ug/L	ND	94.2	80-120			
Chromium (VI)	5.1	0.4	ug/g	ND	102	89-123			
Chromium	48.9		ug/L	ND	97.8	80-120			
Cobalt	47.5		ug/L	ND	94.9	80-120			
Copper	45.9		ug/L	ND	91.9	80-120			
Lead	47.5		ug/L	ND	95.1	80-120			
Mercury	1.62	0.1	ug/g	ND	108	72-128			
Molybdenum	48.8		ug/L	ND	97.6	80-120			
Nickel	46.0		ug/L	ND	91.9	80-120			
Selenium	46.8		ug/L	ND	93.7	80-120			
Silver	47.6		ug/L	ND	95.2	80-120			
Thallium	48.2		ug/L	ND	96.5	80-120			
Vanadium	49.6		ug/L	ND	99.1	80-120			
Zinc	43.9		ug/L	ND	87.9	80-120			
Semi-Volatiles									
Acenaphthene	0.134	0.02	ug/g	ND	80.3	31-121			
Acenaphthylene	0.129	0.02	ug/g	ND	77.4	26-124			
Anthracene	0.128	0.02	ug/g	ND	76.6	29-128			
Benzo[a]anthracene	0.146	0.02	ug/g	ND	87.6	29-129			
Benzo[a]pyrene	0.136	0.02	ug/g	ND	81.6	29-111			
Benzo[b]fluoranthene	0.130	0.02	ug/g	ND	78.1	26-111			
Benzo[g,h,i]perylene	0.079	0.02	ug/g	ND	47.7	23-128			
Benzo[k]fluoranthene	0.119	0.02	ug/g	ND	71.5	23-135			
Biphenyl	0.132	0.02	ug/g	ND	79.0	31-107			
Chrysene	0.151	0.02	ug/g	ND	90.6	28-136			
Dibenzo[a,h]anthracene	0.045	0.02	ug/g	ND	27.3	20-131			
Fluoranthene	0.142	0.02	ug/g	ND	85.3	24-131			
Fluorene	0.135	0.02	ug/g	ND	81.3	28-123			
Indeno[1,2,3-cd]pyrene	0.061	0.02	ug/g	ND	36.9	20-128			
1-Methylnaphthalene	0.136	0.02	ug/g	ND	81.6	24-127			
2-Methylnaphthalene	0.131	0.02	ug/g	ND	78.4	21-127			
Naphthalene	0.113	0.02	ug/g	ND	67.7	29-118			
Phenanthrene	0.131	0.02	ug/g	ND	78.4	34-108			
Pyrene	0.144	0.02	ug/g	ND	86.7	29-131			
Surrogate: 2-Fluorobiphenyl	1.27	0.01	ug/g		95.4	32-156			
Surrogate: Terphenyl-d14	1.34	0.01	ug/g		101	39-146			
Volatiles									
Benzene	0.0874	0.002	ug/g	ND	128	55-141			
Bromodichloromethane	0.0685	0.002	ug/g	ND	101	52-139			
Bromoform	0.0659	0.002	ug/g	ND	96.9	52-170			
Bromomethane	0.0481	0.003	ug/g	ND	70.7	32-138			
Carbon Tetrachloride	0.0645	0.002	ug/g	ND	94.8	49-149			
Chlorobenzene	0.0804	0.002	ug/g	ND	118	64-137			

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Certificate of Analysis

Report Date: 01-Dec-2009

Order Date: 20-Nov-2009

Client: **Trow Associates Inc. (Ottawa)**

Client PO:

Project Description: OTEN00020038R

Method Quality Control: Spike

Analyte	Result	Reporting Limit	Units	Source Result	%REC	%REC Limit	RPD	RPD Limit	Notes
Chloroethane	0.0797	0.005	ug/g	ND	117	39-152			
Chloroform	0.0788	0.003	ug/g	ND	116	58-138			
Chloromethane	0.0474	0.020	ug/g	ND	69.7	24-163			
Dibromochloromethane	0.0795	0.002	ug/g	ND	117	61-153			
1,2-Dibromoethane	0.0804	0.002	ug/g	ND	118	61-145			
1,2-Dichlorobenzene	0.0805	0.002	ug/g	ND	118	60-150			
1,3-Dichlorobenzene	0.0843	0.002	ug/g	ND	124	62-149			
1,4-Dichlorobenzene	0.0864	0.002	ug/g	ND	127	63-132			
1,1-Dichloroethane	0.0808	0.002	ug/g	ND	119	51-156			
1,2-Dichloroethane	0.0650	0.002	ug/g	ND	95.6	50-140			
1,1-Dichloroethylene	0.0859	0.002	ug/g	ND	126	43-153			
cis-1,2-Dichloroethylene	0.0814	0.002	ug/g	ND	120	58-145			
trans-1,2-Dichloroethylene	0.0833	0.003	ug/g	ND	123	51-145			
1,2-Dichloropropane	0.0787	0.002	ug/g	ND	116	56-136			
cis-1,3-Dichloropropylene	0.0751	0.002	ug/g	ND	110	54-141			
trans-1,3-Dichloropropylene	0.0635	0.002	ug/g	ND	93.3	61-140			
Ethylbenzene	0.0830	0.002	ug/g	ND	122	61-139			
Methylene Chloride	0.0789	0.003	ug/g	ND	116	58-149			
Styrene	0.0863	0.002	ug/g	ND	127	63-143			
1,1,1,2-Tetrachloroethane	0.0702	0.003	ug/g	ND	103	61-148			
1,1,2,2-Tetrachloroethane	0.0736	0.003	ug/g	ND	108	50-157			
Tetrachloroethylene	0.0782	0.002	ug/g	ND	115	51-145			
Toluene	0.0599	0.002	ug/g	ND	88.1	54-136			
1,1,1-Trichloroethane	0.0734	0.002	ug/g	ND	108	55-140			
1,1,2-Trichloroethane	0.0747	0.002	ug/g	ND	110	63-144			
Trichloroethylene	0.0793	0.003	ug/g	ND	117	52-135			
Trichlorofluoromethane	0.0511	0.005	ug/g	ND	75.2	37-155			
1,3,5-Trimethylbenzene	0.0928	0.003	ug/g	ND	136	61-151			
Vinyl chloride	0.0793	0.002	ug/g	ND	117	31-159			
m,p-Xylenes	0.162	0.002	ug/g	ND	119	61-139			
o-Xylene	0.0836	0.002	ug/g	ND	123	60-142			
Surrogate: 4-Bromofluorobenzene	0.144		ug/g		106	83-134			
Surrogate: Dibromofluoromethane	0.127		ug/g		93.5	78-124			
Surrogate: Toluene-d8	0.122		ug/g		89.6	76-118			

Certificate of Analysis

Report Date: 01-Dec-2009

Order Date: 20-Nov-2009

Client: **Trow Associates Inc. (Ottawa)**

Client PO:

Project Description: OTEN00020038R

Sample and QC Qualifiers Notes

1- 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

MDL: Method Detection Limit

Source Result: Data used as source for matrix and duplicate samples

%REC: Percent recovery.

RPD: Relative percent difference.

Soil results are reported on a dry weight basis when the units are denoted with 'dry'.

Where %Solids is reported, moisture loss includes the loss of volatile hydrocarbons.

CCME PHC additional information:

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



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Chain of Custody Record

Nº 62026

Pg. 1 of 2

Company Name: <u>Trow</u>	Project Ref: <u>OTEN00020038R</u>	Date Required: _____
Contact Name: <u>Mark McLellan</u>	PO# _____	Turn Around Time: <input type="checkbox"/> 1-day <input type="checkbox"/> 2-day <input checked="" type="checkbox"/> Regular
Address: _____	Quote # _____ <input type="checkbox"/> Not Quoted	Regulatory/Guideline Requirements
Tel: _____ Cell: _____	Preservative to be added by Paracel? <input type="checkbox"/> Yes <input type="checkbox"/> No	<u>Table 1</u>
Email: _____		

Matrix Types: S-Soil/Sed GW-Ground Water SW-Surface Water SS-Storm/Sanitary Sewer A-Air O-Other RDW-Regulated Drinking Water

Sample Information					Analysis Required									
Parcel Order #	Matrix	Air Volume	# Containers	Date Sampled dd/mm/yy	PH	DOC	Metals	As	Cd	Cr	Pb	Se	Ag	Hazardous? (Y/N)
0947120														
Sample Identification														
1	BH1	SS1	S	20/11/09	X	X	X	X					250	
2	BH1	SS2												
3	BH2	SS1												
4	BH2	SS2												
5	BH3	SS1												
6	BH3	SS2												
7	BH4	SS1												
8	BH4	SS2												
9	BH5	SS1												
10	BH5	SS2												

Comments: Not ICP

Relinquished By: <u>[Signature]</u>	Received at Depot: _____	Received at Lab: <u>Ureic</u>	Verified By: <u>Ureic</u>
Date: <u>Nov 20/09</u> Time: <u>12:40</u>	Date: _____ Time: _____	Date: <u>Nov 20/09</u> Time: <u>12:41</u>	Date: <u>Nov 20/09</u> Time: <u>16:15</u>

Please refer to the back page for Locations and Sample Preservation, Container and Hold Time Requirements.

WHITE - Lab Copy, PINK - Client Copy



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Chain of Custody Record

Nº 65291

Pg. 2 of 2

Company Name: <u>Trow</u>	Project Ref: <u>OTE/000020038R</u>	Date Required: _____
Contact Name: <u>Mark McLalla/Kristina Leonard</u>	PO# _____	Turn Around Time: 1-day 2-day <input checked="" type="checkbox"/> Regular
Address: _____	Quote # _____ <input type="checkbox"/> Not Quoted	Regulatory/Guideline Requirements
Tel: _____ Cell: _____	Preservative to be added by Paracel? <input type="checkbox"/> Yes <input type="checkbox"/> No	<u>Table 1</u>
Email: _____		

Matrix Types: S-Soil/Sed GW-Ground Water SW-Surface Water SS-Storm/Sanitary Sewer A-Air O-Other RDW-Regulated Drinking Water

Sample Information					Analysis Required									
Paracel Order #		Matrix	Air Volume	# Containers	Date Sampled dd/mm/yy	PH	VOC	Metals (Cr6 + Bism)						Hazardous? (Y/N)
0947190														
Sample Identification														
1	BH6 SS1	S		1	20/11/09	x	x	x					250	
2	BH6 SS2	↓		↓	↓	↓	↓	↓					1	
3	BH6 SS20	↓		↓	↓	↓	↓	↓						
4														
5														
6														
7														
8														
9														
10														

Comments: _____

Relinquished By: <u>[Signature]</u>	Received at Depot: _____	Received at Lab: <u>Vic</u>	Verified By: <u>Vic</u>
Date: <u>Nov 20/09</u> Time: <u>12:40</u>	Date: _____ Time: _____	Date: <u>Nov 20/09</u> Time: <u>12:41</u>	Date: <u>Nov 20/09</u> Time: <u>16:15</u>

Please refer to the back page for Locations and Sample Preservation, Container and Hold Time Requirements.

WHITE - Lab Copy, PINK - Client Copy