



33 FINDLAY DRIVE, 750 & 774 HURONTARIO
STREET, TOWN OF COLLINGWOOD, ONTARIO

PHASE TWO ENVIRONMENTAL SITE ASSESSMENT

STRAW HAT RESTORATION

VERSION 1

PROJECT NO.: 17M-01364-00
DATE: MAY 2018

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May 7, 2018

Mr. James and Jason Harrison

STRAW HAT RESTORATION
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Dear Sirs:

Subject: Phase Two Environmental Site Assessment
33 Findlay Drive, 750 & 774 Hurontario Street, Collingwood, Ontario
Project No.: 17M-01364-00

WSP is pleased to present our Phase Two Environmental Site Assessment report for the above-noted property. This Phase Two Environmental Site Assessment was completed in accordance with Ontario Regulation 153/04, as amended. The report describes the interpreted environmental conditions at the property and provides conclusions for your consideration.

We trust that this information is sufficient for your current needs. If you have any questions or require further information, please contact us.

Kind regards,

Nicole Collins
Environmental Technician

Jay Dolan, P.Eng. QPESA
Senior Project Engineer

WSP ref.: 17M-01364-00

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ACRONYMS AND ABBREVIATIONS

µm	micrometre(s)
APEC	area(s) of potential environmental concern as defined in O.Reg. 153/04, “the area on, in or under a phase one property where one or more contaminants are potentially present, as determined through the phase one environmental site assessment, including through (a) identification of past or present uses on, in or under the phase one property, and (b) identification of potentially contaminating activity”
As	arsenic
B-HWS	boron (hot water soluble)
BTEX	benzene, toluene, ethylbenzene, and xylenes
CALA	Canadian Association for Laboratory Accreditation
Cl-	chlorine
CN-	cyanide
Cr (VI)	hexavalent chromium
CSM	conceptual site model
DNAPL	dense non-aqueous phase liquid(s)
EC	electrical conductivity
ESA	environmental site assessment
ha	hectare(s)
Hg	mercury
ICC	Industrial/Commercial/Community
km	kilometre(s)
L	litre(s)
LNAPL	light non-aqueous phase liquid(s)
m	metre(s)
masl	metres above sea level
mbgs	metres below ground surface
MDL	method detection limit
MNRF	Ministry of Natural Resources and Forestry
MOECC	Ministry of the Environment and Climate Change
N/S	Not Specified
Na	sodium
O.Reg. 153/04	Ontario Regulation 153/04, as amended
O.Reg. 347	Ontario Regulation 347, as amended

O.Reg. 903	Ontario Regulation 903, as amended
ORPs	other regulated parameter
PAH	polycyclic aromatic hydrocarbon
PCA	potentially contaminating activity as defined in O.Reg. 153/04, “a use or activity set out in Column A of Table 2 of Schedule D that is occurring or has occurred in a Phase One study area”
PCB	polychlorinated biphenyl
PCOC	potential contaminant(s) of concern
PHC	petroleum hydrocarbon
PID	photoionization detector
PIN	property identification number
ppm	parts per million
QA	quality assurance
QC	quality control
QPESA	Qualified Person for ESAs according to MOECC O.Reg. 153/04
RA	Risk Assessment
RDL	reporting detection limit
RPI	Residential/Parkland/Institution
RPIICC	Residential/Parkland/Institution/Industrial/Commercial/Community
RSC	Record of Site Condition
SAP	Sampling and Analysis Plan
SAR	sodium adsorption ratio
Sb	antimony
Se	selenium
SOP	standard operating procedure(s)
SCS	Site Condition Standard
THM	trihalomethane
TOV	total organic vapours
UST	underground storage tank
VOC	volatile organic compound

1 EXECUTIVE SUMMARY

WSP was retained by Mr. James Harrison and Mr. Jason Harrison of Straw Hat Restoration to conduct a Phase Two Environmental Site Assessment (ESA) to support potential future development of 33 Findlay Drive, 750 Hurontario Street and 774 Hurontario Street located in the Town of Collingwood, Ontario (hereafter referred to as the “Phase Two Property” or “Site”). It is our understanding that this Phase Two ESA was undertaken to assess the soil and groundwater conditions prior to a residential redevelopment, and that a Record of Site Condition (RSC) for the Phase Two Property will not be required.

The Site is located on the west side of Hurontario Street, on the north side of Findlay Drive and on the south side of Campbell Street, and is approximately 1.7 ha (4.2 acres) in size. The current Site use is residential with an apple orchard in the back yard of 774 Hurontario Street and a tennis court in the back yard of 750 Hurontario Street.

Based on the Phase One ESA completed by WSP in February 2018, the Phase Two Property is considered to have areas of potential environmental concern (APEC) due to the following potentially contaminating activities (PCAs):

Table 1.1 PCA Summary

POTENTIALLY CONTAMINATING ACTIVITY	OBSERVATIONS
PCA No. 28 Gasoline and Associated Products Storage in Fixed Tanks	Phase One Property – During the interview, Mr. and Mrs. Kenney mentioned having a heating fuel oil tank located on the Phase One Property prior to having the gas furnace installed. Due to the location of the tank being directly located on the Phase One Property, this PCA contributes to an APEC, which is identified in this report as APEC-1.
PCA No. 40 Pesticides (including Herbicides, Fungicides, and Anti-Fouling Agents) Manufacturing, Processing, Bulk Storage and Large-Scale Applications	Phase One Property – An apple orchard is located in the backyard of the Phase One Property. Soil samples were collected for OC Pesticides during the Geotechnical Investigation performed by WSP in June of 2017. Two samples collected between 0-0.6m BGS exceeded the Table 1 criteria for the pesticide DDE. The extent of the DDE exceedance is unknown. Since this PCA is located on the Phase One Property, this PCA contributes to an APEC, which is identified in this report as APEC-2.

During the Phase Two ESA, a total of nine (9) boreholes were advanced to a maximum depth of 5.2 metres below ground surface (mbgs) in June, 2017 and March, 2018 under the supervision of WSP personnel. Four (4) of the nine (9) boreholes were converted into monitoring wells for the purpose of groundwater levels/sampling. One groundwater sample was obtained on March 7, 2018 for the purpose of this Phase Two ESA. The borehole locations were selected based on the findings of the Phase One ESA (WSP, 2018). Soil samples were submitted for analysis of potential contaminants of concern (PCOCs) including: metals and other regulated parameters (ORPs), petroleum hydrocarbons (PHCs), volatile organic compounds (VOCs), polycyclic aromatic hydrocarbons (PAHs) and organochlorine pesticides (OCPs). Groundwater samples were submitted for analysis of potential contaminants of concern (PCOCs) including: metals and ORPs, PHCs, VOCs and PAHs.

Based on the Phase Two ESA, WSP presents the following findings:

- In the June 2017 investigation, the stratigraphy of the boreholes on 774 Hurontario Street from ground surface consisted of 20 to 30cm of topsoil overlying 0.4 to 1.1m of sand or sand to sand and gravel. Underneath this layer was sandy silt till to borehole termination depths (5.2mBGS) with the exception of one borehole which produced gravelly silty sand from 4.3 to 5.0 mBGS. In the March 2018 investigation, the stratigraphy of the boreholes on 33 Findlay Drive and the additional borehole on 774 Hurontario Street from ground surface consisted of 10 to 40 cm of topsoil. Fill was encountered in three of the boreholes to depths ranging from 0.8 to 1.5 mBGS. Underlying the topsoil in two of the boreholes and underlying the fill in two of the boreholes was sand ranging in depths from 0.9 to 1.9 mBGS. A silt and clay/clayey silt layer was found in two of the boreholes underneath the fill and sand layer. Silty sand till/sandy silt till was found in all boreholes to the final depth with exception of two. One borehole had a sand till layer and one borehole had a silt layer from 4.6 to 5.2 mBGS. The borehole utilized for this Phase Two ESA (BH18-01) consisted of 20 mm of topsoil with underlying fill consisting of sand to a depth of 1.5 mBGS. A silt and clay layer underlaid the fill to a depth of 1.8 mBGS while sandy silt till extended to the final depth of the borehole. Bedrock was not encountered in any of the boreholes during this investigation. Based on the MOECC Water Well Records reviewed as part of the Phase One ESA by WSP, bedrock is anticipated at depths ranging from 8.5 to 10.4 mBGS.
- The groundwater level in the monitoring well utilized for the Phase Two ESA was 1.1 mBGS. The three groundwater monitoring wells installed in June 2017 as part of the geotechnical investigation ranged from 0.3 to 0.4 mbgs on March 7, 2018. The screens are 1.5 m in length and were installed in the native sandy silt till. The borehole elevations were not surveyed as part of this investigation.
- The soil and groundwater analytical results were compared to 2011 MOECC Table 3 Full Depth Generic SCS in a Non-Potable Groundwater Condition for residential use.
- A Geotechnical Investigation was completed by WSP in conjunction with this Phase Two ESA Report for 33 Findlay Drive and 774 Hurontario Street. In June 2017, four boreholes were drilled and three groundwater monitoring wells were installed on 774 Hurontario Street by Lantech Drilling under WSP supervision. In March 2018, four boreholes were drilled on 33 Findlay Drive and one additional borehole on 774 Hurontario Street for the purpose of this Phase Two ESA by Pontil Drilling under WSP supervision. Chemical analyses were completed on thirty-four (34) soil samples for parameters including metals and inorganics, PHCs (F1 to F4), BTEX, and OC Pesticides. All samples met the 2011 MOECC Table 3 Full Depth Generic SCS in a Non-Potable Groundwater Condition for RPI property uses.
- On June 22 & 23, 2017 and March 2, 2018, a total of thirty-six (36) soil samples, and one (1) QA/QC sample, were submitted to the laboratory and analysed for potential contaminants of concern (PCOCs) including: metals and ORPs, PAHs, PHCs, VOCs and OCPs. The results of the analyses indicated that all soil samples tested met Table 3 SCS concentrations for all parameters analyzed.
- On March 7, 2018, one (1) groundwater sample was obtained from one (1) monitoring well on-site and submitted for analysis of metals and ORPs, PAHs, PHCs, and VOCs. The results of the analyses indicated that the groundwater sampled from the monitoring well met the Table 3 SCS for all parameters analysed.

Based on the findings of this Phase Two ESA, WSP presents the following conclusions and recommendations:

- All soil and groundwater samples collected from the site met the Table 3 SCS for all tested parameters.
- As development of the site is not expected to result in a more sensitive land use than the existing use, an RSC is not required under O.Reg. 153/04. If a Record of Site Condition is required for any other purpose (i.e. municipal approvals), additional information will be required prior to the filing of a Record of Site Condition.

All monitoring wells should be decommissioned in accordance with O.Reg. 903 when no longer required.

2 INTRODUCTION

WSP was retained by Mr. James Harrison and Mr. Jason Harrison of Straw Hat Restoration to conduct a Phase Two Environmental Site Assessment (ESA) to support potential future development of 33 Findlay Drive, 750 Hurontario Street and 774 Hurontario Street located in the Town of Collingwood, Ontario (collectively the “Site” or the “Phase Two Property”). It is our understanding that this environmental assessment has been requested as part of a transactional due-diligence process involving future residential development.

The Phase Two ESA was conducted in compliance with O.Reg. 153/04 to support the proposed property transaction and residential redevelopment of the Site. It is our understanding that the proposed development for the Phase Two Property is not considered a change to a more sensitive property use, and as such an RSC is not required under O.Reg. 153/04.

2.1 SITE DESCRIPTION

The Site is located on the west side of Hurontario Street, north side of Findlay Drive and south side of Campbell Street in a mixed-use area (primarily residential, commercial and community) in the Town of Collingwood, Ontario. The Phase One Property is currently residential with an apple orchard in the backyard of 774 Hurontario Street and a tennis court in the backyard of 750 Hurontario Street and having a total area of approximately 1.7 ha (4.2 acres). The location of the Phase Two Property is depicted in Figure 1.

Property information for the Site is provided in the table below:

Table 2.1 Phase Two Property Information

CRITERION	DESCRIPTION
Municipal Addresses	33 Findlay Drive, Town of Collingwood, Ontario 750 Hurontario Street, Town of Collingwood, Ontario 774 Hurontario Street, Town of Collingwood, Ontario
Property Identification Numbers (PINs)	33 Findlay Drive: N/A 750 Hurontario Street: N/A 774 Hurontario Street: 58261-0261, 58261-0262
Legal Descriptions	33 Findlay Drive: Part of Block A, Registered Plan 334, Town of Collingwood, County of Simcoe 750 Hurontario Street: Lot O, West of Hurontario Street, Registered Plan 353, Town of Collingwood, County of Simcoe 774 Hurontario Street: Part of Lot 5 and Part of Block P, Registered Plan 353 in the Town of Collingwood, County of Simcoe

Three (3) Legal Surveys were provided to WSP for review as part of this assessment:

- For 33 Findlay Drive, one survey dated April 24, 1997, completed by Zubek, Emo and Patten Ltd Ontario Land Surveyors;
- For 750 Hurontario Street, one survey dated May 18, 1978, completed by Zubek and Emo Ltd Ontario Land Surveyors; and

- For 774 Hurontario Street, one survey dated June 5, 2017, completed by WSP Geomatics Ontario Limited Ontario Land Surveyors.

The Legal Surveys are provided in Appendix A.

2.2 PROPERTY OWNERSHIP

Property ownership information for the Site is provided in the table below:

Table 2.2 Property Ownership and Property Representative

CRITERION	DESCRIPTION
Current Site Owners	33 Findlay Drive – Bruce McInnis and Gail Gillespie 750 Hurontario Street – Dorothy Rhea Dennis 774 Hurontario Street – Lorne and Susan Kenney
Phase Two Property Representatives	Mr. James Harrison and Mr. Jason Harrison Straw Hat Restoration 325 Willard Avenue Toronto, Ontario M6S 3R1 226-668-1776

2.3 CURRENT AND PROPOSED USES

The Phase Two Property contains one residential dwelling on 33 Findlay Drive and one residential dwelling on 774 Hurontario Street and is utilized for residential purposes. Redevelopment of the property for residential purposes has been proposed.

2.4 APPLICABLE SITE CONDITION STANDARDS

Analytical results were compared to the 2011 MOECC Table 3 Full Depth Generic SCS in a Non-Potable Groundwater Condition for RPI property uses set out in the MOECC publication *Soil, Groundwater and Sediment Standards for Use Under Part XV.1 of the Environmental Protection Act* (April 15, 2011). This evaluation standard for the Phase Two Property was selected for comparison purposes based on the following information:

- The Town of Collingwood obtains its potable water from Georgian Bay, and does not rely on groundwater as a potable water source;
- The Phase Two Property is not considered an “environmentally sensitive” site as defined by O.Reg. 153/04;
- Residential land use is proposed for the Phase Two Property;
- The Phase Two Property is not situated within 30 m of a water body;
- The pH of the soil samples analysed during this investigation was 7.77 which falls within the acceptable range stated in O.Reg. 153/04; and
- Bedrock was not encountered within 2 m of the ground surface.

3 BACKGROUND INFORMATION

3.1 PHYSICAL SETTING

A summary of the Site's physical setting from the Phase One ESA is included in table below:

Table 3.1 Phase Two Property Physical Setting

PHYSICAL

FEATURES

FEATURE DESCRIPTION

i. Water Bodies and Areas of Natural Significance	The nearest surface water body is the Pretty River, which is located approximately 1.1 km southeast of the Phase Two Property and runs in a south to north direction. Georgian Bay is located 2.0 km north of the Phase Two Property. No threatened or endangered species have been observed on the Phase Two Property and therefore the Phase Two Property is unlikely to be considered an environmentally sensitive area in accordance with O.Reg. 153/04, as amended. There are no Areas of Natural Significance within the Phase Two Property or the Phase One Study Area.
ii. Topography, Hydrology, Geology	The Phase Two Property is relatively flat with an elevation of approximately 189-200 masl. The topography in the vicinity of the Phase Two Property slopes down to the north. Based on the local topography, the inferred shallow groundwater flow direction of the Phase One Study Area is to the north towards Georgian Bay. The central portion of the Site is situated within a beach physiographic region while the north and south portions are located in a sand plains region. The surficial geology in the vicinity of the Site is described as "coarse-textured glaciolacustrine deposits consisting of sand, gravel, minor silt and clay (derived from foreshore and basal deposits)". The underlying bedrock within the area generally consists of limestone, dolostone, shale, arkose and sandstone of the Ottawa Group; Simcoe Group; Shadow Lake Formation. The bedrock in the vicinity of the Site is estimated to begin at a depth of approximately of 8.5 to 10.4 mBGS based on available MOECC Water Well Records. According to the Geotechnical Investigation on 33 Findlay Drive and 774 Hurontario Street by WSP performed in conjunction with this study, the bedrock on the Site is at a greater depth than 5.2 mBGS.

3.2 PAST ASSESSMENTS AND INVESTIGATIONS

A Phase One ESA was completed in February 2018 and is referenced throughout this Phase Two ESA Report. The Phase One CSM can be found in Section 4.3 below.

A Geotechnical Investigation was completed by WSP in conjunction with this report for 33 Findlay Drive and 774 Hurontario Street. In June 2017, four boreholes were drilled and three groundwater monitoring wells were installed on 774 Hurontario Street by Lantech Drilling under WSP supervision. In March 2018, four boreholes were drilled on 33 Findlay Drive and one additional borehole on 774 Hurontario Street for the purpose of this Phase Two ESA by Pontil Drilling under WSP supervision. The additional borehole on 774 Hurontario was completed as a groundwater-monitoring well.

In the June 2017 investigation, the stratigraphy of the boreholes on 774 Hurontario Street from ground surface consisted of 20 to 30cm of topsoil overlying 0.4 to 1.1m of sand or sand to sand and gravel. Underneath this layer was sandy silt till to borehole termination depths (5.2mBGS) with the exception of one borehole which produced gravelly silty sand from 4.3 to 5.0 mBGS.

In the March 2018 investigation, the stratigraphy of the boreholes on 33 Findlay Drive and the additional borehole on 774 Hurontario Street from ground surface consisted of 10 to 40 cm of topsoil. Fill was encountered in three of the boreholes to depths ranging from 0.8 to 1.5 mBGS. Underlying the topsoil in two of the boreholes and underlying the fill in two of the boreholes was sand ranging in depths from 0.9 to 1.9 mBGS. A silt and clay/clayey silt layer was found in two of the boreholes underneath the fill and sand layer. Silty sand till/sandy silt till was found in all boreholes to the final depth with two exceptions. One borehole had a sand till layer and one borehole had a silt layer from 4.6 to 5.2 mBGS.

Chemical analyses was completed on thirty-four (34) soil samples as part of the Geotechnical Investigation and is discussed within this report. The soil samples were tested for parameters including metals and inorganics, PHCs (F1 to F4), BTEX, and OC Pesticides. All samples met the 2011 MOECC Table 3 Full Depth Generic SCS in a Non-Potable Groundwater Condition for RPI property uses.

4 SCOPE OF INVESTIGATION

4.1 OVERVIEW OF SITE INVESTIGATION

This Phase Two ESA involved an intrusive investigation in the areas determined in the Phase One ESA to be APECs. The Phase Two ESA was carried out according to O. Reg. 153/04. The Site investigation activities were limited to visible and accessible locations of the Site. Subsurface investigations, testing, sampling, and laboratory analyses were completed based on the findings of the Phase One ESA, accessibility to each APEC, and site observations.

The site investigation program included the following:

- Clearance of public and private underground utilities and services prior to commencement of intrusive investigation activities;
- Preparation of a Health and Safety Plan and safe execution of all proposed work;
- Advancement of nine (9) boreholes on the Phase Two Property, to an approximate maximum depth of 5.2 mBGS using a track-mounted drill rig. Soil samples were submitted for analysis from all nine (9) boreholes. Soil samples were removed from one (1) of the boreholes for analysis as part of this Phase Two ESA, while soil samples were removed from the remaining eight (8) boreholes and analyzed as part of the geotechnical investigation that was completed concurrently with this Phase Two ESA. All of the soil sample chemical results are discussed within this report. Soil lithology within each borehole was logged in the field and samples were screened for TOV using a photoionization detector;
- Based on field screening and visual/olfactory observations, worst-case/representative soil samples were selected from each borehole and submitted for laboratory testing of relevant PCOCs;
- Groundwater monitoring wells were installed within four (4) of the nine (9) boreholes to assess groundwater levels below the Site. Groundwater samples were removed from one (1) of the groundwater monitoring wells and analyzed for COCs as part of this Phase Two ESA.
- The groundwater well was purged to remove stagnant water and sampled for laboratory testing of relevant parameters of concern;
- Soil and groundwater samples were submitted to a CALA certified laboratory for chemical analysis by in accordance with the MOECC standards and requirements of O.Reg. 153/04.

4.1.1 SAMPLING AND ANALYSIS PLAN

The Sampling and Analysis Plan (SAP) developed and executed in the field by WSP is provided in Appendix B. WSP developed the SOPs used in the field investigation per O.Reg. 153/04 Schedule E. Condition 3(5).

Fieldwork for this Phase Two ESA was undertaken in accordance with the SAP and SOPs. Deviations from the SAP and SOPs, if any, are detailed in Section 4.4. The list of SOPs is presented in the table below.

Table 4.1 List of Standard Operating Procedures Used in Field Investigation

CATEGORY	SOP
i. Drilling	Auger/Boring Rigs Monitoring Well Hollow Stem Auger Advancement Soil Sample Material Descriptions
ii. Soil Sampling	Continuous Sampling Field Soil Sampling for VOC and PHC Analysis
iii. Soil Field Testing	Odour Identification Field Screening of Samples for ionizable Organic Vapours
iv. Monitoring Well Construction	Monitoring Well Construction Monitoring Well Development
v. Field Measurement of Water Quality Indicators	Temperature Measurement Conductivity Measurement pH Measurement
vi. Groundwater Monitoring/Sampling	Water Level Monitoring Monitoring Well Purging Monitoring Well Sampling Volatile Organic Sampling
vii. QA/QC Program	Quality Assurance Quality Control

4.2 MEDIA INVESTIGATION

A summary of the media investigated during the Phase Two ESA is provided in Table 2 and Table 3, attached.

4.3 PHASE ONE CONCEPTUAL SITE MODEL

A Phase One CSM was presented in the Phase One ESA report by WSP and is presented in this Report as Figure 2. The Phase One CSM identified the PCAs and APECs for the Site, as described in Section 6.5.

4.4 DEVIATIONS FROM THE SAMPLING AND ANALYSIS PLAN

The Phase Two ESA was performed in general accordance with the SAP with the exception of the final depth of one borehole. While drilling, the field technician determined that a final depth of 3.6 mBGS was sufficient to

retrieve a groundwater sample from the shallow, unconfined aquifer rather than drilling to 5.2 mBGS as planned in the SAP.

4.5 IMPEDIMENTS

Impediments were not encountered during this investigation and, therefore, did not limit WSP's ability to carry out this Phase Two ESA in accordance with O.Reg. 153/04.

5 INVESTIGATION METHOD

5.1 GENERAL

This section provides a brief description of all methods employed in undertaking this Phase Two ESA. Where the method differs from the associated standard operating procedure, a detailed description of the method used and a rationale for the change in method is provided in the appropriate subsection below.

5.2 DRILLING

WSP staff inspected the Site and identified the preferred borehole locations based on the APECs identified in the most recent Phase One ESA by WSP, as shown on Figure 2. The borehole locations are shown on the Borehole Location Plan in Figure 3. Underground services and utilities within the Site were cleared prior to the commencement of the drilling program. WSP arranged for public service locates to be completed through Ontario One Call and private locates through Allclear Private Locators. A summary of drilling information is presented in the table below.

Table 5.1 Summary of Drilling Information

INFORMATION PARAMETER DETAILS

Name of Drilling Contractors	Pontil Drilling /Lantech Drilling
Drilling Equipment Used	Track-mounted CME 55
Measures taken to minimize the potential for cross-contamination	A 50 mm stainless steel split spoon sampler was used to collect soil samples from the boreholes. The split spoon sampler was brushed clean of soil, washed in municipal water containing phosphate free detergent, and rinsed in municipal water between each sampling interval in order to reduce the potential for cross contamination.
Frequency of sample collection	All boreholes were sampled every 0.6 m per 0.8 m collected for the first 3.1 m followed by 0.6 m per 1.5 m collected to the termination of the borehole.

On June 22 and 23, 2017, four (4) boreholes (BH17-01 to BH17-04) were drilled on-site using a track-mounted CME 55 drill rig supplied and operated by Lantech Drilling of Sharon, Ontario. The boreholes were advanced to a maximum depth of 5.2 mbgs. On March 2, 2018, five (5) boreholes (BH18-01 to BH18-05) were drilled on-site using a track-mounted CME 55 drill rig provided by Pontil Drilling of Mount Albert, Ontario. The boreholes were advanced to a maximum depth of 5.2 mbgs. Soil samples were collected using a 50 mm diameter, 0.61-m long stainless steel split spoon sampler.

5.3 SOIL

5.3.1 SOIL SAMPLING

Disposable nitrile gloves were used during sample collection and changed between each sampling event to minimize the potential for cross-contamination. Soil samples were described in the field by WSP staff and observations were recorded in a dedicated field book. Soil samples were collected directly into laboratory-supplied 250-mL and 120-mL amber glass jars and 40-mL methanol-preserved vials and were stored at a temperature of less than 10°C. Samples selected for laboratory analysis were handled under standard chain of custody procedures until received at the laboratory. The soil samples selected for laboratory analysis were considered representative of “worst-case” conditions in the boreholes based on field screening results along with visual and olfactory observations.

All soil samples were submitted to AGAT Laboratories in Mississauga, Ontario. The soil samples submitted for chemical analysis are summarized in Table 2, appended.

5.3.2 FIELD SCREENING MEASUREMENTS

Soil samples collected from the boreholes were field screened for ionizable organic vapours (TOV) using a MiniRae 3000 PID. In addition to visual and olfactory observations, the results of field screening were used to identify “worst-case” samples for analysis of volatile parameters. A summary of field screening information is provided in the table below.

Table 5.2 Summary of Field Screening Information

CRITERIA	DESCRIPTION
i. Make and Model of Field Screening Instrument	MiniRae 3000 PID
ii. Chemicals that Field Screening Instrument Detects and Respective Detection Limits	Ionizable VOCs with a dynamic range of 0.1 parts per million (ppm) to 5,000 ppm
iii. Precision of the Measurements	3 significant figures
iv. Accuracy of the Measurements	± 5% display reading ± one digit
v. Calibration Reference Standard	100 ppm isobutylene
vi. Calibration Procedures	The PID is factory-calibrated on an annual basis and the calibration was checked on a daily basis both prior to and after use in the field using 100 ppm isobutylene according to manufacturer procedures.

Field screening measurements (PID readings) are discussed in Section 6.3.1.2 and presented on the finalized borehole logs, included in Appendix C.

5.4 GROUNDWATER

5.4.1 GROUNDWATER MONITORING AND WELL INSTALLATION

A groundwater monitoring well was installed within borehole BH18-01 by Pontil Drilling. A track-mounted drill rig was used for the installation of the monitoring well on March 2, 2018 upon completion of soil sampling activities. Nitrile gloves were used to handle the well casings and screens during installation to minimize the potential for cross contamination. Three (3) additional monitoring wells were installed by WSP as part of a geotechnical investigation (BH17-01, BH17-03 and BH17-04) which were used to estimate groundwater flow direction.

BH18-01 was screened to intersect the suspected local groundwater table based on observed conditions in the soil horizon (brown to grey colour change and/or observed change in moisture content) during the drilling and soil sampling activities. The wells were constructed using 50-millimetre (mm) Schedule 40 PVC riser and included a 1.5-m well screen (#10 slot). A sand pack was placed in the borehole annulus around the well screen from the bottom of the well to approximately 0.3 m above the well screen. Bentonite holeplug seal was placed above the sand pack to surface. The wells were completed above-grade and set inside pendant-style protective covers. Monitoring well construction details are shown on the attached borehole logs included in Appendix C.

5.4.2 GROUNDWATER FIELD MEASUREMENT OF WATER QUALITY PARAMETERS

The monitoring well was purged of three well volumes using dedicated tubing and a low-flow peristaltic pump. The well was sampled on March 7, 2018 using the peristaltic pump. Field measurements of water quality parameters were collected using a Hanna multi-meter including field pH, EC, and temperature. Field groundwater quality measurements were obtained and recorded after the removal of each well volume. This data has been archived and is available upon request.

5.4.3 GROUNDWATER SAMPLING

A groundwater sample was collected on March 7, 2018 from the newly-installed and purged well BH18-01.

The sample was collected in laboratory-supplied bottles and jars and stored on ice in a cooler. The groundwater samples were submitted under proper chain of custody procedures to AGAT Laboratories in Mississauga for analysis of metals and ORPs, PHCs, VOCs, and PAHs.

5.5 SEDIMENT SAMPLING

Sediment sampling was not conducted as part of this Phase Two ESA.

5.6 ANALYTICAL TESTING

Soil and groundwater samples were submitted to AGAT Laboratories in Mississauga, Ontario, for chemical analysis for the above listed parameters. AGAT Laboratories is certified by CALA.

5.7 RESIDUE MANAGEMENT PROCEDURES

Residues such as soil cuttings, purge and development groundwater, and fluids from equipment cleaning were managed as indicated in the table below.

Table 5.3 Summary of Residue Management Procedures

RESIDUE	MANAGEMENT PROCEDURE
i. Soil cuttings from drilling and excavations	Soil cuttings were left on the Phase Two Property due to the absence of visual and olfactory observations of potential contaminants.
ii. Water from well development and purging	Groundwater from the development and purging of the monitoring wells was emptied onto the ground downstream of the wells.
iii. Fluids from equipment cleaning.	Equipment cleaning water was emptied onto the ground downstream of the wells.

Neither the soil nor the groundwater encountered during this investigation had the potential to cause an adverse effect under the Ontario *Environmental Protection Act* based on the analytical results discussed in this Report.

5.8 ELEVATION SURVEY

Borehole elevations were not surveyed as part of this investigation.

5.9 QUALITY ASSURANCE AND QUALITY CONTROL MEASURES

The project-specific QA/QC measures are described in the table below.

Table 5.4 Quality Assurance and Quality Control Measures

QA/QC MEASURE	DESCRIPTION
i. Sample containers, preservation, labelling, handling, and custody for samples submitted for laboratory analysis, including any deviations from the SAP.	Soil samples were collected in 40 mL methanol-preserved vials for PHC F1/VOCs/BTEX analysis, 250mL and 120 mL glass jars without preservative for analysis of all other parameters at the sample locations. Groundwater samples from the monitoring wells were collected using the following laboratory supplied containers: a. VOCs – three (3) 40 mL glass vials preserved with a sodium bisulphate tablet; b. PHC F1/BTEX – three (3) 40 mL glass vials preserved with a sodium bisulphate tablet; c. PHC F2-F4 – one (1) 500 mL amber glass bottle, HCl preservative; d. PAHs – one (1) 1L amber glass bottle, no preservative; e. Inorganics – one (1) 500 mL plastic ‘general’ bottle, no preservation; f. Dissolved metals – one (1) 125 mL plastic bottle, HNO₃ preservative; g. Mercury – one (1) 100 mL clear glass bottle, HCl preservative; h. Chromium VI – one (1) 125 mL plastic bottle, preserved with Ammonium Sulfate/Ammonium Hydroxide; and i. Cyanide – one (1) 125 mL plastic bottle, preserved with Sodium Hydroxide. Groundwater samples were collected using dedicated sampling equipment for each well. Groundwater samples collected for dissolved metals, mercury, and chromium (VI) analysis were field filtered using a dedicated 0.45-micron filter. Groundwater containers used for PHC F1/BTEX and VOC analysis were filled to achieve zero headspace. Sample containers were labelled with unique sample identification, the project number, and the sampling date. A laboratory-supplied chain of custody was completed. A copy was sent with the samples to the laboratory, and one (1) copy was retained for the project file.
ii. Equipment cleaning procedures during sampling	Nitrile gloves were replaced after each sample was collected to reduce the potential for cross-contamination of the samples. Field equipment was cleaned with soap and water, and was rinsed with municipal water between samples.
iii. Field QC measures	Blind field duplicate samples of soil and groundwater were collected and submitted for laboratory analysis as part of this investigation. A laboratory-prepared VOC trip blank was brought to the Site during the groundwater sampling and was submitted to the laboratory for analysis.

QA/QC MEASURE

DESCRIPTION

iv. Deviations from the procedures set out in the QA/QC program set out in the SAP.	None
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Field duplicate samples were assessed as part of the QA/QC program through a comparison of the analytical results of the original samples to the field duplicate samples. Field duplicates measure the cumulative effects of both field and laboratory precision and hence provide an indication of overall precision. Therefore, field duplicates may have greater variability than laboratory duplicates which measure only laboratory precision. It is also expected that non-aqueous matrices will have a greater variance than aqueous matrices due to the heterogeneity of most non-aqueous samples (such as soil/sediment samples). Field duplicates were evaluated based on the relative percent difference (RPD) in parameter concentrations.

The RPD was calculated in accordance with the *Protocol for Analytical Methods Used in the Assessment of Properties under Part XV.1 of the Environmental Protection Act* (July 1, 2011). The calculated RPD was assessed against the recommended performance criteria outlined in the 2011 Protocol where the measured concentration was greater than 5 times the MDL.

AGAT Laboratories also performed QA/QC procedures as outlined in their CALA procedures. These procedures included analysis of lab duplicates and blanks as well as analysis of surrogate recovery as outlined in the Certificates of Analysis provided in Appendix D.

6 REVIEW AND EVALUATION

6.1 GEOLOGY/SOIL STRATIGRAPHY

A brief summary of the subsurface conditions encountered at the Site is presented below. Detailed borehole logs are included in Appendix C.

In the June 2017 investigation, the stratigraphy of the boreholes on 774 Hurontario Street from ground surface consisted of 20 to 30cm of topsoil overlying 0.4 to 1.1m of sand or sand to sand and gravel. Underneath this layer was sandy silt till to borehole termination depths (5.2mBGS) with the exception of one borehole which produced gravelly silty sand from 4.3 to 5.0 mBGS.

In the March 2018 investigation, the stratigraphy of the boreholes on 33 Findlay Drive and the additional borehole on 774 Hurontario Street from ground surface consisted of 10 to 40 cm of topsoil. Fill was encountered in three of the boreholes to depths ranging from 0.8 to 1.5 mBGS. Underlying the topsoil in two of the boreholes and underlying the fill in two of the boreholes was sand ranging in depths from 0.9 to 1.9 mBGS. A silt and clay/clayey silt layer was found in two of the boreholes underneath the fill and sand layer. Silty sand till/sandy silt till was found in all boreholes to the final depth with exception of two. One borehole had a sand till layer and one borehole had a silt layer from 4.6 to 5.2 mBGS.

The borehole advanced exclusively for this Phase Two ESA and not as part of the geotechnical investigation (BH18-01) consisted of 20 mm of topsoil with underlying fill consisting of sand to a depth of 1.5 mBGS. A silt and clay layer underlined the fill to a depth of 1.8 mBGS while sandy silt till extended to the final depth of the borehole.

Bedrock was not encountered in any of the boreholes during this investigation. Based on the MOECC Water Well Records reviewed as part of the Phase One ESA by WSP, bedrock is anticipated at depths ranging from 8.5 to 10.4 mBGS.

6.2 HYDROGEOLOGY

6.2.1 ELEVATIONS AND FLOW DIRECTION

The groundwater level in the monitoring well utilized for the Phase Two ESA was 1.1 mBGS on March 7, 2018. The three groundwater monitoring wells installed in June 2017 as part of the geotechnical investigation ranged from 0.3 to 0.4 mbgs on March 7, 2018. The screens are 1.5 m in length and were installed to intersect the groundwater table in the native sandy silt till.

Borehole elevations were not surveyed as part of this investigation.

6.3 RESULTS OF ANALYSIS

Field observations and analytical results are discussed in the following sub-sections.

6.3.1 SOIL TEXTURE ANALYSIS

Results of the soil texture analysis are presented below.

Table 6.1 Soil Texture Analysis

CRITERIA	DESCRIPTION
i. rationale for the use of soil texture category	Five (5) soil samples from the native material sampled during the geotechnical investigation underwent grain size analysis, the results of which indicated that all five (5) samples were coarse-textured, as defined by O.Reg. 153/04.
ii. a description of the results of the required grain size analysis	The results of the five (5) grain size analysis indicated that all samples contained more than 50% by mass of particles that are 75 µm or larger in mean diameter as follows: BH17-02 SS5: 7% Gravel, 25% Sand, 49% Silt, 49% Clay BH17-03 SS6: 23% Gravel, 46% Sand, 31% Silt & Clay BH17-04 SS4: 13% Gravel, 29% Sand, 41% Silt, 17% Clay BH18-03 SS3: 10% Gravel, 25% Sand, 48% Silt, 17% Clay BH18-04 SS3: 0% Gravel, 5% Sand, 73% Silt, 22% Clay
iii. a description and rationale for the number of samples collected and analysed	The grain size analyses were conducted as part of the geotechnical investigation conducted concurrently with this Phase Two ESA. A total of five (5) samples were analyzed in order to characterize the soils across the Phase Two Property. Five samples were considered sufficient to characterize the soil types observed during this study.

6.3.2 FIELD SCREENING

Twenty-eight (28) soil samples were screened for TOV using a PID. TOV concentrations ranged from 0.0 ppm to 0.6 ppm, while the average concentration was 0.1 ppm. The TOV readings are included on the borehole logs included in Appendix C.

6.3.3 SOIL CHEMICAL QUALITY

The soil analytical results consolidated from the geotechnical investigation and the present investigation are presented in Tables 4 through Table 8 and summarized on Figure 4.

The consolidated laboratory Certificates of Analysis for the soil analyses are provided in Appendix D.

6.3.4 SOIL - METALS AND OTHER REGULATED PARAMETERS

Seventeen (17) soil samples were collected and submitted for analysis of metals and ORPs. The soil analytical results for metals and ORPs are provided in Table 4. All samples analysed met the Table 3 RPI SCS for all metals and other regulated parameters.

6.3.5 SOIL - PETROLEUM HYDROCARBONS AND BTEX

Seventeen (17) soil samples were collected and submitted for analysis of PHCs and BTEX. The soil analytical results for PHCs and BTEX are provided in Table 5. All samples analysed met the Table 3 RPI SCS for petroleum hydrocarbons and BTEX.

6.3.6 SOIL - VOLATILE ORGANIC COMPOUNDS (OTHER THAN BTEX)

One (1) soil sample and one (1) blind field duplicate for QA/QC purposes, were collected and submitted for analysis of VOCs. The soil analytical results for VOCs are provided in Table 6. All samples analysed met the Table 3 RPI SCS for Volatile Organic Compounds (other than BTEX).

6.3.7 SOIL - POLYCYCLIC AROMATIC HYDROCARBONS (PAH)

One (1) soil sample was collected and submitted for analysis of PAHs. The soil analytical results for PAHs are provided in Table 7. All samples analysed met the Table 3 RPI SCS for PAH.

6.3.8 SOIL - ORGANOCHLORINE PESTICIDES (OCP)

Sixteen (16) soil samples were collected and submitted for analysis of OCPs. The soil analytical results for OCPs are provided in Table 8. All samples analysed met the Table 3 RPI SCS for OCPs.

6.3.9 GROUNDWATER CHEMICAL QUALITY

The groundwater analytical results from the March 2018 sampling event are presented in Tables 9 through 12 and are summarized on Figure 5.

The Laboratory Certificates of Analysis for the groundwater analysis completed during the present Phase Two ESA are provided in Appendix D.

6.3.10 GROUNDWATER - METALS AND OTHER REGULATED PARAMETERS

One (1) groundwater sample was collected and submitted for analysis of metals and ORPs. The groundwater analytical results for metals and ORPs are provided in Table 9. The sample analysed met the Table 3 RPI SCS for all metals and other regulated parameters.

6.3.11 GROUNDWATER - PETROLEUM HYDROCARBONS AND BTEX

One (1) groundwater sample was collected and submitted for the analysis of PHCs and BTEX. The groundwater analytical results for PHCs and BTEX are provided in Table 10. The sample analysed met the Table 3 RPI SCS for petroleum hydrocarbons and BTEX.

6.3.12 GROUNDWATER- VOLATILE ORGANIC COMPOUNDS

One (1) groundwater sample and one (1) field QA/QC duplicate were collected and submitted for analysis of VOCs (other than BTEX). The groundwater analytical results for VOCs are provided in Table 11. The sample analysed met the Table 3 RPI SCS for VOCs (other than BTEX).

6.3.13 GROUNDWATER - POLYCYCLIC AROMATIC HYDROCARBONS

One (1) groundwater sample was collected and submitted for analysis of PAHs. The groundwater analytical results for PAHs are provided in Table 12. The sample analysed met the Table 3 RPI SCS for PAHs).

6.3.14 SEDIMENT QUALITY

No sediment was encountered during this study.

6.4 QUALITY ASSURANCE AND QUALITY CONTROL RESULTS

Proper field protocols for sample collection and handling were followed by all WSP personnel in general accordance with the MOECC document *Guidance on Sampling and Analytical Methods for Use at Contaminated Sites in Ontario*. All field equipment was decontaminated before and between sample collection events and clean nitrile gloves were used to collect each sample to eliminate the potential for cross contamination. All soil and groundwater samples were collected directly into laboratory-supplied containers, preserved as required, and stored and shipped in ice-filled coolers. Proper chain of custody procedures were followed by WSP and the laboratory during sample transfer.

The RPDs for the analyzed parameters (where the RPD could be calculated) were within the 2011 Protocol performance criteria. As such, it is WSP's opinion that the laboratory analytical data referenced in this Report is reliable and reproducible. A summary of the QA/QC RPD results is provided in Table 6.2.

Table 6.2 Summary of QA/QC Results

DATE	MEDIA	SAMPLE ID	FIELD DUPLICATE ID	PARAMETERS	QA/QC RESULTS
2018-03-02	Soil	BH18-01 SS3	DUP-1	VOCs	All results were within the 2011 Protocol criteria for RPD
2018-03-07	Groundwater	BH18-01	GWDUP-1	VOCs	All results were within the 2011 Protocol criteria for RPD

A laboratory prepared trip blank was included with the March 2018 groundwater samples and was analysed by the laboratory for VOCs. All VOC concentrations were below the RDL indicating no contamination from the sample containers, preservatives, transportation, and storage conditions. The results also indicate that the laboratory instrument (GC/MS) was not detecting false interference.

AGAT Laboratories carried out internal QA/QC measures including process recoveries, blanks, and replicate samples. The laboratory QA/QC results are provided on the Certificates of Analysis in Appendix D. The results were acceptable and therefore suitable for interpretation.

With respect to subsection 47 (3) of O.Reg. 153/04, all certificates of analysis received pursuant to clause 47 (2) (b) of the regulation comply with subsection 47(3), a certificate of analysis of analytical report has been received for each sample submitted for analysis, and all certificates of analysis or analytical reports received have been included in full in Appendix D to this Phase Two ESA Report.

6.5 PHASE TWO CONCEPTUAL SITE MODEL

Through analysis and interpretation of the Phase One ESA, Phase One CSM, and field data gathered during this Phase Two ESA, a Phase Two CSM was developed.

Based on information obtained as part of the Phase One ESA, it was concluded that APECs associated with past activities/operations exist at the Site. The table of APECs, prepared in accordance with clause 16 (2) (a), Schedule D, O.Reg. 153/04, is presented in Table 6.3.

Table 6.3 Summary of APECs Identified in Phase One ESA

AREA OF POTENTIAL ENVIRONMENTAL CONCERN	LOCATION OF POTENTIAL ENVIRONMENTAL CONCERN ON PHASE ONE PROPERTY	POTENTIALLY CONTAMINATING ACTIVITY	LOCATION OF PCA (ON-SITE OR OFF- SITE)	POTENTIAL CONTAMINANTS OF CONCERN	MEDIA POTENTIALLY IMPACTED (GROUND WATER, SOIL AND/OR SEDIMENT)
APEC-1 Historical heating oil tank location	Western portion of Phase One Property	PCA No. 28 Gasoline and Associated Products in Fixed Tanks	On-site	Lead PAHs PHCs VOCs	Soil & Groundwater
APEC-2 Pesticides Application Area	Location of the apple orchard in the backyard of the Phase One Property	PCA No. 40 Pesticides (including Herbicides, Fungicides, and Anti- Fouling Agents) Manufacturing, Processing, Bulk Storage and Large- Scale Applications	On-site	OC Pesticides, Metals and Inorganics	Soil

Table 6.4 provides a summary discussion of the interpreted field data that is incorporated into the Phase Two CSM:

Table 6.4 Summary of Phase Two CSM

CRITERIA	DISCUSSION
i. a description and assessment of, a. areas where a PCA have occurred, b. APECs, and c. any subsurface structures and utilities on, in or under the phase two property that may affect contaminant distribution and transport,	The Phase One ESA completed by WSP identified PCAs that contributed to the identification of APECs, as identified in Figure 2. The Phase One CSM (Figure 2) and the Phase Two CSM (Figure 3 through Figure 4) for the Site incorporates the information and data collected as part of this Phase Two ESA and Phase One ESA. A. In summary, on and off-site PCAs that were identified as contributing to on-site APECs were: PCA No. 28. Gasoline and Associated Products Storage in Fixed Tanks on-site PCA No. 40. Pesticides (including Herbicides, Fungicides, and Anti-Fouling Agents) Manufacturing, Processing, Bulk Storage and Large-Scale Applications B. The on-site APECs that were interpreted from the occurrence of the PCAs were: APEC #1 – North of dwelling on 774 Hurontario Street – Gasoline and Associated Products Storage <u>No exceedances relating to this APEC were identified on-site during this investigation.</u> APEC #2 – Apple orchard on 774 Hurontario Street – Pesticide Application <u>No exceedances relating to this APEC were identified on-site during this investigation.</u> C. Underground utilities can affect contaminant distribution and transport. Trenches excavated to install utility services, and the associated granular backfill may provide preferential pathways for horizontal contaminant migration in the shallow subsurface.
ii. a description of and, as appropriate, figures illustrating, the physical setting of the phase two property and any areas under it including, A. stratigraphy from ground surface to the deepest aquifer or aquitard investigated, B. hydrogeological characteristics, including aquifers, aquitards and, in each hydrostratigraphic unit where one or more contaminants is present at	A. The central portion of the Site is situated within a beach physiographic region while the north and south portions are located in a sand plains region. The surficial geology in the vicinity of the Site is described as “coarse-textured glaciolacustrine deposits consisting of sand, gravel, minor silt and clay (derived from foreshore and basinal deposits)”. The underlying bedrock within the area generally consists of limestone, dolostone, shale, arkose and sandstone of the Ottawa Group; Simcoe Group; Shadow Lake Formation. B. The borehole sampling generally identified the on-site soils as predominantly silt and sand with no discernible aquitards identified in the explored depths of the boreholes

	concentrations above the applicable site condition standards, lateral and vertical gradients, C. approximate depth to bedrock, D. approximate depth to water table, E. any respect in which section 41 or 43.1 of the regulation applies to the property, F. areas where soil has been brought from another property and placed on, in or under the phase two property, and G. approximate locations, if known, of any proposed buildings and other structures	suggesting that the sampled soils represent one hydrostratigraphic unit. C. The depth to bedrock is estimated to be approximately 8.5 to 10.4 mbgs based on the MOECC Water Well Records reviewed as part of the Phase One ESA by WSP. D. The groundwater levels in the monitoring well utilized for the Phase Two ESA was 1.1 mBGS. The three groundwater monitoring wells installed in June 2017 as part of the geotechnical investigation ranged from 0.3 to 0.4 mBGS on March 7, 2018. E. Neither section 41 nor section 43.1 apply to the Site: F. According to the MNR Natural Heritage Mapping website, no threatened or endangered species have been observed on the Phase Two Property. As such, it is not envisioned that this property is considered a sensitive site for the purposes of standards assessment; G. The soil at the property has a pH value between 5 and 9; H. Soil was not brought from another property and placed on, in, or under the Site, as part of this Phase Two ESA; and I. The Site is proposed for redevelopment while maintaining the current residential uses.		
iii.	where a contaminant is present on, in or under the phase two property at a concentration greater than the applicable site condition standard, identification of, H. each area where a contaminant is present on, in or under the phase two property at a concentration greater than the applicable site condition standard, I. the contaminants associated with each of the areas referred to in subparagraph A, J. each medium in which a contaminant associated with an area referred to in subparagraph is present, K. a description and assessment of what is known about each of the areas referred to in subparagraph A, L. the distribution, in each of the areas referred to in subparagraph A, of each	A.	B.	C.
		N/A	N/A	N/A
		D. No environmental impacts were identified on the Phase Two Property. E. N/A F. N/A G. N/A H. N/A I. N/A		

contaminant present in the area at a concentration greater than the applicable site condition standard, for each medium in which the contaminant is present, together with figures showing the distribution, M. anything known about the reason for the discharge of the contaminants present on, in or under the phase two property at a concentration greater than the applicable site condition standard into the natural environment, N. anything known about migration of the contaminants present on, in or under the phase two property at a concentration greater than the applicable site condition standard away from any APEC, including the identification of any preferential pathways, O. climatic or meteorological conditions that may have influenced distribution and migration of the contaminants, such as temporal fluctuations in groundwater levels, and P. if applicable, information concerning soil vapour intrusion of the contaminants into buildings including, 1. relevant construction features of a building, such as a basement or crawl space, 2. building heating, ventilating and air conditioning design and operation, and 3. subsurface utilities,	
iv. where contaminants on, in or under the phase two property	

are present at concentrations greater than the applicable site condition standard, one or more cross-sections showing, A. the lateral and vertical distribution of a contaminant in each area where the contaminants is present at concentrations greater than the applicable site condition standard in soil, groundwater and sediment, B. approximate depth to water table in each area referred to in subparagraph A, C. stratigraphy from ground surface to the deepest aquifer or aquitard investigated, and D. any subsurface structures and utilities that may affect contaminant distribution and transport in each area referred to in subparagraph A	A. No environmental impacts were identified on the Phase Two Property. B. Groundwater levels are provided in Table 1. C. Stratigraphy from ground surface to the deepest strata investigated is provided in the borehole logs presented in Appendix C. D. Underground utilities were identified during the public and private locates on the Site leading from Findlay Drive and Hurontario Street into the dwellings.
v. for each areas where a contaminant is present on, in or under the property at a concentration greater than the applicable site condition standard for the contaminant, a diagram identifying, with narrative explanatory notes, E. the release mechanisms, F. contaminant transport pathway, G. the human and ecological receptors located on, in or under the phase two property, H. receptor exposure points, and routes of exposure.	No environmental impacts were identified on the Phase Two Property.

7 CONCLUSIONS

Based on the Phase Two ESA, WSP presents the following findings:

- In the June 2017 investigation, the stratigraphy of the boreholes on 774 Hurontario Street from ground surface consisted of 20 to 30cm of topsoil overlying 0.4 to 1.1m of sand or sand to sand and gravel. Underneath this layer was sandy silt till to borehole termination depths (5.2mBGS) with the exception of one borehole which produced gravelly silty sand from 4.3 to 5.0 mBGS. In the March 2018 investigation, the stratigraphy of the boreholes on 33 Findlay Drive and the additional borehole on 774 Hurontario Street from ground surface consisted of 10 to 40 cm of topsoil. Fill was encountered in three of the boreholes to depths ranging from 0.8 to 1.5 mBGS. Underlying the topsoil in two of the boreholes and underlying the fill in two of the boreholes was sand ranging in depths from 0.9 to 1.9 mBGS. A silt and clay/clayey silt layer was found in two of the boreholes underneath the fill and sand layer. Silty sand till/sandy silt till was found in all boreholes to the final depth with exception of two. One borehole had a sand till layer and one borehole had a silt layer from 4.6 to 5.2 mBGS. The borehole utilized for this Phase Two ESA (BH18-01) consisted of 20 mm of topsoil with underlying fill consisting of sand to a depth of 1.5 mBGS. A silt and clay layer underlaid the fill to a depth of 1.8 mBGS while sandy silt till extended to the final depth of the borehole. Bedrock was not encountered in any of the boreholes during this investigation. Based on the MOECC Water Well Records reviewed as part of the Phase One ESA by WSP, bedrock is anticipated at depths ranging from 8.5 to 10.4 mBGS.
- The groundwater level in the monitoring well utilized for the Phase Two ESA was 1.1 mBGS. The three groundwater monitoring wells installed in June 2017 as part of the geotechnical investigation ranged from 0.3 to 0.4 mbgs on March 7, 2018. The screens are 1.5 m in length and were installed in the native sandy silt till. The borehole elevations were not surveyed as part of this investigation.
- The soil and groundwater analytical results were compared to 2011 MOECC Table 3 Full Depth Generic SCS in a Non-Potable Groundwater Condition for residential use.
- A Geotechnical Investigation was completed by WSP in conjunction with this Phase Two ESA Report for 33 Findlay Drive and 774 Hurontario Street. In June 2017, four boreholes were drilled and three groundwater monitoring wells were installed on 774 Hurontario Street by Lantech Drilling under WSP supervision. In March 2018, four boreholes were drilled on 33 Findlay Drive and one additional borehole on 774 Hurontario Street for the purpose of this Phase Two ESA by Pontil Drilling under WSP supervision. Chemical analyses were completed on thirty-four (34) soil samples for parameters including metals and inorganics, PHCs (F1 to F4), BTEX, and OC Pesticides. All samples met the 2011 MOECC Table 3 Full Depth Generic SCS in a Non-Potable Groundwater Condition for RPI property uses.
- On June 22 & 23, 2017 and March 2, 2018, a total of thirty-six (36) soil samples, and one (1) QA/QC sample, were submitted to the laboratory and analysed for potential contaminants of concern (PCOCs) including: metals and ORPs, PAHs, PHCs, VOCs and OCPs. The results of the analyses indicated that all soil samples tested met Table 3 SCS concentrations for all parameters analyzed.
- On March 7, 2018, one (1) groundwater sample was obtained from one (1) monitoring well on-site and submitted for analysis of metals and ORPs, PAHs, PHCs, and VOCs. The results of the analyses indicated that the groundwater sampled from the monitoring well met the Table 3 SCS for all parameters analysed.

Based on the findings of this Phase Two ESA, WSP presents the following conclusions and recommendations:

- All soil and groundwater samples collected from the site met the Table 3 SCS for all tested parameters.

- As development of the site is not expected to result in a more sensitive land use than the existing use, an RSC is not required under O.Reg. 153/04. If a Record of Site Condition is required for any other purpose (i.e. municipal approvals), additional information will be required prior to the filing of a Record of Site Condition.

All monitoring wells should be decommissioned in accordance with O.Reg. 903 when no longer required.

7.1 QUALIFIER

This assignment is limited to the completion of a Phase Two ESA and analysis of potential contamination at the selected borehole locations. This report is prepared for Straw Hat Restoration's sole use in the evaluation of the property at 33 Findlay Drive, 750 & 774 Hurontario Street, Collingwood, Ontario.

The Phase Two ESA, sampling, and laboratory analyses were completed as documented in the report. Extrapolation of data beyond the borehole locations assumes that homogenous conditions exist beyond the sampling locations, which may not be the case. Therefore, it is not feasible to state conclusively, that the subsurface conditions encountered during this investigation exist beyond the sampled locations.

The conclusions provided in this report reflect our best judgment in light of the information available at the time of report preparation. Any use, which a third party makes of this report, or any reliance on or any decisions to be made based on it, is the responsibility of such third parties. Reliance on this report, where granted, must be obtained in writing from WSP. WSP accepts no responsibility for damages, if any, suffered by any third party because of decisions or actions taken, based on this report. Conclusions documented in this report do not apply to other land uses. It is understood that Site conditions, environmental or otherwise, are not static and that this report documents Site conditions at the time of the investigation.

7.2 QUALIFICATIONS OF THE ASSESSORS

This report was prepared by Ms. Nicole Collins, an Environmental Technician with WSP. Nicole has Diplomas in the Environmental Technician Program and Ecosystem Management Technology Program from Sir Sandford Fleming College. She has worked on Phase One and Phase Two Environmental Site Assessments (ESA) for six years.

This report was reviewed by Mr. Jay Dolan, P.Eng., QPESA, a Senior Project Engineer in WSP's Barrie Office. Jay has over 25 years of experience assessing and remediating contaminated lands, and is a Qualified Person (QPESA) under O.Reg. 153/04.

8 REFERENCES

- Ontario Ministry of the Environment and Climate Change (MOECC). 1996. Guidance on Sampling and Analytical Methods for Use at Contaminated Sites in Ontario. December 1996.
- Ontario Ministry of the Environment and Climate Change (MOECC). 2011a. Ontario Regulation 153/04, as amended, made under the Environmental Protection Act. July 1, 2011.
- Ontario Ministry of the Environment and Climate Change (MOECC). 2011b. Soil, Ground Water and Sediment Standards for Use Under Part XV.1 of the Environmental Protection Act. July 1, 2011.
- Ontario Ministry of the Environment and Climate Change (MOECC). 2011c. Protocol for Analytical Methods Used in the Assessment of Properties under Part XV.1 of the Environmental Protection Act. July 1, 2011.
- Ontario Ministry of the Environment and Climate Change (MOECC). 2013. Ontario Regulation 903: “Wells.” R.R.O. 1990, under the Ontario Water Resources Act, as amended by O.Reg. 331/13.
- WSP Canada Inc. (WSP). 2018. Phase One Environmental Site Assessment 33 Findlay Drive, 750 & 774 Hurontario Street, Town of Collingwood, ON. February 2018.

TABLES



Notes for Soil & Groundwater Summary Tables

1. mbgs = metres below ground surface
2. ORPs = other reportable parameters
3. PHCs = petroleum hydrocarbons
4. VOCs = volatile organic compounds
5. PAHs = polycyclic aromatic hydrocarbons
6. - = parameter not analyzed
7. Units for all soil analyses are in µg/g (ppm) unless otherwise indicated
8. Units for all groundwater analyses are in µg/L (ppb) unless otherwise indicated
9. Table 3 = Full Depth Generic Site Condition Standards in a Non Potable Ground Water Condition with Coarse Textured Soils as contained in Table 3 of the "Soil, Ground Water and Sediment Standards for Use Under Part XV.1 of the Environmental Protection Act", published by the MOECC on April 15, 2011
10. For soil and groundwater analytical results: **bold** = Concentration exceeds the 2011 MOECC Table 3 SCS



Table 1 Monitoring Well Installation and Groundwater Levels

Monitoring Well ID		BH18-01	
Installed By		WSP	
Installation Date		2-Mar-18	
Well Status		Active	
Well Inner Diameter	(mm)	50	
Top of Pipe Length	(m)	-0.14	
Ground Surface Elevation	(masl)	N/A	
Bottom of Bentonite Seal/Top of Sand Pack	(mbgs)	1.3	
Top of Well Screen	(mbgs)	1.6	
Screen Length	(m)	1.5	
Bottom of Screen	(mbgs)	3.1	
6-Mar-17	Depth of GW	1.1	

See "Notes for Soil and Groundwater Summary Tables"
included at the beginning of this Section

Table 2 Summary of Soil Samples Submitted for Chemical Analysis

Borehole ID	Sample ID	Depth (mbgs)	Date	Soil Type	Laboratory Analyses
BH17-01	SS2	0.8-1.4	22-Jun-18	Sandy Silt Till	Metals and ORPs, incl. EC & SAR
	SS3	1.5-2.1		Sandy Silt Till	OCPs, PHCs (F1-F4) incl. BTEX
	SS4	2.3-2.9		Sandy Silt Till	Metals and ORPs
	SS5	3.1-3.7		Sandy Silt Till	OCPs, PHCs (F1-F4) incl. BTEX
BH17-02	SS1	0.0-0.6	22-Jun-18	Topsoil/ Sand	Metals and ORPs
	SS2	0.8-1.4		Sand/ Sandy Silt Till	OCPs, PHCs (F1-F4) incl. BTEX
	SS3	1.5-2.1		Sandy Silt Till	Metals and ORPs
	SS4	2.3-2.9		Sandy Silt Till	OCPs, PHCs (F1-F4) incl. BTEX
BH17-03	SS1	0.0-0.6	23-Jun-18	Topsoil/ Sand	OCPs
	SS2	0.8-1.4		Sand	PHCs (F1-F4) incl. BTEX
	SS3	1.5-2.1		Sandy Silt Till	Metals and ORPs
	SS4	2.3-2.9		Sandy Silt Till	OCPs, PHCs (F1-F4) incl. BTEX
	SS5	3.1-3.7		Sandy Silt Till	Metals and ORPs
BH17-04	SS1	0.0-0.6	23-Jun-18	Topsoil/ Sand to Sand and Gravel	OCPs, PHCs (F1-F4) incl. BTEX
	SS2	0.8-1.4		Sand to Sand and Gravel	Metals and ORPs
	SS3	1.5-2.1		Sandy Silt Till	OCPs, PHCs (F1-F4) incl. BTEX
	SS4	2.3-2.9		Sandy Silt Till	Metals and ORPs
BH18-01	SS3	1.5 - 2.1	2-Mar-18	Silt and Clay/Sandy Silt Till	Metals & ORPs, PHCs, VOCs, PAHs
	DUP-1			Silt and Clay/Sandy Silt Till	VOCs
BH18-02	SS1	0.0-0.6	2-Mar-18	Topsoil/Sand	OCPs
	SS2	0.8-1.4		Silty Sand Till	Metals and ORPs, OCPs, PHCs (F1-F4) incl. BTEX
	SS3	1.5-2.1		Silty Sand Till	Metals and ORPs
	SS6	4.6-5.2		Silty Sand Till	PHCs (F1-F4) incl. BTEX
BH18-03	SS1	0.0-0.6	2-Mar-18	Topsoil/Sand	OCPs, PHCs (F1-F4) incl. BTEX
	SS2	0.8-1.4		Silty Sand Till	Metals and ORPs
	SS3	1.5-2.1		Silty Sand Till	OCPs
	SS4	2.3-2.9		Silty Sand Till	Metals and ORPs
	SS5	3.1-3.7		Silty Sand Till	PHCs (F1-F4) incl. BTEX
BH18-04	SS1	0.0-0.6	2-Mar-18	Topsoil/Fill	Metals and ORPs, OCPs
	SS2	0.8-1.4		Fill/Sand	PHCs (F1-F4) incl. BTEX
	SS4	2.3-2.9		Clayey Silt Till	Metals and ORPs, OCPs, PHCs (F1-F4) incl. BTEX
BH18-05	SS1	0.0-0.6	2-Mar-18	Topsoil/Fill	Metals and ORPs, OCPs
	SS2	0.8-1.4		Sand	OCPs
	SS3	1.5-2.1		Sand/Sandy Silt Till	PHCs (F1-F4) incl. BTEX
	SS4	2.3-2.9		Sandy Silt Till	Metals and ORPs
	SS5	3.1-3.7		Sandy Silt Till	PHCs (F1-F4) incl. BTEX

Table 3: Summary of Groundwater Samples Submitted for Chemical Analysis

Monitoring Well ID	Screened Interval (mbgs)	Date	Parameters			
			M&ORP	PHCs	VOCs	PAHs
BH18-01	1.6 - 3.1	7-Mar-18	✓	✓	✓	✓
GWDUP-1			-	-	✓	-
Trip Blank	-	-	-	-	✓	-

See "Notes for Soil and Groundwater Summary Tables" included at the beginning of this Section

Table 4 Soil Analytical Results - Metals&ORPs

Parameter		BH17-01 SS2		BH17-01 SS4		BH17-02 SS1		BH17-02 SS3		BH17-03 SS3		BH17-03 SS5		BH17-04 SS2	
Date of Collection	Table 3 RPI C T	Jun 22, 2017	Jul 06, 2017	Jun 22, 2017	Jul 06, 2017	Jun 22, 2017	Jul 06, 2017	Jun 22, 2017	Jul 06, 2017	Jun 23, 2017	Jul 06, 2017	Jun 23, 2017	Jul 06, 2017	Jun 23, 2017	Jul 06, 2017
Date Reported		0.8 - 1.4	2.3 - 2.9	0 - 0.6	1.5 - 2.1	0 - 0.6	1.5 - 2.1	0 - 0.6	1.5 - 2.1	1.5 - 2.1	3.1 - 3.7	0.8 - 1.4	8513032	0.8 - 1.4	8513032
Sampling Depth (mbgs)		8512961	8512975	8512979	8512984	8512979	8512984	8512979	8512984	8513001	8513024	8513032	8513032	8513032	8513032
Analytical Report Reference No.															
Antimony	7.5	<0.8	<0.8	<0.8	<0.8	<0.8	<0.8	<0.8	<0.8	<0.8	<0.8	<0.8	<0.8	<0.8	<0.8
Arsenic	18	3	3	11	3	11	3	11	3	3	3	3	3	3	3
Barium	390	10	24	14	24	14	24	14	24	22	23	23	23	12	12
Beryllium	4	<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
Boron	120	<5	9	<5	7	<5	7	<5	7	7	7	7	7	<5	<5
Boron (Hot Water Soluble)	1.5	<0.10	0.56	0.25	0.25	0.25	0.25	0.25	0.25	0.31	0.50	0.50	0.50	0.12	0.12
Cadmium	1.2	<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	160	5	8	8	8	8	8	8	8	7	8	8	8	6	6
Chromium VI	8	<0.2	<0.2	<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	22	2.2	4.5	2.2	3.4	2.2	3.4	2.2	3.4	3.2	3.9	3.9	3.9	2.5	2.5
Copper	140	4	11	6	10	6	10	6	10	8	8	8	8	6	6
Cyanide	0.051	<0.040	<0.040	<0.040	<0.040	<0.040	<0.040	<0.040	<0.040	<0.040	<0.040	<0.040	<0.040	<0.040	<0.040
Lead	120	4	4	32	6	32	6	32	6	5	4	4	4	4	4
Mercury	0.27	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10
Molybdenum	6.9	<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
Nickel	100	3	9	4	7	4	7	4	7	6	7	7	7	4	4
Selenium	2.4	<0.4	<0.4	<0.4	<0.4	<0.4	<0.4	<0.4	<0.4	<0.4	<0.4	<0.4	<0.4	<0.4	<0.4
Silver	20	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2
Thallium	1	<0.4	<0.4	<0.4	<0.4	<0.4	<0.4	<0.4	<0.4	<0.4	<0.4	<0.4	<0.4	<0.4	<0.4
Uranium	23	<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
Vanadium	86	9	13	18	11	18	11	18	11	11	12	12	12	12	12
Zinc	340	13	19	19	20	19	20	19	20	16	18	18	18	14	14
Electrical Conductivity (mS/cm)	0.7	0.108	0.159	0.119	0.255	0.119	0.255	0.119	0.255	0.163	0.169	0.169	0.169	0.105	0.105
Sodium Adsorption Ratio	5	0.090	0.262	0.062	0.157	0.062	0.157	0.062	0.157	0.231	0.267	0.267	0.267	0.201	0.201
pH, 2:1 CaCl2 Extraction	5 to 9	7.72	7.76	7.80	7.94	7.80	7.94	7.80	7.94	8.01	8.06	8.06	8.06	7.86	7.86

See "Notes for Soil and Groundwater Summary Tables" included at the beginning of this Section

Table 4 Soil Analytical Results - Metals&ORPs

Parameter		BH17-04 SS4												BH18-01 SS3		BH18-02 SS2		BH18-02 SS3		BH18-03 SS2		BH18-03 SS4		BH18-04 SS1	
		Date of Collection		Jun 23, 2017		Mar 02, 2018		Mar 02, 2018		Mar 02, 2018		Mar 02, 2018		Mar 02, 2018		Mar 02, 2018		Mar 02, 2018		Mar 02, 2018		Mar 02, 2018			
	Date Reported	Table 3 RPI		Jul 06, 2017	Mar 15, 2018	Mar 15, 2018	Mar 15, 2018	Mar 15, 2018	Mar 15, 2018	Mar 15, 2018	Mar 15, 2018	Mar 15, 2018	Mar 15, 2018	Mar 15, 2018	Mar 15, 2018	Mar 15, 2018	Mar 15, 2018	Mar 15, 2018	Mar 15, 2018	Mar 15, 2018	Mar 15, 2018	Mar 15, 2018			
	Sampling Depth (mbgs)	C T		2.3 - 2.9	1.5 - 2.1	0.8 - 1.4	1.5 - 2.1	0.8 - 1.4	1.5 - 2.1	0.8 - 1.4	1.5 - 2.1	0.8 - 1.4	1.5 - 2.1	0.8 - 1.4	1.5 - 2.1	0.8 - 1.4	1.5 - 2.1	0.8 - 1.4	1.5 - 2.1	0.8 - 1.4	1.5 - 2.1	0 - 0.6			
	Analytical Report Reference No.			8513044	9104531	9104422	9104466	9104482	9104485	9104482	9104466	9104482	9104485	9104482	9104466	9104482	9104485	9104482	9104485	9104482	9104485	9104496			
Antimony		7.5		<0.8	<0.8	<0.8	<0.8	<0.8	<0.8	<0.8	<0.8	<0.8	<0.8	<0.8	<0.8	<0.8	<0.8	<0.8	<0.8	<0.8	<0.8				
Arsenic		18		3	3	4	4	4	3	3	4	3	3	3	4	3	3	3	3	3	6				
Barium		390		26	31	41	29	41	29	41	29	41	29	41	29	41	29	41	29	41	28				
Beryllium		4		<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				
Boron		120		9	9	10	11	10	11	10	11	10	11	10	11	10	11	10	11	10	6				
Boron (Hot Water Soluble)		1.5		0.41	0.24	0.27	0.55	0.27	0.55	0.27	0.55	0.27	0.55	0.27	0.55	0.27	0.55	0.27	0.55	0.27	0.21				
Cadmium		1.2		<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		160		8	12	15	13	15	13	15	13	15	13	15	13	15	13	15	13	15	12				
Chromium VI		8		<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<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		22		4.2	6.1	8.4	6.9	8.4	6.9	8.4	6.9	8.4	6.9	8.4	6.9	8.4	6.9	8.4	6.9	8.4	5.2				
Copper		140		11	14	17	15	17	15	17	15	17	15	17	15	17	15	17	15	17	26				
Cyanide		0.051		<0.040	<0.040	<0.040	<0.040	<0.040	<0.040	<0.040	<0.040	<0.040	<0.040	<0.040	<0.040	<0.040	<0.040	<0.040	<0.040	<0.040	<0.040				
Lead		120		4	5	6	6	6	6	6	6	6	6	6	6	6	6	6	6	6	11				
Mercury		0.27		<0.10	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10				
Molybdenum		6.9		<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				
Nickel		100		8	12	16	15	16	15	16	15	16	15	16	15	16	15	16	15	16	14				
Selenium		2.4		<0.4	<0.4	<0.4	<0.4	<0.4	<0.4	<0.4	<0.4	<0.4	<0.4	<0.4	<0.4	<0.4	<0.4	<0.4	<0.4	<0.4	0.4				
Silver		20		<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2				
Thallium		1		<0.4	<0.4	<0.4	<0.4	<0.4	<0.4	<0.4	<0.4	<0.4	<0.4	<0.4	<0.4	<0.4	<0.4	<0.4	<0.4	<0.4	<0.4				
Uranium		23		<0.5	0.5	0.6	0.5	0.6	0.5	0.6	0.5	0.6	0.5	0.6	0.5	0.6	0.5	0.6	0.5	0.6	<0.5				
Vanadium		86		12	16	19	15	19	15	19	15	19	15	19	15	19	15	19	15	19	15				
Zinc		340		19	27	34	26	34	26	34	26	34	26	34	26	34	26	34	26	34	32				
Electrical Conductivity (mS/cm)		0.7		0.199	0.193	0.176	0.206	0.176	0.206	0.176	0.206	0.176	0.206	0.176	0.206	0.176	0.206	0.176	0.206	0.176	0.144				
Sodium Adsorption Ratio		5		0.216	0.539	0.327	0.231	0.327	0.231	0.327	0.231	0.327	0.231	0.327	0.231	0.327	0.231	0.327	0.231	0.327	0.030				
pH, 2:1 CaCl2 Extraction		5 to 9		8.05	7.77	7.58	7.82	7.58	7.82	7.58	7.82	7.58	7.82	7.58	7.82	7.58	7.82	7.58	7.82	7.58	7.60				

See "Notes for Soil and Groundwater Summary Tables" included at the beginning of this Section

Table 4 Soil Analytical Results - Metals&ORPs

Parameter		BH18-04 SS4		BH18-05 SS1		BH18-05 SS4	
Date of Collection	Table 3 RPI	Mar 02, 2018	Mar 15, 2018	Mar 02, 2018	Mar 15, 2018	Mar 02, 2018	Mar 15, 2018
Date Reported	CT						
Sampling Depth (mbgs)		2.3 - 2.9	0 - 0.6	2.3 - 2.9	2.3 - 2.9		
Analytical Report Reference No.		9104505	9104512	9104524	9104524		
Antimony	7.5	<0.8	<0.8	<0.8	<0.8	<0.8	<0.8
Arsenic	18	4	7	3	3		
Barium	390	33	44	35	35		
Beryllium	4	<0.5	<0.5	<0.5	<0.5		
Boron	120	11	6	9	9		
Boron (Hot Water Soluble)	1.5	0.34	0.37	0.24	0.24		
Cadmium	1.2	<0.5	<0.5	<0.5	<0.5		
Chromium	160	13	15	13	13		
Chromium VI	8	<0.2	<0.2	<0.2	<0.2		
Cobalt	22	8.0	5.4	7.2	7.2		
Copper	140	17	17	17	17		
Cyanide	0.051	<0.040	<0.040	<0.040	<0.040		
Lead	120	6	18	6	6		
Mercury	0.27	<0.10	<0.10	<0.10	<0.10		
Molybdenum	6.9	<0.5	<0.5	<0.5	<0.5		
Nickel	100	17	12	15	15		
Selenium	2.4	0.4	0.5	0.4	0.4		
Silver	20	<0.2	<0.2	<0.2	<0.2		
Thallium	1	<0.4	<0.4	<0.4	<0.4		
Uranium	23	0.5	<0.5	0.5	0.5		
Vanadium	86	17	19	18	18		
Zinc	340	31	46	30	30		
Electrical Conductivity (mS/cm)	0.7	0.189	0.149	0.218	0.218		
Sodium Adsorption Ratio	5	0.158	0.040	0.208	0.208		
pH, 2:1 CaCl2 Extraction	5 to 9	7.71	7.54	7.76	7.76		

See "Notes for Soil and Groundwater Summary Tables" included at the beginning of this Section

Table 5 Soil Analytical Results - PHCs & BTEX

Parameter		BH17-01 SS3		BH17-01 SS5		BH17-02 SS2		BH17-02 SS4		BH17-03 SS2		BH17-03 SS4		BH17-04 SS1	
Date of Collection	Table 3 RPI CT	Jun 22, 2017	Jun 22, 2017	Jun 22, 2017	Jun 22, 2017	Jun 22, 2017	Jun 22, 2017	Jun 22, 2017	Jun 22, 2017	Jun 23, 2017	Jun 23, 2017	Jun 23, 2017	Jun 23, 2017	Jun 23, 2017	Jun 23, 2017
Date Reported		Jul 06, 2017	Jul 06, 2017	Jul 06, 2017	Jul 06, 2017	Jul 06, 2017	Jul 06, 2017	Jul 06, 2017	Jul 06, 2017	Jul 06, 2017	Jul 06, 2017	Jul 06, 2017	Jul 06, 2017	Jul 06, 2017	Jul 06, 2017
Sampling Depth (mbgs)		1.5 - 2.1	3.1 - 3.7	0.8 - 1.4	2.3 - 2.9	0.8 - 1.4	2.3 - 2.9	0.8 - 1.4	2.3 - 2.9	0.8 - 1.4	2.3 - 2.9	2.3 - 2.9	2.3 - 2.9	0 - 0.6	0 - 0.6
Analytical Report Reference No.		8512963	8512976	8512980	8512985	8512980	8512985	8512980	8512985	8512996	8512996	8513025	8513025	8513041	8513041
Benzene	0.21	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	-	-
Toluene	2.3	<0.08	<0.08	<0.08	<0.08	<0.08	<0.08	<0.08	<0.08	<0.08	<0.08	<0.08	<0.08	-	-
Ethylbenzene	2	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	-	-
Xylene Mixture	3.1	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	-	-
F1 (C6 to C10) minus BTEX	55	<5	<5	<5	<5	<5	<5	<5	<5	<5	<5	<5	<5	-	-
F2 (C10 to C16)	98	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10
F3 (C16 to C34)	300	<50	<50	<50	<50	<50	<50	<50	<50	<50	<50	<50	<50	<50	<50
F4 (C34 to C50)	2800	<50	<50	<50	<50	<50	<50	<50	<50	<50	<50	<50	<50	<50	<50

See "Notes for Soil and Groundwater Summary Tables" included at the beginning of this Section

Table 5 Soil Analytical Results - PHCs & BTE

Parameter		BH17-04 SS3	BH18-01 SS3	BH18-02 SS2	BH18-02 SS6	BH18-03 SS1	BH18-03 SS5	BH18-04 SS2
Date of Collection	Table 3 RPI CT	Mar 02, 2018	Jun 23, 2017	Mar 02, 2018	Mar 02, 2018	Mar 02, 2018	Mar 02, 2018	Mar 02, 2018
Date Reported		Mar 15, 2018	Jul 06, 2017	Mar 15, 2018	Mar 15, 2018	Mar 15, 2018	Mar 15, 2018	Mar 15, 2018
Sampling Depth (mbgs)		1.5 - 2.1	1.5 - 2.1	0.8 - 1.4	4.6 - 5.3	0 - 0.6	3.1 - 3.7	0.8 - 1.4
Analytical Report Reference No.		8513041	9104531	9104422	9104468	9104477	9104494	9104501
Benzene	0.21	<0.02	-	<0.02	<0.02	<0.02	<0.02	<0.02
Toluene	2.3	<0.08	-	<0.08	<0.08	<0.08	<0.08	<0.08
Ethylbenzene	2	<0.05	-	<0.05	<0.05	<0.05	<0.05	<0.05
Xylene Mixture	3.1	<0.05	-	<0.05	<0.05	<0.05	<0.05	<0.05
F1 (C6 to C10) minus BTEX	55	<5	<5	<5	<5	<5	<5	<5
F2 (C10 to C16)	98	<10	<10	<10	<10	<10	<10	<10
F3 (C16 to C34)	300	<50	<50	<50	<50	<50	<50	<50
F4 (C34 to C50)	2800	<50	<50	<50	<50	<50	<50	<50

See "Notes for Soil and Groundwater Summary Tables" included at the beginning of this Section

Table 5 Soil Analytical Results - PHCs & BTE

Parameter		BH18-04 SS4	BH18-05 SS3	BH18-05 SS5
Date of Collection	Table 3 RPI CT	Mar 02, 2018	Mar 02, 2018	Mar 02, 2018
Date Reported		Mar 15, 2018	Mar 15, 2018	Mar 15, 2018
Sampling Depth (mbgs)		2.3 - 2.9	1.5 - 2.1	3.1 - 3.7
Analytical Report Reference No.		9104505	9104520	9104527
Benzene	0.21	<0.02	<0.02	<0.02
Toluene	2.3	<0.08	<0.08	<0.08
Ethylbenzene	2	<0.05	<0.05	<0.05
Xylene Mixture	3.1	<0.05	<0.05	<0.05
F1 (C6 to C10) minus BTEX	55	<5	<5	<5
F2 (C10 to C16)	98	<10	<10	<10
F3 (C16 to C34)	300	<50	<50	<50
F4 (C34 to C50)	2800	<50	<50	<50

See "Notes for Soil and Groundwater Summary Tables" included at the beginning of this Section

Table 6 Soil Analytical Results - VOCs

Parameter		BH18-01 SS3	DUP-1
Date of Collection	Table 3 RPI CT	Mar 02, 2018	Mar 02, 2018
Date Reported		Mar 15, 2018	Mar 15, 2018
Sampling Depth (mbgs)		1.5 - 2.1	1.5 - 2.1
Analytical Report Reference No.		9104531	9104532
Acetone	0.5	<0.50	<0.50
Benzene	0.02	<0.02	<0.02
Bromodichloromethane	0.05	<0.05	<0.05
Bromoform	0.05	<0.05	<0.05
Bromomethane	0.05	<0.05	<0.05
Carbon Tetrachloride	0.05	<0.05	<0.05
Chlorobenzene	0.05	<0.05	<0.05
Chloroform	0.05	<0.04	<0.04
Dibromochloromethane	0.05	<0.05	<0.05
Dichlorobenzene, 1,2-	0.05	<0.05	<0.05
Dichlorobenzene, 1,3-	0.05	<0.05	<0.05
Dichlorobenzene, 1,4-	0.05	<0.05	<0.05
Dichlorodifluoromethane	0.05	<0.05	<0.05
Dichloroethane, 1,1-	0.05	<0.02	<0.02
Dichloroethane, 1,2-	0.05	<0.03	<0.03
Dichloroethylene, 1,1-	0.05	<0.05	<0.05
Dichloroethylene, Cis- 1,2-	0.05	<0.02	<0.02
Dichloroethylene, Trans- 1,2-	0.05	<0.05	<0.05
Dichloropropane, 1,2-	0.05	<0.03	<0.03
Dichloropropene, 1,3-	0.05	<0.04	<0.04
Ethylbenzene	0.05	<0.05	<0.05
Ethylene Dibromide	0.05	<0.04	<0.04
Hexane, n-	0.05	<0.05	<0.05
Methyl Ethyl Ketone	0.5	<0.50	<0.50
Methyl Isobutyl Ketone	0.5	<0.50	<0.50
Methyl tert-butyl Ether	0.05	<0.05	<0.05
Methylene Chloride	0.05	<0.05	<0.05
Styrene	0.05	<0.05	<0.05
Tetrachloroethane, 1,1,1,2-	0.05	<0.04	<0.04
Tetrachloroethane, 1,1,2,2-	0.05	<0.05	<0.05
Tetrachloroethylene	0.05	<0.05	<0.05
Toluene	0.2	<0.05	<0.05
Trichloroethane, 1,1,1-	0.05	<0.05	<0.05
Trichloroethane, 1,1,2-	0.05	<0.04	<0.04
Trichloroethylene	0.05	<0.03	<0.03
Trichlorofluoromethane	0.25	<0.05	<0.05
Vinyl Chloride	0.02	<0.02	<0.02
Xylene Mixture	0.05	<0.05	<0.05

See "Notes for Soil and Groundwater
Summary Tables" included at the
beginning of this Section

Table 7 Soil Analytical Results - PAHs

Parameter		BH18-01 SS3		
Date of Collection	Table 3 RPI CT	Mar 02, 2018		
Date Reported		Mar 15, 2018		
Sampling Depth (mbgs)		1.5 - 2.1		
Analytical Report Reference No.		9104531		
Acenaphthene	7.9	<0.05		
Acenaphthylene	0.15	<0.05		
Anthracene	0.67	<0.05		
Benz(a)anthracene	0.5	<0.05		
Benzo(a)pyrene	0.3	<0.05		
Benzo(b)fluoranthene	0.78	<0.05		
Benzo(g,h,i)perylene	6.6	<0.05		
Benzo(k)fluoranthene	0.78	<0.05		
Chrysene	7	<0.05		
Dibenz(a,h)anthracene	0.1	<0.05		
Fluoranthene	0.69	<0.05		
Fluorene	62	<0.05		
Indeno(1,2,3-cd)pyrene	0.38	<0.05		
Methyl Naphthalene, 2-and 1-	0.99	<0.05		
Naphthalene	0.6	<0.05		
Phenanthrene	6.2	<0.05		
Pyrene	78	<0.05		

See "Notes for Soil and Groundwater Summary Tables" included at the beginning of this Section

Table 8 Soil Analytical Results - OC Pesticides

Parameter		BH17-01 SS3	BH17-01 SS5	BH17-02 SS2	BH17-02 SS4	BH17-03 SS1	BH17-03 SS4	BH17-04 SS1
Date of Collection		Jun 22, 2017	Jun 22, 2017	Jun 22, 2017	Jun 22, 2017	Jun 23, 2017	Jun 23, 2017	Jun 23, 2017
Date Reported		Jul 06, 2017	Jul 06, 2017	Jul 06, 2017	Jul 06, 2017	Jul 06, 2017	Jul 06, 2017	Jul 06, 2017
Sampling Depth (m bgs)		1.5 - 2.1	3.1 - 3.7	0.8 - 1.4	2.3 - 2.9	0 - 0.6	2.3 - 2.9	0 - 0.6
Analytical Report Reference No.		8512963	8512976	8512980	8512985	8512992	8513021	8513025
Aldrin	Table 3 RPI CT	0.05	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005
Chlordane		0.05	<0.007	<0.007	<0.007	<0.007	<0.007	<0.007
DDD		3.3	<0.007	<0.007	<0.007	<0.007	<0.007	<0.007
DDE		0.26	<0.007	<0.007	<0.007	0.13	<0.007	0.057
DDT		1.4	<0.007	<0.007	<0.007	<0.007	<0.007	0.014
Dieldrin		0.05	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005
Endosulfan		0.04	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005
Endrin		0.04	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005
Heptachlor		0.15	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005
Heptachlor Epoxide		0.05	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005
Hexachlorobenzene		0.52	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005
Hexachlorobutadiene		0.012	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01
Hexachlorocyclohexane Gamma-		0.056	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005
Hexachloroethane		0.089	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01
Methoxychlor		0.13	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005

See "Notes for Soil and Groundwater Summary Tables" included at the beginning of this Section

Table 8 Soil Analytical Results - OC Pesticides

Parameter		BH17-04 SS3		BH18-02 SS2		BH18-02 SS1		BH18-03 SS1		BH18-03 SS3		BH18-04 SS1		BH18-04 SS4	
Date of Collection	Table 3 RPI CT	Jun 23, 2017	Mar 02, 2018	Mar 02, 2018	Mar 02, 2018	Mar 02, 2018	Mar 02, 2018	Mar 02, 2018	Mar 02, 2018	Mar 02, 2018	Mar 02, 2018	Mar 02, 2018	Mar 02, 2018	Mar 02, 2018	Mar 02, 2018
Date Reported		Jul 06, 2017	Mar 15, 2018	Mar 15, 2018	Mar 15, 2018	Mar 15, 2018	Mar 15, 2018	Mar 15, 2018	Mar 15, 2018	Mar 15, 2018	Mar 15, 2018	Mar 15, 2018	Mar 15, 2018	Mar 15, 2018	Mar 15, 2018
Sampling Depth (m bgs)		1.5 - 2.1	0.8 - 1.4	0 - 0.6	0 - 0.6	0 - 0.6	0 - 0.6	0 - 0.6	0 - 0.6	1.5 - 2.1	0 - 0.6	0 - 0.6	0 - 0.6	2.3 - 2.9	2.3 - 2.9
Analytical Report Reference No.		8513041	9104422	9104459	9104477	9104486	9104496	9104505	9104505	9104505	9104505	9104505	9104505	9104505	9104505
Aldrin	0.05	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005
Chlordane	0.05	<0.007	<0.007	<0.007	<0.007	<0.007	<0.007	<0.007	<0.007	<0.007	<0.007	<0.007	<0.007	<0.007	<0.007
DDD	3.3	<0.007	<0.007	<0.007	<0.007	<0.007	<0.007	<0.007	<0.007	<0.007	<0.007	<0.007	<0.007	<0.007	<0.007
DDE	0.26	<0.007	<0.007	<0.007	<0.007	<0.007	<0.007	<0.007	<0.007	<0.007	<0.007	<0.007	<0.007	<0.007	<0.007
DDT	1.4	<0.007	<0.007	<0.007	<0.007	<0.007	<0.007	<0.007	<0.007	<0.007	<0.007	<0.007	<0.007	<0.007	<0.007
Dieldrin	0.05	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005
Endosulfan	0.04	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005
Endrin	0.04	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005
Heptachlor	0.15	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005
Heptachlor Epoxide	0.05	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005
Hexachlorobenzene	0.52	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005
Hexachlorobutadiene	0.012	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01
Hexachlorocyclohexane Gamma-	0.056	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005
Hexachloroethane	0.089	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01
Methoxychlor	0.13	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005

See "Notes for Soil and Groundwater Summary Tables" included at the beginning of this Section

Table 8 Soil Analytical Results - OC Pesticides

Parameter		BH18-05 SS1 BH18-05 SS2		
		Mar 02, 2018	Mar 02, 2018	Mar 02, 2018
Date of Collection	Date Reported	Mar 15, 2018	Mar 15, 2018	Mar 15, 2018
Sampling Depth (m bgs)		0 - 0.6	0.8 - 1.4	
Analytical Report Reference No.	Table 3 RPI CT	9104512	9104516	
Aldrin	0.05	<0.005	<0.005	<0.005
Chlordane	0.05	<0.007	<0.007	<0.007
DDD	3.3	<0.007	<0.007	<0.007
DDE	0.26	0.048	<0.007	<0.007
DDT	1.4	0.05	<0.007	<0.007
Dieldrin	0.05	<0.005	<0.005	<0.005
Endosulfan	0.04	<0.005	<0.005	<0.005
Endrin	0.04	<0.005	<0.005	<0.005
Heptachlor	0.15	<0.005	<0.005	<0.005
Heptachlor Epoxide	0.05	<0.005	<0.005	<0.005
Hexachlorobenzene	0.52	<0.005	<0.005	<0.005
Hexachlorobutadiene	0.012	<0.01	<0.01	<0.01
Hexachlorocyclohexane Gamma-	0.056	<0.005	<0.005	<0.005
Hexachloroethane	0.089	<0.01	<0.01	<0.01
Methoxychlor	0.13	<0.005	<0.005	<0.005

See "Notes for Soil and Groundwater Summary Tables" included at the beginning of this Section

Table 9 Groundwater Analytical Results - Metals&ORPs

Parameter			BH18-01		
Analytical Report Reference No.	Date of Collection	Table 3 Non-potable Groundwater CT	Mar 07, 2018	Mar 19, 2018	
	Date Reported				
	Screened Depth (mbgs)			1.6 - 3.1	
				9109222	
Antimony		20000		<1.0	
Arsenic		1900		<1.0	
Barium		29000		62.3	
Beryllium		67		<0.5	
Boron		45000		26.3	
Cadmium		2.7		<0.2	
Chromium		810		<2.0	
Chromium VI		140		<5	
Cobalt		66		<0.5	
Copper		87		<1.0	
Cyanide		66		<2	
Lead		25		<0.5	
Mercury		0.29		<0.02	
Molybdenum		9200		1.5	
Nickel		490		<1.0	
Selenium		63		1.1	
Silver		1.5		<0.2	
Thallium		510		<0.3	
Uranium		420		1.1	
Vanadium		250		0.4	
Zinc		1100		8.2	
Sodium		2300000		66000	
Chloride		2300000		78600	

See "Notes for Soil and Groundwater Summary Tables" included at the beginning of this Section



Table 10 Groundwater Analytical Results - PHCs&BTEX

Parameter		BH18-01		
Date of Collection	Table 3 Non-potable Groundwater CT	Mar 07, 2018		
Date Reported		Mar 19, 2018		
Screened Depth (mbgs)		1.6 - 3.1		
Analytical Report Reference No.	750	9109222		
F1 (C6 to C10) minus BTEX		<25		
F2 (C10 to C16)		<100		
F3 (C16 to C34)		<100		
F4 (C34 to C50)		<100		

See "Notes for Soil and Groundwater Summary Tables" included at the beginning of this Section

Table 11 Groundwater Analytical Results - VOCs

Parameter		BH18-01	GWDUP-1	Trip Blank
Date of Collection	Table 3 Non-potable Groundwater CT	Mar 07, 2018	Mar 07, 2018	-
Date Reported		Mar 19, 2018	Mar 19, 2018	#####
Screened Depth (mbgs)		1.6 - 3.1	1.6 - 3.1	-
Analytical Report Reference No.		9109222	9109227	9109229
Acetone	130000	<1.0	<1.0	<1.0
Benzene	44	<0.20	<0.20	<0.20
Bromodichloromethane	85000	<0.20	<0.20	<0.20
Bromoform	380	<0.10	<0.10	<0.10
Bromomethane	5.6	<0.20	<0.20	<0.20
Carbon Tetrachloride	0.79	<0.20	<0.20	<0.20
Chlorobenzene	630	<0.10	<0.10	<0.10
Chloroform	2.4	<0.20	<0.20	<0.20
Dibromochloromethane	82000	<0.10	<0.10	<0.10
Dichlorobenzene, 1,2-	4600	<0.10	<0.10	<0.10
Dichlorobenzene, 1,3-	9600	<0.10	<0.10	<0.10
Dichlorobenzene, 1,4-	8	<0.10	<0.10	<0.10
Dichlorodifluoromethane	4400	<0.20	<0.20	<0.20
Dichloroethane, 1,1-	320	<0.30	<0.30	<0.30
Dichloroethane, 1,2-	1.6	<0.20	<0.20	<0.20
Dichloroethylene, 1,1-	1.6	<0.30	<0.30	<0.30
Dichloroethylene, cis- 1,2-	1.6	<0.20	<0.20	<0.20
Dichloroethylene, trans- 1,2-	1.6	<0.20	<0.20	<0.20
Dichloropropane, 1,2-	16	<0.20	<0.20	<0.20
Dichloropropene, 1,3-	5.2	<0.30	<0.30	<0.30
Ethylbenzene	2300	<0.10	<0.10	<0.10
Ethylene Dibromide	0.25	<0.10	<0.10	<0.10
Hexane, n-	51	<1.0	<1.0	<1.0
Methyl Ethyl Ketone	470000	<1.0	<1.0	<1.0
Methyl Isobutyl Ketone	140000	<0.20	<0.20	<0.20
Methyl tert-butyl ether	190	<0.30	<0.30	<0.30
Methylene Chloride	610	<0.10	<0.10	<0.10
Styrene	1300	<0.10	<0.10	<0.10
Tetrachloroethane, 1,1,1,2-	3.3	<0.10	<0.10	<0.10
Tetrachloroethane, 1,1,2,2-	3.2	<0.20	<0.20	<0.20
Tetrachloroethylene	1.6	<0.20	<0.20	<0.20
Toluene	18000	<0.30	<0.30	<0.30
Trichloroethane, 1,1,1-	640	<0.20	<0.20	<0.20
Trichloroethane, 1,1,2-	4.7	<0.20	<0.20	<0.20
Trichloroethylene	1.6	<0.40	<0.40	<0.40
Trichlorofluoromethane	2500	<0.17	<0.17	<0.17
Vinyl Chloride	0.5	<0.20	<0.20	<0.20
Xylene Mixture	4200	<0.20	<0.20	<0.20

See "Notes for Soil and Groundwater Summary Tables" included at the beginning of this Section

Table 12 Groundwater Analytical Results - PAHs

Parameter			BH18-01	
Date of Collection	Table 3 Non-potable Groundwater CT		Mar 07, 2018	
Date Reported			Mar 19, 2018	
Screened Depth (mbgs)			1.6 - 3.1	
Analytical Report Reference No.			9109222	
Acenaphthene		600	<0.20	
Acenaphthylene		1.8	<0.20	
Anthracene		2.4	<0.10	
Benz(a)anthracene		4.7	<0.20	
Benzo(a)pyrene		0.81	<0.01	
Benzo(b)fluoranthene		0.75	<0.10	
Benzo(g,h,i)perylene		0.2	<0.20	
Benzo(k)fluoranthene		0.4	<0.10	
Chrysene		1	<0.10	
Dibenz(a,h)anthracene		0.52	<0.20	
Fluoranthene		130	<0.20	
Fluorene		400	<0.20	
Indeno(1,2,3-cd)pyrene		0.2	<0.20	
Methyl Naphthalene, 2-and 1-		1800	<0.20	
Naphthalene		1400	<0.20	
Phenanthrene		580	<0.10	
Pyrene		68	<0.20	

See "Notes for Soil and Groundwater Summary Tables" included at the beginning of this Section

Table 13 Summary of Maximum Concentrations in Soil

Group	Parameter	Table 3 RPI CT	Maximum Concentration	Location
Metals & ORPs	Antimony	7.5	<0.8	BH18-01 SS3
	Arsenic	18	7	BH18-01 SS3
	Barium	390	44	BH18-01 SS3
	Beryllium	4	<0.5	BH18-01 SS3
	Boron	120	11	BH18-01 SS3
	Boron (Hot Water Soluble)	1.5	0.55	BH18-01 SS3
	Cadmium	1.2	<0.5	BH18-01 SS3
	Chromium	160	15	BH18-01 SS3
	Chromium VI	8	<0.2	BH18-01 SS3
	Cobalt	22	8.4	BH18-01 SS3
	Copper	140	26	BH18-01 SS3
	Cyanide	0.051	<0.040	BH18-01 SS3
	Lead	120	18	BH18-01 SS3
	Mercury	0.27	<0.10	BH18-01 SS3
	Molybdenum	6.9	<0.5	BH18-01 SS3
	Nickel	100	17	BH18-01 SS3
	Selenium	2.4	0.5	BH18-01 SS3
	Silver	20	<0.2	BH18-01 SS3
	Thallium	1	<0.4	BH18-01 SS3
	Uranium	23	0.6	BH18-01 SS3
	Vanadium	86	19	BH18-01 SS3
	Zinc	340	46	BH18-01 SS3
	Electrical Conductivity (mS/cm)	0.7	0.237	BH18-01 SS3
	Sodium Adsorption Ratio	5	0.539	BH18-01 SS3
PHCs	F1 (C6 to C10) minus BTEX	55	<5	BH18-01 SS3
	F2 (C10 to C16)	98	<10	BH18-01 SS3
	F3 (C16 to C34)	300	<50	BH18-01 SS3
	F4 (C34 to C50)	2800	<50	BH18-01 SS3
VOCs	Acetone	0.5	<0.50	all samples
	Benzene	0.02	<0.02	all samples
	Bromodichloromethane	0.05	<0.05	all samples
	Bromoform	0.05	<0.05	all samples
	Bromomethane	0.05	<0.05	all samples
	Carbon Tetrachloride	0.05	<0.05	all samples
	Chlorobenzene	0.05	<0.05	all samples
	Chloroform	0.05	<0.04	all samples
	Dibromochloromethane	0.05	<0.05	all samples
	Dichlorobenzene, 1,2-	0.05	<0.05	all samples
	Dichlorobenzene, 1,3-	0.05	<0.05	all samples
	Dichlorobenzene, 1,4-	0.05	<0.05	all samples
	Dichlorodifluoromethane	0.05	<0.05	all samples
	Dichloroethane, 1,1-	0.05	<0.02	all samples
	Dichloroethane, 1,2-	0.05	<0.03	all samples
	Dichloroethylene, 1,1-	0.05	<0.05	all samples
	Dichloroethylene, Cis- 1,2-	0.05	<0.02	all samples

Table 13 Summary of Maximum Concentrations in Soil

Group	Parameter	Table 3 RPI CT	Maximum Concentration	Location
VOCs	Dichloroethylene, Trans- 1,2-	0.05	<0.05	all samples
	Dichloropropane, 1,2-	0.05	<0.03	all samples
	Dichloropropene, 1,3-	0.05	<0.04	all samples
	Ethylbenzene	0.05	<0.05	all samples
	Ethylene Dibromide	0.05	<0.04	all samples
	Hexane, n-	0.05	<0.05	all samples
	Methyl Ethyl Ketone	0.5	<0.50	all samples
	Methyl Isobutyl Ketone	0.5	<0.50	all samples
	Methyl tert-butyl Ether	0.05	<0.05	all samples
	Methylene Chloride	0.05	<0.05	all samples
	Styrene	0.05	<0.05	all samples
	Tetrachloroethane, 1,1,1,2-	0.05	<0.04	all samples
	Tetrachloroethane, 1,1,2,2-	0.05	<0.05	all samples
	Tetrachloroethylene	0.05	<0.05	all samples
	Toluene	0.2	<0.05	all samples
	Trichloroethane, 1,1,1-	0.05	<0.05	all samples
	Trichloroethane, 1,1,2-	0.05	<0.04	all samples
	Trichloroethylene	0.05	<0.03	all samples
	Trichlorofluoromethane	0.25	<0.05	all samples
	Vinyl Chloride	0.02	<0.02	all samples
	Xylene Mixture	0.05	<0.05	all samples
PAHs	Acenaphthene	7.9	<0.05	BH18-01 SS3
	Acenaphthylene	0.15	<0.05	BH18-01 SS3
	Anthracene	0.67	<0.05	BH18-01 SS3
	Benz(a)anthracene	0.5	<0.05	BH18-01 SS3
	Benzo(a)pyrene	0.3	<0.05	BH18-01 SS3
	Benzo(b)fluoranthene	0.78	<0.05	BH18-01 SS3
	Benzo(g,h,i)perylene	6.6	<0.05	BH18-01 SS3
	Benzo(k)fluoranthene	0.78	<0.05	BH18-01 SS3
	Chrysene	7	<0.05	BH18-01 SS3
	Dibenz(a,h)anthracene	0.1	<0.05	BH18-01 SS3
	Fluoranthene	0.69	<0.05	BH18-01 SS3
	Fluorene	62	<0.05	BH18-01 SS3
	Indeno(1,2,3-cd)pyrene	0.38	<0.05	BH18-01 SS3
	Methyl Naphthalene, 2-and 1-	0.99	<0.05	BH18-01 SS3
	Naphthalene	0.6	<0.05	BH18-01 SS3
	Phenanthrene	6.2	<0.05	BH18-01 SS3
	Pyrene	78	<0.05	BH18-01 SS3
OCPs	Aldrin	0.05	<0.005	all samples
	Chlordane	0.05	<0.007	all samples
	DDD	3.3	<0.007	all samples
	DDE	0.26	0.13	BH17-03 SS1
	DDT	1.4	0.05	BH18-05 SS1
	Dieldrin	0.05	<0.005	all samples
	Endosulfan	0.04	<0.005	all samples
	Endrin	0.04	<0.005	all samples

Table 13 Summary of Maximum Concentrations in Soil

Group	Parameter	Table 3 RPI CT	Maximum Concentration	Location
OCPs	Heptachlor	0.15	<0.005	all samples
	Heptachlor Epoxide	0.05	<0.005	all samples
	Hexachlorobenzene	0.52	<0.005	all samples
	Hexachlorobutadiene	0.012	<0.01	all samples
	Hexachlorocyclohexane Gamma-	0.056	<0.005	all samples
	Hexachloroethane	0.089	<0.01	all samples
	Methoxychlor	0.13	<0.005	all samples

See "Notes for Soil and Groundwater Summary Tables" included at the beginning of this Section

Table 14 Summary of Maximum Concentrations in Groundwater

Group	Parameter	Table 3 Non-potable Groundwater CT	Maximum Concentration	Location
Metals & ORPs	Antimony	20000	<1.0	BH18-01
	Arsenic	1900	<1.0	BH18-01
	Barium	29000	62.3	BH18-01
	Beryllium	67	<0.5	BH18-01
	Boron	45000	26.3	BH18-01
	Cadmium	2.7	<0.2	BH18-01
	Chromium	810	<2.0	BH18-01
	Chromium VI	140	<5	BH18-01
	Cobalt	66	<0.5	BH18-01
	Copper	87	<1.0	BH18-01
	Cyanide	66	<2	BH18-01
	Lead	25	<0.5	BH18-01
	Mercury	0.29	<0.02	BH18-01
	Molybdenum	9200	1.5	BH18-01
	Nickel	490	<1.0	BH18-01
	Selenium	63	1.1	BH18-01
	Silver	1.5	<0.2	BH18-01
	Thallium	510	<0.3	BH18-01
	Uranium	420	1.1	BH18-01
	Vanadium	250	0.4	BH18-01
	Zinc	1100	8.2	BH18-01
	Sodium	2300000	66000	BH18-01
	Chloride	2300000	78600	BH18-01
PHCs	F1 (C6 to C10) minus BTEX	750	<25	BH18-01
	F2 (C10 to C16)	150	<100	BH18-01
	F3 (C16 to C34)	500	<100	BH18-01
	F4 (C34 to C50)	500	<100	BH18-01
VOCs	Acetone	130000	<1.0	all samples
	Benzene	44	<0.20	all samples
	Bromodichloromethane	85000	<0.20	all samples
	Bromoform	380	<0.10	all samples
	Bromomethane	5.6	<0.20	all samples
	Carbon Tetrachloride	0.79	<0.20	all samples
	Chlorobenzene	630	<0.10	all samples
	Chloroform	2.4	<0.20	all samples
	Dibromochloromethane	82000	<0.10	all samples
	Dichlorobenzene, 1,2-	4600	<0.10	all samples
	Dichlorobenzene, 1,3-	9600	<0.10	all samples
	Dichlorobenzene, 1,4-	8	<0.10	all samples
	Dichlorodifluoromethane	4400	<0.20	all samples
	Dichloroethane, 1,1-	320	<0.30	all samples
	Dichloroethane, 1,2-	1.6	<0.20	all samples
	Dichloroethylene, 1,1-	1.6	<0.30	all samples
	Dichloroethylene, cis- 1,2-	1.6	<0.20	all samples

Table 14 Summary of Maximum Concentrations in Groundwater

Group	Parameter	Table 3 Non-potable Groundwater CT	Maximum Concentration	Location
VOCs	Dichloroethylene, trans- 1,2-	1.6	<0.20	all samples
	Dichloropropane, 1,2-	16	<0.20	all samples
	Dichloropropene, 1,3-	5.2	<0.30	all samples
	Ethylbenzene	2300	<0.10	all samples
	Ethylene Dibromide	0.25	<0.10	all samples
	Hexane, n-	51	<1.0	all samples
	Methyl Ethyl Ketone	470000	<1.0	all samples
	Methyl Isobutyl Ketone	140000	<0.20	all samples
	Methyl tert-butyl ether	190	<0.30	all samples
	Methylene Chloride	610	<0.10	all samples
	Styrene	1300	<0.10	all samples
	Tetrachloroethane, 1,1,1,2-	3.3	<0.10	all samples
	Tetrachloroethane, 1,1,2,2-	3.2	<0.20	all samples
	Tetrachloroethylene	1.6	<0.20	all samples
	Toluene	18000	<0.30	all samples
	Trichloroethane, 1,1,1-	640	<0.20	all samples
	Trichloroethane, 1,1,2-	4.7	<0.20	all samples
	Trichloroethylene	1.6	<0.40	all samples
	Trichlorofluoromethane	2500	<0.17	all samples
	Vinyl Chloride	0.5	<0.20	all samples
	Xylene Mixture	4200	<0.20	all samples
PAHs	Acenaphthene	600	<0.20	BH18-01
	Acenaphthylene	1.8	<0.20	BH18-01
	Anthracene	2.4	<0.10	BH18-01
	Benz(a)anthracene	4.7	<0.20	BH18-01
	Benzo(a)pyrene	0.81	<0.01	BH18-01
	Benzo(b)fluoranthene	0.75	<0.10	BH18-01
	Benzo(g,h,i)perylene	0.2	<0.20	BH18-01
	Benzo(k)fluoranthene	0.4	<0.10	BH18-01
	Chrysene	1	<0.10	BH18-01
	Dibenz(a,h)anthracene	0.52	<0.20	BH18-01
	Fluoranthene	130	<0.20	BH18-01
	Fluorene	400	<0.20	BH18-01
	Indeno(1,2,3-cd)pyrene	0.2	<0.20	BH18-01
	Methyl Naphthalene, 2-and 1-	1800	<0.20	BH18-01
	Naphthalene	1400	<0.20	BH18-01
	Phenanthrene	580	<0.10	BH18-01
	Pyrene	68	<0.20	BH18-01

See "Notes for Soil and Groundwater Summary Tables" included at the beginning of this Section

FIGURES





LEGEND
 APPROXIMATE SITE LOCATION

Data Source: Ministry of Natural Resources; Ontario Base Mapping, October 2016.



126 DON HILLOCK DRIVE, UNIT 2
 AURORA, ONTARIO CANADA L4G 0G9
 TEL.: 905-750-3080 | FAX: 905-727-0463 | WWW.WSP.COM

PROJECT: **GEOTECHNICAL INVESTIGATION /
 PHASE TWO ENVIRONMENTAL SITE ASSESSMENT**
33 FINDLAY DR., 750 & 744 HURONTARIO ST.
COLLINGWOOD, ONTARIO

TITLE: **SITE LOCATION MAP**

CLIENT: **STRAW HAT RESTORATION**

SCALE: 1:30,000	
DRAWN BY: TP	CHECKED BY: -
PROJECT NO: 17M-01364-00 GEO	
DATE: MARCH 2018	
FIGURE NO: 1	REV.: -



WSP

14 RONELL CRESCENT, UNIT 1
COLLINGWOOD, ONTARIO CANADA L9Y 4J7
TEL.: 705-445-0064 | FAX: 705-445-0067 | WWW.WSP.COM

LEGEND

- APPROXIMATE PHASE ONE PROPERTY
- PHASE ONE STUDY AREA
- 5 m INTERVAL TOPOGRAPHIC CONTOURS
- WATERCOURSE
- GROUNDWATER FLOW DIRECTION
- MOECC WATER WELL RECORD

POTENTIALLY CONTAMINATING ACTIVITIES (PCAs)

- 28 GASOLINE AND ASSOCIATED PRODUCTS STORAGE IN FIXED TANKS
- 40 PESTICIDES (INCLUDING HERBICIDES, FUNGICIDES, AND ANTI-FOULING AGENTS) MANUFACTURING, PROCESSING, BULK STORAGE AND LARGE-SCALE APPLICATIONS
- 52 STORAGE, MAINTENANCE, FUELLING AND REPAIR OF EQUIPMENT VEHICLES, AND MATERIAL USED TO MAINTAIN TRANSPORTATION SYSTEMS

Data Source: Ministry of Natural Resources, Ontario Base Mapping, October 2016.
Imagery, Simcoe County, 2016.

CLIENT:	STRAW HAT RESTORATION		PROJECT NO:	17M-01364-00	DATE:	MARCH 2018	TITLE:		CONCEPTUAL SITE MODEL	
DESIGNED BY:	-		DRAWN BY:	TP		CHECKED BY:		JD		
FIGURE NO:	2		SCALE:	AS SHOWN		DISCIPLINE:		ENVIRONMENT		
PROJECT:		PHASE TWO ENVIRONMENTAL SITE ASSESSMENT		38 FINDLAY DRIVE, 750 & 774 HURONTARIO STREET TOWN OF COLLINGWOOD, ONTARIO		ISSUE:		-		
REV.:		-		-		-		-		



126 DON HILLOCK DRIVE, UNIT 2
AURORA, ONTARIO CANADA L4G 0G9
TEL.: 905-750-3080 | FAX: 905-727-0463 | WWW.WSP.COM

LEGEND

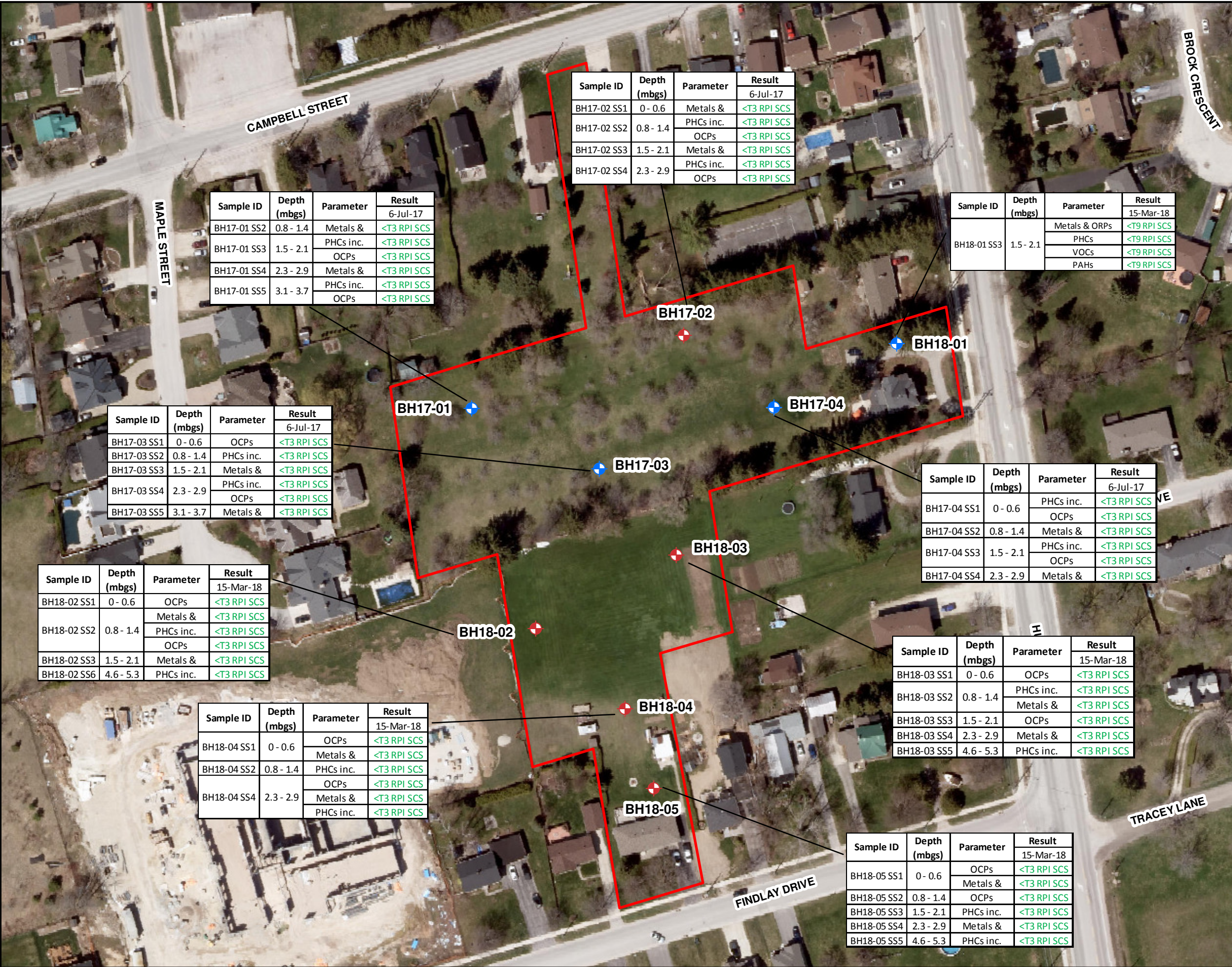
- APPROXIMATE SITE LOCATION
- BOREHOLE LOCATION
- MONITORING WELL LOCATION

20 10 0 20 Metres

Data Source: Ministry of Natural Resources, Ontario Base Mapping, October 2016.
Imagery, Simcoe County, 2016.



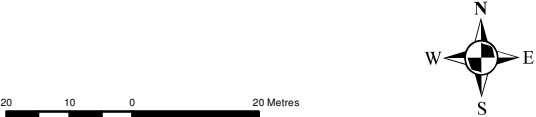
CLIENT:		STRAW HAT RESTORATION	
PROJECT:		GEOTECHNICAL INVESTIGATION / PHASE TWO ENVIRONMENTAL SITE ASSESSMENT 33 FINDLAY DR., 750 & 744 HURONTARIO ST. COLLINGWOOD, ONTARIO	
PROJECT NO:	17M-01364-00 GEO	DATE:	MARCH 2018
DESIGNED BY:	-		
DRAWN BY:	T.P.		
CHECKED BY:	-		
FIGURE NO:	3	SCALE:	1:1,200
TITLE:		BOREHOLE LOCATION PLAN	
DISCIPLINE:		ENVIRONMENT	
ISSUE:	-	REV.:	-



126 DON HILLOCK DRIVE, UNIT 2
AURORA, ONTARIO CANADA L4G 0G9
TEL.: 905-750-3080 | FAX: 905-727-0463 | WWW.WSP.COM

LEGEND

- APPROXIMATE SITE LOCATION
- BOREHOLE LOCATION
- MONITORING WELL LOCATION



Data Source: Ministry of Natural Resources, Ontario Base Mapping, October 2016.
Imagery, Simcoe County, 2016.

CLIENT:

STRAW HAT RESTORATION

PROJECT:

GEOTECHNICAL INVESTIGATION /
PHASE TWO ENVIRONMENTAL SITE ASSESSMENT
33 FINDLAY DR., 750 & 744 HURONTARIO ST.
COLLINGWOOD, ONTARIO

PROJECT NO:
17M-01364-00 GEO

DATE:
APRIL 2018

DESIGNED BY:
-

DRAWN BY:
T.P.

CHECKED BY:
-

FIGURE NO:
4

SCALE:
1:1,200

TITLE:

SUMMARY OF CHEMICAL ANALYSIS IN SOIL

DISCIPLINE:

ENVIRONMENT

ISSUE:
-

REV.:
-



126 DON HILLOCK DRIVE, UNIT 2
AURORA, ONTARIO CANADA L4G 0G9
TEL.: 905-750-3080 | FAX: 905-727-0463 | WWW.WSP.COM

LEGEND

- APPROXIMATE SITE LOCATION
- BOREHOLE LOCATION
- MONITORING WELL LOCATION



20 10 0 20 Metres
Data Source: Ministry of Natural Resources, Ontario Base Mapping, October 2016.
Imagery, Simcoe County, 2016.

CLIENT:	
STRAW HAT RESTORATION	
PROJECT: GEOTECHNICAL INVESTIGATION / PHASE TWO ENVIRONMENTAL SITE ASSESSMENT 33 FINDLAY DR., 750 & 744 HURONTARIO ST. COLLINGWOOD, ONTARIO	
PROJECT NO: 17M-01364-00 GEO	DATE: MARCH 2018
DESIGNED BY: -	
DRAWN BY: T.P.	
CHECKED BY: -	
FIGURE NO: 5	SCALE: 1:1,200
TITLE: SUMMARY OF CHEMICAL ANALYSIS IN GROUNDWATER	
DISCIPLINE: ENVIRONMENT	
ISSUE: -	REV.: -

Sample ID	Screened Depth (mbgs)	Parameter	Result 19-Mar-18
BH18-01	1.5 - 3.0	Metals&ORPs	<T3 SCS
		PHCs	<T3 SCS
		VOCs	<T3 SCS
		PAHs	<T3 SCS

APPENDIX

A LEGAL SURVEY



I REQUIRE THIS PLAN TO BE DEPOSITED UNDER THE LAND TITLES ACT.

DATE
MICHAEL MACEK, O.L.S.

PLAN 51R-
RECEIVED AND DEPOSITED
DATE

METRIC
DISTANCES AND COORDINATES SHOWN ON THIS PLAN ARE IN METRES AND CAN BE CONVERTED TO FEET BY DIVIDING BY 0.3048

REPRESENTATIVE FOR THE LAND REGISTRAR FOR THE LAND TITLES DIVISION OF SIMCOE (NO. 51)

SCHEDULE				
PART	LOT	REGISTERED PLAN	P. I. NO.	AREA
1	PART OF BLOCK P	REGISTERED PLAN 353	ALL OF PIN 58261-0261	7920.5 m ²
2				1565.6 m ²
3	PART OF LOT 5		ALL OF PIN 58261-0262	1012.6 m ²

PLAN OF SURVEY OF
PART OF LOT 5 AND PART OF BLOCK P
REGISTERED PLAN 353
IN THE
TOWN OF COLLINGWOOD
COUNTY OF SIMCOE

SCALE 1: 500

WSP GEOMATICS ONTARIO LIMITED
ONTARIO LAND SURVEYORS
2017

NOTE

BEARINGS SHOWN HEREON ARE GRID BEARINGS AND ARE DERIVED FROM OBSERVED REFERENCE POINTS A AND B, BY REAL TIME NETWORK OBSERVATIONS, UTM ZONE 17, NAD83(CRS95)(2010).

POINT ID	NORTHING	EASTING
(A)	4926121.38	562489.41
(B)	4926070.04	562318.28

COORDINATES CANNOT, IN THEMSELVES, BE USED TO RE-ESTABLISH CORNERS OR BOUNDARIES SHOWN ON THIS PLAN.

DISTANCES HEREON ARE GROUND DISTANCES AND CAN BE CONVERTED TO GRID DISTANCES BY MULTIPLYING BY A COMBINED SCALE FACTOR 0.9996326

- LEGEND
- | | | |
|------|---------|--|
| □ | DENOTES | FOUND |
| ■ | DENOTES | PLANTED |
| SIB | DENOTES | STANDARD IRON BAR |
| SSIB | DENOTES | SHORT STANDARD IRON BAR |
| IB | DENOTES | IRON BAR |
| PB | DENOTES | PLASTIC BAR |
| MMM | DENOTES | WSP GEOMATICS ONTARIO LIMITED (FORMERLY MMM GEOMATICS ONTARIO LIMITED) |
| OU | DENOTES | ORIGIN UNKNOWN |
| WIT | DENOTES | WITNESS |
| P1 | DENOTES | PLAN 51R-39905 |
| P2 | DENOTES | PLAN 51R-36293 |
| P4 | DENOTES | PLAN 51R-33885 |
| MTS | DENOTES | PLAN 51R-23404 |
| ZUMO | DENOTES | MINISTRY OF TRANSPORTATION |
| | | ZUBEK, EMO, PATTEN AND THOMSEN LIMITED, O.L.S. |

SURVEYOR'S CERTIFICATE

I CERTIFY THAT:

1. THIS SURVEY AND PLAN ARE CORRECT AND IN ACCORDANCE WITH THE SURVEYS ACT AND THE SURVEYORS ACT AND THE LAND TITLES ACT AND THE REGULATIONS MADE UNDER THEM.

2. THE SURVEY WAS COMPLETED ON THE 5TH DAY OF JUNE, 2017.

DATE
MICHAEL MACEK
ONTARIO LAND SURVEYOR

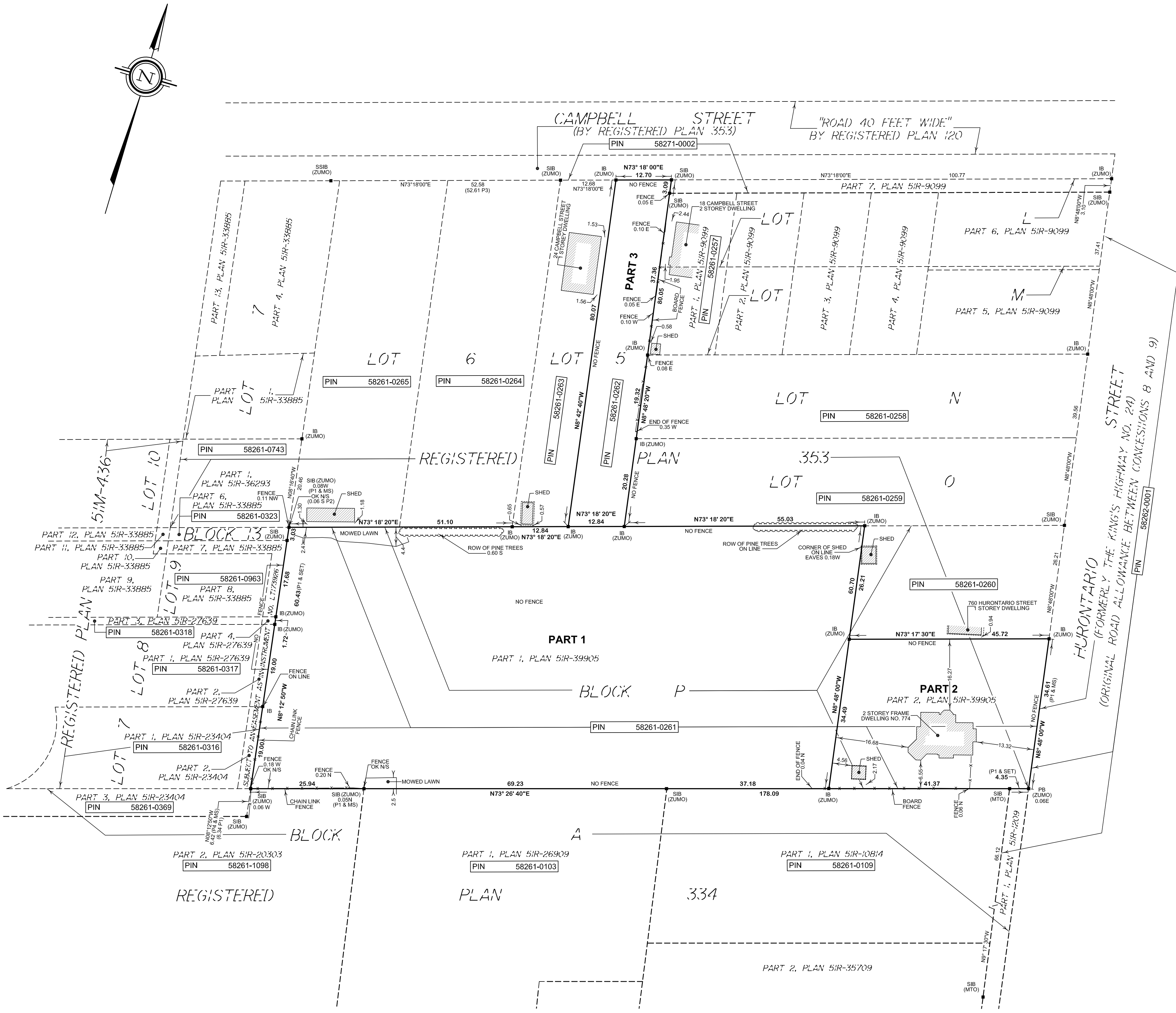
wsp WSP Geomatics Ontario Limited

Ontario Land Surveyors

Drawing Number:
17M-01364-100

610 Chartwell Road, Suite 300, Oakville, Ontario Canada, L6J 4A5
t: 905-823-8500 f: 905-823-8503
Website: www.wspgroup.ca

P.Chief: L.L./J.S. Dwg. By: M.A.M. Chk'd by: M.M.
Job Number: 17M-01364-00-GE01 Tab Name: R-PLAN
Dwg File Name: P17-M1003-61_P01_C302015.DWG



REGISTERED
PLAN 51M-436

BLOCK P , REGISTERED PLAN 353
INST. 713627

I REQUIRE THIS PLAN TO
BE DEPOSITED UNDER THE
REGISTRY ACT

PLAN 51R-26909

RECEIVED AND DEPOSITED

JUNE 20, 1997
DATE

JUNE 26 1997
DATE

Lynn H. Patten
LYNN H. PATTEN

Shelton

DEPUTY LAND REGISTRAR
FOR THE REGISTRY
DIVISION OF SIMCOE (Nº 51)

PART	BLOCK	PLAN	INST.	AREA
1	Pt. of A	334	297155	5431 m ²

PLAN OF SURVEY OF
PART OF BLOCK A
REGISTERED PLAN 334
(FORMERLY TOWNSHIP OF NOTTAWASAGA)
TOWN OF COLLINGWOOD
COUNTY OF SIMCOE

SCALE 1:400
0 2 4 6 8 10 METRES
ZUBEK, EMO AND PATTEN LTD.
1997

METRIC
DISTANCES SHOWN ON THIS PLAN ARE IN
METRES AND CAN BE CONVERTED TO FEET BY
DIVIDING BY 0.3048.

CAUTION THIS PLAN IS NOT A PLAN OF SUBDIVISION
WITHIN THE MEANING OF THE PLANNING ACT.

NOTES
BEARINGS HEREON ARE ASTRONOMIC AND ARE REFERRED
TO THE BEARING OF FINDLAY DRIVE BEING N73°59'00"E,
IN ACCORDANCE WITH PLAN 51R-20303.

- ✦ DENOTES SET
- ✦ DENOTES FOUND
- ✦ DENOTES 0.025x0.025x1.219 IRON SURVEY BAR
- ✦ DENOTES 0.016x0.016x0.610 IRON SURVEY BAR
- ✦ DENOTES 0.025x0.025x0.610 IRON SURVEY BAR
- ✦ DENOTES CUT CROSS

SURVEYOR'S CERTIFICATE

I CERTIFY THAT:
1. THIS SURVEY AND PLAN ARE CORRECT AND IN
ACCORDANCE WITH THE SURVEYS ACT, THE SURVEYOR'S
ACT AND THE REGISTRY ACT AND THE
REGULATIONS MADE UNDER THEM.
2. THE SURVEY WAS COMPLETED ON THE 17th DAY OF
APR., 1997.

APR. 24, 1997 *Lynn H. Patten* O.L.S.
LYNN H. PATTEN
ONTARIO LAND SURVEYOR
COLLINGWOOD

APPENDIX

B SAMPLING AND ANALYSIS PLAN



SAMPLING AND ANALYSIS PLAN

WSP was retained by Mr. James Harrion and Mr. Jason Harrison of Straw Hat Restoration to conduct a Phase Two Environmental Site Assessment (ESA) of 33 Findlay Drive, 750 Hurontario Street and 774 Hurontario Street in the Town of Collingwood, Ontario. The purpose of the proposed Phase Two ESA is to assess the current subsurface environmental conditions in support of a residential redevelopment.

The Phase Two ESA will involve intrusive investigation in the areas determined in the Site visit to be APECs, and will be completed in general accordance with O.Reg 153/04. Based on the findings of the field and laboratory analyses, a Phase Two ESA report will be prepared.

The Site Investigation Program will be completed as follows:

- Public and private underground utilities and services will be cleared prior to commencement of intrusive investigation activities
- A Health and Safety Plan will be prepared and all work will be executed safely
- One (1) borehole will be advanced on the Phase Two Property to an approximate maximum depth of 5.0 mbgs using a track-mounted drill rig. The soil profile from each borehole will be logged in the field and samples will be screened for TOV with a PID. The location of the boreholes will be selected to investigate any APECs identified during the Site visit, as well as to delineate the horizontal and vertical extents of relevant parameters of concern.
- Based on field screening and visual/olfactory observations, worst-case/representative soil samples from the boreholes will be submitted for laboratory testing of relevant parameters of concern.
- One (1) groundwater monitoring well will be installed within the borehole to assess groundwater quality below the Site;
- The groundwater level in the well will be measured at least 24 hours after well development has been completed.
- The groundwater well will be purged to remove stagnant water and sampled for laboratory testing of relevant parameters of concern.
- Both soil and groundwater samples will be submitted for chemical analysis by a CALA laboratory in accordance with the Ontario MOECC standards and requirements of O.Reg. 153/04 under the Environmental Protection Act.

The proposed analytical program is outlined below (proposed program subject to change as a result of site observations/findings). All soil and groundwater sampling will be carried out in accordance with WSP's Standard Operating Procedures (SOPs).

Soils:

- One (1) soil samples for Metals and ORPs
- One (1) soil samples for PAHs
- One (1) soil samples for VOCs

- One (1) soil samples for PHCs
- One (1) soil sample for QA/QC purposes (duplicates)

Groundwater:

- One (1) groundwater samples for Metals and ORPs
- One (1) groundwater samples for VOCs
- One (1) groundwater samples for PHCs
- One (1) groundwater samples for PAHs
- Two (2) groundwater samples for QA/QC purposes (one duplicate and one trip blank)

Following receipt of all of the results, a report in accordance with O.Reg. 153/04 will be prepared.

It is noted that if the Phase Two ESA reveals parameter concentrations greater than the applicable standards set out in *Ontario Regulation 153/04*, then additional work (i.e., supplemental delineation, additional drilling, sampling, analysis, and/or site remediation activities) will be deemed necessary prior to RSC filing, should an RSC be required. The costs for any additional work, if necessary, are beyond the current scope of work.

Finalized Sampling & Analysis Plan

The finalized SAP was created based on the request to complete a Phase Two ESA for due diligence purposes. The SAP was compiled to collect data to provide information on soil and/or groundwater quality in each APEC.

Figure 3 outlines the borehole/monitoring well investigation locations. Table 4.1 provides the proposed and implemented SAP, which includes the specific requirements for sampling and analysis for the areas to be investigated.

Additional delineation may be required following the implementation of this SAP to meet the requirements of O.Reg. 153/04 which requires delineation of all areas where concentrations are above the applicable SCS such as in the following conditions:

Unexpected contamination not previously discovered, or not related to identified APECs, will need to be further delineated to identify source(s); and

Requirement for a minimum of three monitoring wells per stratigraphic unit would have to extend to underlying units if there is evidence of contamination extending into it; the SAP assumes contamination is limited to the upper stratigraphic unit (confirmed with clean sample) then the underlying units do not necessarily have to be characterized. The SAP has been developed using the available data, and may require additional delineation if sampling results come out suggesting impacts are deeper than initially expected.

APPENDIX

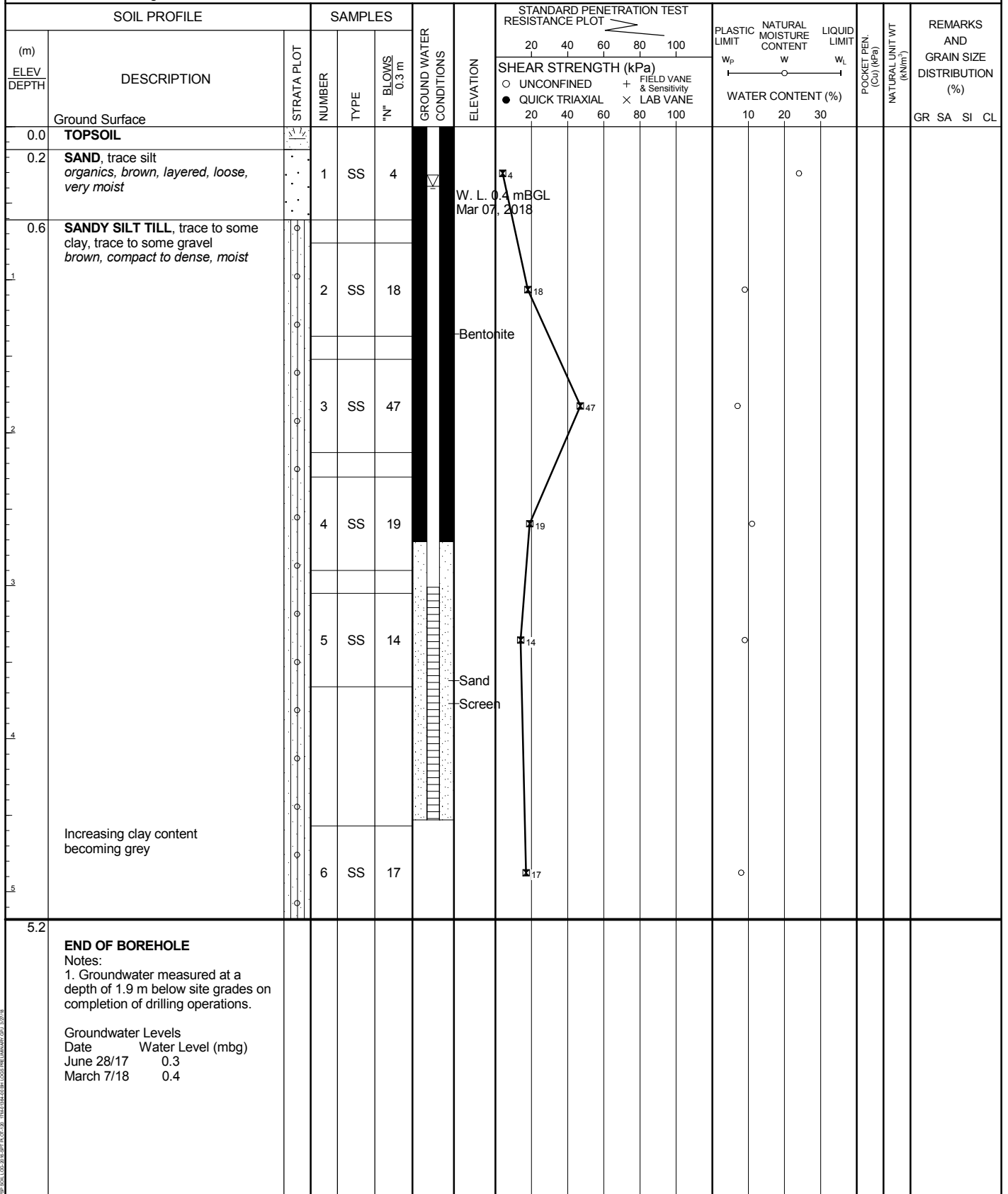
C BOREHOLE LOGS



PROJECT: Hurontario Street/Findlay Drive
 CLIENT: Straw Hat Restoration
 PROJECT LOCATION: Collingwood ON
 DATUM: Relative
 BH LOCATION: See Figure 2

Method: Hollow Stem Auger
 Diameter: 216 mm
 Date: Jun/23/2017

REF. NO.: 17M-01364-00
 ENCL NO.: 1



GROUNDWATER ELEVATIONS

Measurement 1st 2nd 3rd 4th

GRAPH NOTES

+ 3, × 3: Numbers refer to Sensitivity

○ ε=3% Strain at Failure

PROJECT: Hurontario Street/Findlay Drive

CLIENT: Straw Hat Restoration

PROJECT LOCATION: Collingwood ON

DATUM: Relative

BH LOCATION: See Figure 2

Method: Hollow Stem Auger

Diameter: 216 mm

Date: Jun/23/2017

REF. NO.: 17M-01364-00

ENCL NO.: 2

SOIL PROFILE			SAMPLES			GROUND WATER CONDITIONS	ELEVATION	STANDARD PENETRATION TEST RESISTANCE PLOT		PLASTIC LIMIT W _P	NATURAL MOISTURE CONTENT W	LIQUID LIMIT W _L	POCKET PEN. (G _u) (kPa)	NATURAL UNIT WT (kN/m ³)	REMARKS AND GRAIN SIZE DISTRIBUTION (%)		
(m) ELEV DEPTH	DESCRIPTION	STRATA PLOT	NUMBER	TYPE	"N" BLOWS 0.3 m			SHEAR STRENGTH (kPa)								WATER CONTENT (%)	
								○ UNCONFINED ● QUICK TRIAXIAL	+ FIELD VANE & Sensitivity × LAB VANE								
0.0	Ground Surface TOPSOIL														GR SA SI CL		
0.2	SAND , trace silt <i>orangish brown, very loose to dense, moist</i>		1	SS	3			3									
			2	SS	32			32									
1.2	SANDY SILT TILL , trace to some clay, trace to some gravel, occasional cobble <i>brown, compact to very dense, very moist</i>		3	SS	68			68									
			4	SS	31			31									
			5	SS	17			17							7 25 49 19		
	becoming grey		6	SS	31			31									
5.2	END OF BOREHOLE Notes: 1. Borehole open to a depth of 4.0 m below site grades on completion of drilling. 2. Groundwater measured at a depth of 2.5 m below site grades on completion of drilling operations.																

GROUNDWATER ELEVATIONS

Measurement 1st 2nd 3rd 4th

GRAPH NOTES

+ 3, × 3: Numbers refer to Sensitivity

○ s=3% Strain at Failure

PROJECT: Hurontario Street/Findlay Drive
 CLIENT: Straw Hat Restoration
 PROJECT LOCATION: Collingwood ON
 DATUM: Relative
 BH LOCATION: See Figure 2

Method: Hollow Stem Auger
 Diameter: 216 mm
 Date: Jun/23/2017

REF. NO.: 17M-01364-00
 ENCL NO.: 3

SOIL PROFILE			SAMPLES			GROUND WATER CONDITIONS	ELEVATION	STANDARD PENETRATION TEST RESISTANCE PLOT				PLASTIC LIMIT W _p	NATURAL MOISTURE CONTENT W	LIQUID LIMIT W _L	POCKET PEN. (Cu) (kPa)	NATURAL UNIT WT (kNm ³)	REMARKS AND GRAIN SIZE DISTRIBUTION (%)
(m) ELEV DEPTH	DESCRIPTION	STRATA PLOT	NUMBER	TYPE	"N" BLOWS 0.3 m			SHEAR STRENGTH (kPa)									
								○ UNCONFINED	● QUICK TRIAXIAL	+ FIELD VANE & Sensitivity	× LAB VANE						
0.0	Ground Surface TOPSOIL																GR SA SI CL
0.3	SAND , trace silt <i>orangish brown, compact, wet</i>		1	SS	5		5										
							W. L. 0.4 m BGL Mar 07, 2018										
			2	SS	23		23										
1.4	SANDY SILT TILL , trace to some clay, some gravel, occasional cobbles <i>grey, compact to dense, moist</i>						Bentonite										
			3	SS	39		39										
			4	SS	29		29										
			5	SS	26		26										
							Sand										
							Screen										
4.3	GRAVELLY SILTY SAND <i>grey, wet, dense</i>																
			6	SS	43		43									23 46 31	
5.0	END OF BOREHOLE Notes: 1. Groundwater measured at a depth of 0.4 m below site grades on completion of drilling operations. Groundwater Levels Date Water Level (mbg) June 28/17 0.3 March 7/18 0.4																

GROUNDWATER ELEVATIONS

Measurement 1st 2nd 3rd 4th

GRAPH NOTES

+ 3, × 3: Numbers refer to Sensitivity

○ ε=3% Strain at Failure

PROJECT: Hurontario Street/Findlay Drive

CLIENT: Straw Hat Restoration

PROJECT LOCATION: Collingwood ON

DATUM: Relative

BH LOCATION: See Figure 2

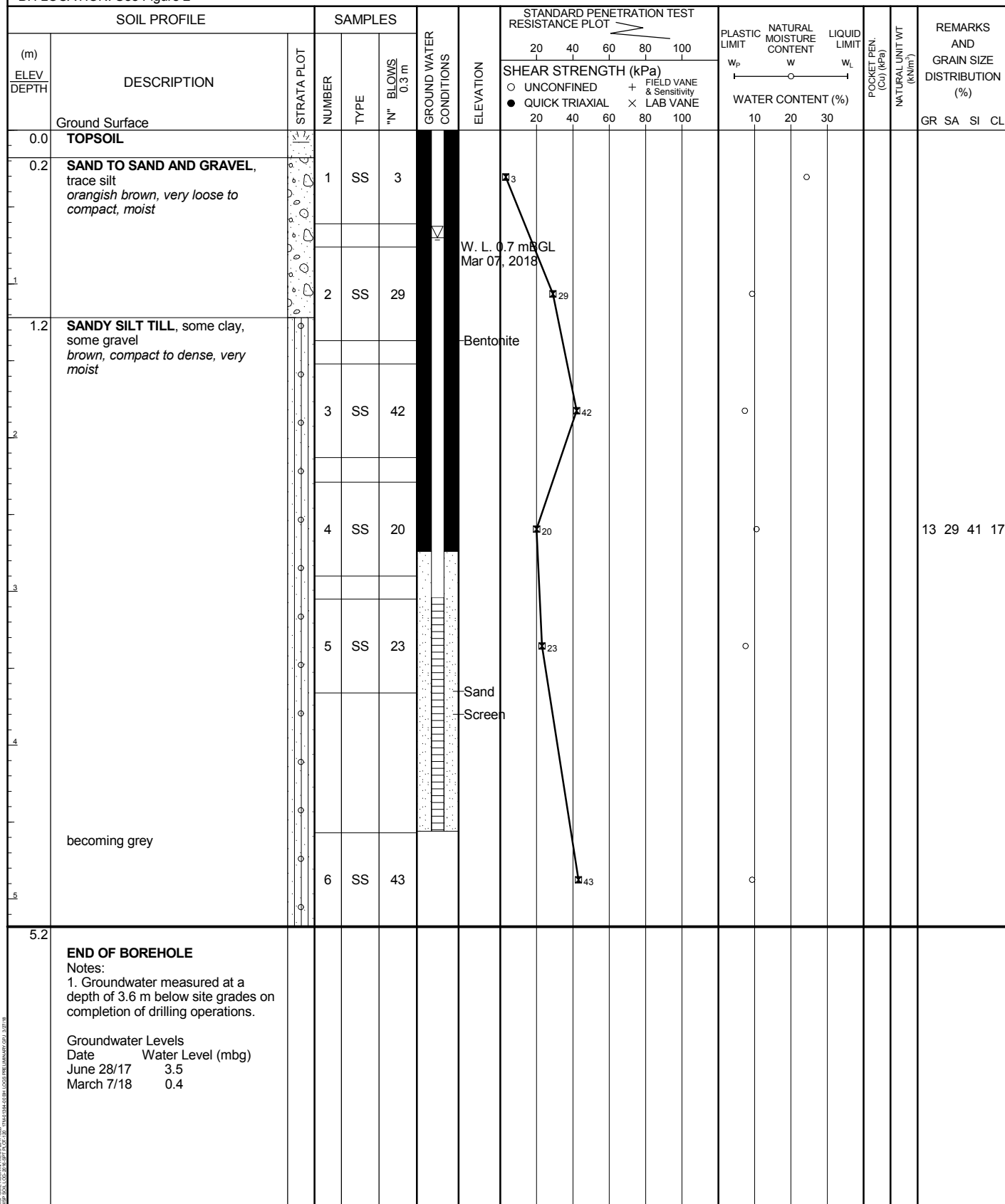
Method: Hollow Stem Auger

Diameter: 216 mm

Date: Jun/23/2017

REF. NO.: 17M-01364-00

ENCL NO.: 4



GROUNDWATER ELEVATIONS

	1st	2nd	3rd	4th
Measurement				

GRAPH
NOTES

$+^3, \times^3$: Numbers refer to Sensitivity

○ $\epsilon=3\%$ Strain at Failure

PROJECT: Hurontario Street/Findlay Drive

CLIENT: Straw Hat Restoration

PROJECT LOCATION: Collingwood ON

DATUM: Relative

BH LOCATION: See Figure 2

Method: Hollow Stem Auger

Diameter: 216 mm

Date: Mar/02/2018

REF. NO.: 17M-01364-00

ENCL NO.: 5

SOIL PROFILE			SAMPLES			GROUND WATER CONDITIONS	ELEVATION	STANDARD PENETRATION TEST RESISTANCE PLOT		PLASTIC LIMIT NATURAL MOISTURE CONTENT LIQUID LIMIT			POCKET PEN. (Cu) (kPa)	NATURAL UNIT WT (kNm ³)	REMARKS AND GRAIN SIZE DISTRIBUTION (%)
(m) ELEV DEPTH	DESCRIPTION	STRATA PLOT	NUMBER	TYPE	"N" BLOWS 0.3 m			SHEAR STRENGTH (kPa)		W _p	W	W _L			
0.0	Ground Surface TOPSOIL							20 40 60 80 100	20 40 60 80 100	10 20 30					GR SA SI CL
0.2	FILL, sand <i>brown, moist, loose to compact</i>		1	SS	10			10							PID:0.2ppm
	no recovery, spoon possibly pushing cobble very dense														
1			2	SS	50/ 80mm			50/80mm							
1.5	SILT AND CLAY <i>layered, brown, moist, hard</i>														
1.8	SANDY SILT TILL , some sand, some gravel <i>grey, moist, compact to dense</i>		3	SS	40			40							PID:0.3ppm
			4	SS	15			15							PID:0.2ppm
			5	SS	14			14							PID:0.2ppm
3.7	END OF BOREHOLE Notes: 1. Installed 50mm groundwater monitoring well upon completion. Groundwater Levels Date Water Level (mbg) March 7/18 1.1														

GROUNDWATER ELEVATIONS

Measurement 1st 2nd 3rd 4th

GRAPH
NOTES+ 3, × 3: Numbers refer
to Sensitivity

○ ε=3% Strain at Failure

PROJECT: Hurontario Street/Findlay Drive
CLIENT: Straw Hat Restoration
PROJECT LOCATION: Collingwood ON
DATUM: Relative
BH LOCATION: See Figure 2

Method: Solid Stem Auger
Diameter: 150mm
Date: Mar/02/2018

REF. NO.: 17M-01364-00
ENCL NO.: 6

[illegible]

GROUNDWATER ELEVATIONS

	1st	2nd	3rd	4th
Measurement				

GRAPH
NOTES

$+^3, \times^3$: Numbers refer to Sensitivity

○ $\epsilon=3\%$ Strain at Failure

PROJECT: Hurontario Street/Findlay Drive
CLIENT: Straw Hat Restoration
PROJECT LOCATION: Collingwood ON
DATUM: Relative
BH LOCATION: See Figure 2

Method: Solid Stem Auger
Diameter: 150mm
Date: Mar/02/2018

REF. NO.: 17M-01364-00
ENCL NO.: 7

[illegible]

GROUNDWATER ELEVATIONS

	1st	2nd	3rd	4th
Measurement				

GRAPH
NOTES

+ 3, × 3: Numbers refer to Sensitivity

○ $\epsilon=3\%$ Strain at Failure

PROJECT: Hurontario Street/Findlay Drive

CLIENT: Straw Hat Restoration

PROJECT LOCATION: Collingwood ON

DATUM: Relative

BH LOCATION: See Figure 2

Method: Solid Stem Auger

Diameter: 150mm

Date: Mar/02/2018

REF. NO.: 17M-01364-00

ENCL NO.: 8

[illegible]

GROUNDWATER ELEVATIONS

	1st	2nd	3rd	4th
Measurement				

GRAPH
NOTES

+ 3, × 3: Numbers refer to Sensitivity

○ $\epsilon=3\%$ Strain at Failure

BH LOCATION: See Figure 2

GRAPH NOTES + 3, $\times 3$: Numbers refer to Sensitivity ○ $\epsilon=3\%$ Strain at Failure

APPENDIX

D CERTIFICATES OF ANALYSIS



APPENDIX

D-1 SOIL



**CLIENT NAME: WSP CANADA INC.
561 BRYNE DRIVE, UNITS C&D
BARRIE , ON L4N9Y3
(705) 735-9771**

ATTENTION TO: Jason Murchison

PROJECT: 17M-01364-00

AGAT WORK ORDER: 17T231150

SOIL ANALYSIS REVIEWED BY: Scott Ross, Operations Manager

TRACE ORGANICS REVIEWED BY: Neli Popnikolova, Senior Chemist

DATE REPORTED: Jul 06, 2017

PAGES (INCLUDING COVER): 9

VERSION*: 1

Should you require any information regarding this analysis please contact your client services representative at (905) 712-5100

***NOTES**

All samples will be disposed of within 30 days following analysis. Please contact the lab if you require additional sample storage time.

AGAT Laboratories (V1)

Member of: Association of Professional Engineers and Geoscientists of Alberta (APEGA)
Western Enviro-Agricultural Laboratory Association (WEALA)
Environmental Services Association of Alberta (ESAA)

AGAT Laboratories is accredited to ISO/IEC 17025 by the Canadian Association for Laboratory Accreditation Inc. (CALA) and/or Standards Council of Canada (SCC) for specific tests listed on the scope of accreditation. AGAT Laboratories (Mississauga) is also accredited by the Canadian Association for Laboratory Accreditation Inc. (CALA) for specific drinking water tests. Accreditations are location and parameter specific. A complete listing of parameters for each location is available from www.cala.ca and/or www.scc.ca. The tests in this report may not necessarily be included in the scope of accreditation.

*Results relate only to the items tested and to all the items tested
All reportable information as specified by ISO 17025:2005 is available from AGAT Laboratories upon request*



AGAT Laboratories

Certificate of Analysis

AGAT WORK ORDER: 17T231150

PROJECT: 17M-01364-00

5835 COOPERS AVENUE
MISSISSAUGA, ONTARIO
CANADA L4Z 1Y2
TEL (905)712-5100
FAX (905)712-5122
<http://www.agatlabs.com>

CLIENT NAME: WSP CANADA INC.

SAMPLING SITE:

ATTENTION TO: Jason Murchison

SAMPLED BY:

O. Reg. 153(511) - Metals & Inorganics (Soil)

DATE RECEIVED: 2017-06-27		DATE REPORTED: 2017-07-06									
Parameter	Unit	SAMPLE DESCRIPTION:		SAMPLE TYPE:		DATE SAMPLED:		DATE REPORTED:		DATE REPORTED:	
		BH17-01 SS2		BH17-01 SS4		BH17-02 SS1		BH17-02 SS3		BH17-03 SS5	
		G / S	RDL	Soil	Soil	Soil	Soil	Soil	Soil	Soil	Soil
Antimony	µg/g	7.5	0.8	<0.8	<0.8	<0.8	<0.8	<0.8	<0.8	<0.8	<0.8
Arsenic	µg/g	18	1	3	3	11	3	3	3	3	3
Barium	µg/g	390	2	10	24	14	24	22	23	12	26
Beryllium	µg/g	4	0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5
Boron	µg/g	120	5	<5	9	<5	7	7	7	<5	9
Boron (Hot Water Soluble)	µg/g	1.5	0.10	<0.10	0.56	0.25	0.25	0.31	0.50	0.12	0.41
Cadmium	µg/g	1.2	0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5
Chromium	µg/g	160	2	5	8	8	8	7	8	6	8
Cobalt	µg/g	22	0.5	2.2	4.5	2.2	3.4	3.2	3.9	2.5	4.2
Copper	µg/g	140	1	4	11	6	10	8	8	6	11
Lead	µg/g	120	1	4	4	32	6	5	4	4	4
Molybdenum	µg/g	6.9	0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5
Nickel	µg/g	100	1	3	9	4	7	6	7	4	8
Selenium	µg/g	2.4	0.4	<0.4	<0.4	<0.4	<0.4	<0.4	<0.4	<0.4	<0.4
Silver	µg/g	20	0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2
Thallium	µg/g	1	0.4	<0.4	<0.4	<0.4	<0.4	<0.4	<0.4	<0.4	<0.4
Uranium	µg/g	23	0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5
Vanadium	µg/g	86	1	9	13	18	11	11	12	12	12
Zinc	µg/g	340	5	13	19	19	20	16	18	14	19
Chromium VI	µg/g	8	0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2
Cyanide	µg/g	0.051	0.040	<0.040	<0.040	<0.040	<0.040	<0.040	<0.040	<0.040	<0.040
Mercury	µg/g	0.27	0.10	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10
Electrical Conductivity	mS/cm	0.7	0.005	0.108	0.159	0.119	0.255	0.163	0.169	0.105	0.199
Sodium Adsorption Ratio	NA	5	NA	0.090	0.262	0.062	0.157	0.231	0.267	0.201	0.216
pH, 2:1 CaCl2 Extraction	pH Units		NA	7.72	7.76	7.80	7.94	8.01	8.06	7.86	8.05

Comments: RDL - Reported Detection Limit; G / S - Guideline / Standard; Refers to Table 3: Full Depth Generic Site Condition Standards in a Non-Potable Ground Water Condition - Soil - Residential/Parkland/Institutional Property Use - Coarse Textured Soils

Guideline values are for general reference only. The guidelines provided may or may not be relevant for the intended use. Refer directly to the applicable standard for regulatory interpretation.

8512961-8513044 EC & SAR were determined on the DI water extract obtained from the 2:1 leaching procedure (2 parts DI water:1 part soil). pH was determined on the 0.01M CaCl2 extract prepared at 2:1 ratio.

Certified By:



AGAT Laboratories

Certificate of Analysis

AGAT WORK ORDER: 17T231150

PROJECT: 17M-01364-00

5835 COOPERS AVENUE
MISSISSAUGA, ONTARIO
CANADA L4Z 1Y2
TEL (905)712-5100
FAX (905)712-5122
<http://www.agatlabs.com>

CLIENT NAME: WSP CANADA INC.

SAMPLING SITE:

ATTENTION TO: Jason Murchison

SAMPLED BY:

O. Reg. 153(511) - OC Pesticides (Soil)																	
DATE RECEIVED: 2017-06-27				DATE REPORTED: 2017-07-06													
SAMPLE DESCRIPTION:				BH17-01 SS3		BH17-01 SS5		BH17-02 SS2		BH17-02 SS4		BH17-03 SS1		BH17-03 SS4		BH17-04 SS1	
SAMPLE TYPE:				Soil		Soil		Soil		Soil		Soil		Soil		Soil	
DATE SAMPLED:				2017-06-22		2017-06-22		2017-06-22		2017-06-22		2017-06-23		2017-06-23		2017-06-23	
G / S				8512963		8512976		8512980		8512985		8512992		8513021		8513025	
RDL																	
Parameter	Unit	G / S	RDL	Soil	Soil	Soil	Soil	Soil	Soil	Soil	Soil	Soil	Soil	Soil	Soil	Soil	Soil
Hexachloroethane	µg/g	0.089	0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01
Gamma-Hexachlorocyclohexane	µg/g	0.056	0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005
Heptachlor	µg/g	0.15	0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005
Aldrin	µg/g	0.05	0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005
Heptachlor Epoxide	µg/g	0.05	0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005
Endosulfan	µg/g	0.04	0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005
Chlordane	µg/g	0.05	0.007	<0.007	<0.007	<0.007	<0.007	<0.007	<0.007	<0.007	<0.007	<0.007	<0.007	<0.007	<0.007	<0.007	<0.007
DDE	µg/g	0.26	0.007	<0.007	<0.007	<0.007	<0.007	<0.007	<0.007	<0.007	<0.007	0.13	<0.007	<0.007	0.057	<0.007	<0.007
DDD	µg/g	3.3	0.007	<0.007	<0.007	<0.007	<0.007	<0.007	<0.007	<0.007	<0.007	<0.007	<0.007	<0.007	<0.007	<0.007	<0.007
DDT	µg/g	1.4	0.007	<0.007	<0.007	<0.007	<0.007	<0.007	<0.007	<0.007	<0.007	<0.007	<0.007	<0.007	0.014	<0.007	<0.007
Dieldrin	µg/g	0.05	0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005
Endrin	µg/g	0.04	0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005
Methoxychlor	µg/g	0.13	0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005
Hexachlorobenzene	µg/g	0.52	0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005
Hexachlorobutadiene	µg/g	0.012	0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01
Moisture Content	%	0.1	0.1	7.7	12.2	13.3	10.0	24.4	7.7	13.3	10.0	24.4	7.7	8.2	7.7	7.7	7.7
Acceptable Limits																	
Surrogate	Unit																
TCMX	%	50-140		74	62	62	59	60	62	59	62	60	62	62	72	80	80
Decachlorobiphenyl	%	60-130		73	68	74	62	71	62	74	62	71	61	61	96	90	90

Comments: RDL - Reported Detection Limit; G / S - Guideline / Standard; Refers to Table 3: Full Depth Generic Site Condition Standards in a Non-Potable Ground Water Condition - Soil - Residential/Parkland/Institutional Property Use - Coarse Textured Soils

Guideline values are for general reference only. The guidelines provided may or may not be relevant for the intended use. Refer directly to the applicable standard for regulatory interpretation.

Results are based on the dry weight of the soil.

Note: DDT applies to the total of op'DDT and pp'DDT, DDD applies to the total of op'DDD and pp'DDD and DDE applies to the total of op'DDE and pp'DDE. Endosulfan I and Endosulfan II.

Chlordane applies to the total of Alpha-Chlordane and Gamma-Chlordane.

8512963-8513041

Certified By:

N Popmickalof



AGAT

Laboratories

Certificate of Analysis

AGAT WORK ORDER: 17T231150

PROJECT: 17M-01364-00

5835 COOPERS AVENUE
MISSISSAUGA, ONTARIO
CANADA L4Z 1Y2
TEL (905)712-5100
FAX (905)712-5122
<http://www.agatlabs.com>

CLIENT NAME: WSP CANADA INC.

SAMPLING SITE:

ATTENTION TO: Jason Murchison

SAMPLED BY:

O. Reg. 153(511) - PHCs F1 - F4 (Soil)											
DATE RECEIVED: 2017-06-27				DATE REPORTED: 2017-07-06							
SAMPLE DESCRIPTION: BH17-01 SS3 BH17-01 SS5 BH17-02 SS2 BH17-02 SS4 BH17-03 SS2 BH17-03 SS4 BH17-04 SS3											
SAMPLE TYPE: Soil Soil Soil Soil Soil Soil Soil											
DATE SAMPLED: 2017-06-22 2017-06-22 2017-06-22 2017-06-22 2017-06-23 2017-06-23 2017-06-23											
G / S RDL 8512963 8512976 8512980 8512985 8512996 8513021 8513041											
Parameter	Unit	G / S	RDL	Soil	Soil	Soil	Soil	Soil	Soil	Soil	Soil
Benzene	µg/g	0.21	0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02
Toluene	µg/g	2.3	0.08	<0.08	<0.08	<0.08	<0.08	<0.08	<0.08	<0.08	<0.08
Ethylbenzene	µg/g	2	0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05
Xylene Mixture	µg/g	3.1	0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05
F1 (C6 to C10)	µg/g	55	5	<5	<5	<5	<5	<5	<5	<5	<5
F1 (C6 to C10) minus BTEX	µg/g	55	5	<5	<5	<5	<5	<5	<5	<5	<5
F2 (C10 to C16)	µg/g	98	10	<10	<10	<10	<10	<10	<10	<10	<10
F3 (C16 to C34)	µg/g	300	50	<50	<50	<50	<50	<50	<50	<50	<50
F4 (C34 to C50)	µg/g	2800	50	<50	<50	<50	<50	<50	<50	<50	<50
Gravimetric Heavy Hydrocarbons	µg/g	2800	50	NA	NA	NA	NA	NA	NA	NA	NA
Moisture Content	%	0.1	7.7	12.2	13.3	10.0	22.9	8.2	7.7	7.7	7.7
Surrogate	Unit	Acceptable Limits									
Terphenyl	%	60-140									
		78	95	89	81	74	93	74			

Comments:

RDL - Reported Detection Limit; G / S - Guideline / Standard; Refers to Table 3: Full Depth Generic Site Condition Standards in a Non-Potable Ground Water Condition - Soil - Residential/Parkland/Institutional Property Use - Coarse Textured Soils
Guideline values are for general reference only. The guidelines provided may or may not be relevant for the intended use. Refer directly to the applicable standard for regulatory interpretation.

Results are based on sample dry weight.

The C6-C10 fraction is calculated using Toluene response factor.

The C10 - C16, C16 - C34, and C34 - C50 fractions are calculated using the average response factor for n-C10, n-C16, and n-C34.

Gravimetric Heavy Hydrocarbons are not included in the Total C16-C50 and are only determined if the chromatogram of the C34 - C50 hydrocarbons indicates that hydrocarbons >C50 are present.

The chromatogram has returned to baseline by the retention time of nC50.

Total C6 - C50 results are corrected for BTEX contributions.

This method complies with the Reference Method for the CWS PHC and is validated for use in the laboratory.

nC6 and nC10 response factors are within 30% of Toluene response factor.

nC10, nC16 and nC34 response factors are within 10% of their average.

C50 response factor is within 70% of nC10 + nC16 + nC34 average.

Linearity is within 15%.

Extraction and holding times were met for this sample.

Fractions 1-4 are quantified with the contribution of PAHs. Under Ontario Regulation 153, results are considered valid without determining the PAH contribution if not requested by the client.

Quality Control Data is available upon request.

Certified By:



AGAT Laboratories

Certificate of Analysis

AGAT WORK ORDER: 17T231150

PROJECT: 17M-01364-00

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<http://www.agatlabs.com>

CLIENT NAME: WSP CANADA INC.

SAMPLING SITE:

ATTENTION TO: Jason Murchison

SAMPLED BY:

O. Reg. 153(511) - PHCs F2 - F4 (Soil)

DATE RECEIVED: 2017-06-27

DATE REPORTED: 2017-07-06

SAMPLE DESCRIPTION: BH17-04 SS1

SAMPLE TYPE: Soil

DATE SAMPLED: 2017-06-23

G / S RDL 8513025

Parameter Unit

F2 (C10 to C16) µg/g

98

10

<10

F3 (C16 to C34) µg/g

300

50

<50

F4 (C34 to C50) µg/g

2800

50

<50

Gravimetric Heavy Hydrocarbons µg/g

2800

50

NA

Moisture Content %

0.1

15.6

Surrogate Unit

Acceptable Limits

60-140

75

Terphenyl %

Comments:

RDL - Reported Detection Limit; G / S - Guideline / Standard; Refers to Table 3: Full Depth Generic Site Condition Standards in a Non-Potable Ground Water Condition - Soil - Residential/Parkland/Institutional Property Use - Coarse Textured Soils

Guideline values are for general reference only. The guidelines provided may or may not be relevant for the intended use. Refer directly to the applicable standard for regulatory interpretation.

Results are based on sample dry weight.

The C10 - C16, C16 - C34, and C34 - C50 fractions are calculated using the average response factor for n-C10, n-C16, and n-C34.

Gravimetric Heavy Hydrocarbons are not included in the Total C16-C50 and are only determined if the chromatogram of the C34 - C50 hydrocarbons indicates that hydrocarbons >C50 are present. The chromatogram has returned to baseline by the retention time of nC50.

This method complies with the Reference Method for the CWS PHC and is validated for use in the laboratory.

nC6 and nC10 response factors are within 30% of Toluene response factor.

nC10, nC16 and nC34 response factors are within 10% of their average.

C50 response factor is within 70% of nC10 + nC16 + nC34 average.

Linearity is within 15%.

Extraction and holding times were met for this sample.

Fractions 1-4 are quantified with the contribution of PAHs.

Under Ontario Regulation 153, results are considered valid without determining the PAH contribution if not requested by the client.

Quality Control Data is available upon request.

Certified By:



Quality Assurance

CLIENT NAME: WSP CANADA INC.

PROJECT: 17M-01364-00

SAMPLING SITE:

AGAT WORK ORDER: 17T231150

ATTENTION TO: Jason Murchison

SAMPLED BY:

Soil Analysis															
RPT Date: Jul 06, 2017			DUPLICATE			Method Blank	REFERENCE MATERIAL			METHOD BLANK SPIKE			MATRIX SPIKE		
PARAMETER	Batch	Sample Id	Dup #1	Dup #2	RPD		Measured Value	Acceptable Limits		Recovery	Acceptable Limits		Recovery	Acceptable Limits	
								Lower	Upper		Lower	Upper		Lower	Upper
O. Reg. 153(511) - Metals & Inorganics (Soil)															
Antimony	8512961	8512961	<0.8	<0.8	NA	< 0.8	106%	70%	130%	96%	80%	120%	84%	70%	130%
Arsenic	8512961	8512961	3	3	NA	< 1	111%	70%	130%	90%	80%	120%	93%	70%	130%
Barium	8512961	8512961	10	12	18.2%	< 2	109%	70%	130%	100%	80%	120%	99%	70%	130%
Beryllium	8512961	8512961	<0.5	<0.5	NA	< 0.5	75%	70%	130%	98%	80%	120%	90%	70%	130%
Boron	8512961	8512961	<5	<5	NA	< 5	73%	70%	130%	99%	80%	120%	90%	70%	130%
Boron (Hot Water Soluble)	8512961	8512961	<0.10	<0.10	NA	< 0.10	93%	60%	140%	104%	70%	130%	97%	60%	140%
Cadmium	8512961	8512961	<0.5	<0.5	NA	< 0.5	99%	70%	130%	95%	80%	120%	97%	70%	130%
Chromium	8512961	8512961	5	5	NA	< 2	87%	70%	130%	99%	80%	120%	82%	70%	130%
Cobalt	8512961	8512961	2.2	2.3	NA	< 0.5	98%	70%	130%	91%	80%	120%	93%	70%	130%
Copper	8512961	8512961	4	5	NA	< 1	95%	70%	130%	99%	80%	120%	90%	70%	130%
Lead	8512961	8512961	4	4	NA	< 1	105%	70%	130%	96%	80%	120%	85%	70%	130%
Molybdenum	8512961	8512961	<0.5	<0.5	NA	< 0.5	100%	70%	130%	103%	80%	120%	108%	70%	130%
Nickel	8512961	8512961	3	3	NA	< 1	102%	70%	130%	93%	80%	120%	93%	70%	130%
Selenium	8512961	8512961	<0.4	<0.4	NA	< 0.4	101%	70%	130%	98%	80%	120%	99%	70%	130%
Silver	8512961	8512961	<0.2	<0.2	NA	< 0.2	92%	70%	130%	91%	80%	120%	89%	70%	130%
Thallium	8512961	8512961	<0.4	<0.4	NA	< 0.4	99%	70%	130%	96%	80%	120%	91%	70%	130%
Uranium	8512961	8512961	<0.5	<0.5	NA	< 0.5	90%	70%	130%	95%	80%	120%	96%	70%	130%
Vanadium	8512961	8512961	9	9	0.0%	< 1	94%	70%	130%	101%	80%	120%	87%	70%	130%
Zinc	8512961	8512961	13	13	NA	< 5	100%	70%	130%	98%	80%	120%	95%	70%	130%
Chromium VI	8509348		<0.2	<0.2	NA	< 0.2	99%	70%	130%	103%	80%	120%	93%	70%	130%
Cyanide	8512961	8512961	<0.040	<0.040	NA	< 0.040	91%	70%	130%	103%	80%	120%	110%	70%	130%
Mercury	8512961	8512961	<0.10	<0.10	NA	< 0.10	107%	70%	130%	99%	80%	120%	86%	70%	130%
Electrical Conductivity	8512961	8512961	0.108	0.111	2.7%	< 0.005	96%	90%	110%	NA			NA		
Sodium Adsorption Ratio	8512961	8512961	0.090	0.095	5.4%	NA	NA			NA			NA		
pH, 2:1 CaCl2 Extraction	8513001	8513001	8.01	7.98	0.4%	NA	101%	80%	120%	NA			NA		

Comments: NA signifies Not Applicable.

Duplicate Qualifier: As the measured result approaches the RL, the uncertainty associated with the value increases dramatically, thus duplicate acceptance limits apply only where the average of the two duplicates is greater than five times the RL.

Certified By:

Quality Assurance

CLIENT NAME: WSP CANADA INC.

PROJECT: 17M-01364-00

SAMPLING SITE:

AGAT WORK ORDER: 17T231150

ATTENTION TO: Jason Murchison

SAMPLED BY:

Trace Organics Analysis

RPT Date: Jul 06, 2017			DUPLICATE			Method Blank	REFERENCE MATERIAL		METHOD BLANK SPIKE			MATRIX SPIKE			
PARAMETER	Batch	Sample Id	Dup #1	Dup #2	RPD		Measured Value	Acceptable Limits		Recovery	Acceptable Limits		Recovery	Acceptable Limits	
								Lower	Upper		Lower	Upper		Lower	Upper

O. Reg. 153(511) - OC Pesticides (Soil)

Hexachloroethane	8509490		< 0.01	< 0.01	NA	< 0.01	99%	50%	140%	70%	50%	140%	84%	50%	140%
Gamma-Hexachlorocyclohexane	8509490		< 0.005	< 0.005	NA	< 0.005	105%	50%	140%	74%	50%	140%	74%	50%	140%
Heptachlor	8509490		< 0.005	< 0.005	NA	< 0.005	103%	50%	140%	90%	50%	140%	90%	50%	140%
Aldrin	8509490		< 0.005	< 0.005	NA	< 0.005	106%	50%	140%	90%	50%	140%	90%	50%	140%
Heptachlor Epoxide	8509490		< 0.005	< 0.005	NA	< 0.005	107%	50%	140%	102%	50%	140%	100%	50%	140%
Endosulfan	8509490		< 0.005	< 0.005	NA	< 0.005	106%	50%	140%	87%	50%	140%	88%	50%	140%
Chlordane	8509490		< 0.007	< 0.007	NA	< 0.007	108%	50%	140%	102%	50%	140%	92%	50%	140%
DDE	8509490		< 0.007	< 0.007	NA	< 0.007	106%	50%	140%	109%	50%	140%	100%	50%	140%
DDD	8509490		< 0.007	< 0.007	NA	< 0.007	111%	50%	140%	93%	50%	140%	93%	50%	140%
DDT	8509490		< 0.007	< 0.007	NA	< 0.007	114%	50%	140%	86%	50%	140%	84%	50%	140%
Dieldrin	8509490		< 0.005	< 0.005	NA	< 0.005	107%	50%	140%	102%	50%	140%	96%	50%	140%
Endrin	8509490		< 0.005	< 0.005	NA	< 0.005	109%	50%	140%	102%	50%	140%	98%	50%	140%
Methoxychlor	8509490		< 0.005	< 0.005	NA	< 0.005	112%	50%	140%	94%	50%	140%	102%	50%	140%
Hexachlorobenzene	8509490		< 0.005	< 0.005	NA	< 0.005	105%	50%	140%	96%	50%	140%	96%	50%	140%
Hexachlorobutadiene	8509490		< 0.01	< 0.01	NA	< 0.01	108%	50%	140%	74%	50%	140%	92%	50%	140%

O. Reg. 153(511) - PHCs F1 - F4 (Soil)

Benzene	8509842		< 0.02	< 0.02	NA	< 0.02	114%	60%	130%	117%	60%	130%	108%	60%	130%
Toluene	8509842		< 0.08	< 0.08	NA	< 0.08	114%	60%	130%	116%	60%	130%	115%	60%	130%
Ethylbenzene	8509842		< 0.05	< 0.05	NA	< 0.05	115%	60%	130%	114%	60%	130%	111%	60%	130%
Xylene Mixture	8509842		< 0.05	< 0.05	NA	< 0.05	111%	60%	130%	111%	60%	130%	109%	60%	130%
F1 (C6 to C10)	8509842		< 5	< 5	NA	< 5	76%	60%	130%	86%	85%	115%	71%	70%	130%
F2 (C10 to C16)	8515718		< 10	< 10	NA	< 10	100%	60%	130%	95%	80%	120%	72%	70%	130%
F3 (C16 to C34)	8515718		< 50	< 50	NA	< 50	94%	60%	130%	105%	80%	120%	74%	70%	130%
F4 (C34 to C50)	8515718		< 50	< 50	NA	< 50	86%	60%	130%	92%	80%	120%	81%	70%	130%

Comments: When the average of the sample and duplicate results is less than 5x the RDL, the Relative Percent Difference (RPD) will be indicated as Not Applicable (NA).

Certified By:





Method Summary

CLIENT NAME: WSP CANADA INC.

PROJECT: 17M-01364-00

SAMPLING SITE:

AGAT WORK ORDER: 17T231150

ATTENTION TO: Jason Murchison

SAMPLED BY:

PARAMETER	AGAT S.O.P	LITERATURE REFERENCE	ANALYTICAL TECHNIQUE
Soil Analysis			
Antimony	MET-93-6103	EPA SW-846 3050B & 6020A	ICP-MS
Arsenic	MET-93-6103	EPA SW-846 3050B & 6020A	ICP-MS
Barium	MET-93-6103	EPA SW-846 3050B & 6020A	ICP-MS
Beryllium	MET-93-6103	EPA SW-846 3050B & 6020A	ICP-MS
Boron	MET-93-6103	EPA SW-846 3050B & 6020A	ICP-MS
Boron (Hot Water Soluble)	MET-93-6104	EPA SW 846 6010C; MSA, Part 3, Ch.21	ICP/OES
Cadmium	MET-93-6103	EPA SW-846 3050B & 6020A	ICP-MS
Chromium	MET-93-6103	EPA SW-846 3050B & 6020A	ICP-MS
Cobalt	MET-93-6103	EPA SW-846 3050B & 6020A	ICP-MS
Copper	MET-93-6103	EPA SW-846 3050B & 6020A	ICP-MS
Lead	MET-93-6103	EPA SW-846 3050B & 6020A	ICP-MS
Molybdenum	MET-93-6103	EPA SW-846 3050B & 6020A	ICP-MS
Nickel	MET-93-6103	EPA SW-846 3050B & 6020A	ICP-MS
Selenium	MET-93-6103	EPA SW-846 3050B & 6020A	ICP-MS
Silver	MET-93-6103	EPA SW-846 3050B & 6020A	ICP-MS
Thallium	MET-93-6103	EPA SW-846 3050B & 6020A	ICP-MS
Uranium	MET-93-6103	EPA SW-846 3050B & 6020A	ICP-MS
Vanadium	MET-93-6103	EPA SW-846 3050B & 6020A	ICP-MS
Zinc	MET-93-6103	EPA SW-846 3050B & 6020A	ICP-MS
Chromium VI	INOR-93-6029	SM 3500 B; MSA Part 3, Ch. 25	SPECTROPHOTOMETER
Cyanide	INOR-93-6052	MOE CN-3015 & E 3009 A; SM 4500 CN	TECHNICON AUTO ANALYZER
Mercury	MET-93-6103	EPA SW-846 3050B & 6020A	ICP-MS
Electrical Conductivity	INOR-93-6036	McKeague 4.12, SM 2510 B	EC METER
Sodium Adsorption Ratio	INOR-93-6007	McKeague 4.12 & 3.26 & EPA SW-846 6010B	ICP/OES
pH, 2:1 CaCl ₂ Extraction	INOR-93-6031	MSA part 3 & SM 4500-H+ B	PH METER

Method Summary

CLIENT NAME: WSP CANADA INC.

PROJECT: 17M-01364-00

SAMPLING SITE:

AGAT WORK ORDER: 17T231150

ATTENTION TO: Jason Murchison

SAMPLED BY:

PARAMETER	AGAT S.O.P	LITERATURE REFERENCE	ANALYTICAL TECHNIQUE
Trace Organics Analysis			
Hexachloroethane	ORG-91-5113	EPA SW-846 3541,3620 & 8081	GC/ECD
Gamma-Hexachlorocyclohexane	ORG-91-5113	EPA SW-846 3541,3620 & 8081	GC/ECD
Heptachlor	ORG-91-5113	EPA SW-846 3541,3620 & 8081	GC/ECD
Aldrin	ORG-91-5113	EPA SW-846 3541,3620 & 8081	GC/ECD
Heptachlor Epoxide	ORG-91-5113	EPA SW-846 3541,3620 & 8081	GC/ECD
Endosulfan	ORG-91-5113	EPA SW-846 3541,3620 & 8081	GC/ECD
Chlordane	ORG-91-5113	EPA SW-846 3541,3620 & 8081	GC/ECD
DDE	ORG-91-5113	EPA SW-846 3541,3620 & 8081	GC/ECD
DDD	ORG-91-5113	EPA SW-846 3541,3620 & 8081	GC/ECD
DDT	ORG-91-5113	EPA SW-846 3541,3620 & 8081	GC/ECD
Dieldrin	ORG-91-5113	EPA SW-846 3541,3620 & 8081	GC/ECD
Endrin	ORG-91-5113	EPA SW-846 3541,3620 & 8081	GC/ECD
Methoxychlor	ORG-91-5113	EPA SW-846 3541,3620 & 8081	GC/ECD
Hexachlorobenzene	ORG-91-5113	EPA SW-846 3541,3620 & 8081	GC/ECD
Hexachlorobutadiene	ORG-91-5113	EPA SW-846 3541,3620 & 8081	GC/ECD
TCMX	ORG-91-5112	EPA SW-846 3541,3620 & 8081	GC/ECD
Decachlorobiphenyl	ORG-91-5113	EPA SW-846 3541,3620 & 8081	GC/ECD
Moisture Content		MOE E3139	BALANCE
Benzene	VOL-91-5009	EPA SW-846 5035 & 8260	P & T GC/MS
Toluene	VOL-91-5009	EPA SW-846 5035 & 8260	P & T GC/MS
Ethylbenzene	VOL-91-5009	EPA SW-846 5035 & 8260	P & T GC/MS
Xylene Mixture	VOL-91-5009	EPA SW-846 5035 & 8260	P & T GC/MS
F1 (C6 to C10)	VOL-91-5009	CCME Tier 1 Method	P & T GC/FID
F1 (C6 to C10) minus BTEX	VOL-91-5009	CCME Tier 1 Method	P & T GC/FID
F2 (C10 to C16)	VOL-91-5009	CCME Tier 1 Method, EPA SW846 8015	GC / FID
F3 (C16 to C34)	VOL-91-5009	CCME Tier 1 Method, EPA SW846 8015	GC / FID
F4 (C34 to C50)	VOL-91-5009	CCME Tier 1 Method, EPA SW846 8015	GC / FID
Gravimetric Heavy Hydrocarbons	VOL-91-5009	CCME Tier 1 Method	BALANCE
Moisture Content	VOL-91-5009	CCME Tier 1 Method	BALANCE
Terphenyl	VOL-91-5009		GC/FID

CLIENT NAME: WSP CANADA INC
14 RONELL CRESCENT UNIT 1
COLLINGWOOD, ON L9Y 4J7
(705) 445-0064

ATTENTION TO: Nicole Collins

PROJECT: 17M-01364-00

AGAT WORK ORDER: 18T317303

SOIL ANALYSIS REVIEWED BY: Nivine Basily, Inorganics Report Writer

TRACE ORGANICS REVIEWED BY: Oksana Gushyla, Trace Organics Lab Supervisor

DATE REPORTED: Mar 15, 2018

PAGES (INCLUDING COVER): 10

VERSION*: 1

Should you require any information regarding this analysis please contact your client services representative at (905) 712-5100

*NOTES

All samples will be disposed of within 30 days following analysis. Please contact the lab if you require additional sample storage time.



AGAT Laboratories

Certificate of Analysis

AGAT WORK ORDER: 18T317303

PROJECT: 17M-01364-00

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CANADA L4Z 1Y2
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<http://www.agatlabs.com>

CLIENT NAME: WSP CANADA INC

SAMPLING SITE: 774 Hurontario/ Findlay Dr.

ATTENTION TO: Nicole Collins

SAMPLED BY: Brian Cooper/Nicole Collins

O. Reg. 153(511) - Metals & Inorganics (Soil)													
DATE RECEIVED: 2018-03-06				DATE REPORTED: 2018-03-15									
SAMPLE DESCRIPTION: BH18-02 SS2 BH18-02 SS3 BH18-03 SS2 BH18-03 SS4 BH18-04 SS1 BH18-04 SS4 BH18-05 SS1 BH18-05 SS4													
SAMPLE TYPE: Soil Soil Soil Soil Soil Soil Soil Soil													
DATE SAMPLED: 2018-03-02 2018-03-02 2018-03-02 2018-03-02 2018-03-02 2018-03-02 2018-03-02 2018-03-02													
G / S RDL 7.5 0.8 <0.8 <0.8 <0.8 <0.8 <0.8 <0.8													
Parameter	Unit	G / S	RDL	BH18-02 SS2	BH18-02 SS3	BH18-03 SS2	BH18-03 SS4	BH18-04 SS1	BH18-04 SS4	BH18-05 SS1	BH18-05 SS4	2018-03-02	2018-03-02
Antimony	µg/g	7.5	0.8	<0.8	<0.8	<0.8	<0.8	<0.8	<0.8	<0.8	<0.8	<0.8	<0.8
Arsenic	µg/g	18	1	4	4	3	3	6	4	7	3	7	3
Barium	µg/g	390	2	41	29	29	26	28	33	44	35	44	35
Beryllium	µg/g	4	0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5
Boron	µg/g	120	5	10	11	10	10	6	11	6	9	6	9
Boron (Hot Water Soluble)	µg/g	1.5	0.10	0.27	0.55	0.22	0.41	0.21	0.34	0.37	0.24	0.37	0.24
Cadmium	µg/g	1.2	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	2	15	13	10	10	12	13	15	13	15	13
Cobalt	µg/g	22	0.5	8.4	6.9	6.0	5.1	5.2	8.0	5.4	7.2	5.4	7.2
Copper	µg/g	140	1	17	15	12	10	26	17	17	17	17	17
Lead	µg/g	120	1	6	6	4	4	11	6	18	6	18	6
Molybdenum	µg/g	6.9	0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5
Nickel	µg/g	100	1	16	15	12	11	14	17	12	15	12	15
Selenium	µg/g	2.4	0.4	<0.4	<0.4	<0.4	<0.4	0.4	0.4	0.5	0.4	0.5	0.4
Silver	µg/g	20	0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2
Thallium	µg/g	1	0.4	<0.4	<0.4	<0.4	<0.4	<0.4	<0.4	<0.4	<0.4	<0.4	<0.4
Uranium	µg/g	23	0.5	0.6	0.5	<0.5	<0.5	<0.5	0.5	<0.5	0.5	<0.5	0.5
Vanadium	µg/g	86	1	19	15	14	13	15	17	19	18	19	18
Zinc	µg/g	340	5	34	26	23	21	32	31	46	30	46	30
Chromium VI	µg/g	8	0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2
Cyanide	µg/g	0.051	0.040	<0.040	<0.040	<0.040	<0.040	<0.040	<0.040	<0.040	<0.040	<0.040	<0.040
Mercury	µg/g	0.27	0.10	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10
Electrical Conductivity	mS/cm	0.7	0.005	0.176	0.206	0.164	0.237	0.144	0.189	0.149	0.218	0.149	0.218
Sodium Adsorption Ratio	NA	5	NA	0.327	0.231	0.126	0.138	0.030	0.158	0.040	0.208	0.040	0.208
pH, 2:1 CaCl2 Extraction	pH Units		NA	7.58	7.82	7.78	7.80	7.60	7.71	7.54	7.76	7.54	7.76

Comments: RDL - Reported Detection Limit; G / S - Guideline / Standard; Refers to Table 3: Full Depth Generic Site Condition Standards in a Non-Potable Ground Water Condition - Soil - Residential/Parkland/Institutional Property Use - Coarse Textured Soils

Guideline values are for general reference only. The guidelines provided may or may not be relevant for the intended use. Refer directly to the applicable standard for regulatory interpretation.

9104422-9104524 EC & SAR were determined on the DI water extract obtained from the 2:1 leaching procedure (2 parts DI water:1 part soil). pH was determined on the 0.01M CaCl2 extract prepared at 2:1 ratio.

Certified By:

Nivine Basily



AGAT Laboratories

Certificate of Analysis

AGAT WORK ORDER: 18T317303

PROJECT: 17M-01364-00

5835 COOPERS AVENUE
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CLIENT NAME: WSP CANADA INC

SAMPLING SITE: 774 Hurontario/ Findlay Dr.

ATTENTION TO: Nicole Collins

SAMPLED BY: Brian Cooper/Nicole Collins

O. Reg. 153(511) - OC Pesticides (Soil)													
DATE RECEIVED: 2018-03-06				DATE REPORTED: 2018-03-15									
Parameter		SAMPLE DESCRIPTION:		SAMPLE TYPE:		DATE SAMPLED:		DATE SAMPLED:		DATE SAMPLED:		DATE SAMPLED:	
		BH18-02 SS2		BH18-02 SS1		BH18-03 SS1		BH18-03 SS2		BH18-04 SS1		BH18-04 SS4	
		G / S	RDL	Soil	Soil	Soil	Soil	Soil	Soil	Soil	Soil	Soil	Soil
Hexachloroethane	µg/g	0.089	0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01
Gamma-Hexachlorocyclohexane	µg/g	0.056	0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005
Heptachlor	µg/g	0.15	0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005
Aldrin	µg/g	0.05	0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005
Heptachlor Epoxide	µg/g	0.05	0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005
Endosulfan	µg/g	0.04	0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005
Chlordane	µg/g	0.05	0.007	<0.007	<0.007	<0.007	<0.007	<0.007	<0.007	<0.007	<0.007	<0.007	<0.007
DDE	µg/g	0.26	0.007	<0.007	0.014	0.022	<0.007	<0.007	<0.007	<0.007	<0.007	0.048	<0.007
DDD	µg/g	3.3	0.007	<0.007	<0.007	<0.007	<0.007	<0.007	<0.007	<0.007	<0.007	<0.007	<0.007
DDT	µg/g	1.4	0.007	<0.007	0.011	0.008	<0.007	<0.007	<0.007	<0.007	<0.007	0.050	<0.007
Dieldrin	µg/g	0.05	0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005
Endrin	µg/g	0.04	0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005
Methoxychlor	µg/g	0.13	0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005
Hexachlorobenzene	µg/g	0.52	0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005
Hexachlorobutadiene	µg/g	0.012	0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01
Moisture Content	%	0.1	14.8	17.4	23	8.7	10.6	11.3	13.7	14.7	14.7	14.7	14.7
Surrogate	Unit	Acceptable Limits											
TCMX	%	50-140	68	66	62	102	60	72	68	70	70	70	70
Decachlorobiphenyl	%	60-130	84	74	90	88	76	82	80	80	80	80	80

Comments: RDL - Reported Detection Limit; G / S - Guideline / Standard; Refers to Table 3: Full Depth Generic Site Condition Standards in a Non-Potable Ground Water Condition - Soil - Residential/Parkland/Institutional Property Use - Coarse Textured Soils

Guideline values are for general reference only. The guidelines provided may or may not be relevant for the intended use. Refer directly to the applicable standard for regulatory interpretation.

9104422-9104516 Results are based on the dry weight of the soil.

Note: DDT applies to the total of op'DDT and pp'DDT, DDD applies to the total of op'DDD and pp'DDD and DDE applies to the total of op'DDE and pp'DDE. Endosulfan I and Endosulfan II.

Chlordane applies to the total of Alpha-Chlordane and Gamma-Chlordane.

Certified By:



AGAT Laboratories

Certificate of Analysis

AGAT WORK ORDER: 18T317303

PROJECT: 17M-01364-00

5835 COOPERS AVENUE
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CLIENT NAME: WSP CANADA INC

SAMPLING SITE: 774 Hurontario/ Findlay Dr.

ATTENTION TO: Nicole Collins

SAMPLED BY: Brian Cooper/Nicole Collins

O. Reg. 153(511) - PHCs F1 - F4 (Soil)											
DATE RECEIVED: 2018-03-06				DATE REPORTED: 2018-03-15							
SAMPLE DESCRIPTION: BH18-02 SS2 BH18-02 SS6 BH18-03 SS1 BH18-03 SS5 BH18-04 SS2 BH18-04 SS4 BH18-05 SS3 BH18-05 SS5											
SAMPLE TYPE: Soil Soil Soil Soil Soil Soil Soil											
DATE SAMPLED: 2018-03-02 2018-03-02 2018-03-02 2018-03-02 2018-03-02 2018-03-02 2018-03-02 2018-03-02											
G / S RDL 9104422 9104468 9104477 9104494 9104501 9104505 9104520 9104527											
Parameter	Unit	G / S	RDL	BH18-02 SS2	BH18-02 SS6	BH18-03 SS1	BH18-03 SS5	BH18-04 SS2	BH18-04 SS4	BH18-05 SS3	BH18-05 SS5
Benzene	µg/g	0.21	0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02
Toluene	µg/g	2.3	0.08	<0.08	<0.08	<0.08	<0.08	<0.08	<0.08	<0.08	<0.08
Ethylbenzene	µg/g	2	0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05
Xylene Mixture	µg/g	3.1	0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05
F1 (C6 to C10)	µg/g	55	5	<5	<5	<5	<5	<5	<5	<5	<5
F1 (C6 to C10) minus BTEX	µg/g	55	5	<5	<5	<5	<5	<5	<5	<5	<5
F2 (C10 to C16)	µg/g	98	10	<10	<10	<10	<10	<10	<10	<10	<10
F3 (C16 to C34)	µg/g	300	50	<50	<50	<50	<50	<50	<50	<50	<50
F4 (C34 to C50)	µg/g	2800	50	<50	<50	<50	<50	<50	<50	<50	<50
Gravimetric Heavy Hydrocarbons	µg/g	2800	50	NA	NA	NA	NA	NA	NA	NA	NA
Moisture Content	%	0.1	14.8	14.8	7.8	16.8	9.7	14.9	11.3	16.5	13.4
Surrogate	Unit	Acceptable Limits									
Terphenyl	%	60-140		76	73	79	67	62	70	79	96

Comments:

RDL - Reported Detection Limit; G / S - Guideline / Standard; Refers to Table 3: Full Depth Generic Site Condition Standards in a Non-Potable Ground Water Condition - Soil - Residential/Parkland/Institutional Property Use - Coarse Textured Soils

Guideline values are for general reference only. The guidelines provided may or may not be relevant for the intended use. Refer directly to the applicable standard for regulatory interpretation.

9104422-9104527 Results are based on sample dry weight.

The C6-C10 fraction is calculated using Toluene response factor.

The C10 - C16, C16 - C34, and C34 - C50 fractions are calculated using the average response factor for n-C10, n-C16, and n-C34.

Gravimetric Heavy Hydrocarbons are not included in the Total C16-C50 and are only determined if the chromatogram of the C34 - C50 hydrocarbons indicates that hydrocarbons >C50 are present.

The chromatogram has returned to baseline by the retention time of nC50.

Total C6 - C50 results are corrected for BTEX contributions.

This method complies with the Reference Method for the CWS PHC and is validated for use in the laboratory.

nC6 and nC10 response factors are within 30% of Toluene response factor.

nC10, nC16 and nC34 response factors are within 10% of their average.

C50 response factor is within 70% of nC10 + nC16 + nC34 average.

Linearity is within 15%.

Extraction and holding times were met for this sample.

Fractions 1-4 are quantified with the contribution of PAHs. Under Ontario Regulation 153, results are considered valid without determining the PAH contribution if not requested by the client.

Quality Control Data is available upon request.

Certified By: 

Quality Assurance

CLIENT NAME: WSP CANADA INC

PROJECT: 17M-01364-00

SAMPLING SITE: 774 Hurontario/ Findlay Dr.

AGAT WORK ORDER: 18T317303

ATTENTION TO: Nicole Collins

SAMPLED BY: Brian Cooper/Nicole Collins

Soil Analysis															
RPT Date: Mar 15, 2018			DUPLICATE			Method Blank	REFERENCE MATERIAL			METHOD BLANK SPIKE			MATRIX SPIKE		
PARAMETER	Batch	Sample Id	Dup #1	Dup #2	RPD		Measured Value	Acceptable Limits		Recovery	Acceptable Limits		Recovery	Acceptable Limits	
								Lower	Upper		Lower	Upper		Lower	Upper
O. Reg. 153(511) - Metals & Inorganics (Soil)															
Antimony	9104422	9104422	<0.8	<0.8	NA	< 0.8	96%	70%	130%	104%	80%	120%	87%	70%	130%
Arsenic	9104422	9104422	4	4	NA	< 1	104%	70%	130%	107%	80%	120%	105%	70%	130%
Barium	9104422	9104422	41	40	2.5%	< 2	99%	70%	130%	99%	80%	120%	95%	70%	130%
Beryllium	9104422	9104422	<0.5	<0.5	NA	< 0.5	99%	70%	130%	110%	80%	120%	94%	70%	130%
Boron	9104422	9104422	10	11	NA	< 5	74%	70%	130%	104%	80%	120%	86%	70%	130%
Boron (Hot Water Soluble)	9104422	9104422	0.27	0.27	NA	< 0.10	101%	60%	140%	98%	70%	130%	99%	60%	140%
Cadmium	9104422	9104422	<0.5	<0.5	NA	< 0.5	98%	70%	130%	97%	80%	120%	102%	70%	130%
Chromium	9104422	9104422	15	15	0.0%	< 2	89%	70%	130%	100%	80%	120%	100%	70%	130%
Cobalt	9104422	9104422	8.4	8.3	1.2%	< 0.5	101%	70%	130%	107%	80%	120%	103%	70%	130%
Copper	9104422	9104422	17	17	0.0%	< 1	92%	70%	130%	104%	80%	120%	102%	70%	130%
Lead	9104422	9104422	6	6	0.0%	< 1	100%	70%	130%	105%	80%	120%	100%	70%	130%
Molybdenum	9104422	9104422	<0.5	<0.5	NA	< 0.5	97%	70%	130%	107%	80%	120%	109%	70%	130%
Nickel	9104422	9104422	16	16	0.0%	< 1	95%	70%	130%	100%	80%	120%	94%	70%	130%
Selenium	9104422	9104422	<0.4	<0.4	NA	< 0.4	109%	70%	130%	98%	80%	120%	101%	70%	130%
Silver	9104422	9104422	<0.2	<0.2	NA	< 0.2	75%	70%	130%	101%	80%	120%	90%	70%	130%
Thallium	9104422	9104422	<0.4	<0.4	NA	< 0.4	96%	70%	130%	101%	80%	120%	96%	70%	130%
Uranium	9104422	9104422	0.6	0.6	NA	< 0.5	90%	70%	130%	101%	80%	120%	99%	70%	130%
Vanadium	9104422	9104422	19	19	0.0%	< 1	92%	70%	130%	103%	80%	120%	95%	70%	130%
Zinc	9104422	9104422	34	34	0.0%	< 5	98%	70%	130%	105%	80%	120%	109%	70%	130%
Chromium VI	9104531		<0.2	<0.2	NA	< 0.2	77%	70%	130%	103%	80%	120%	97%	70%	130%
Cyanide	9104422	9104422	<0.040	<0.040	NA	< 0.040	94%	70%	130%	100%	80%	120%	97%	70%	130%
Mercury	9104422	9104422	<0.10	<0.10	NA	< 0.10	106%	70%	130%	103%	80%	120%	102%	70%	130%
Electrical Conductivity	9104422	9104422	0.176	0.181	2.8%	< 0.005	96%	90%	110%						
Sodium Adsorption Ratio	9104422	9104422	0.327	0.331	1.2%	NA									
pH, 2:1 CaCl2 Extraction	9107591		7.52	7.51	0.1%	NA	100%	80%	120%						

Comments: NA signifies Not Applicable.

Duplicate Qualifier: As the measured result approaches the RL, the uncertainty associated with the value increases dramatically, thus duplicate acceptance limits apply only where the average of the two duplicates is greater than five times the RL.

Certified By:

divine Basil



Quality Assurance

CLIENT NAME: WSP CANADA INC

PROJECT: 17M-01364-00

SAMPLING SITE: 774 Hurontario/ Findlay Dr.

AGAT WORK ORDER: 18T317303

ATTENTION TO: Nicole Collins

SAMPLED BY: Brian Cooper/Nicole Collins

Trace Organics Analysis

RPT Date: Mar 15, 2018			DUPLICATE			Method Blank	REFERENCE MATERIAL		METHOD BLANK SPIKE			MATRIX SPIKE			
PARAMETER	Batch	Sample Id	Dup #1	Dup #2	RPD		Measured Value	Acceptable Limits		Recovery	Acceptable Limits		Recovery	Acceptable Limits	
								Lower	Upper		Lower	Upper		Lower	Upper

O. Reg. 153(511) - OC Pesticides (Soil)

Hexachloroethane	9104512	< 0.01	< 0.01	NA	< 0.01	81%	50%	140%	90%	50%	140%	70%	50%	140%
Gamma-Hexachlorocyclohexane	9104512	< 0.005	< 0.005	NA	< 0.005	60%	50%	140%	55%	50%	140%	94%	50%	140%
Heptachlor	9104512	< 0.005	< 0.005	NA	< 0.005	93%	50%	140%	114%	50%	140%	87%	50%	140%
Aldrin	9104512	< 0.005	< 0.005	NA	< 0.005	87%	50%	140%	92%	50%	140%	88%	50%	140%
Heptachlor Epoxide	9104512	< 0.005	< 0.005	NA	< 0.005	90%	50%	140%	103%	50%	140%	89%	50%	140%
Endosulfan	9104512	< 0.005	< 0.005	NA	< 0.005	86%	50%	140%	91%	50%	140%	78%	50%	140%
Chlordane	9104512	< 0.007	< 0.007	NA	< 0.007	86%	50%	140%	100%	50%	140%	86%	50%	140%
DDE	9104512	< 0.007	< 0.007	NA	< 0.007	95%	50%	140%	117%	50%	140%	90%	50%	140%
DDD	9104512	< 0.007	< 0.007	NA	< 0.007	97%	50%	140%	110%	50%	140%	86%	50%	140%
DDT	9104512	< 0.007	< 0.007	NA	< 0.007	97%	50%	140%	103%	50%	140%	99%	50%	140%
Dieldrin	9104512	< 0.005	< 0.005	NA	< 0.005	89%	50%	140%	107%	50%	140%	92%	50%	140%
Endrin	9104512	< 0.005	< 0.005	NA	< 0.005	91%	50%	140%	113%	50%	140%	108%	50%	140%
Methoxychlor	9104512	< 0.005	< 0.005	NA	< 0.005	110%	50%	140%	110%	50%	140%	112%	50%	140%
Hexachlorobenzene	9104512	< 0.005	< 0.005	NA	< 0.005	89%	50%	140%	84%	50%	140%	89%	50%	140%
Hexachlorobutadiene	9104512	< 0.01	< 0.01	NA	< 0.01	90%	50%	140%	95%	50%	140%	80%	50%	140%

O. Reg. 153(511) - PHCs F1 - F4 (Soil)

Benzene	9102931	< 0.02	< 0.02	NA	< 0.02	93%	60%	130%	94%	60%	130%	107%	60%	130%
Toluene	9102931	< 0.08	< 0.08	NA	< 0.08	89%	60%	130%	97%	60%	130%	115%	60%	130%
Ethylbenzene	9102931	< 0.05	< 0.05	NA	< 0.05	88%	60%	130%	99%	60%	130%	116%	60%	130%
Xylene Mixture	9102931	< 0.05	< 0.05	NA	< 0.05	85%	60%	130%	96%	60%	130%	115%	60%	130%
F1 (C6 to C10)	9102931	< 5	< 5	NA	< 5	85%	60%	130%	89%	85%	115%	102%	70%	130%
F2 (C10 to C16)	9105581	< 10	< 10	NA	< 10	94%	60%	130%	86%	80%	120%	74%	70%	130%
F3 (C16 to C34)	9105581	< 50	< 50	NA	< 50	97%	60%	130%	84%	80%	120%	75%	70%	130%
F4 (C34 to C50)	9105581	< 50	< 50	NA	< 50	86%	60%	130%	86%	80%	120%	77%	70%	130%

Comments: When the average of the sample and duplicate results is less than 5x the RDL, the Relative Percent Difference (RPD) will be indicated as Not Applicable (NA).

Certified By:

Method Summary

CLIENT NAME: WSP CANADA INC

PROJECT: 17M-01364-00

SAMPLING SITE: 774 Hurontario/ Findlay Dr.

AGAT WORK ORDER: 18T317303

ATTENTION TO: Nicole Collins

SAMPLED BY: Brian Cooper/Nicole Collins

PARAMETER	AGAT S.O.P	LITERATURE REFERENCE	ANALYTICAL TECHNIQUE
Soil Analysis			
Antimony	MET-93-6103	EPA SW-846 3050B & 6020A	ICP-MS
Arsenic	MET-93-6103	EPA SW-846 3050B & 6020A	ICP-MS
Barium	MET-93-6103	EPA SW-846 3050B & 6020A	ICP-MS
Beryllium	MET-93-6103	EPA SW-846 3050B & 6020A	ICP-MS
Boron	MET-93-6103	EPA SW-846 3050B & 6020A	ICP-MS
Boron (Hot Water Soluble)	MET-93-6104	EPA SW 846 6010C; MSA, Part 3, Ch.21	ICP/OES
Cadmium	MET-93-6103	EPA SW-846 3050B & 6020A	ICP-MS
Chromium	MET-93-6103	EPA SW-846 3050B & 6020A	ICP-MS
Cobalt	MET-93-6103	EPA SW-846 3050B & 6020A	ICP-MS
Copper	MET-93-6103	EPA SW-846 3050B & 6020A	ICP-MS
Lead	MET-93-6103	EPA SW-846 3050B & 6020A	ICP-MS
Molybdenum	MET-93-6103	EPA SW-846 3050B & 6020A	ICP-MS
Nickel	MET-93-6103	EPA SW-846 3050B & 6020A	ICP-MS
Selenium	MET-93-6103	EPA SW-846 3050B & 6020A	ICP-MS
Silver	MET-93-6103	EPA SW-846 3050B & 6020A	ICP-MS
Thallium	MET-93-6103	EPA SW-846 3050B & 6020A	ICP-MS
Uranium	MET-93-6103	EPA SW-846 3050B & 6020A	ICP-MS
Vanadium	MET-93-6103	EPA SW-846 3050B & 6020A	ICP-MS
Zinc	MET-93-6103	EPA SW-846 3050B & 6020A	ICP-MS
Chromium VI	INOR-93-6029	SM 3500 B; MSA Part 3, Ch. 25	SPECTROPHOTOMETER
Cyanide	INOR-93-6052	MOE CN-3015 & E 3009 A; SM 4500 CN	TECHNICON AUTO ANALYZER
Mercury	MET-93-6103	EPA SW-846 3050B & 6020A	ICP-MS
Electrical Conductivity	INOR-93-6036	McKeague 4.12, SM 2510 B	EC METER
Sodium Adsorption Ratio	INOR-93-6007	McKeague 4.12 & 3.26 & EPA SW-846 6010B	ICP/OES
pH, 2:1 CaCl ₂ Extraction	INOR-93-6031	MSA part 3 & SM 4500-H+ B	PH METER

Method Summary

CLIENT NAME: WSP CANADA INC

AGAT WORK ORDER: 18T317303

PROJECT: 17M-01364-00

ATTENTION TO: Nicole Collins

SAMPLING SITE: 774 Hurontario/ Findlay Dr.

SAMPLED BY: Brian Cooper/Nicole Collins

PARAMETER	AGAT S.O.P	LITERATURE REFERENCE	ANALYTICAL TECHNIQUE
Trace Organics Analysis			
Hexachloroethane	ORG-91-5113	EPA SW-846 3541,3620 & 8081	GC/ECD
Gamma-Hexachlorocyclohexane	ORG-91-5113	EPA SW-846 3541,3620 & 8081	GC/ECD
Heptachlor	ORG-91-5113	EPA SW-846 3541,3620 & 8081	GC/ECD
Aldrin	ORG-91-5113	EPA SW-846 3541,3620 & 8081	GC/ECD
Heptachlor Epoxide	ORG-91-5113	EPA SW-846 3541,3620 & 8081	GC/ECD
Endosulfan	ORG-91-5113	EPA SW-846 3541,3620 & 8081	GC/ECD
Chlordane	ORG-91-5113	EPA SW-846 3541,3620 & 8081	GC/ECD
DDE	ORG-91-5113	EPA SW-846 3541,3620 & 8081	GC/ECD
DDD	ORG-91-5113	EPA SW-846 3541,3620 & 8081	GC/ECD
DDT	ORG-91-5113	EPA SW-846 3541,3620 & 8081	GC/ECD
Dieldrin	ORG-91-5113	EPA SW-846 3541,3620 & 8081	GC/ECD
Endrin	ORG-91-5113	EPA SW-846 3541,3620 & 8081	GC/ECD
Methoxychlor	ORG-91-5113	EPA SW-846 3541,3620 & 8081	GC/ECD
Hexachlorobenzene	ORG-91-5113	EPA SW-846 3541,3620 & 8081	GC/ECD
Hexachlorobutadiene	ORG-91-5113	EPA SW-846 3541,3620 & 8081	GC/ECD
TCMX	ORG-91-5112	EPA SW-846 3541,3620 & 8081	GC/ECD
Decachlorobiphenyl	ORG-91-5113	EPA SW-846 3541,3620 & 8081	GC/ECD
Moisture Content		MOE E3139	BALANCE
Benzene	VOL-91-5009	EPA SW-846 5035 & 8260	P & T GC/MS
Toluene	VOL-91-5009	EPA SW-846 5035 & 8260	P & T GC/MS
Ethylbenzene	VOL-91-5009	EPA SW-846 5035 & 8260	P & T GC/MS
Xylene Mixture	VOL-91-5009	EPA SW-846 5035 & 8260	P & T GC/MS
F1 (C6 to C10)	VOL-91-5009	CCME Tier 1 Method	P & T GC/FID
F1 (C6 to C10) minus BTEX	VOL-91-5009	CCME Tier 1 Method	P & T GC/FID
F2 (C10 to C16)	VOL-91-5009	CCME Tier 1 Method, EPA SW846 8015	GC / FID
F3 (C16 to C34)	VOL-91-5009	CCME Tier 1 Method, EPA SW846 8015	GC / FID
F4 (C34 to C50)	VOL-91-5009	CCME Tier 1 Method, EPA SW846 8015	GC / FID
Gravimetric Heavy Hydrocarbons	VOL-91-5009	CCME Tier 1 Method	BALANCE
Moisture Content	VOL-91-5009	CCME Tier 1 Method	BALANCE
Terphenyl	VOL-91-5009		GC/FID



Mississauga, Ontario L4Z 1Y2
Ph: 905.712.5100 Fax: 905.712.5122
webearth.agatlabs.com

If this is a Drinking Water sample, please use Drinking Water Chain of Custody Form (potable water consumed by humans)

Report Information:

Company: WSP Canada Inc.

Contact: Nicole Collins

Address: 14 Ronell Cres. Unit 1
Collingwood, ON
(705)443-0064 Fax: (705)443-0067

Phone: nicole.collins@wsp.com

Reports to be sent to:

1. Email: gord.jervis@wsp.com

2. Email:

Project: 17M-01364-00
Site Location: 774 Hurontario/Findlay Dr.
Sampled By: Brian Cooper / Nicole Collins
AGAT Quote #: PO: 100
Please note: If quotation number is not provided, client will be billed full price for analysis.

Company: _____
Contact: _____
Address: _____
Email: Payables.Ontario@wsp.com

Sample Identification	Date Sampled	Time Sampled	# of Containers	Sample Matrix	Comments/ Special Instructions
BH18-02 SSZ	03/02/18	AM	4	S	
BH18-02 SS1	"	"	1	S	
BH18-02 SS3	"	"	1	S	
BH18-02 SS6	"	"	2	S	
BH18-03 SS1	"	"	3	S	
BH18-03 SS2	"	"	1	S	
BH18-03 SS4	"	"	1	S	
BH18-03 SS3	"	"	1	S	
BH18-03 SS5	"	"	2	S	
BH18-04 SS1	"	PM	2	S	
BH18-04 SS7	"	"	2	S	

Samples Relinquished By (Print Name and Sign):	Date	Time	Samples Received By (Print Name and Sign):
Nicole Collins <i>Nicole Collins</i>	03/05/18	4:00pm	
Samples Relinquished By (Print Name and Sign):	Date	Time	Samples Received By (Print Name and Sign):
Samples Relinquished By (Print Name and Sign):	Date	Time	Samples Received By (Print Name and Sign):

Work Order #: 18T317303

Cooler Quantity: _____

Arrival Temperatures: 2.1 | 2.2 | 2.5

Custody Seal Intact: ☐ Yes ☐ No ☐ N/A

Notes: *ie*

Regular TAT ☒ 1-2 business days

Blush TAT (Blush Synchronization App(w))

☐ 3 Business Days
 ☐ 2 Business Days
 ☐ Next Business Day

OR Date Required (Rush Surcharges May Apply):

Please provide prior notification for rush TAT

For 'Same Day' analysis, please contact your AGAT CPM

B	Biota
GW	Ground Water
O	Oil
P	Paint
S	Soil
SD	Sediment
SW	Surface Water

not 900.0

[illegible]

Time		Page 7 of 2
Time		

Time 9:00	Nº: T 064506
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y - AGAT | White Copy- AGAT

 Date Issued: February 22, 2017
 Page 9 of 10



Laboratory Use Only

5835 Coopers Avenue
Mississauga, Ontario L4Z 1Y2
Ph: 905.712.5100 Fax: 905.712.5122
webearth.agatlabs.com

If this is a Drinking Water sample, please use Drinking Water Chain of Custody Form (potable water consumed by humans)

Company: WSP Canada Inc.
Contact: Nicole Collins
Address: 14 Powell Cres, Unit 1
Collingwood, ON
L7G5Y4Y5-0064 Fax: (705)445-0067
Reports to be sent to:
1. Email: nicole.collins@wsp.com
2. Email: gordon.jervis@wsp.com

Project: 17M-01364-06
Site Location: Huronxio / Findlay Collingwood
Sampled By: Brian Cooper / Nicole Collins
AGAT Quote #: PO:

Company: _____
Contact: _____
Address: _____
Email: Payables.ontario@wsp.com

(Please check all applicable boxes)

☒ Regulation 153/04 ☐ Regulation 558

Table Indicate One

☐ In/ Corn ☐ COME

☒ Res/Park ☐ Prov. Water Quality Objectives (PWQO)

☐ Agriculture ☐ Other

Soil Texture (Check One)

☒ Coarse Indicate One

☐ Fine Indicate One

Region Indicate One

☐ Sewer Use ☐ Sanitary ☐ Storm ☐ MISA

Record of Site Condition?	Certificate of Analysis
☐ Yes	☒ Yes
☒ No	☐ No

Certificate of Analysis

B	Biota
GW	Ground Water
O	Oil
P	Paint
S	Soil
SD	Sediment
SW	Surface Water

O	Oil
P	Paint
S	Soil
SD	Sediment
SW	Surface Water

Sample Identification	Date Sampled	Time Sampled	# of Containers	Sample Matrix	Comments/ Special Instructions
BH18-04 S54	03/02/18	PM	4	S	
BH18-05 S51	03/02/18	PM	2	S	
BH18-05 S52	"	"	1	S	
BH18-05 S53	"	"	2	S	
BH18-05 S54	"	"	1	S	
BH18-05 S55	"	"	2	S	

N / Y	Field Filtered - Metals, Hg, CrVI
	Metals and Inorganics
X	All Metals ☐ 153 Metals (excl. Hydrides)
X	Hydride Metals ☐ 153 Metals (incl. Hydrides)
	ORPs: ☐ B-HWS ☐ Cl ☐ CN
	☐ Cr ⁶⁺ ☐ EOC ☐ FOC ☐ Hg
	pH ☐ SAR
	Full Metals Scan
	Regulation/Custom Metals
	Nutrients: ☐ TP ☐ NH ₃ ☐ TKN
	☐ NO ₃ ☐ NO ₂ ☐ NO ₂ +NO ₃
	Volatiles: ☐ VOC ☐ BTEX ☐ THM
	CCME Fractions 1 to 4
	ABNs
	PAHS
	PCBS: ☐ Total ☐ Aroclors
	Organochlorine Pesticides
	TCLP: ☐ M&I ☐ VOCs ☐ ABNs ☐ B(a)P ☐ PCBs
	Sewer Use
	X PHCS + BTEX

Regular TAT

☐ 3 Business Days ☐ 2 Business Days ☐ Next Business Day

OR Date Required (Rush Surcharges May Apply):

Please provide prior notification for rush TAT

For 'Same Day' analysis, please contact your AGAT CPM

Nicole Collins	Nicole Collins	03/05/18	4:00pm
*Services performed through Blue Cross of Michigan *This is a courtesy service. Blue Cross of Michigan is not responsible for the accuracy of the information provided.			

TABLE 1. THE VARIOUS ASPECTS OF THE POLYMERIZATION SYSTEMS

	Date
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CLIENT NAME: WSP CANADA INC
14 RONELL CRESCENT UNIT 1
COLLINGWOOD, ON L9Y 4J7
(705) 445-0064

ATTENTION TO: Nicole Collins

PROJECT: 17M-01364-00

AGAT WORK ORDER: 18T317331

SOIL ANALYSIS REVIEWED BY: Parvathi Malemath, Data Reviewer

TRACE ORGANICS REVIEWED BY: Neli Popnikolova, Senior Chemist

DATE REPORTED: Mar 15, 2018

PAGES (INCLUDING COVER): 15

VERSION*: 1

Should you require any information regarding this analysis please contact your client services representative at (905) 712-5100

*NOTES

All samples will be disposed of within 30 days following analysis. Please contact the lab if you require additional sample storage time.



AGAT Laboratories

Certificate of Analysis

AGAT WORK ORDER: 18T317331

PROJECT: 17M-01364-00

5835 COOPERS AVENUE
MISSISSAUGA, ONTARIO
CANADA L4Z 1Y2
TEL (905)712-5100
FAX (905)712-5122
<http://www.agatlabs.com>

CLIENT NAME: WSP CANADA INC
SAMPLING SITE: 774 Hurontario St.

ATTENTION TO: Nicole Collins
SAMPLED BY: Brian Cooper

O. Reg. 153(511) - Metals & Inorganics (Soil)					DATE REPORTED: 2018-03-15
SAMPLE DESCRIPTION: BH18-01 SS3					
SAMPLE TYPE: Soil					
DATE SAMPLED: 2018-03-02					
Parameter	Unit	G / S	RDL	9104531	
Antimony	µg/g	1.3	0.8	<0.8	
Arsenic	µg/g	18	1	3	
Barium	µg/g	220	2	31	
Beryllium	µg/g	2.5	0.5	<0.5	
Boron	µg/g	36	5	9	
Boron (Hot Water Soluble)	µg/g	NA	0.10	0.24	
Cadmium	µg/g	1.2	0.5	<0.5	
Chromium	µg/g	70	2	12	
Cobalt	µg/g	21	0.5	6.1	
Copper	µg/g	92	1	14	
Lead	µg/g	120	1	5	
Molybdenum	µg/g	2	0.5	<0.5	
Nickel	µg/g	82	1	12	
Selenium	µg/g	1.5	0.4	<0.4	
Silver	µg/g	0.5	0.2	<0.2	
Thallium	µg/g	1	0.4	<0.4	
Uranium	µg/g	2.5	0.5	0.5	
Vanadium	µg/g	86	1	16	
Zinc	µg/g	290	5	27	
Chromium VI	µg/g	0.66	0.2	<0.2	
Cyanide	µg/g	0.051	0.040	<0.040	
Mercury	µg/g	0.27	0.10	<0.10	
Electrical Conductivity	mS/cm	0.57	0.005	0.193	
Sodium Adsorption Ratio	NA	2.4	NA	0.539	
pH, 2:1 CaCl2 Extraction	pH Units		NA	7.77	

Comments: RDL - Reported Detection Limit; G / S - Guideline / Standard; Refers to Table 1: Full Depth Background Site Condition Standards - Soil - Residential/Parkland/Industrial/Commercial/Community Property Use

Guideline values are for general reference only. The guidelines provided may or may not be relevant for the intended use. Refer directly to the applicable standard for regulatory interpretation.

EC & SAR were determined on the DI water extract obtained from the 2:1 leaching procedure (2 parts DI water:1 part soil). pH was determined on the 0.01M CaCl2 extract prepared at 2:1 ratio.

9104531



Certified By:



AGAT Laboratories

Certificate of Analysis

AGAT WORK ORDER: 18T317331

PROJECT: 17M-01364-00

CLIENT NAME: WSP CANADA INC

SAMPLING SITE: 774 Hurontario St.

ATTENTION TO: Nicole Collins

SAMPLED BY: Brian Cooper

5835 COOPERS AVENUE
MISSISSAUGA, ONTARIO
CANADA L4Z 1Y2
TEL (905)712-5100
FAX (905)712-5122
http://www.agatlabs.com

O. Reg. 153(511) - PAHs (Soil)						DATE REPORTED: 2018-03-15
DATE RECEIVED: 2018-03-06		SAMPLE DESCRIPTION: BH18-01 SS3				
Parameter	Unit	SAMPLE TYPE: Soil		DATE SAMPLED: 2018-03-02		9104531
		G / S	RDL			
Naphthalene	µg/g	0.09	0.05		<0.05	
Acenaphthylene	µg/g	0.093	0.05		<0.05	
Acenaphthene	µg/g	0.072	0.05		<0.05	
Fluorene	µg/g	0.12	0.05		<0.05	
Phenanthrene	µg/g	0.69	0.05		<0.05	
Anthracene	µg/g	0.16	0.05		<0.05	
Fluoranthene	µg/g	0.56	0.05		<0.05	
Pyrene	µg/g	1	0.05		<0.05	
Benz(a)anthracene	µg/g	0.36	0.05		<0.05	
Chrysene	µg/g	2.8	0.05		<0.05	
Benzo(b)fluoranthene	µg/g	0.47	0.05		<0.05	
Benzo(k)fluoranthene	µg/g	0.48	0.05		<0.05	
Benzo(a)pyrene	µg/g	0.3	0.05		<0.05	
Indeno(1,2,3-cd)pyrene	µg/g	0.23	0.05		<0.05	
Dibenz(a,h)anthracene	µg/g	0.1	0.05		<0.05	
Benzo(g,h,i)perylene	µg/g	0.68	0.05		<0.05	
Methyl Naphthalene, 2-and 1-	µg/g	0.59	0.05		<0.05	
Surrogate	Unit	Acceptable Limits				
.Chrysene-d12	%	50-140		112		

Comments: RDL - Reported Detection Limit: G / S - Guideline / Standard: Refers to Table 1: Full Depth Background Site Condition Standards - Soil - Residential/Parkland/Industrial/Commercial/Community Property Use

Guideline values are for general reference only. The guidelines provided may or may not be relevant for the intended use. Refer directly to the applicable standard for regulatory interpretation.

Results are based on the dry weight of the soil.

Note: The result for Benzo(b)Fluoranthene is the total of the Benzo(b)&(j)Fluoranthene isomers because the isomers co-elute on the GC column.

9104531

Certified By:



AGAT Laboratories

Certificate of Analysis

AGAT WORK ORDER: 18T317331

PROJECT: 17M-01364-00

CLIENT NAME: WSP CANADA INC

SAMPLING SITE: 774 Hurontario St.

ATTENTION TO: Nicole Collins

SAMPLED BY: Brian Cooper

5835 COOPERS AVENUE
MISSISSAUGA, ONTARIO
CANADA L4Z 1Y2
TEL (905)712-5100
FAX (905)712-5122
<http://www.agatlabs.com>

O. Reg. 153(511) - PHCs F1 - F4 (with PAHs) (Soil)					
DATE RECEIVED: 2018-03-06			DATE REPORTED: 2018-03-15		
SAMPLE DESCRIPTION: BH18-01 SS3					
SAMPLE TYPE: Soil					
DATE SAMPLED: 2018-03-02					
9104531					
Parameter	Unit	G / S	RDL		
F1 (C6 to C10)	µg/g	25	5	<5	
F1 (C6 to C10) minus BTEX	µg/g	25	5	<5	
F2 (C10 to C16)	µg/g	10	10	<10	
F2 (C10 to C16) minus Naphthalene	µg/g		10	<10	
F3 (C16 to C34)	µg/g	240	50	<50	
F3 (C16 to C34) minus PAHs	µg/g		50	<50	
F4 (C34 to C50)	µg/g	120	50	<50	
Gravimetric Heavy Hydrocarbons	µg/g	120	50	NA	
Moisture Content	%		0.1	15.5	
Surrogate	Unit	Acceptable Limits			
		60-140		91	
Terphenyl	%				

Comments:

RDL - Reported Detection Limit; G / S - Guideline / Standard; Refers to Table 1: Full Depth Background Site Condition Standards - Soil - Residential/Parkland/Industrial/Commercial/Community Property Use

Guideline values are for general reference only. The guidelines provided may or may not be relevant for the intended use. Refer directly to the applicable standard for regulatory interpretation.

Results are based on sample dry weight.

The C6-C10 fraction is calculated using toluene response factor.

The C10 - C16, C16 - C34, and C34 - C50 fractions are calculated using the average response factor for n-C10, n-C16, and n-C34.

Gravimetric Heavy Hydrocarbons are not included in the Total C16-C50 and are only determined if the chromatogram of the C34 - C50 hydrocarbons indicates that hydrocarbons >C50 are present.

The chromatogram has returned to baseline by the retention time of nC50.

Total C6 - C50 results are corrected for BTEX and PAH contributions.

This method complies with the Reference Method for the CWS PHC and is validated for use in the laboratory.

nC6 and nC10 response factors are within 30% of Toluene response factor.

nC10, nC16 and nC34 response factors are within 10% of their average.

C50 response factor is within 70% of nC10 + nC16 + nC34 average.

Linearity is within 15%.

Extraction and holding times were met for this sample.

Certified By:



AGAT Laboratories

Certificate of Analysis

AGAT WORK ORDER: 18T317331

PROJECT: 17M-01364-00

5835 COOPERS AVENUE
MISSISSAUGA, ONTARIO
CANADA L4Z 1Y2
TEL (905)712-5100
FAX (905)712-5122
<http://www.agatlabs.com>

CLIENT NAME: WSP CANADA INC
SAMPLING SITE: 774 Hurontario St.

ATTENTION TO: Nicole Collins
SAMPLED BY: Brian Cooper

O. Reg. 153(511) - VOCs (Soil)					DATE REPORTED: 2018-03-15
DATE RECEIVED: 2018-03-06					
Parameter	Unit	SAMPLE DESCRIPTION:		Dup-1 Soil	
		SAMPLE TYPE:			
		DATE SAMPLED:	2018-03-02		
		G / S	RDL	9104532	
Dichlorodifluoromethane	µg/g	0.05	0.05	<0.05	
Vinyl Chloride	ug/g	0.02	0.02	<0.02	
Bromomethane	ug/g	0.05	0.05	<0.05	
Trichlorofluoromethane	ug/g	0.25	0.05	<0.05	
Acetone	ug/g	0.5	0.50	<0.50	
Dichloroethylene, 1,1-	ug/g	0.05	0.05	<0.05	
Methylene Chloride	ug/g	0.05	0.05	<0.05	
Dichloroethylene, Trans- 1,2-	ug/g	0.05	0.05	<0.05	
Methyl tert-butyl Ether	ug/g	0.05	0.05	<0.05	
Dichloroethane, 1,1-	ug/g	0.05	0.02	<0.02	
Methyl Ethyl Ketone	ug/g	0.5	0.50	<0.50	
Dichloroethylene, Cis- 1,2-	ug/g	0.05	0.02	<0.02	
Chloroform	ug/g	0.05	0.04	<0.04	
Dichloroethane, 1,2-	ug/g	0.05	0.03	<0.03	
Trichloroethane, 1,1,1-	ug/g	0.05	0.05	<0.05	
Carbon Tetrachloride	ug/g	0.05	0.05	<0.05	
Benzene	ug/g	0.02	0.02	<0.02	
Dichloropropane, 1,2-	ug/g	0.05	0.03	<0.03	
Trichloroethylene	ug/g	0.05	0.03	<0.03	
Bromodichloromethane	ug/g	0.05	0.05	<0.05	
Methyl Isobutyl Ketone	ug/g	0.5	0.50	<0.50	
Trichloroethane, 1,1,2-	ug/g	0.05	0.04	<0.04	
Toluene	ug/g	0.2	0.05	<0.05	
Dibromochloromethane	ug/g	0.05	0.05	<0.05	
Ethylene Dibromide	ug/g	0.05	0.04	<0.04	
Tetrachloroethylene	ug/g	0.05	0.05	<0.05	
Tetrachloroethane, 1,1,1,2-	ug/g	0.05	0.04	<0.04	
Chlorobenzene	ug/g	0.05	0.05	<0.05	
Ethylbenzene	ug/g	0.05	0.05	<0.05	
Bromoform	ug/g	0.05	0.05	<0.05	

Certified By:

N Popniuk



AGAT Laboratories

Certificate of Analysis

AGAT WORK ORDER: 18T317331

PROJECT: 17M-01364-00

5835 COOPERS AVENUE
MISSISSAUGA, ONTARIO
CANADA L4Z 1Y2
TEL (905)712-5100
FAX (905)712-5122
<http://www.agatlabs.com>

CLIENT NAME: WSP CANADA INC
SAMPLING SITE: 774 Hurontario St.

ATTENTION TO: Nicole Collins
SAMPLED BY: Brian Cooper

O. Reg. 153(511) - VOCs (Soil)						
DATE RECEIVED: 2018-03-06			DATE REPORTED: 2018-03-15			
		SAMPLE DESCRIPTION:		Dup-1		
		SAMPLE TYPE:		Soil		
		DATE SAMPLED:		2018-03-02		
Parameter	Unit	G / S	RDL	9104532		
Styrene	ug/g	0.05	0.05	<0.05		
Tetrachloroethane, 1,1,2,2-	ug/g	0.05	0.05	<0.05		
Dichlorobenzene, 1,3-	ug/g	0.05	0.05	<0.05		
Dichlorobenzene, 1,4-	ug/g	0.05	0.05	<0.05		
Dichlorobenzene, 1,2-	ug/g	0.05	0.05	<0.05		
Xylene Mixture	ug/g	0.05	0.05	<0.05		
Dichloropropene, 1,3-	µg/g	0.05	0.04	<0.04		
Hexane, n-	µg/g	0.05	0.05	<0.05		
Surrogate	Unit	Acceptable Limits				
Toluene-d8	% Recovery	50-140		101		
4-Bromofluorobenzene	% Recovery	50-140		84		

Comments: RDL - Reported Detection Limit; G / S - Guideline / Standard; Refers to Table 1: Full Depth Background Site Condition Standards - Soil - Residential/Parkland/Industrial/Commercial/Community Property Use

Guideline values are for general reference only. The guidelines provided may or may not be relevant for the intended use. Refer directly to the applicable standard for regulatory interpretation.

9104532 The sample was analyzed using the high level technique. The sample was extracted using methanol, a small amount of the methanol extract was diluted in water and the purge & trap GC/MS analysis was performed. Results are based on the dry weight of the soil.

Certified By:



AGAT Laboratories

Certificate of Analysis

AGAT WORK ORDER: 18T317331

PROJECT: 17M-01364-00

5835 COOPERS AVENUE
MISSISSAUGA, ONTARIO
CANADA L4Z 1Y2
TEL (905)712-5100
FAX (905)712-5122
<http://www.agatlabs.com>

CLIENT NAME: WSP CANADA INC
SAMPLING SITE: 774 Hurontario St.

ATTENTION TO: Nicole Collins
SAMPLED BY: Brian Cooper

O. Reg. 153(511) - VOCs (Soil)					DATE REPORTED: 2018-03-15
SAMPLE DESCRIPTION: BH18-01 SS3 Soil					
SAMPLE TYPE: DATE SAMPLED: 2018-03-02					
Parameter	Unit	G / S	RDL	9104531	
Dichlorodifluoromethane	µg/g	0.05	0.05	<0.05	
Vinyl Chloride	ug/g	0.02	0.02	<0.02	
Bromomethane	ug/g	0.05	0.05	<0.05	
Trichlorofluoromethane	ug/g	0.25	0.05	<0.05	
Acetone	ug/g	0.5	0.50	<0.50	
Dichloroethylene, 1,1-	ug/g	0.05	0.05	<0.05	
Methylene Chloride	ug/g	0.05	0.05	<0.05	
Dichloroethylene, Trans- 1,2-	ug/g	0.05	0.05	<0.05	
Methyl tert-butyl Ether	ug/g	0.05	0.05	<0.05	
Dichloroethane, 1,1-	ug/g	0.05	0.02	<0.02	
Methyl Ethyl Ketone	ug/g	0.5	0.50	<0.50	
Dichloroethylene, Cis- 1,2-	ug/g	0.05	0.02	<0.02	
Chloroform	ug/g	0.05	0.04	<0.04	
Dichloroethane, 1,2-	ug/g	0.05	0.03	<0.03	
Trichloroethane, 1,1,1-	ug/g	0.05	0.05	<0.05	
Carbon Tetrachloride	ug/g	0.05	0.05	<0.05	
Benzene	ug/g	0.02	0.02	<0.02	
Dichloropropane, 1,2-	ug/g	0.05	0.03	<0.03	
Trichloroethylene	ug/g	0.05	0.03	<0.03	
Bromodichloromethane	ug/g	0.05	0.05	<0.05	
Methyl Isobutyl Ketone	ug/g	0.5	0.50	<0.50	
Trichloroethane, 1,1,2-	ug/g	0.05	0.04	<0.04	
Toluene	ug/g	0.2	0.05	<0.05	
Dibromochloromethane	ug/g	0.05	0.05	<0.05	
Ethylene Dibromide	ug/g	0.05	0.04	<0.04	
Tetrachloroethylene	ug/g	0.05	0.05	<0.05	
Tetrachloroethane, 1,1,1,2-	ug/g	0.05	0.04	<0.04	
Chlorobenzene	ug/g	0.05	0.05	<0.05	
Ethylbenzene	ug/g	0.05	0.05	<0.05	
Bromoform	ug/g	0.05	0.05	<0.05	

Certified By: *N Popniuk*



AGAT Laboratories

Certificate of Analysis

AGAT WORK ORDER: 18T317331

PROJECT: 17M-01364-00

5835 COOPERS AVENUE
MISSISSAUGA, ONTARIO
CANADA L4Z 1Y2
TEL (905)712-5100
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CLIENT NAME: WSP CANADA INC
SAMPLING SITE: 774 Hurontario St.

ATTENTION TO: Nicole Collins
SAMPLED BY: Brian Cooper

O. Reg. 153(511) - VOCs (Soil)					
DATE RECEIVED: 2018-03-06			DATE REPORTED: 2018-03-15		
SAMPLE DESCRIPTION: BH18-01 SS3					
		SAMPLE TYPE: Soil			
		DATE SAMPLED: 2018-03-02			
Parameter	Unit	G / S	RDL	9104531	
Styrene	ug/g	0.05	0.05	<0.05	
Tetrachloroethane, 1,1,2,2-	ug/g	0.05	0.05	<0.05	
Dichlorobenzene, 1,3-	ug/g	0.05	0.05	<0.05	
Dichlorobenzene, 1,4-	ug/g	0.05	0.05	<0.05	
Dichlorobenzene, 1,2-	ug/g	0.05	0.05	<0.05	
Xylene Mixture	ug/g	0.05	0.05	<0.05	
Dichloropropene, 1,3-	µg/g	0.05	0.04	<0.04	
Hexane, n-	µg/g	0.05	0.05	<0.05	
Surrogate	Unit	Acceptable Limits			
Toluene-d8	% Recovery	50-140		98	
4-Bromofluorobenzene	% Recovery	50-140		83	

Comments: RDL - Reported Detection Limit; G / S - Guideline / Standard; Refers to Table 1: Full Depth Background Site Condition Standards - Soil - Residential/Parkland/Industrial/Commercial/Community Property Use

Guideline values are for general reference only. The guidelines provided may or may not be relevant for the intended use. Refer directly to the applicable standard for regulatory interpretation.

9104531 The sample was analyzed using the high level technique. The sample was extracted using methanol, a small amount of the methanol extract was diluted in water and the purge & trap GC/MS analysis was performed. Results are based on the dry weight of the soil.

Certified By:



Quality Assurance

CLIENT NAME: WSP CANADA INC

PROJECT: 17M-01364-00

SAMPLING SITE: 774 Hurontario St.

AGAT WORK ORDER: 18T317331

ATTENTION TO: Nicole Collins

SAMPLED BY: Brian Cooper

Soil Analysis

RPT Date: Mar 15, 2018			DUPLICATE			Method Blank	REFERENCE MATERIAL			METHOD BLANK SPIKE			MATRIX SPIKE		
PARAMETER	Batch	Sample Id	Dup #1	Dup #2	RPD		Measured Value	Acceptable Limits		Recovery	Acceptable Limits		Recovery	Acceptable Limits	
								Lower	Upper		Lower	Upper		Lower	Upper
O. Reg. 153(511) - Metals & Inorganics (Soil)															
Antimony	9104531	9104531	<0.8	<0.8	NA	< 0.8	100%	70%	130%	106%	80%	120%	83%	70%	130%
Arsenic	9104531	9104531	3	3	NA	< 1	101%	70%	130%	104%	80%	120%	107%	70%	130%
Barium	9104531	9104531	31	32	3.2%	< 2	104%	70%	130%	102%	80%	120%	102%	70%	130%
Beryllium	9104531	9104531	<0.5	<0.5	NA	< 0.5	78%	70%	130%	97%	80%	120%	94%	70%	130%
Boron	9104531	9104531	9	10	NA	< 5	86%	70%	130%	101%	80%	120%	90%	70%	130%
Boron (Hot Water Soluble)	9104531	9104531	0.24	0.26	NA	< 0.10	97%	60%	140%	101%	70%	130%	94%	60%	140%
Cadmium	9104531	9104531	<0.5	<0.5	NA	< 0.5	99%	70%	130%	100%	80%	120%	107%	70%	130%
Chromium	9104531	9104531	12	12	0.0%	< 2	86%	70%	130%	105%	80%	120%	106%	70%	130%
Cobalt	9104531	9104531	6.1	6.3	3.2%	< 0.5	97%	70%	130%	108%	80%	120%	111%	70%	130%
Copper	9104531	9104531	14	14	0.0%	< 1	89%	70%	130%	104%	80%	120%	108%	70%	130%
Lead	9104531	9104531	5	5	0.0%	< 1	106%	70%	130%	106%	80%	120%	103%	70%	130%
Molybdenum	9104531	9104531	<0.5	<0.5	NA	< 0.5	96%	70%	130%	104%	80%	120%	109%	70%	130%
Nickel	9104531	9104531	12	12	0.0%	< 1	90%	70%	130%	99%	80%	120%	103%	70%	130%
Selenium	9104531	9104531	<0.4	<0.4	NA	< 0.4	114%	70%	130%	98%	80%	120%	107%	70%	130%
Silver	9104531	9104531	<0.2	<0.2	NA	< 0.2	72%	70%	130%	102%	80%	120%	91%	70%	130%
Thallium	9104531	9104531	<0.4	<0.4	NA	< 0.4	99%	70%	130%	103%	80%	120%	100%	70%	130%
Uranium	9104531	9104531	0.5	0.6	NA	< 0.5	92%	70%	130%	100%	80%	120%	102%	70%	130%
Vanadium	9104531	9104531	16	15	6.5%	< 1	88%	70%	130%	101%	80%	120%	96%	70%	130%
Zinc	9104531	9104531	27	27	0.0%	< 5	96%	70%	130%	106%	80%	120%	118%	70%	130%
Chromium VI	9104531	9104531	<0.2	<0.2	NA	< 0.2	77%	70%	130%	103%	80%	120%	97%	70%	130%
Cyanide	9098087		<0.040	<0.040	NA	< 0.040	94%	70%	130%	100%	80%	120%	106%	70%	130%
Mercury	9104531	9104531	<0.10	<0.10	NA	< 0.10	107%	70%	130%	101%	80%	120%	104%	70%	130%
Electrical Conductivity	9104531	9104531	0.193	0.192	0.5%	< 0.005	96%	90%	110%						
Sodium Adsorption Ratio	9104531	9104531	0.539	0.543	0.7%	NA	NA								
pH, 2:1 CaCl2 Extraction	9104531	9104531	7.77	7.76	0.1%	NA	100%	80%	120%						

Comments: NA signifies Not Applicable.

Duplicate Qualifier: As the measured result approaches the Reporting Limit (RL), the uncertainty associated with the value increases dramatically, thus duplicate acceptance limits apply only where the average of the two duplicates is greater than five times the RL.

Certified By: _____



Quality Assurance

CLIENT NAME: WSP CANADA INC

PROJECT: 17M-01364-00

SAMPLING SITE: 774 Hurontario St.

AGAT WORK ORDER: 18T317331

ATTENTION TO: Nicole Collins

SAMPLED BY: Brian Cooper

Trace Organics Analysis

RPT Date: Mar 15, 2018			DUPLICATE			Method Blank	REFERENCE MATERIAL			METHOD BLANK SPIKE			MATRIX SPIKE		
PARAMETER	Batch	Sample Id	Dup #1	Dup #2	RPD		Measured Value	Acceptable Limits		Recovery	Acceptable Limits		Recovery	Acceptable Limits	
								Lower	Upper		Lower	Upper		Lower	Upper
O. Reg. 153(511) - PAHs (Soil)															
Naphthalene	9098784		< 0.05	< 0.05	NA	< 0.05	83%	50%	140%	108%	50%	140%	106%	50%	140%
Acenaphthylene	9098784		< 0.05	< 0.05	NA	< 0.05	103%	50%	140%	107%	50%	140%	113%	50%	140%
Acenaphthene	9098784		< 0.05	< 0.05	NA	< 0.05	95%	50%	140%	105%	50%	140%	104%	50%	140%
Fluorene	9098784		< 0.05	< 0.05	NA	< 0.05	110%	50%	140%	115%	50%	140%	114%	50%	140%
Phenanthrene	9098784		< 0.05	< 0.05	NA	< 0.05	112%	50%	140%	110%	50%	140%	115%	50%	140%
Anthracene	9098784		< 0.05	< 0.05	NA	< 0.05	115%	50%	140%	109%	50%	140%	115%	50%	140%
Fluoranthene	9098784		< 0.05	< 0.05	NA	< 0.05	114%	50%	140%	104%	50%	140%	119%	50%	140%
Pyrene	9098784		< 0.05	< 0.05	NA	< 0.05	112%	50%	140%	102%	50%	140%	111%	50%	140%
Benz(a)anthracene	9098784		< 0.05	< 0.05	NA	< 0.05	113%	50%	140%	96%	50%	140%	86%	50%	140%
Chrysene	9098784		< 0.05	< 0.05	NA	< 0.05	112%	50%	140%	108%	50%	140%	108%	50%	140%
Benzo(b)fluoranthene	9098784		< 0.05	< 0.05	NA	< 0.05	116%	50%	140%	119%	50%	140%	111%	50%	140%
Benzo(k)fluoranthene	9098784		< 0.05	< 0.05	NA	< 0.05	110%	50%	140%	117%	50%	140%	119%	50%	140%
Benzo(a)pyrene	9098784		< 0.05	< 0.05	NA	< 0.05	119%	50%	140%	117%	50%	140%	97%	50%	140%
Indeno(1,2,3-cd)pyrene	9098784		< 0.05	< 0.05	NA	< 0.05	96%	50%	140%	87%	50%	140%	85%	50%	140%
Dibenz(a,h)anthracene	9098784		< 0.05	< 0.05	NA	< 0.05	105%	50%	140%	107%	50%	140%	105%	50%	140%
Benzo(g,h,i)perylene	9098784		< 0.05	< 0.05	NA	< 0.05	88%	50%	140%	89%	50%	140%	82%	50%	140%
Methyl Naphthalene, 2-and 1-	9098784		< 0.05	< 0.05	NA	< 0.05	85%	50%	140%	98%	50%	140%	88%	50%	140%
O. Reg. 153(511) - VOCs (Soil)															
Dichlorodifluoromethane	9102772		< 0.05	< 0.05	NA	< 0.05	111%	50%	140%	121%	50%	140%	116%	50%	140%
Vinyl Chloride	9102772		< 0.02	< 0.02	NA	< 0.02	103%	50%	140%	118%	50%	140%	101%	50%	140%
Bromomethane	9102772		< 0.05	< 0.05	NA	< 0.05	84%	50%	140%	100%	50%	140%	98%	50%	140%
Trichlorofluoromethane	9102772		< 0.05	< 0.05	NA	< 0.05	106%	50%	140%	109%	50%	140%	114%	50%	140%
Acetone	9102772		< 0.50	< 0.50	NA	< 0.50	84%	50%	140%	99%	50%	140%	99%	50%	140%
Dichloroethylene, 1,1-	9102772		< 0.05	< 0.05	NA	< 0.05	96%	50%	140%	98%	60%	130%	86%	50%	140%
Methylene Chloride	9102772		< 0.05	< 0.05	NA	< 0.05	117%	50%	140%	80%	60%	130%	80%	50%	140%
Dichloroethylene, Trans- 1,2-	9102772		< 0.05	< 0.05	NA	< 0.05	94%	50%	140%	103%	60%	130%	108%	50%	140%
Methyl tert-butyl Ether	9102772		< 0.05	< 0.05	NA	< 0.05	77%	50%	140%	88%	60%	130%	90%	50%	140%
Dichloroethane, 1,1-	9102772		< 0.02	< 0.02	NA	< 0.02	110%	50%	140%	83%	60%	130%	91%	50%	140%
Methyl Ethyl Ketone	9102772		< 0.50	< 0.50	NA	< 0.50	86%	50%	140%	96%	50%	140%	92%	50%	140%
Dichloroethylene, Cis- 1,2-	9102772		< 0.02	< 0.02	NA	< 0.02	92%	50%	140%	98%	60%	130%	107%	50%	140%
Chloroform	9102772		< 0.04	< 0.04	NA	< 0.04	102%	50%	140%	93%	60%	130%	92%	50%	140%
Dichloroethane, 1,2-	9102772		< 0.03	< 0.03	NA	< 0.03	102%	50%	140%	105%	60%	130%	106%	50%	140%
Trichloroethane, 1,1,1-	9102772		< 0.05	< 0.05	NA	< 0.05	96%	50%	140%	101%	60%	130%	106%	50%	140%
Carbon Tetrachloride	9102772		< 0.05	< 0.05	NA	< 0.05	83%	50%	140%	89%	60%	130%	82%	50%	140%
Benzene	9102772		< 0.02	< 0.02	NA	< 0.02	101%	50%	140%	113%	60%	130%	97%	50%	140%
Dichloropropane, 1,2-	9102772		< 0.03	< 0.03	NA	< 0.03	96%	50%	140%	93%	60%	130%	107%	50%	140%
Trichloroethylene	9102772		< 0.03	< 0.03	NA	< 0.03	92%	50%	140%	103%	60%	130%	107%	50%	140%
Bromodichloromethane	9102772		< 0.05	< 0.05	NA	< 0.05	101%	50%	140%	109%	60%	130%	107%	50%	140%



Quality Assurance

CLIENT NAME: WSP CANADA INC
PROJECT: 17M-01364-00
SAMPLING SITE: 774 Hurontario St.

AGAT WORK ORDER: 18T317331
ATTENTION TO: Nicole Collins
SAMPLED BY: Brian Cooper

Trace Organics Analysis (Continued)

RPT Date: Mar 15, 2018			DUPLICATE			Method Blank	REFERENCE MATERIAL			METHOD BLANK SPIKE			MATRIX SPIKE		
PARAMETER	Batch	Sample Id	Dup #1	Dup #2	RPD		Measured Value	Acceptable Limits		Recovery	Acceptable Limits		Recovery	Acceptable Limits	
								Lower	Upper		Lower	Upper		Lower	Upper
Methyl Isobutyl Ketone	9102772		< 0.50	< 0.50	NA	< 0.50	75%	50%	140%	102%	50%	140%	88%	50%	140%
Trichloroethane, 1,1,2-	9102772		< 0.04	< 0.04	NA	< 0.04	113%	50%	140%	106%	60%	130%	106%	50%	140%
Toluene	9102772		< 0.02	< 0.02	NA	< 0.05	103%	50%	140%	108%	60%	130%	108%	50%	140%
Dibromochloromethane	9102772		< 0.05	< 0.05	NA	< 0.05	87%	50%	140%	100%	60%	130%	91%	50%	140%
Ethylene Dibromide	9102772		< 0.04	< 0.04	NA	< 0.04	99%	50%	140%	100%	60%	130%	100%	50%	140%
Tetrachloroethylene	9102772		< 0.05	< 0.05	NA	< 0.05	102%	50%	140%	108%	60%	130%	105%	50%	140%
Tetrachloroethane, 1,1,1,2-	9102772		< 0.04	< 0.04	NA	< 0.04	104%	50%	140%	86%	60%	130%	104%	50%	140%
Chlorobenzene	9102772		< 0.05	< 0.05	NA	< 0.05	105%	50%	140%	106%	60%	130%	107%	50%	140%
Ethylbenzene	9102772		< 0.05	< 0.05	NA	< 0.05	101%	50%	140%	107%	60%	130%	106%	50%	140%
Bromoform	9102772		< 0.05	< 0.05	NA	< 0.05	95%	50%	140%	98%	60%	130%	93%	50%	140%
Styrene	9102772		< 0.05	< 0.05	NA	< 0.05	101%	50%	140%	85%	60%	130%	106%	50%	140%
Tetrachloroethane, 1,1,2,2-	9102772		< 0.05	< 0.05	NA	< 0.05	105%	50%	140%	96%	60%	130%	109%	50%	140%
Dichlorobenzene, 1,3-	9102772		< 0.05	< 0.05	NA	< 0.05	97%	50%	140%	90%	60%	130%	95%	50%	140%
Dichlorobenzene, 1,4-	9102772		< 0.05	< 0.05	NA	< 0.05	104%	50%	140%	95%	60%	130%	103%	50%	140%
Dichlorobenzene, 1,2-	9102772		< 0.05	< 0.05	NA	< 0.05	102%	50%	140%	98%	60%	130%	101%	50%	140%
Dichloropropene, 1,3-	9102772		< 0.04	< 0.04	NA	< 0.04	102%	50%	140%	89%	60%	130%	102%	50%	140%
Hexane, n-	9102772		< 0.05	< 0.05	NA	< 0.05	97%	50%	140%	101%	60%	130%	101%	50%	140%
O. Reg. 153(511) - PHCs F1 - F4 (with PAHs) (Soil)															
F1 (C6 to C10)	9104691		< 5	< 5	NA	< 5	88%	60%	130%	90%	85%	115%	96%	70%	130%
F2 (C10 to C16)	9103674		< 10	< 10	NA	< 10	105%	60%	130%	86%	80%	120%	74%	70%	130%
F3 (C16 to C34)	9103674		< 50	< 50	NA	< 50	104%	60%	130%	84%	80%	120%	75%	70%	130%
F4 (C34 to C50)	9103674		< 50	< 50	NA	< 50	96%	60%	130%	86%	80%	120%	77%	70%	130%

Comments: When the average of the sample and duplicate results is less than 5x the RDL, the Relative Percent Difference (RPD) will be indicated as Not Applicable (NA).

Certified By:

N Popmukohof



Method Summary

CLIENT NAME: WSP CANADA INC
PROJECT: 17M-01364-00
SAMPLING SITE: 774 Hurontario St.

AGAT WORK ORDER: 18T317331
ATTENTION TO: Nicole Collins
SAMPLED BY: Brian Cooper

PARAMETER	AGAT S.O.P	LITERATURE REFERENCE	ANALYTICAL TECHNIQUE
Soil Analysis			
Antimony	MET-93-6103	EPA SW-846 3050B & 6020A	ICP-MS
Arsenic	MET-93-6103	EPA SW-846 3050B & 6020A	ICP-MS
Barium	MET-93-6103	EPA SW-846 3050B & 6020A	ICP-MS
Beryllium	MET-93-6103	EPA SW-846 3050B & 6020A	ICP-MS
Boron	MET-93-6103	EPA SW-846 3050B & 6020A	ICP-MS
Boron (Hot Water Soluble)	MET-93-6104	EPA SW 846 6010C; MSA, Part 3, Ch.21	ICP/OES
Cadmium	MET-93-6103	EPA SW-846 3050B & 6020A	ICP-MS
Chromium	MET-93-6103	EPA SW-846 3050B & 6020A	ICP-MS
Cobalt	MET-93-6103	EPA SW-846 3050B & 6020A	ICP-MS
Copper	MET-93-6103	EPA SW-846 3050B & 6020A	ICP-MS
Lead	MET-93-6103	EPA SW-846 3050B & 6020A	ICP-MS
Molybdenum	MET-93-6103	EPA SW-846 3050B & 6020A	ICP-MS
Nickel	MET-93-6103	EPA SW-846 3050B & 6020A	ICP-MS
Selenium	MET-93-6103	EPA SW-846 3050B & 6020A	ICP-MS
Silver	MET-93-6103	EPA SW-846 3050B & 6020A	ICP-MS
Thallium	MET-93-6103	EPA SW-846 3050B & 6020A	ICP-MS
Uranium	MET-93-6103	EPA SW-846 3050B & 6020A	ICP-MS
Vanadium	MET-93-6103	EPA SW-846 3050B & 6020A	ICP-MS
Zinc	MET-93-6103	EPA SW-846 3050B & 6020A	ICP-MS
Chromium VI	INOR-93-6029	SM 3500 B; MSA Part 3, Ch. 25	SPECTROPHOTOMETER
Cyanide	INOR-93-6052	MOE CN-3015 & E 3009 A; SM 4500 CN	TECHNICON AUTO ANALYZER
Mercury	MET-93-6103	EPA SW-846 3050B & 6020A	ICP-MS
Electrical Conductivity	INOR-93-6036	McKeague 4.12, SM 2510 B	EC METER
Sodium Adsorption Ratio	INOR-93-6007	McKeague 4.12 & 3.26 & EPA SW-846 6010B	ICP/OES
pH, 2:1 CaCl ₂ Extraction	INOR-93-6031	MSA part 3 & SM 4500-H+ B	PH METER



Method Summary

CLIENT NAME: WSP CANADA INC
PROJECT: 17M-01364-00
SAMPLING SITE: 774 Hurontario St.

AGAT WORK ORDER: 18T317331
ATTENTION TO: Nicole Collins
SAMPLED BY: Brian Cooper

PARAMETER	AGAT S.O.P	LITERATURE REFERENCE	ANALYTICAL TECHNIQUE
Trace Organics Analysis			
Naphthalene	ORG-91-5106	EPA SW846 3541 & 8270	GC/MS
Acenaphthylene	ORG-91-5106	EPA SW846 3541 & 8270	GC/MS
Acenaphthene	ORG-91-5106	EPA SW846 3541 & 8270	GC/MS
Fluorene	ORG-91-5106	EPA SW846 3541 & 8270	GC/MS
Phenanthrene	ORG-91-5106	EPA SW846 3541 & 8270	GC/MS
Anthracene	ORG-91-5106	EPA SW846 3541 & 8270	GC/MS
Fluoranthene	ORG-91-5106	EPA SW846 3541 & 8270	GC/MS
Pyrene	ORG-91-5106	EPA SW846 3541 & 8270	GC/MS
Benz(a)anthracene	ORG-91-5106	EPA SW846 3541 & 8270	GC/MS
Chrysene	ORG-91-5106	EPA SW846 3541 & 8270	GC/MS
Benzo(b)fluoranthene	ORG-91-5106	EPA SW846 3541 & 8270	GC/MS
Benzo(k)fluoranthene	ORG-91-5106	EPA SW846 3541 & 8270	GC/MS
Benzo(a)pyrene	ORG-91-5106	EPA SW846 3541 & 8270	GC/MS
Indeno(1,2,3-cd)pyrene	ORG-91-5106	EPA SW846 3541 & 8270	GC/MS
Dibenz(a,h)anthracene	ORG-91-5106	EPA SW846 3541 & 8270	GC/MS
Benzo(g,h,i)perylene	ORG-91-5106	EPA SW846 3541 & 8270	GC/MS
Methyl Naphthalene, 2-and 1-	ORG-91-5106	EPA SW846 3541 & 8270	GC/MS
.Chrysene-d12	ORG-91-5106	EPA SW846 3541 & 8270	GC/MS
F1 (C6 to C10)	VOL-91-5009	CCME Tier 1 Method	GC / FID
F1 (C6 to C10) minus BTEX	VOL-91-5009	CCME Tier 1 Method	GC / FID
F2 (C10 to C16)	VOL-91-5009	CCME Tier 1 Method	GC / FID
F2 (C10 to C16) minus Naphthalene	VOL-91-5009	CCME Tier 1 Method	GC / FID
F3 (C16 to C34)	VOL-91-5009	CCME Tier 1 Method	GC / FID
F3 (C16 to C34) minus PAHs	VOL-91-5009	CCME Tier 1 Method	GC / FID
F4 (C34 to C50)	VOL-91-5009	CCME Tier 1 Method	GC / FID
Gravimetric Heavy Hydrocarbons	VOL-91-5009	CCME Tier 1 Method	BALANCE
Moisture Content	VOL-91-5009	CCME Tier 1 Method	BALANCE
Terphenyl	VOL-91-5009		GC/FID
Dichlorodifluoromethane	VOL-91-5002	EPA SW-846 5035 & 8260	(P&T)GC/MS
Vinyl Chloride	VOL-91-5002	EPA SW-846 5035 & 8260	(P&T)GC/MS
Bromomethane	VOL-91-5002	EPA SW-846 5035 & 8260	(P&T)GC/MS
Trichlorofluoromethane	VOL-91-5002	EPA SW-846 5035 & 8260	(P&T)GC/MS
Acetone	VOL-91-5002	EPA SW-846 5035 & 8260	(P&T)GC/MS
Dichloroethylene, 1,1-	VOL-91-5002	EPA SW-846 5035 & 8260	(P&T)GC/MS
Methylene Chloride	VOL-91-5002	EPA SW-846 5035 & 8260	(P&T)GC/MS
Dichloroethylene, Trans- 1,2-	VOL-91-5002	EPA SW-846 5035 & 8260	(P&T)GC/MS
Methyl tert-butyl Ether	VOL-91-5002	EPA SW-846 5035 & 8260	(P&T)GC/MS
Dichloroethane, 1,1-	VOL-91-5002	EPA SW-846 5035 & 8260	(P&T)GC/MS
Methyl Ethyl Ketone	VOL-91-5002	EPA SW-846 5035 & 8260	(P&T)GC/MS
Dichloroethylene, Cis- 1,2-	VOL-91-5002	EPA SW-846 5035 & 8260	(P&T)GC/MS
Chloroform	VOL-91-5002	EPA SW-846 5035 & 8260	(P&T)GC/MS
Dichloroethane, 1,2-	VOL-91-5002	EPA SW-846 5035 & 8260	(P&T)GC/MS
Trichloroethane, 1,1,1-	VOL-91-5002	EPA SW-846 5035 & 8260	(P&T)GC/MS
Carbon Tetrachloride	VOL-91-5002	EPA SW-846 5035 & 8260	(P&T)GC/MS
Benzene	VOL-91-5002	EPA SW-846 5035 & 8260	(P&T)GC/MS
Dichloropropane, 1,2-	VOL-91-5002	EPA SW-846 5035 & 8260	(P&T)GC/MS
Trichloroethylene	VOL-91-5002	EPA SW-846 5035 & 8260	(P&T)GC/MS
Bromodichloromethane	VOL-91-5002	EPA SW-846 5035 & 8260	(P&T)GC/MS
Methyl Isobutyl Ketone	VOL-91-5002	EPA SW-846 5035 & 8260	(P&T)GC/MS



Method Summary

CLIENT NAME: WSP CANADA INC

AGAT WORK ORDER: 18T317331

PROJECT: 17M-01364-00

ATTENTION TO: Nicole Collins

SAMPLING SITE: 774 Hurontario St.

SAMPLED BY: Brian Cooper

PARAMETER	AGAT S.O.P	LITERATURE REFERENCE	ANALYTICAL TECHNIQUE
Trichloroethane, 1,1,2-	VOL-91-5002	EPA SW-846 5035 & 8260	(P&T)GC/MS
Toluene	VOL-91-5002	EPA SW-846 5035 & 8260	(P&T)GC/MS
Dibromochloromethane	VOL-91-5002	EPA SW-846 5035 & 8260	(P&T)GC/MS
Ethylene Dibromide	VOL-91-5002	EPA SW-846 5035 & 8260	(P&T)GC/MS
Tetrachloroethylene	VOL-91-5002	EPA SW-846 5035 & 8260	(P&T)GC/MS
Tetrachloroethane, 1,1,1,2-	VOL-91-5002	EPA SW-846 5035 & 8260	(P&T)GC/MS
Chlorobenzene	VOL-91-5002	EPA SW-846 5035 & 8260	(P&T)GC/MS
Ethylbenzene	VOL-91-5002	EPA SW-846 5035 & 8260	(P&T)GC/MS
Bromoform	VOL-91-5002	EPA SW-846 5035 & 8260	(P&T)GC/MS
Styrene	VOL-91-5002	EPA SW-846 5035 & 8260	(P&T)GC/MS
Tetrachloroethane, 1,1,1,2-	VOL-91-5002	EPA SW-846 5035 & 8260	(P&T)GC/MS
Dichlorobenzene, 1,3-	VOL-91-5002	EPA SW-846 5035 & 8260	(P&T)GC/MS
Dichlorobenzene, 1,4-	VOL-91-5002	EPA SW-846 5035 & 8260	(P&T)GC/MS
Dichlorobenzene, 1,2-	VOL-91-5002	EPA SW-846 5035 & 8260	(P&T)GC/MS
Xylene Mixture	VOL-91-5002	EPA SW-846 5035 & 8260	(P&T)GC/MS
Dichloropropene, 1,3-	VOL-91-5002	EPA SW-846 5035 & 8260	(P&T)GC/MS
Hexane, n-	VOL-91-5002	EPA SW-846 5035 & 8260	(P&T)GC/MS
Toluene-d8	VOL-91-5002	EPA SW-846 5035 & 8260	(P&T)GC/MS
4-Bromofluorobenzene	VOL-91-5002	EPA SW-846 5035 & 8260	(P&T)GC/MS

APPENDIX

D-2 GROUNDWATER



CLIENT NAME: WSP CANADA INC
14 RONELL CRESCENT UNIT 1
COLLINGWOOD, ON L9Y 4J7
(705) 445-0064

ATTENTION TO: Nicole Collins

PROJECT: 17M-01364-06

AGAT WORK ORDER: 18T318186

TRACE ORGANICS REVIEWED BY: Gylhan Yalamova, Report Reviewer

WATER ANALYSIS REVIEWED BY: Parvathi Malemath, Data Reviewer

DATE REPORTED: Mar 19, 2018

PAGES (INCLUDING COVER): 12

VERSION*: 1

Should you require any information regarding this analysis please contact your client services representative at (905) 712-5100

*NOTES

All samples will be disposed of within 30 days following analysis. Please contact the lab if you require additional sample storage time.



AGAT Laboratories

Certificate of Analysis

AGAT WORK ORDER: 18T318186
PROJECT: 17M-01364-06

5835 COOPERS AVENUE
MISSISSAUGA, ONTARIO
CANADA L4Z 1Y2
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FAX (905)712-5122
<http://www.agatlabs.com>

CLIENT NAME: WSP CANADA INC

SAMPLING SITE: 774 Hurontario St. Collingwood

ATTENTION TO: Nicole Collins
SAMPLED BY: NC

DATE RECEIVED: 2018-03-08		O. Reg. 153(511) - PAHs (Water)		DATE REPORTED: 2018-03-19	
SAMPLE DESCRIPTION: BH18 - 01		SAMPLE TYPE: Water			
		DATE SAMPLED: 2018-03-07			
Parameter	Unit	G / S	RDL		
Naphthalene	µg/L	7	0.20	<0.20	
Acenaphthylene	µg/L	1	0.20	<0.20	
Acenaphthene	µg/L	4.1	0.20	<0.20	
Fluorene	µg/L	120	0.20	<0.20	
Phenanthrene	µg/L	0.1	0.10	<0.10	
Anthracene	µg/L	0.1	0.10	<0.10	
Fluoranthene	µg/L	0.4	0.20	<0.20	
Pyrene	µg/L	0.2	0.20	<0.20	
Benz(a)anthracene	µg/L	0.2	0.20	<0.20	
Chrysene	µg/L	0.1	0.10	<0.10	
Benzo(b)fluoranthene	µg/L	0.1	0.10	<0.10	
Benzo(k)fluoranthene	µg/L	0.1	0.10	<0.10	
Benzo(a)pyrene	µg/L	0.01	0.01	<0.01	
Indeno(1,2,3-cd)pyrene	µg/L	0.2	0.20	<0.20	
Dibenz(a,h)anthracene	µg/L	0.2	0.20	<0.20	
Benzo(g,h,i)perylene	µg/L	0.2	0.20	<0.20	
Methyl Naphthalene, 2-and 1-	µg/L	2	0.20	<0.20	
Surrogate	Unit	Acceptable Limits			
Chrysene-d12	%	50-140		62	

Comments: RDL - Reported Detection Limit: G / S - Guideline / Standard: Refers to Table 1: Full Depth Background Site Condition Standards - Ground Water - All Types of Property Uses
Guideline values are for general reference only. The guidelines provided may or may not be relevant for the intended use. Refer directly to the applicable standard for regulatory interpretation.
Note: The result for Benzo(b)Fluoranthene is the total of the Benzo(b)&(j)Fluoranthene isomers because the isomers co-elute on the GC column.

9109222

Certified By: _____



AGAT Laboratories

Certificate of Analysis

AGAT WORK ORDER: 18T318186

PROJECT: 17M-01364-06

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<http://www.agatlabs.com>

CLIENT NAME: WSP CANADA INC

SAMPLING SITE: 774 Hurontario St. Collingwood

ATTENTION TO: Nicole Collins

SAMPLED BY: NC

DATE RECEIVED: 2018-03-08				O. Reg. 153(511) - PHCs F1 - F4 (with PAHs) (Water)				DATE REPORTED: 2018-03-19			
Parameter		Unit		SAMPLE DESCRIPTION: BH18 - 01							
				SAMPLE TYPE: Water		DATE SAMPLED: 2018-03-07					
		G / S		RDL		9109222					
Benzene		µg/L		0.5		0.20		<0.20			
Toluene		µg/L		0.8		0.20		<0.20			
Ethylbenzene		µg/L		0.5		0.10		<0.10			
Xylene Mixture		µg/L		72		0.20		<0.20			
F1 (C6 to C10)		µg/L		420		25		<25			
F1 (C6 to C10) minus BTEX		µg/L		420		25		<25			
F2 (C10 to C16)		µg/L		150		100		<100			
F2 (C10 to C16) minus Naphthalene		µg/L				100		<100			
F3 (C16 to C34)		µg/L		500		100		<100			
F3 (C16 to C34) minus PAHs		µg/L				100		<100			
F4 (C34 to C50)		µg/L		500		100		<100			
Gravimetric Heavy Hydrocarbons		µg/L		500		500		NA			
Surrogate		Unit		Acceptable Limits							
Terphenyl		%		60-140		95					

Comments: RDL - Reported Detection Limit: G / S - Guideline / Standard: Refers to Table 1: Full Depth Background Site Condition Standards - Ground Water - All Types of Property Uses
Guideline values are for general reference only. The guidelines provided may or may not be relevant for the intended use. Refer directly to the applicable standard for regulatory interpretation.

9109222 The C6-C10 fraction is calculated using Toluene response factor.
The C10 - C16, C16 - C34, and C34 - C50 fractions are calculated using the average response factor for n-C10, n-C16, and n-C34.
Gravimetric Heavy Hydrocarbons are not included in the Total C16 - C50 and are only determined if the chromatogram of the C34 - C50 Hydrocarbons indicated that hydrocarbons >C50 are present.
The chromatogram has returned to baseline by the retention time of nC50.
Total C6-C50 results are corrected for BTEX and PAH contributions.
This method complies with the Reference Method for the CWS PHC and is validated for use in the laboratory.
nC6 and nC10 response factors are within 30% of Toluene response factor.
nC10, nC16 and nC34 response factors are within 10% of their average.
C50 response factor is within 70% of nC10 + nC16 nC34 average.
Linearity is within 15%.
Extraction and holding times were met for this sample.
Some sediment was observed in the sample. The whole bottle extraction was performed.

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AGAT Laboratories

Certificate of Analysis

AGAT WORK ORDER: 18T318186

PROJECT: 17M-01364-06

5835 COOPERS AVENUE
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TEL (905)712-5100
FAX (905)712-5122
<http://www.agatlabs.com>

CLIENT NAME: WSP CANADA INC

SAMPLING SITE: 774 Hurontario St. Collingwood

ATTENTION TO: Nicole Collins

SAMPLED BY: NC

O. Reg. 153(511) - VOCs (Water)

DATE RECEIVED: 2018-03-08				DATE REPORTED: 2018-03-19					
SAMPLE DESCRIPTION: BH18 - 01									
Parameter	Unit	SAMPLE TYPE:		BH18 - 01		GWDUP-1		Trip Blank	
		DATE SAMPLED:	RDL	Water	2018-03-07	Water	2018-03-07	Water	2018-03-07
	G / S			2018-03-07	9109222	2018-03-07	9109227	2018-03-07	9109229
Dichlorodifluoromethane	µg/L	590	0.20	<0.20		<0.20		<0.20	
Vinyl Chloride	µg/L	0.5	0.17	<0.17		<0.17		<0.17	
Bromomethane	µg/L	0.89	0.20	<0.20		<0.20		<0.20	
Trichlorofluoromethane	µg/L	150	0.40	<0.40		<0.40		<0.40	
Acetone	µg/L	2700	1.0	<1.0		<1.0		<1.0	
Dichloroethylene, 1,1-	µg/L	0.5	0.30	<0.30		<0.30		<0.30	
Methylene Chloride	µg/L	5	0.30	<0.30		<0.30		<0.30	
Dichloroethylene, Trans- 1,2-	µg/L	1.6	0.20	<0.20		<0.20		<0.20	
Methyl tert-butyl ether	µg/L	15	0.20	<0.20		<0.20		<0.20	
Dichloroethane, 1,1-	µg/L	0.5	0.30	<0.30		<0.30		<0.30	
Methyl Ethyl Ketone	µg/L	400	1.0	<1.0		<1.0		<1.0	
Dichloroethylene, Cis- 1,2-	µg/L	1.6	0.20	<0.20		<0.20		<0.20	
Chloroform	µg/L	2	0.20	<0.20		<0.20		<0.20	
Dichloroethane, 1,2-	µg/L	0.5	0.20	<0.20		<0.20		<0.20	
Trichloroethane, 1,1,1-	µg/L	0.5	0.30	<0.30		<0.30		<0.30	
Carbon Tetrachloride	µg/L	0.2	0.20	<0.20		<0.20		<0.20	
Benzene	µg/L	0.5	0.20	<0.20		<0.20		<0.20	
Dichloropropane, 1,2-	µg/L	0.5	0.20	<0.20		<0.20		<0.20	
Trichloroethylene	µg/L	0.5	0.20	<0.20		<0.20		<0.20	
Bromodichloromethane	µg/L	2	0.20	<0.20		<0.20		<0.20	
Methyl Isobutyl Ketone	µg/L	640	1.0	<1.0		<1.0		<1.0	
Trichloroethane, 1,1,2-	µg/L	0.5	0.20	<0.20		<0.20		<0.20	
Toluene	µg/L	0.8	0.20	<0.20		<0.20		<0.20	
Dibromochloromethane	µg/L	2	0.10	<0.10		<0.10		<0.10	
Ethylene Dibromide	µg/L	0.2	0.10	<0.10		<0.10		<0.10	
Tetrachloroethylene	µg/L	0.5	0.20	<0.20		<0.20		<0.20	
Tetrachloroethane, 1,1,1,2-	µg/L	1.1	0.10	<0.10		<0.10		<0.10	
Chlorobenzene	µg/L	0.5	0.10	<0.10		<0.10		<0.10	
Ethylbenzene	µg/L	0.5	0.10	<0.10		<0.10		<0.10	
Bromoform	µg/L	5	0.10	<0.10		<0.10		<0.10	

Proof.

Certified By:



AGAT Laboratories

Certificate of Analysis

AGAT WORK ORDER: 18T318186
PROJECT: 17M-01364-06

5835 COOPERS AVENUE
MISSISSAUGA, ONTARIO
CANADA L4Z 1Y2
TEL (905)712-5100
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<http://www.agatlabs.com>

CLIENT NAME: WSP CANADA INC

SAMPLING SITE: 774 Hurontario St. Collingwood

ATTENTION TO: Nicole Collins

SAMPLED BY: NC

O. Reg. 153(511) - VOCs (Water)

DATE RECEIVED: 2018-03-08

DATE REPORTED: 2018-03-19

Parameter	Unit	SAMPLE DESCRIPTION:				BH18 - 01		GWDUP-1		Trip Blank	
		SAMPLE TYPE:		DATE SAMPLED:	Water	2018-03-07	Water	2018-03-07	Water	2018-03-07	
		G / S	RDL								
Styrene	µg/L	0.5	0.10	<0.10	<0.10			<0.10		<0.10	
Tetrachloroethane, 1,1,2,2-	µg/L	0.5	0.10	<0.10	<0.10			<0.10		<0.10	
Dichlorobenzene, 1,3-	µg/L	0.5	0.10	<0.10	<0.10			<0.10		<0.10	
Dichlorobenzene, 1,4-	µg/L	0.5	0.10	<0.10	<0.10			<0.10		<0.10	
Dichlorobenzene, 1,2-	µg/L	0.5	0.10	<0.10	<0.10			<0.10		<0.10	
Dichloropropene, 1,3-	µg/L	0.5	0.30	<0.30	<0.30			<0.30		<0.30	
Xylene Mixture	µg/L	72	0.20	<0.20	<0.20			<0.20		<0.20	
Hexane, n-	µg/L	5	0.20	<0.20	<0.20			<0.20		<0.20	
Surrogate	Unit	Acceptable Limits									
Toluene-d8	% Recovery	50-140				111		85		81	
4-Bromofluorobenzene	% Recovery	50-140				75		89		86	

Comments: RDL - Reported Detection Limit; G / S - Guideline / Standard; Refers to Table 1: Full Depth Background Site Condition Standards - Ground Water - All Types of Property Uses
Guideline values are for general reference only. The guidelines provided may or may not be relevant for the intended use. Refer directly to the applicable standard for regulatory interpretation.

Certified By: _____



AGAT Laboratories

Certificate of Analysis

AGAT WORK ORDER: 18T318186

PROJECT: 17M-01364-06

5835 COOPERS AVENUE
MISSISSAUGA, ONTARIO
CANADA L4Z 1Y2
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http://www.agatlabs.com

CLIENT NAME: WSP CANADA INC

SAMPLING SITE: 774 Hurontario St. Collingwood

ATTENTION TO: Nicole Collins

SAMPLED BY: NC

O. Reg. 153(511) - Metals & Inorganics (Water)					DATE RECEIVED: 2018-03-08	DATE REPORTED: 2018-03-19
Parameter	Unit	SAMPLE DESCRIPTION: BH18 - 01				
		SAMPLE TYPE: Water		DATE SAMPLED: 2018-03-07	RDL	9109222
		G / S	RDL			
Antimony	µg/L	1.5	1.0	<1.0		
Arsenic	µg/L	13	1.0	<1.0		
Barium	µg/L	610	2.0	62.3		
Beryllium	µg/L	0.5	0.5	<0.5		
Boron	µg/L	1700	10.0	26.3		
Cadmium	µg/L	0.5	0.2	<0.2		
Chromium	µg/L	11	2.0	<2.0		
Cobalt	µg/L	3.8	0.5	<0.5		
Copper	µg/L	5	1.0	<1.0		
Lead	µg/L	1.9	0.5	<0.5		
Molybdenum	µg/L	23	0.5	1.5		
Nickel	µg/L	14	1.0	<1.0		
Selenium	µg/L	5	1.0	1.1		
Silver	µg/L	0.3	0.2	<0.2		
Thallium	µg/L	0.5	0.3	<0.3		
Uranium	µg/L	8.9	0.5	1.1		
Vanadium	µg/L	3.9	0.4	0.4		
Zinc	µg/L	160	5.0	8.2		
Mercury	µg/L	0.1	0.02	<0.02		
Chromium VI	µg/L	25	5	<5		
Cyanide	µg/L	5	2	<2		
Sodium	µg/L	490000	500	66000		
Chloride	µg/L	790000	500	78600		
Electrical Conductivity	uS/cm		2	805		
pH	pH Units		NA	7.54		

Comments: RDL - Reported Detection Limit; G / S - Guideline / Standard; Refers to Table 1: Full Depth Background Site Condition Standards - Ground Water - All Types of Property Uses
Guideline values are for general reference only. The guidelines provided may or may not be relevant for the intended use. Refer directly to the applicable standard for regulatory interpretation.
Elevated RDL for Chloride indicates dilution of the sample prior to analyses in order to minimize matrix interference.

9109222



Certified By:



Quality Assurance

CLIENT NAME: WSP CANADA INC

AGAT WORK ORDER: 18T318186

PROJECT: 17M-01364-06

ATTENTION TO: Nicole Collins

SAMPLING SITE: 774 Hurontario St. Collingwood

SAMPLED BY: NC

Trace Organics Analysis

RPT Date: Mar 19, 2018			DUPLICATE			Method Blank	REFERENCE MATERIAL			METHOD BLANK SPIKE			MATRIX SPIKE		
PARAMETER	Batch	Sample Id	Dup #1	Dup #2	RPD		Measured Value	Acceptable Limits		Recovery	Acceptable Limits		Recovery	Acceptable Limits	
								Lower	Upper		Lower	Upper		Lower	Upper
O. Reg. 153(511) - VOCs (Water)															
Dichlorodifluoromethane	9112375		< 0.20	< 0.20	NA	< 0.20	72%	50%	140%	92%	50%	140%	78%	50%	140%
Vinyl Chloride	9112375		< 0.17	< 0.17	NA	< 0.17	119%	50%	140%	120%	50%	140%	88%	50%	140%
Bromomethane	9112375		< 0.20	< 0.20	NA	< 0.20	85%	50%	140%	111%	50%	140%	84%	50%	140%
Trichlorofluoromethane	9112375		< 0.40	< 0.40	NA	< 0.40	78%	50%	140%	108%	50%	140%	90%	50%	140%
Acetone	9112375		< 1.0	< 1.0	NA	< 1.0	121%	50%	140%	106%	50%	140%	101%	50%	140%
Dichloroethylene, 1,1-	9112375		< 0.30	< 0.30	NA	< 0.30	79%	50%	140%	109%	60%	130%	90%	50%	140%
Methylene Chloride	9112375		< 0.30	< 0.30	NA	< 0.30	106%	50%	140%	111%	60%	130%	86%	50%	140%
Dichloroethylene, Trans- 1,2-	9112375		< 0.20	< 0.20	NA	< 0.20	90%	50%	140%	110%	60%	130%	91%	50%	140%
Methyl tert-butyl ether	9112375		< 0.20	< 0.20	NA	< 0.20	96%	50%	140%	99%	60%	130%	111%	50%	140%
Dichloroethane, 1,1-	9112375		< 0.30	< 0.30	NA	< 0.30	87%	50%	140%	100%	60%	130%	80%	50%	140%
Methyl Ethyl Ketone	9112375		< 1.0	< 1.0	NA	< 1.0	95%	50%	140%	82%	50%	140%	81%	50%	140%
Dichloroethylene, Cis- 1,2-	9112375		< 0.20	< 0.20	NA	< 0.20	77%	50%	140%	88%	60%	130%	79%	50%	140%
Chloroform	9112375		< 0.20	< 0.20	NA	< 0.20	85%	50%	140%	103%	60%	130%	83%	50%	140%
Dichloroethane, 1,2-	9112375		< 0.20	< 0.20	NA	< 0.20	85%	50%	140%	86%	60%	130%	76%	50%	140%
Trichloroethane, 1,1,1-	9112375		< 0.30	< 0.30	NA	< 0.30	71%	50%	140%	98%	60%	130%	74%	50%	140%
Carbon Tetrachloride	9112375		< 0.20	< 0.20	NA	< 0.20	105%	50%	140%	79%	60%	130%	74%	50%	140%
Benzene	9112375		< 0.20	< 0.20	NA	< 0.20	77%	50%	140%	86%	60%	130%	90%	50%	140%
Dichloropropane, 1,2-	9112375		< 0.20	< 0.20	NA	< 0.20	79%	50%	140%	92%	60%	130%	72%	50%	140%
Trichloroethylene	9112375		< 0.20	< 0.20	NA	< 0.20	74%	50%	140%	88%	60%	130%	73%	50%	140%
Bromodichloromethane	9112375		< 0.20	< 0.20	NA	< 0.20	84%	50%	140%	91%	60%	130%	75%	50%	140%
Methyl Isobutyl Ketone	9112375		< 1.0	< 1.0	NA	< 1.0	108%	50%	140%	81%	50%	140%	74%	50%	140%
Trichloroethane, 1,1,2-	9112375		< 0.20	< 0.20	NA	< 0.20	109%	50%	140%	106%	60%	130%	87%	50%	140%
Toluene	9112375		< 0.20	< 0.20	NA	< 0.20	91%	50%	140%	114%	60%	130%	83%	50%	140%
Dibromochloromethane	9112375		< 0.10	< 0.10	NA	< 0.10	87%	50%	140%	99%	60%	130%	79%	50%	140%
Ethylene Dibromide	9112375		< 0.10	< 0.10	NA	< 0.10	94%	50%	140%	95%	60%	130%	79%	50%	140%
Tetrachloroethylene	9112375		< 0.20	< 0.20	NA	< 0.20	79%	50%	140%	107%	60%	130%	80%	50%	140%
Tetrachloroethane, 1,1,1,2-	9112375		< 0.10	< 0.10	NA	< 0.10	107%	50%	140%	103%	60%	130%	74%	50%	140%
Chlorobenzene	9112375		< 0.10	< 0.10	NA	< 0.10	92%	50%	140%	110%	60%	130%	82%	50%	140%
Ethylbenzene	9112375		< 0.10	< 0.10	NA	< 0.10	70%	50%	140%	97%	60%	130%	99%	50%	140%
Bromoform	9112375		< 0.10	< 0.10	NA	< 0.10	93%	50%	140%	94%	60%	130%	80%	50%	140%
Styrene	9112375		< 0.10	< 0.10	NA	< 0.10	76%	50%	140%	86%	60%	130%	74%	50%	140%
Tetrachloroethane, 1,1,2,2-	9112375		< 0.10	< 0.10	NA	< 0.10	100%	50%	140%	107%	60%	130%	97%	50%	140%
Dichlorobenzene, 1,3-	9112375		< 0.10	< 0.10	NA	< 0.10	77%	50%	140%	88%	60%	130%	89%	50%	140%
Dichlorobenzene, 1,4-	9112375		< 0.10	< 0.10	NA	< 0.10	100%	50%	140%	104%	60%	130%	83%	50%	140%
Dichlorobenzene, 1,2-	9112375		< 0.10	< 0.10	NA	< 0.10	97%	50%	140%	90%	60%	130%	71%	50%	140%
Dichloropropene, 1,3-	9112375		< 0.30	< 0.30	NA	< 0.30	103%	50%	140%	84%	60%	130%	97%	50%	140%
Hexane, n-	9112375		< 0.20	< 0.20	NA	< 0.20	96%	50%	140%	96%	60%	130%	89%	50%	140%

O. Reg. 153(511) - PHCs F1 - F4 (with PAHs) (Water)



Quality Assurance

CLIENT NAME: WSP CANADA INC

PROJECT: 17M-01364-06

SAMPLING SITE: 774 Hurontario St. Collingwood

AGAT WORK ORDER: 18T318186

ATTENTION TO: Nicole Collins

SAMPLED BY: NC

Trace Organics Analysis (Continued)

RPT Date: Mar 19, 2018			DUPLICATE				REFERENCE MATERIAL			METHOD BLANK SPIKE			MATRIX SPIKE		
PARAMETER	Batch	Sample Id	Dup #1	Dup #2	RPD	Method Blank	Measured Value	Acceptable Limits		Recovery	Acceptable Limits		Recovery	Acceptable Limits	
								Lower	Upper		Lower	Upper		Lower	Upper
Benzene	9115043		< 0.20	< 0.20	NA	< 0.20	101%	50%	140%	95%	60%	130%	88%	50%	140%
Toluene	9115043		< 0.20	< 0.20	NA	< 0.20	89%	50%	140%	93%	60%	130%	87%	50%	140%
Ethylbenzene	9115043		< 0.10	< 0.10	NA	< 0.10	88%	50%	140%	94%	60%	130%	89%	50%	140%
Xylene Mixture	9115043		< 0.20	< 0.20	NA	< 0.20	94%	50%	140%	94%	60%	130%	97%	50%	140%
F1 (C6 to C10)	9115043		< 25	< 25	NA	< 25	103%	60%	140%	103%	60%	140%	87%	60%	140%
F2 (C10 to C16)		TW	< 100	< 100	NA	< 100	98%	60%	140%	66%	60%	140%	61%	60%	140%
F3 (C16 to C34)		TW	< 100	< 100	NA	< 100	98%	60%	140%	72%	60%	140%	69%	60%	140%
F4 (C34 to C50)		TW	< 100	< 100	NA	< 100	83%	60%	140%	80%	60%	140%	74%	60%	140%
O. Reg. 153(511) - PAHs (Water)															
Naphthalene		TW	< 0.20	< 0.20	NA	< 0.20	91%	50%	140%	104%	50%	140%	103%	50%	140%
Acenaphthylene		TW	< 0.20	< 0.20	NA	< 0.20	108%	50%	140%	115%	50%	140%	110%	50%	140%
Acenaphthene		TW	< 0.20	< 0.20	NA	< 0.20	101%	50%	140%	110%	50%	140%	105%	50%	140%
Fluorene		TW	< 0.20	< 0.20	NA	< 0.20	111%	50%	140%	115%	50%	140%	110%	50%	140%
Phenanthrene		TW	< 0.10	< 0.10	NA	< 0.10	104%	50%	140%	106%	50%	140%	102%	50%	140%
Anthracene		TW	< 0.10	< 0.10	NA	< 0.10	107%	50%	140%	115%	50%	140%	103%	50%	140%
Fluoranthene		TW	< 0.20	< 0.20	NA	< 0.20	109%	50%	140%	102%	50%	140%	110%	50%	140%
Pyrene		TW	< 0.20	< 0.20	NA	< 0.20	101%	50%	140%	103%	50%	140%	106%	50%	140%
Benz(a)anthracene		TW	< 0.20	< 0.20	NA	< 0.20	85%	50%	140%	95%	50%	140%	102%	50%	140%
Chrysene		TW	< 0.10	< 0.10	NA	< 0.10	101%	50%	140%	107%	50%	140%	109%	50%	140%
Benzo(b)fluoranthene		TW	< 0.10	< 0.10	NA	< 0.10	88%	50%	140%	98%	50%	140%	92%	50%	140%
Benzo(k)fluoranthene		TW	< 0.10	< 0.10	NA	< 0.10	97%	50%	140%	96%	50%	140%	90%	50%	140%
Benzo(a)pyrene		TW	< 0.01	< 0.01	NA	< 0.01	109%	50%	140%	107%	50%	140%	89%	50%	140%
Indeno(1,2,3-cd)pyrene		TW	< 0.20	< 0.20	NA	< 0.20	102%	50%	140%	93%	50%	140%	97%	50%	140%
Dibenz(a,h)anthracene		TW	< 0.20	< 0.20	NA	< 0.20	109%	50%	140%	96%	50%	140%	99%	50%	140%
Benzo(g,h,i)perylene		TW	< 0.20	< 0.20	NA	< 0.20	89%	50%	140%	90%	50%	140%	93%	50%	140%
Methyl Naphthalene, 2-and 1-		TW	< 0.20	< 0.20	NA	< 0.20	86%	50%	140%	88%	50%	140%	105%	50%	140%

Comments: Tap water analysis has been performed as QC sample testing for duplicate and matrix spike due to insufficient sample volume.
When the average of the sample and duplicate results is less than 5x the RDL, the Relative Percent Difference (RPD) will be indicated as Not Applicable (NA).

Certified By: _____

Quality Assurance

CLIENT NAME: WSP CANADA INC

PROJECT: 17M-01364-06

SAMPLING SITE: 774 Hurontario St. Collingwood

AGAT WORK ORDER: 18T318186

ATTENTION TO: Nicole Collins

SAMPLED BY: NC

Water Analysis															
RPT Date: Mar 19, 2018			DUPLICATE			Method Blank	REFERENCE MATERIAL			METHOD BLANK SPIKE			MATRIX SPIKE		
PARAMETER	Batch	Sample Id	Dup #1	Dup #2	RPD		Measured Value	Acceptable Limits		Recovery	Acceptable Limits		Recovery	Acceptable Limits	
								Lower	Upper		Lower	Upper		Lower	Upper
O. Reg. 153(511) - Metals & Inorganics (Water)															
Antimony	9121408		<1.0	<1.0	NA	< 1.0	97%	70%	130%	104%	80%	120%	110%	70%	130%
Arsenic	9121408		3.8	3.7	NA	< 1.0	102%	70%	130%	100%	80%	120%	109%	70%	130%
Barium	9121408		336	337	0.3%	< 2.0	99%	70%	130%	100%	80%	120%	100%	70%	130%
Beryllium	9121408		<0.5	<0.5	NA	< 0.5	98%	70%	130%	103%	80%	120%	112%	70%	130%
Boron	9121408		16.2	16.4	NA	< 10.0	95%	70%	130%	98%	80%	120%	105%	70%	130%
Cadmium	9121408		<0.2	<0.2	NA	< 0.2	102%	70%	130%	101%	80%	120%	120%	70%	130%
Chromium	9121408		2.6	2.2	NA	< 2.0	104%	70%	130%	101%	80%	120%	106%	70%	130%
Cobalt	9121408		1.5	1.4	NA	< 0.5	102%	70%	130%	103%	80%	120%	104%	70%	130%
Copper	9121408		1.7	1.7	NA	< 1.0	101%	70%	130%	103%	80%	120%	102%	70%	130%
Lead	9121408		<0.5	<0.5	NA	< 0.5	99%	70%	130%	100%	80%	120%	100%	70%	130%
Molybdenum	9121408		6.5	6.3	3.1%	< 0.5	103%	70%	130%	101%	80%	120%	105%	70%	130%
Nickel	9121408		<1.0	<1.0	NA	< 1.0	103%	70%	130%	107%	80%	120%	102%	70%	130%
Selenium	9121408		2.5	2.8	NA	< 1.0	103%	70%	130%	99%	80%	120%	112%	70%	130%
Silver	9121408		<0.2	<0.2	NA	< 0.2	100%	70%	130%	108%	80%	120%	106%	70%	130%
Thallium	9121408		<0.3	<0.3	NA	< 0.3	99%	70%	130%	100%	80%	120%	101%	70%	130%
Uranium	9121408		3.6	3.7	2.7%	< 0.5	100%	70%	130%	100%	80%	120%	102%	70%	130%
Vanadium	9121408		<0.4	<0.4	NA	< 0.4	99%	70%	130%	99%	80%	120%	103%	70%	130%
Zinc	9121408		<5.0	<5.0	NA	< 5.0	100%	70%	130%	102%	80%	120%	106%	70%	130%
Mercury	9105974		<0.02	<0.02	NA	< 0.02	104%	70%	130%	99%	80%	120%	100%	70%	130%
Chromium VI	9109258		<5	<5	NA	< 5	101%	70%	130%	102%	80%	120%	100%	70%	130%
Cyanide	9105974		<2	<2	NA	< 2	103%	70%	130%	99%	80%	120%	88%	70%	130%
Sodium	9109258		2280	2270	NA	< 500	94%	70%	130%	95%	80%	120%	91%	70%	130%
Chloride	9112331		11300	11300	0.0%	< 100	90%	70%	130%	106%	70%	130%	105%	70%	130%
Electrical Conductivity	9112624		569	574	0.9%	< 2	100%	90%	110%						
pH	9112624		7.89	7.90	0.1%	NA	99%	90%	110%						

Comments: NA signifies Not Applicable.

Duplicate Qualifier: As the measured result approaches the Reporting Limit (RL), the uncertainty associated with the value increases dramatically, thus duplicate acceptance limits apply only where the average of the two duplicates is greater than five times the RL.

Certified By:



Method Summary

CLIENT NAME: WSP CANADA INC

AGAT WORK ORDER: 18T318186

PROJECT: 17M-01364-06

ATTENTION TO: Nicole Collins

SAMPLING SITE: 774 Hurontario St. Collingwood

SAMPLED BY: NC

PARAMETER	AGAT S.O.P	LITERATURE REFERENCE	ANALYTICAL TECHNIQUE
Trace Organics Analysis			
Naphthalene	ORG-91-5105	EPA SW-846 3510 & 8270	GC/MS
Acenaphthylene	ORG-91-5105	EPA SW-846 3510 & 8270	GC/MS
Acenaphthene	ORG-91-5105	EPA SW-846 3510 & 8270	GC/MS
Fluorene	ORG-91-5105	EPA SW-846 3510 & 8270	GC/MS
Phenanthrene	ORG-91-5105	EPA SW-846 3510 & 8270	GC/MS
Anthracene	ORG-91-5105	EPA SW-846 3510 & 8270	GC/MS
Fluoranthene	ORG-91-5105	EPA SW-846 3510 & 8270	GC/MS
Pyrene	ORG-91-5105	EPA SW-846 3510 & 8270	GC/MS
Benz(a)anthracene	ORG-91-5105	EPA SW-846 3510 & 8270	GC/MS
Chrysene	ORG-91-5105	EPA SW-846 3510 & 8270	GC/MS
Benzo(b)fluoranthene	ORG-91-5105	EPA SW-846 3510 & 8270	GC/MS
Benzo(k)fluoranthene	ORG-91-5105	EPA SW-846 3510 & 8270	GC/MS
Benzo(a)pyrene	ORG-91-5105	EPA SW-846 3510 & 8270	GC/MS
Indeno(1,2,3-cd)pyrene	ORG-91-5105	EPA SW-846 3510 & 8270	GC/MS
Dibenz(a,h)anthracene	ORG-91-5105	EPA SW-846 3510 & 8270	GC/MS
Benzo(g,h,i)perylene	ORG-91-5105	EPA SW-846 3510 & 8270	GC/MS
Methyl Naphthalene, 2-and 1-	ORG-91-5105	EPA SW-846 3510 & 8270	GC/MS
Chrysene-d12	ORG-91-5105	EPA SW-846 3510 & 8270	GC/MS
Benzene	VOL-91-5010	MOE PHC E3421	(P&T)GC/MS
Toluene	VOL-91-5010	MOE PHC E3421	(P&T)GC/MS
Ethylbenzene	VOL-91-5010	MOE PHC E3421	(P&T)GC/MS
Xylene Mixture	VOL-91-5010	MOE PHC E3421	(P&T)GC/MS
F1 (C6 to C10)	VOL-91-5010	MOE PHC E3421	(P&T)GC/FID
F1 (C6 to C10) minus BTEX	VOL-91-5010	MOE PHC E3421	(P&T)GC/FID
F2 (C10 to C16)	VOL-91-5010	MOE PHC E3421	GC/FID
F2 (C10 to C16) minus Naphthalene	VOL-91-5010	MOE PHC E3421	GC/FID
F3 (C16 to C34)	VOL-91-5010	MOE PHC E3421	GC/FID
F3 (C16 to C34) minus PAHs	VOL-91-5010	MOE PHC E3421	GC/FID
F4 (C34 to C50)	VOL -91- 5010	MOE PHC- E3421	GC/FID
Gravimetric Heavy Hydrocarbons	VOL-91-5010	MOE PHC E3421	BALANCE
Terphenyl	VOL-91-5010		GC/FID
Dichlorodifluoromethane	VOL-91-5001	EPA SW-846 5030 & 8260	(P&T)GC/MS
Vinyl Chloride	VOL-91-5001	EPA SW-846 5030 & 8260	(P&T)GC/MS
Bromomethane	VOL-91-5001	EPA SW-846 5030 & 8260	(P&T)GC/MS
Trichlorofluoromethane	VOL-91-5001	EPA SW-846 5030 & 8260	(P&T)GC/MS
Acetone	VOL-91-5001	EPA SW-846 5030 & 8260	(P&T)GC/MS
Dichloroethylene, 1,1-	VOL-91-5001	EPA SW-846 5030 & 8260	(P&T)GC/MS
Methylene Chloride	VOL-91-5001	EPA SW-846 5030 & 8260	(P&T)GC/MS
Dichloroethylene, Trans- 1,2-	VOL-91-5001	EPA SW-846 5030 & 8260	(P&T)GC/MS
Methyl tert-butyl ether	VOL-91-5001	EPA SW-846 5030 & 8260	(P&T)GC/MS
Dichloroethane, 1,1-	VOL-91-5001	EPA SW-846 5030 & 8260	(P&T)GC/MS
Methyl Ethyl Ketone	VOL-91-5001	EPA SW-846 5030 & 8260	(P&T)GC/MS
Dichloroethylene, Cis- 1,2-	VOL-91-5001	EPA SW-846 5030 & 8260	(P&T)GC/MS
Chloroform	VOL-91-5001	EPA SW-846 5030 & 8260	(P&T)GC/MS
Dichloroethane, 1,2-	VOL-91-5001	EPA SW-846 5030 & 8260	(P&T)GC/MS
Trichloroethane, 1,1,1-	VOL-91-5001	EPA SW-846 5030 & 8260	(P&T)GC/MS
Carbon Tetrachloride	VOL-91-5001	EPA SW-846 5030 & 8260	(P&T)GC/MS
Benzene	VOL-91-5001	EPA SW-846 5030 & 8260	(P&T)GC/MS
Dichloropropane, 1,2-	VOL-91-5001	EPA SW-846 5030 & 8260	(P&T)GC/MS

Method Summary

CLIENT NAME: WSP CANADA INC

PROJECT: 17M-01364-06

SAMPLING SITE: 774 Hurontario St. Collingwood

AGAT WORK ORDER: 18T318186

ATTENTION TO: Nicole Collins

SAMPLED BY: NC

PARAMETER	AGAT S.O.P	LITERATURE REFERENCE	ANALYTICAL TECHNIQUE
Trichloroethylene	VOL-91-5001	EPA SW-846 5030 & 8260	(P&T)GC/MS
Bromodichloromethane	VOL-91-5001	EPA SW-846 5030 & 8260	(P&T)GC/MS
Methyl Isobutyl Ketone	VOL-91-5001	EPA SW-846 5030 & 8260	(P&T)GC/MS
Trichloroethane, 1,1,2-	VOL-91-5001	EPA SW-846 5030 & 8260	(P&T)GC/MS
Toluene	VOL-91-5001	EPA SW-846 5030 & 8260	(P&T)GC/MS
Dibromochloromethane	VOL-91-5001	EPA SW-846 5030 & 8260	(P&T)GC/MS
Ethylene Dibromide	VOL-91-5001	EPA SW-846 5030 & 8260	(P&T)GC/MS
Tetrachloroethylene	VOL-91-5001	EPA SW-846 5030 & 8260	(P&T)GC/MS
Tetrachloroethane, 1,1,1,2-	VOL-91-5001	EPA SW-846 5030 & 8260	(P&T)GC/MS
Chlorobenzene	VOL-91-5001	EPA SW-846 5030 & 8260	(P&T)GC/MS
Ethylbenzene	VOL-91-5001	EPA SW-846 5030 & 8260	(P&T)GC/MS
Bromoform	VOL-91-5001	EPA SW-846 5030 & 8260	(P&T)GC/MS
Styrene	VOL-91-5001	EPA SW-846 5030 & 8260	(P&T)GC/MS
Tetrachloroethane, 1,1,2,2-	VOL-91-5001	EPA SW-846 5030 & 8260	(P&T)GC/MS
Dichlorobenzene, 1,3-	VOL-91-5001	EPA SW-846 5030 & 8260	(P&T)GC/MS
Dichlorobenzene, 1,4-	VOL-91-5001	EPA SW-846 5030 & 8260	(P&T)GC/MS
Dichlorobenzene, 1,2-	VOL-91-5001	EPA SW-846 5030 & 8260	(P&T)GC/MS
Dichloropropene, 1,3-	VOL-91-5001	EPA SW-846 5030 & 8260	(P&T)GC/MS
Xylene Mixture	VOL-91-5001	EPA SW-846 5030 & 8260	(P&T)GC/MS
Hexane, n-	VOL-91-5001	EPA SW-846 5030 & 8260	(P&T)GC/MS
Toluene-d8	VOL-91-5001	EPA SW-846 5030 & 8260	(P&T)GC/MS
4-Bromofluorobenzene	VOL-91-5001	EPA SW-846 5030 & 8260	(P&T)GC/MS
Water Analysis			
Antimony	MET-93-6103	EPA SW-846 6020A & 200.8	ICP-MS
Arsenic	MET-93-6103	EPA SW-846 6020A & 200.8	ICP-MS
Barium	MET-93-6103	EPA SW-846 6020A & 200.8	ICP-MS
Beryllium	MET-93-6103	EPA SW-846 6020A & 200.8	ICP-MS
Boron	MET-93-6103	EPA SW-846 6020A & 200.8	ICP-MS
Cadmium	MET-93-6103	EPA SW-846 6020A & 200.8	ICP-MS
Chromium	MET-93-6103	EPA SW-846 6020A & 200.8	ICP-MS
Cobalt	MET-93-6103	EPA SW-846 6020A & 200.8	ICP-MS
Copper	MET-93-6103	EPA SW-846 6020A & 200.8	ICP-MS
Lead	MET-93-6103	EPA SW-846 6020A & 200.8	ICP-MS
Molybdenum	MET-93-6103	EPA SW-846 6020A & 200.8	ICP-MS
Nickel	MET-93-6103	EPA SW-846 6020A & 200.8	ICP-MS
Selenium	MET-93-6103	EPA SW-846 6020A & 200.8	ICP-MS
Silver	MET-93-6103	EPA SW-846 6020A & 200.8	ICP-MS
Thallium	MET-93-6103	EPA SW-846 6020A & 200.8	ICP-MS
Uranium	MET-93-6103	EPA SW-846 6020A & 200.8	ICP-MS
Vanadium	MET-93-6103	EPA SW-846 6020A & 200.8	ICP-MS
Zinc	MET-93-6103	EPA SW-846 6020A & 200.8	ICP-MS
Mercury	MET-93-6100	EPA SW-846 7470 & 245.1	CVAAS
Chromium VI	INOR-93-6034	SM 3500-Cr B	SPECTROPHOTOMETER
Cyanide	INOR-93-6052	MOE METHOD CN- 3015 & SM 4500 CN- I	TECHNICON AUTO ANALYZER
Sodium	MET-93-6105	EPA SW-846 6010C & 200.7	ICP/OES
Chloride	INOR-93-6004	SM 4110 B	ION CHROMATOGRAPH
Electrical Conductivity	INOR-93-6000	SM 2510 B	PC TITRATE
pH	INOR-93-6000	SM 4500-H+ B	PC TITRATE

