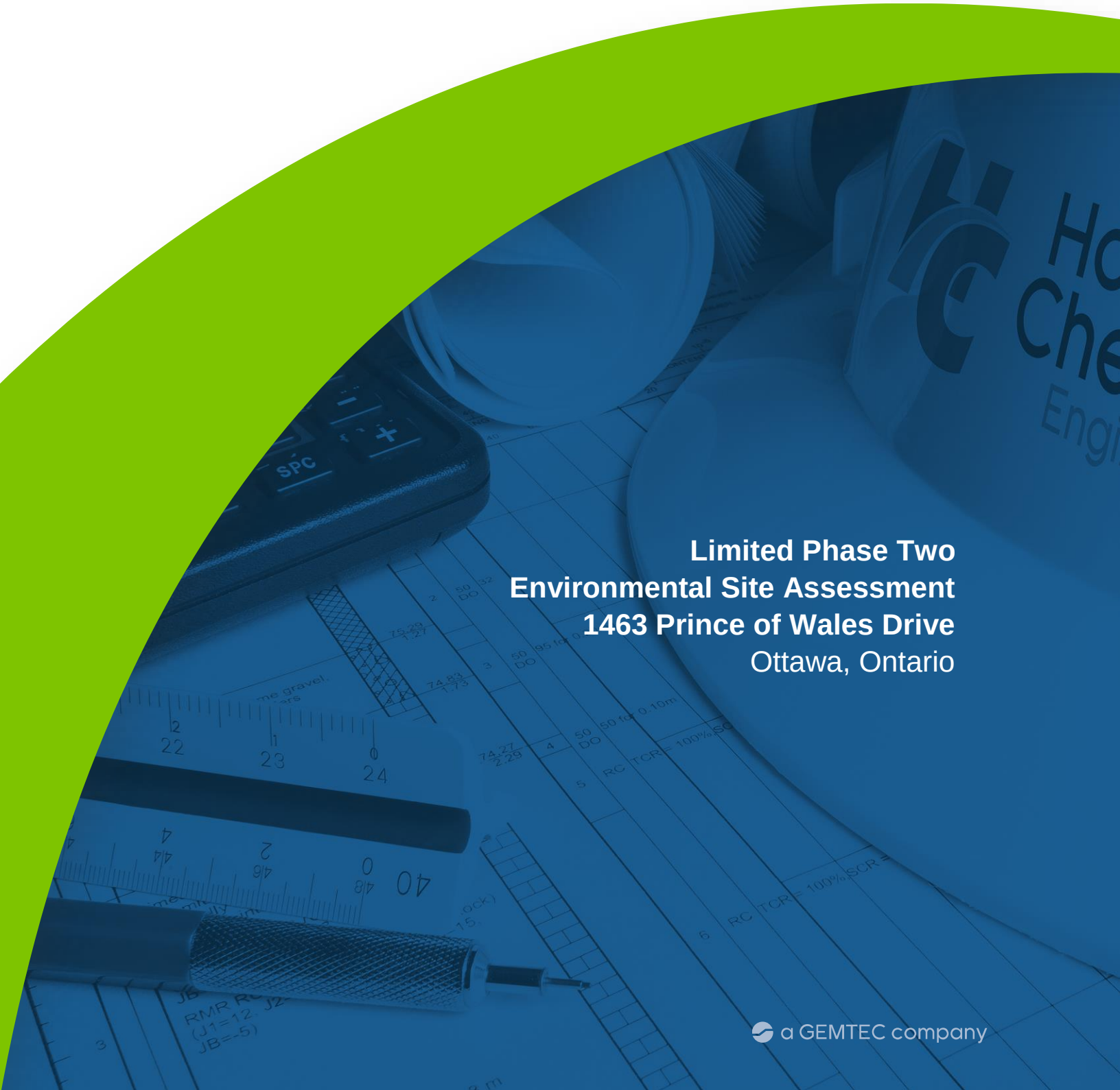
Houle Chevrier Engineering



Limited Phase Two Environmental Site Assessment
1463 Prince of Wales Drive
Ottawa, Ontario

a GEMTEC company

Houle Chevrier Engineering

Submitted to:

Boys and Girls Club of Ottawa
c/o Hobin Architecture Incorporated
63 Pamilla Street
Ottawa, Ontario
K1S 3K7

Limited Phase Two Environmental Site Assessment Proposed Gymnasium Addition and Exterior Ice Rink Boys and Girls Club of Ottawa 1463 Prince of Wales Drive

Ottawa, Ontario

May 25, 2017
Project: 61446.15

EXECUTIVE SUMMARY

The Phase One Environmental Site Assessment (ESA) report previously carried out for the subject property recommended that a Phase Two ESA investigation be carried out for the property located at 1463 Prince of Wales Drive in Ottawa, Ontario (hereafter referred to as "the subject property"). The Limited Phase Two ESA investigated one (1) of the Areas of Potential Environmental Concern (APECs) identified in the Phase One ESA:

APEC 1: Former Fire Hall

Former Fire Hall was located on the subject property. Based on potential maintenance activities occurring within the building, the contaminants of concern are petroleum hydrocarbons (PHCs) and volatile organic compounds (VOCs).

In addition, soil and groundwater was screened to address the following potentially contaminating activities identified during the Phase One ESA:

- On-site fill material of unknown origin;
- Off-site dry cleaners;
- Off-site gasoline service station.

The Limited Phase Two ESA investigation was carried out in March 2017. The components of the Limited Phase Two ESA investigation consisted of advancing three (3) boreholes completed as monitoring wells to assess the soil and groundwater in the area of the proposed construction. Soil and groundwater samples were collected and submitted to AGAT Laboratories of Mississauga, Ontario for laboratory analyses of selected parameters.

The data collected during the borehole drilling indicated that the site is generally underlain by a layer of fine sand overlying silty clay.

The groundwater level measured in monitoring wells 17-4 to 17-6 on March 9, 2017 ranged from 2.00 – 2.67 metres below ground surface (or elevation 79.59 to 79.98 metres geodetic).

The Limited Phase Two ESA investigated the one APEC identified in the Limited Phase One ESA and the results of the investigation are summarized below:

APEC 1: Former Fire Hall

Soil and groundwater samples submitted from borehole 17-4 to 17-6 met the applicable MOECC site condition standards for petroleum hydrocarbons (PHCs) and volatile organic compounds (VOCs).

Granular fill material was also screened for polycyclic aromatic hydrocarbons (PAHs), metals, polychlorinated biphenyls (PCBs). The soil samples submitted from boreholes 17-4 to 17-6 met

the applicable MOECC Table 3 site condition standards for all parameters, with the exception of vanadium at all sample locations.

Discussion

Based on the results of the current investigation no petroleum or solvent impacted soils or groundwater were identified.

Slight metals exceedances were identified at borehole locations 17-4, 17-5, and 17-6 in the fill and native material, respectively. Based on the concentrations and presence in native and fill, the elevated vanadium concentration is likely naturally occurring and no further investigations are required at this time. If these soils are removed from the subject property as excess fill, an appropriate receiving site must be identified. If a receiving site is not available, the excess soil must be disposed of at an MOECC approved landfill.

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1.0 INTRODUCTION

Houle Chevrier Engineering Ltd. (HCEL) was retained by Boys and Girls Club of Ottawa to carry out a Limited Phase Two Environmental Site Assessment (ESA) for the property located 1463 Prince of Wales Drive in Ottawa, Ontario (hereafter referred to as "the subject property"). The general location of the subject property is illustrated on the Key Plan, Figure 1.

The purpose of the Limited Phase Two ESA was to investigate the area of potential environmental concern identified in the Phase One ESA dated February 2017, and to assess the potential for environmental impacts at the subject property. This Limited Phase Two ESA was completed in general accordance with Ontario Regulation 153/04.

1.1 Phase Two Property Description

The subject property is approximately 0.5 hectares (1.24 acres) in size. The legal description for the property is Con B (Rf) PT TWP Lot 34, Prince of Wales Dr E, PIN 040760002.

1.2 Phase Two Property Ownership

The subject property is owned by the City of Ottawa. The contact person for the subject property is Leila Emmrys, O.A.A., M.Arch. at 613-238-7200 x129.

1.3 Current and Future Land Uses

The current land use is community use (youth centre) and was historically used as community (firehall, tourist bureau). Plans are being prepared to construct a gymnasium addition to the south side of the existing building and an outdoor ice rink pad on the east side of the building. The new gymnasium is to be of slab on grade construction, and the outdoor rink pad will consist of an asphaltic concrete pavement structure. The site for the proposed gymnasium currently consists of grass/tree covered landscaped and parking areas. The site of the proposed rink currently consists of an asphaltic concrete surfaced basketball court.

In accordance with Section 168.3.1 of the Environmental Protection Act (Ministry of Environment, December 31, 2011) a Record of Site Condition is not required to be filed for the subject property.

1.4 Applicable Site Condition Standard

Site restoration standards were selected for this site in accordance with the requirements of Ontario Regulation 153/04, Record of Site Condition – Part XV.1 of the Environmental Protection Act (O. Reg. 153/04, Ministry of Environment, October 31, 2011).

The following information was considered in selecting the site condition standards:

- The subject property is within an urban area;

- The current property use is community;
- The overburden thickness in the area of the APEC investigated is greater than 2 metres.

Based on the above, the MOECC Table 3 Full Depth Generic Site Condition Standards for Community Property Use in a Non-Potable Ground Water Condition (medium and fine grained soils) was selected for the subject property.

2.0 BACKGROUND INFORMATION

2.1 Physical Setting

The subject property was first developed for community use sometime between 1956 and 1965. The subject property is currently serviced by underground and overhead hydro, and underground natural gas, sewer and water.

The subject property has a relatively flat topography with an elevation of approximately 80 to 85 metres above sea level. Surrounding topography generally slopes gradually downwards towards the Rideau River to the east. Based on the topography of the area, it is expected that the local shallow groundwater flow is towards the east-northeast.

2.2 Past Investigations

A Phase One ESA was conducted by Dillon Consulting for the subject property in February 2017 and is provided in their report titled “Phase 1 Environmental Site Assessment, 1463 Prince of Wales Drive, Ottawa, ON”, dated February 14, 2017. The Phase One ESA was carried out by or under the supervision of the qualified person in general accordance with Ontario Regulation 153/04 made under the Environmental Protection Act. The following Areas of Potential Environmental Concern (APECs) were determined through the Phase One ESA to exist for the subject property:

APEC 1: Former Fire Hall

Former Fire Hall was located on the subject property. Based on potential maintenance activities occurring within the building, the contaminants of concern are petroleum hydrocarbons (PHCs) and volatile organic compounds (VOCs).

APEC 2: Fill of Unknown Origin

Fill of unknown quality assumed to have been used in the southwest portion of the subject property to fill in a former creek crossing, and potentially other areas of the subject property. The contaminants of concern are PHCs, polycyclic aromatic hydrocarbons (PAHs), polychlorinated biphenyls (PCBs) and metals.

Based on City of Ottawa correspondence, dated February 21, 2017, a Limited Phase Two ESA investigating the impacts within the construction area would be required. Therefore, the fill material of unknown origin at the southwest portion of the subject property would be excluded from the required scope of work.

3.0 SCOPE OF INVESTIGATION

3.1 Overview of Site Investigation

The objectives of the Limited Phase Two ESA were based on the results of the Phase One ESA and are as follows:

- To document the presence or absence of contaminants in the land or water on, in or under the subject property, specifically within the construction area of the proposed addition and outdoor rink pad;
- To identify the locations of and concentrations of contaminants in the land or water on, in or under the subject property, if applicable;
- To assess if the subject property meets the applicable Ministry of the Environment and Climate Change site condition standards. The presence or absence of contaminants was investigated at discrete sampling locations using a limited number of samples.

The following tasks were completed during the Limited Phase Two ESA:

- A sampling and analysis plan was prepared;
- Three (3) environmental boreholes were advanced at the site to collect soil samples;
- The three (3) boreholes were instrumented with a monitoring well in order to collect groundwater samples and triangulate groundwater flow;
- Soil and groundwater samples were submitted to an accredited laboratory for laboratory analysis of contaminants of concern;
- The analytical results were compared with the applicable site condition standard; and,
- A Limited Phase Two Environmental Site Assessment report was prepared.

3.2 Media Investigated

This Limited Phase Two ESA included sampling and analysis of soil and groundwater. No sediment sampling was conducted as no surface water bodies are present on the subject property. The rationale for sampling the soil and groundwater was to investigate the potential for contamination at the APEC identified in the Phase One ESA.

The soil quality at discrete locations on the subject property was assessed by collecting soil samples from three boreholes, numbered 17-4, 17-5, and 17-6, at regular depth intervals. All soil samples were field preserved in methanol and screened in the field and at our laboratory, with a sample subset being submitted for laboratory analysis of the identified contaminants of concern. The locations of the boreholes are provided on Figure 2.

The groundwater quality at the subject property was assessed by collecting groundwater samples from the three (3) monitoring wells that were installed. Groundwater samples were collected in laboratory supplied bottles using dedicated sampling equipment.

3.2.1 Potentially Contaminating Activities

The following potentially contaminating activities were identified to create an area of potential environmental concern (APEC):

- Former fire hall;

3.2.2 Areas of Potential Environmental Concern

The areas of potential environmental concern (APEC) on the subject property are summarized in the following table:

APEC	Location of APEC on Phase One Property	PCA	Location of PCA	Contaminants of Potential Concern	Media Potentially Impacted
APEC 1	Former fire hall, east portion of existing building on the subject property	Former Fire Hall	On site	• PHCs[1] • VOCs[2]	Soil Groundwater

Notes:

1. PHCs – Petroleum Hydrocarbon
2. VOCs – Volatile Organic Compounds

3.3 Deviations from Sampling and Analysis Plan

No deviations occurred during the investigation.

3.4 Impediments

No impediments occurred during the investigation.

4.0 INVESTIGATION METHODS

4.1 General

Three boreholes (numbered 17-4 to 17-6) were advanced on March 2, 2017. Soil samples were recovered at regular depth intervals and screened for combustible headspace gas concentrations and visual and olfactory indications of contamination. Well screens were installed in boreholes 17-4 to 17-6. Soil and groundwater samples were collected from the boreholes and well screens, and submitted to AGAT Laboratories for chemical analyses of selected parameters.

4.2 Borehole Drilling

The boreholes were advanced at the subject property using a geoprobe drill rig supplied and operated by George Downing Estate Drilling Ltd.

Cross-contamination between samples was minimized by using disposable sampling sleeves. Clean gloves were worn and changed between each sample.

4.3 Soil Sampling

Soil samples were collected following the Guidance on Sampling and Analytical Methods for Use at Contaminated Sites in Ontario (MOECC, 1996). Soil samples were collected from the tube sampler and placed directly into sample jars and resealable zipper bags using nitrile gloves. Approximately 5 gram soil samples were also obtained using new disposable syringes and placed into methanol preserved vials for volatile organic compounds (VOCs) analysis.

Geological descriptions of the collected soil samples based on the Record of Borehole sheets in Appendix A are summarized in the following table:

Borehole	Sample	Sample Depth (metres below ground surface)	Geological Description
BH17-4	SA1	0.00 – 1.22	Very stiff, brown silty clay (trace seams of sand)
	SA2	1.22 – 2.44	
	SA3	2.44 – 3.66	
	SA4	3.66 – 4.88	
	SA5	4.88 – 6.00	Grey brown clayey silt (some sand)
BH17-5	SA1	0.00 – 1.22	Very stiff, brown silty clay (trace

Borehole	Sample	Sample Depth (metres below ground surface)	Geological Description
	SA2	1.22 – 2.44	seams of sand)
	SA3	2.44 – 3.66	
	SA4	3.66 – 4.88	
	SA5	4.88 – 6.00	Grey brown sandy silt (some clay)
BH17-6	SA1	0.00 – 1.22	
	SA2	1.22 – 2.44	Very stiff, brown silty clay (trace seams of sand)
	SA3	2.44 – 3.66	
	SA4	3.66 – 4.88	
	SA5	4.88 – 6.00	Grey brown sandy silt (some clay)

4.4 Groundwater Monitoring Well Installation

Groundwater monitoring wells were installed in boreholes 17-4, 17-5, and to 17-6 at the time of drilling the boreholes. The monitoring wells were constructed with 32 mm diameter PVC screens and risers. Silica sand was placed around the screen and to 0.3 metres above the top of the screen. The remaining annulus space to ground surface was sealed with bentonite to minimize cross-contamination. The monitoring well construction details are provided on the Record of Borehole sheets in Appendix A.

4.5 Groundwater Field Measurements

A Heron Instruments oil/water interface meter was used to measure groundwater levels. It did not detect the presence of free petroleum product in any of the monitoring wells.

4.6 Groundwater Sampling

Groundwater samples were collected following the Guidance on Sampling and Analytical Methods for Use at Contaminated Sites in Ontario (MOECC, 1996). All groundwater samples were collected in laboratory supplied bottles, using a peristaltic groundwater pump with dedicated tubing. Prior to sampling, the monitoring wells were developed by purging the wells using a low flow groundwater pump. The groundwater samples were obtained after field tests showed that the pH, conductivity, total dissolved solids, oxidation reduction potential and

temperature had stabilized. All groundwater samples were stored in a cooler filled with ice and were submitted to AGAT Laboratories for analyses of selected parameters

4.7 Sediment Sampling

No sediments were sampled as part of the Limited Phase Two ESA work program as there are no surface water bodies present on the site.

4.8 Analytical Testing

Laboratory analysis of soil samples and groundwater samples was carried out by AGAT Laboratories located at 5835 Coopers Avenue in Mississauga, Ontario.

4.9 Residue Management Procedures

No excess soil cuttings were produced during the borehole drilling.

4.10 Elevation Surveying

The ground surface elevations of the monitoring wells and boreholes were surveyed using Trimble R8 global positioning equipment relative to geodetic datum. The ground surface elevations are provided on the Record of Borehole sheets in Appendix A.

4.11 Quality Assurance and Quality Control Measures

Soil Samples

Soil samples were collected in clear glass jars and vials containing methanol preservative supplied by the laboratory. The jars were partially pre-labeled prior to going out in the field to record the client (Houle Chevrier Engineering Ltd.), project number, borehole number and date of sampling on each laboratory supplied jar. In the field, a black pen or permanent marker was used to fill in the sample number and date. This allowed for the time spent in the field labeling jars to be minimized and reduced possible errors. A chain of custody was clearly completed to include the information for each sample collected and was attached to the cooler storing the samples while the samples were transferred to the analytical laboratory for chemical testing.

A new pair of nitrile gloves was worn for collecting each of the soil samples to minimize cross contamination between samples and to protect staff from exposure to contaminants. The sampling tubes were opened by the contractor and samples were collected directly into laboratory supplied jars using a putty scraper and/or knife which was wiped with a clean cloth and rinsed with a decontamination solution and distilled water following each sampling event. The samples for the vials containing the methanol preservative were collected using new plastic syringes supplied by the laboratory. Following collection of soil samples in laboratory supplied jars, the remaining soil in the sampling tubes was placed in a plastic resealable zipper bag for combustible headspace gas screening at the end of the day.

The soil samples collected in the laboratory supplied containers were immediately preserved in the field by placing the samples in a laboratory supplied cooler filled with ice packs to maintain the temperature between 4 and 10 degrees Celsius. Soil samples were returned to our office and placed into a dedicated refrigerator for storage of soil and groundwater samples. Soil samples were selected for submission based on combustible gas measurements and visual and olfactory signs of contamination. All samples were submitted within the maximum allowable holding time of 14 days.

Groundwater

The groundwater samples were collected in laboratory supplied bottles and vials specific to the requested analysis. The jars were partially pre-labeled prior to going out in the field to record the client (Houle Chevrier Engineering Ltd.), project number, borehole number and date of sampling on each laboratory supplied jar. In the field a black pen or permanent marker was used to fill in the sample number and date.

A new pair of nitrile gloves was worn during the collection of each of the groundwater samples to minimize cross contamination between samples and to protect staff from exposure to contaminants. Groundwater was sampled from the wells using dedicated sampling equipment for each well.

The groundwater samples collected in the laboratory supplied containers were immediately cooled in the field by placing the samples in a laboratory supplied cooler filled with ice packs. Groundwater samples were submitted to the laboratory the same day for analysis. All samples were submitted within the maximum allowable holding time of 7 days.

Disposable nitrile gloves and dedicated groundwater sampling equipment were used in sampling the groundwater from the wells. No cleaning procedures were required as the gloves and dedicated sampling equipment were disposed of following sample collection.

5.0 REVIEW AND EVALUATION OF INFORMATION

5.1 Geology

Surficial geology at the subject property was interpreted from the stratigraphic information obtained during drilling at the specific test locations only. Detailed descriptions of soil conditions can be found on the Record of Borehole sheets in Appendix A.

The following presents an overview of the subsurface conditions encountered in the boreholes advanced during this investigation.

Fill Material

A surficial layer of fill material was encountered at all boreholes from ground surface to between about 0.4 and 0.5 metres below ground surface. The fill material is composed of grey crushed sand and gravel with trace silt.

Silty Clay

A layer of silty clay was encountered at all boreholes below the fill material. The thickness of the silty clay varies from 4.4 to 4.5 metres.

Clayey Silt & Sandy Silt

A layer of clayey silt was encountered below the sand in borehole 17-4 and a layer of sandy silt was encountered below the sand in borehole 17-5 and 17-6 at a depth of around 4.9 metres below ground surface. All boreholes were terminated at a depth of 6.1 metres

5.2 Groundwater Elevations

The groundwater levels were measured in the monitoring wells installed in boreholes 17-4 to 17-6 on March 9, 2016. No free product was detected by the Heron Instruments oil/water interface meter. The groundwater levels and combustible headspace vapour readings are summarized in the following table:

Borehole	Date Measured	Groundwater Depth Below Ground Surface (metres)	Groundwater Elevation (metres, geodetic datum)	Combustible Headspace Vapour Reading (ppm)
17-4	9/12/2016	2.63	79.59	0-5
17-5	9/12/2016	2.47	79.64	5-10
17-6	9/12/2016	2.00	79.98	0-5

5.3 Site Condition Standards

Site condition standards were selected for this site in accordance with the requirements of Ontario Regulation 153/04, Records of Site Condition – Part XV.1 of the Environmental Protection Act (O. Reg. 153/04, MOECC, October 31, 2011).

The following information was considered in selecting the site condition standards:

- The subject property is within an urban area;
- The current property use is community;
- The overburden thickness in the area of the APECs investigated is greater than 2 metres.

Based on the above, the MOECC Table 3 Full Depth Generic Site Condition Standards for Community Property Use in a Non-Potable Ground Water Condition (medium and fine grained soils) was selected for the subject property.

5.4 Soil Quality

The laboratory certificates of analysis for the selected soil samples are presented in Appendix B. The locations and depths of the selected soil samples submitted for laboratory analysis are summarized in the following table:

Borehole / Monitoring Well	Sample	Sample Description	Depth Interval (m bgs[1])	PHCs[2] F1-F4 / VOCs[3]	PAHs[4]	PCBs[5]	Metals
17-4	SA-1	Grey crushed sand and gravel, trace silt	0.0 – 1.2				✓
17-4	SA-2	Brown silty clay, trace sand seams	1.2 – 2.4	✓			
17-5	SA-1	Grey crushed sand and gravel, trace silt	0.0 – 1.2				✓
17-5	SA-3	Brown silty clay, trace sand seams	2.4 – 3.6	✓			
17-6	SA-1	Grey crushed sand and gravel, trace silt	0.0 – 1.2		✓	✓	✓

Borehole / Monitoring Well	Sample	Sample Description	Depth Interval (m bgs[1])	PHCs[2] F1-F4 / VOCs[3]	PAHs[4]	PCBs[5]	Metals
17-6	SA-2	Brown silty clay, trace sand seams	1.2 – 2.4				✓
17-6	SA-3	Brown silty clay, trace sand seams	2.4 – 3.6	✓			
17-106[6]	SA-1	Grey crushed sand and gravel, trace silt	0.0 – 1.2				✓
17-106[6]	SA-3	Brown silty clay, trace sand seams	2.4 – 3.6	✓			

Notes:

1. m bgs – metres below ground surface
2. PHCs F1 to F4 - Petroleum Hydrocarbon Fractions in the F1 to F4 ranges
3. VOCs – Volatile Organic Compounds
4. PAHs – Polycyclic Aromatic Hydrocarbons
5. PCBs – Polychlorinated Biphenyls
6. 17-106 is a duplicate of borehole 17-6

The analytical results from the laboratory certificates of analysis were compared with the applicable Table 3 site condition standards (MOECC, 2011). The results are summarized in Tables A1 following the text of the report. As shown in Tables A1, the soil sample results satisfied the applicable MOECC Table 3 site condition standards for all parameters analysed, with the exception of vanadium in boreholes 17-4 SA-1, 17-5 SA-1, 17-6 SA-1 and 17-6 SA-2.

5.5 Groundwater Quality

The laboratory certificates of analysis for the groundwater samples are presented in Appendix C. The location, date and parameters analysed are summarized in the following table:

Monitoring Well	Screened Interval (m ASL1)	Date Sampled	Water Level (m BGS[2])	Water Elevation (m ASL)	Parameters Analysed
17-4	3.05-6.10	09/03/2017	4.83	64.42	

Monitoring Well	Screened Interval (m ASL[1])	Date Sampled	Water Level (m BGS[2])	Water Elevation (m ASL)	Parameters Analysed
17-5	3.05-6.10	09/03/2017	4.97	64.09	
17-6	3.05-6.10	09/03/2017	5.58	64.49	PHCs, VOCs, Metals, PAHs, PCBs

Notes:

1. m ASL – metres above sea level
2. m BGS – metres below ground surface
3. PHCs F1 to F4 - Petroleum Hydrocarbon Fractions in the F1 to F4 ranges
4. VOCs – Volatile Organic Compounds
5. PAHs – Polycyclic Aromatic Hydrocarbons
6. PCBs – Polychlorinated Biphenyls

The analytical results from the laboratory certificates of analysis were compared with the applicable Table 3 site condition standards (MOECC, 2011). The results are summarized in Tables A2. As shown in Tables A2 the groundwater sample results satisfied the applicable MOECC Table 3 site condition standards for all parameters analysed.

5.6 Sediment Quality

No sediments were investigated as part of the Limited Phase Two ESA as there are no surface water bodies present on the site.

5.7 Quality Assurance and Quality Control Results

One (1) duplicate soil sample was submitted to AGAT Laboratories for analysis of selected parameters. The soil sample 17-106 SA-1 is a duplicate of sample 17-6 SA-1 and 17-106 SA-3 is a duplicate of sample 17-6 SA-3. The results of the duplicate soil samples are similar to the results of the original samples and no significant differences were noted.

The Laboratory QA/QC results for the soil analyses are included with the laboratory analytical data provided in Appendix B. Soil sample holding times were met, and all laboratory quality control blanks, duplicates and spikes and surrogate compound recoveries met applicable industry criteria.

The Laboratory QA/QC results for the groundwater analyses are included with the laboratory analytical data provided in Appendix C. Groundwater sample holding times were met, and all laboratory quality control blanks, duplicates and spikes and surrogate compound recoveries met applicable industry criteria.

Based on the measures discussed above, sample collection and handling protocols are considered acceptable and associated analytical results reproducible. The quality of the field data and laboratory data from the investigation was sufficient in that decision making was not affected and the overall objectives of the investigation and assessment were met.

5.8 Phase Two Conceptual Site Model

5.8.1 Potentially Contaminating Activities

The Phase One ESA identified the following potentially contaminating activities on the subject property:

- The subject property was a former fire hall;
- Fill of unknown origin was likely placed on the property.

5.8.2 Areas of Potential Environmental Concern (APECs)

A description and assessment of areas where potentially contaminating activities have occurred and areas of potential environmental concern are summarized in the following table:

APEC	Location of APEC on Phase One Property	PCA	Location of PCA	Contaminants of Potential Concern	Media Potentially Impacted
APEC 1	Former fire hall, east portion of existing building on the subject property	Former Fire Hall	On site	• PHCs[1] • VOCs[2]	Soil Groundwater
APEC 2	Southwest portion of the subject property.	Fill Material of Unknown Origin	On site	• PAHs[3]; • Metals; • PHCs; • PCBs[4].	Soil Groundwater

Based on City of Ottawa correspondence, dated February 21, 2017, a Limited Phase Two ESA investigating the impacts within the construction area would be required. Therefore, the fill material of unknown origin at the southwest portion of the subject property has been excluded from the current scope of work.

5.8.3 Subsurface Structures

Underground natural gas, phone and municipal water and sewer were identified to exist on the subject property. There is potential that they may affect contaminant distribution and transport.

5.8.4 Physical Settings and Hydrogeological Characteristics of the Subject Property

The stratigraphy at the subject property is generally composed of fine sand overlying silty clay.

The groundwater level measured in monitoring wells 17-4 to 17-6 on March 9, 2017 ranged from 2.00 – 2.67 metres below ground surface (or elevation 79.59 to 79.98 metres geodetic).

5.8.5 Selection of Site Condition Standards

Based on the results of the Phase One and Two ESAs conducted for the subject property, the MOECC Table 3 Generic Site Condition Standards for Shallow Soils and Community Property Use in a Non-Potable Ground Water Condition (medium and fine textured soils) was selected for the subject property.

5.8.6 Identified Contamination and Impacted Medium on the Subject Property

The Limited Phase Two ESA investigated the APECs identified in the Phase One ESA and the results of the investigation for each APEC are summarized below:

APEC 1: Former Fire Hall

Former Fire Hall was located on the subject property. Based on potential maintenance activities occurring within the building, the contaminants of concern are petroleum hydrocarbons (PHCs) and volatile organic compounds (VOCs).

5.8.7 Summary of Identified Impacts

No identified impacts to the soil or groundwater were indentified. The granular fill material was also screened, two (2) samples from boreholes 17-4 and 17-5 were submitted for metals and one (1) samples from borehole 17-6 was submitted for metals, PAHs, and PCBs analysis. The granular fill material met the applicable site condition standards, with the exception of vanadium at all three (3) boreholes.

6.0 CONCLUSIONS

The Phase One Environmental Site Assessment (ESA) report previously carried out for the subject property recommended that a Phase Two ESA investigation be carried out for the property located at 1463 Prince of Wales Drive in Ottawa, Ontario (hereafter referred to as "the subject property"). The Limited Phase Two ESA investigated one (1) of the Areas of Potential Environmental Concern (APECs) identified in the Phase One ESA:

APEC 1: Former Fire Hall

Former Fire Hall was located on the subject property. Based on potential maintenance activities occurring within the building, the contaminants of concern are petroleum hydrocarbons (PHCs) and volatile organic compounds (VOCs).

In addition, soil and groundwater was screened to address the following potentially contaminating activities identified during the Phase One ESA:

- On-site fill material of unknown origin;
- Off-site dry cleaners;
- Off-site gasoline service station.

The Limited Phase Two ESA investigation was carried out in March 2017. The components of the Limited Phase Two ESA investigation consisted of advancing three (3) boreholes completed as monitoring wells to assess the soil and groundwater in the area of the proposed construction. Soil and groundwater samples were collected and submitted to AGAT Laboratories of Mississauga, Ontario for laboratory analyses of selected parameters.

The data collected during the borehole drilling indicated that the site is generally underlain by a layer of fine sand overlying silty clay. The groundwater level measured in monitoring wells 17-4 to 17-6 on March 9, 2017 ranged from 2.00 – 2.67 metres below ground surface (or elevation 79.59 to 79.98 metres geodetic).

The Limited Phase Two ESA investigated the one APEC identified in the Limited Phase One ESA and the results of the investigation are summarized below:

APEC 1: Former Fire Hall

Soil and groundwater samples submitted from borehole 17-4 to 17-6 met the applicable MOECC site condition standards for petroleum hydrocarbons (PHCs) and volatile organic compounds (VOCs).

Granular fill material was also screened for polycyclic aromatic hydrocarbons (PAHs), metals, polychlorinated biphenyls (PCBs). The soil samples submitted from boreholes 17-4 to 17-6 met

the applicable MOECC Table 3 site condition standards for all parameters, with the exception of vanadium at all sample locations.

Discussion

Based on the results of the current investigation no petroleum or solvent impacted soils or groundwater were identified.

Slight metals exceedances were identified at borehole locations 17-4, 17-5, and 17-6 in the fill and native material, respectively. Based on the concentrations and presence in native and fill, the elevated vanadium concentration is likely naturally occurring and no further investigations are required at this time. If these soils are removed from the subject property as excess fill, an appropriate receiving site must be identified. If a receiving site is not available, the excess soil must be disposed of at an MOECC approved landfill.

7.0 LIMITATION OF LIABILITY

This report and the work referred to within it have been undertaken by Houle Chevrier Engineering Ltd. (HCEL) and prepared for the Boys and Girls Club of Ottawa and are intended for the exclusive use of the Boys and Girls Club of Ottawa. This report may not be relied upon by any other person or entity without the express written consent of HCEL and the Boys and Girls Club of Ottawa. Nothing in this report is intended to provide a legal opinion.

The investigation undertaken by HCEL with respect to this report and any conclusions or recommendations made in this report reflect the best judgements of HCEL based on the site conditions observed during the investigations undertaken at the date(s) identified in the report and on the information available at the time the report was prepared.

This report has been prepared for the application noted and it is based, in part, on visual observations made at the site, subsurface investigations at discrete locations and depths and laboratory analyses of specific chemical parameters and material during a specific time interval, all as described in the report. Unless otherwise stated, the findings contained in this report cannot be extrapolated or extended to previous or future site conditions, portions of the site that were unavailable for direct investigation, subsurface locations on the site that were not investigated directly, or chemical parameters, materials or analysis which were not addressed. Chemical parameters other than those addressed by the investigation described in this report may exist in soil and groundwater elsewhere on the site, the chemical parameters addressed in the report may exist in soil and groundwater at other locations at the site that were not investigated and concentrations of the chemical parameters addressed which are different than those reported may exist at other locations on the site than those from where the samples were taken.

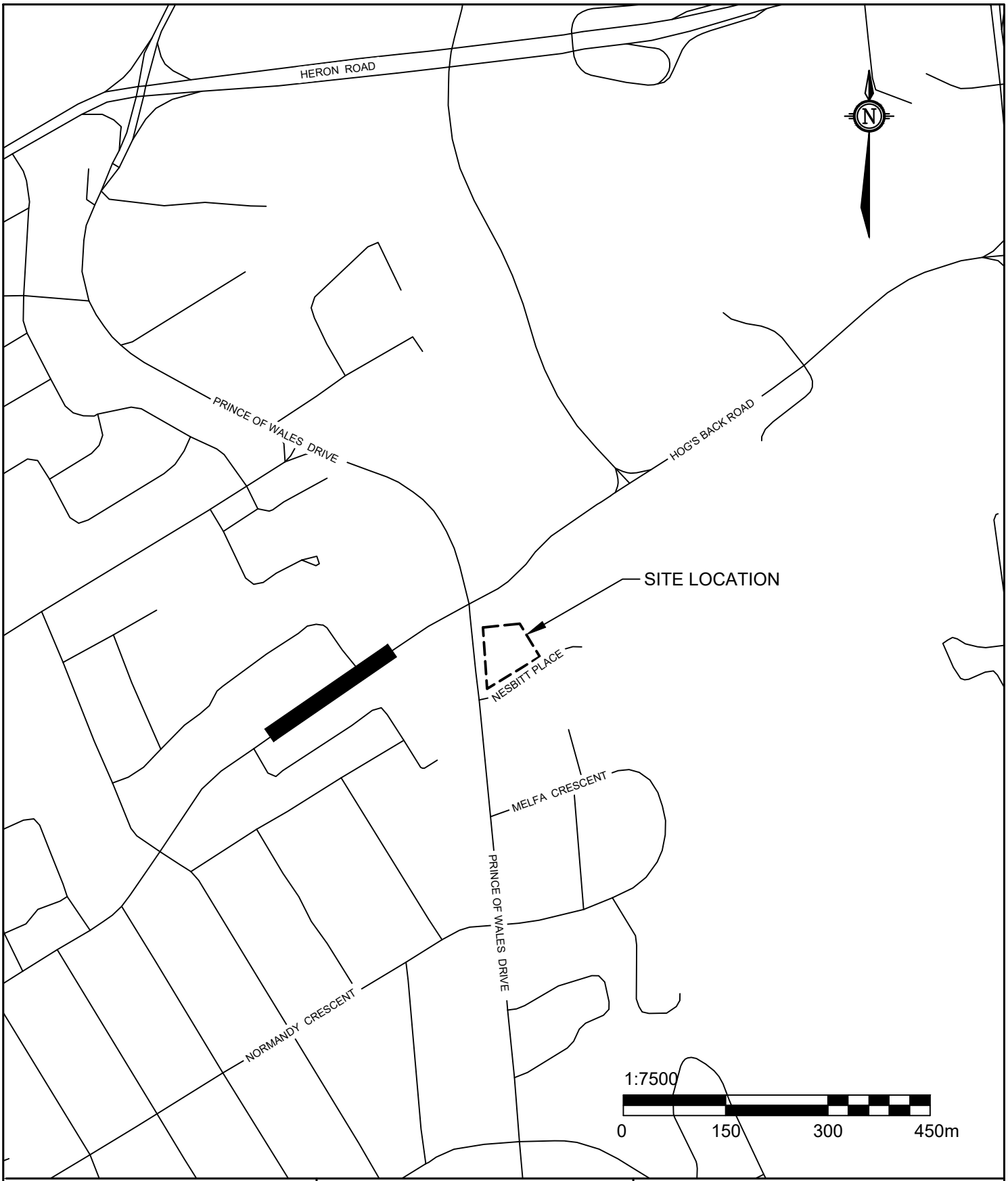
Should new information become available during future work, including excavations, borings or other studies, HCEL should be requested to review the information and, if necessary, re-assess the conclusions presented herein.

We trust this report provides sufficient information for your present purposes. If you have any questions concerning this report, please do not hesitate to contact our office.

Nicole Soucy, B.A.Sc., M.A.Sc.
Junior Environmental Scientist

Katherine Rispoli, B.Eng., M.A.Sc.
Environmental Scientist

Shaun Pelkey, M.Sc.E., P.Eng.
Principal, Environmental Engineer



Houle Chevrier Engineering
32 Steacie Drive, Ottawa, ON
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Project	Drawing
Phase Two ESA PROPOSED GYMNASIUM & ICE RINK 1463 PRINCE OF WALES OTTAWA, ONTARIO	KEY PLAN

Drwn By	Chkd By	Date	Project No.	Revision No.	
P.C.	L.B.	MAY 2017	61446.15	0	**FIGURE 1**

LEGEND

SUBJECT SITE

BH 17-1
82.22

BOREHOLE LOCATION IN PLAN
(current investigation by Houle Chevrier Engineering Ltd.)

GROUND SURFACE ELEVATION IN METRES
GEODETIC DATUM

POTENTIAL SOURCES OF CONTAMINATION
(identified in Phase One Environmental Site Assessment by Dillon Consultants)

1. VEHICLE MAINTENANCE
2. UNKNOWN FILL MATERIAL
3. SERVICE STATION/RETAIL FUEL OUTLET
4. FORMER SERVICE STATION/RETAIL FUEL OUTLET
5. DRY CLEANER
6. FORMER DRY CLEANER

Scale 1:1000

0 20 40 60m

Houle Chevrier Engineering Ltd.
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Drawing: BOREHOLE LOCATION PLAN

Client: HOBIN ARCHITECTURE INC.

Project: 61446.15

PHASE TWO ESA
1463 PRINCE OF WALES DRIVE
OTTAWA, ONTARIO

Drwn by: P.C.

Chkd by: K.R.

Date: MAY 2017

Rev.: 0

FIGURE 2

TABLE A1
SOIL ANALYTICAL RESULTS

Parameters	Units	RDL	Regulation		BH17-4 SA-1	BH17-5 SA-1	BH 17-6 SA-1	BH17-6 SA-2	BH17-106 SA-1
			MOECC Table 1	MOECC Table 3	3/3/2017	3/3/2017	3/2/2017	3/3/2017	3/3/2017
O. Reg. 153(511) - Metals (Including Hydrides) (Soil)									
Antimony	µg/g	0.8	1.3	40	<0.8	<0.8	<0.8	<0.8	<0.8
Arsenic	µg/g	1	18	18	2	2	2	2	2
Boron	µg/g	5	36	120	6	6	<5	6	6
Barium	µg/g	2	220	670	292	310	335	276	319
Beryllium	µg/g	0.5	2.5	8	1	1	0.7	1	1
Cadmium	µg/g	0.5	1.2	1.9	<0.5	<0.5	<0.5	<0.5	<0.5
Chromium	µg/g	2	70	160	132	140	134	125	135
Cobalt	µg/g	0.5	21	80	22.6	28.5	26.3	26.4	24.9
Copper	µg/g	1	92	230	52	54	53	47	51
Lead	µg/g	1	120	120	9	9	10	9	11
Molybdenum	µg/g	0.5	2	40	<0.5	0.7	<0.5	<0.5	<0.5
Nickel	µg/g	1	82	270	72	75	71	70	71
Selenium	µg/g	0.4	1.5	5.5	<0.4	<0.4	<0.4	<0.4	<0.4
Silver	µg/g	0.2	0.5	40	<0.2	<0.2	<0.2	<0.2	<0.2
Thallium	µg/g	0.4	1	3.3	0.4	0.4	0.5	0.4	0.4
Uranium	µg/g	0.5	2.5	33	1	1.1	1	1	1
Vanadium	µg/g	1	86	86	106	106	108	109	109
Zinc	µg/g	5	290	340	121	130	135	128	124
O. Reg. 153(511) - PCBs (Soil)									
Naphthalene	µg/g	0.05	0.09	9.6	-	-	<0.05	-	-
Acenaphthylene	µg/g	0.05	0.093	0.15	-	-	<0.05	-	-
Acenaphthene	µg/g	0.05	0.072	96	-	-	<0.05	-	-
Fluorene	µg/g	0.05	0.12	62	-	-	<0.05	-	-
Phenanthrene	µg/g	0.05	0.69	12	-	-	<0.05	-	-
Anthracene	µg/g	0.05	0.16	0.67	-	-	<0.05	-	-
Fluoranthene	µg/g	0.05	0.56	9.6	-	-	<0.05	-	-
Pyrene	µg/g	0.05	1	96	-	-	<0.05	-	-
Benz(a)anthracene	µg/g	0.05	0.36	0.96	-	-	<0.05	-	-
Chrysene	µg/g	0.05	2.8	9.6	-	-	<0.05	-	-
Benzo(b)fluoranthene	µg/g	0.05	0.47	0.96	-	-	<0.05	-	-
Benzo(k)fluoranthene	µg/g	0.05	0.48	0.96	-	-	<0.05	-	-
Benzo(a)pyrene	µg/g	0.05	0.3	0.3	-	-	<0.05	-	-
Indeno(1,2,3-cd)pyrene	µg/g	0.05	0.23	0.76	-	-	<0.05	-	-
Dibenz(a,h)anthracene	µg/g	0.05	0.1	0.1	-	-	<0.05	-	-
Benzo(g,h,i)perylene	µg/g	0.05	0.68	9.6	-	-	<0.05	-	-
2-and 1-methyl Naphthalene	µg/g	0.05	0.59	76	-	-	<0.05	-	-
Moisture Content	%	0.1	-	-	-	-	28	-	-
Chrysene-d12	%	-	-	-	-	-	97	-	-
Aroclor 1242	µg/g	0.1	-	-	-	-	<0.1	-	-
Aroclor 1248	µg/g	0.1	-	-	-	-	<0.1	-	-
Aroclor 1254	µg/g	0.1	-	-	-	-	<0.1	-	-

TABLE A1 (CONTINUED)
SOIL ANALYTICAL RESULTS

Parameters	Units	RDL	Regulation		BH17-4 SA-1	BH17-5 SA-1	BH 17-6 SA-1	BH17-6 SA-2	BH17-106 SA-1
			MOECC Table 1	MOECC Table 3	3/3/2017	3/3/2017	3/2/2017	3/3/2017	3/3/2017
Aroclor 1260	µg/g	0.1	-	-	-	-	<0.1	-	-
Polychlorinated Biphenyls	µg/g	0.1	0.3	1.1	-	-	<0.1	-	-
Decachlorobiphenyl	%	-	-	-	-	-	120	-	-
Moisture Content	%	0.1	-	-	-	-	28	-	-

Notes

1. MOECC Table 1: Reg 153/04 (2011) Residential/Industrial
2. MOECC Table 3: Reg 153/04 (2011) Industrial, Commercial, Community (coarse textured soil)
3. Underline — Exceeds Table 1 Criteria
4. Shaded — Exceeds Table 3 Criteria
5. RDL: Reported Detection Limit
6. ND: Not detected
7. NA: Not applicable

TABLE A1 (CONTINUED)
SOIL ANALYTICAL RESULTS

Parameters	Units	RDL	Regulation		BH 17-4 SA-2	BH 17-5 SA-3	BH 17-6 SA-3	BH 17-106 SA-3
			MOECC Table 1	MOECC Table 3	3/2/2017	3/2/2017	3/2/2017	3/2/2017
O. Reg. 153(511) - PHCs F1 - F4 (with PAHs) (Soil)								
F1 (C6 to C10)	µg/g	5	25	55	<5	<5	<5	<5
F1 (C6 to C10) minus BTEX	µg/g	5	25	55	<5	<5	<5	<5
F2 (C10 to C16)	µg/g	10	10	230	<10	<10	<10	<10
F3 (C16 to C34)	µg/g	50	240	1700	<50	<50	<50	<50
F4 (C34 to C50)	µg/g	50	120	3300	<50	<50	<50	<50
Gravimetric Heavy Hydrocarbons	µg/g	50	120	3300	NA	NA	NA	NA
Moisture Content	%	0.1	-	-	27.8	28.3	27.7	27.1
Terphenyl	%	-	-	-	83	85	87	68
O. Reg. 153 (511) VOCs (Soil)								
Dichlorodifluoromethane	µg/g	0.05	0.05	16	<0.05	<0.05	<0.05	<0.05
Vinyl Chloride	ug/g	0.02	0.02	0.032	<0.02	<0.02	<0.02	<0.02
Bromomethane	ug/g	0.05	0.05	0.05	<0.05	<0.05	<0.05	<0.05
Trichlorofluoromethane	ug/g	0.05	0.25	4	<0.05	<0.05	<0.05	<0.05
Acetone	ug/g	0.5	0.5	16	<0.50	<0.50	<0.50	<0.50
1,1-Dichloroethylene	ug/g	0.05	0.05	0.064	<0.05	<0.05	<0.05	<0.05
Methylene Chloride	ug/g	0.05	0.05	1.6	<0.05	<0.05	<0.05	<0.05
Trans- 1,2-Dichloroethylene	ug/g	0.05	0.05	1.3	<0.05	<0.05	<0.05	<0.05
Methyl tert-butyl Ether	ug/g	0.05	0.05	11	<0.05	<0.05	<0.05	<0.05
1,1-Dichloroethane	ug/g	0.02	0.05	17	<0.02	<0.02	<0.02	<0.02
Methyl Ethyl Ketone	ug/g	0.5	0.5	70	<0.50	<0.50	<0.50	<0.50
Cis- 1,2-Dichloroethylene	ug/g	0.02	0.05	55	<0.02	<0.02	<0.02	<0.02
Chloroform	ug/g	0.04	0.05	0.47	<0.04	<0.04	<0.04	<0.04
1,2-Dichloroethane	ug/g	0.03	0.05	0.05	<0.03	<0.03	<0.03	<0.03
1,1,1-Trichloroethane	ug/g	0.05	0.05	6.1	<0.05	<0.05	<0.05	<0.05
Carbon Tetrachloride	ug/g	0.05	0.05	0.21	<0.05	<0.05	<0.05	<0.05
Benzene	ug/g	0.02	0.02	0.32	<0.02	<0.02	<0.02	<0.02
1,2-Dichloropropane	ug/g	0.03	0.05	0.16	<0.03	<0.03	<0.03	<0.03
Trichloroethylene	ug/g	0.03	0.05	0.91	<0.03	<0.03	<0.03	<0.03
Bromodichloromethane	ug/g	0.05	0.05	18	<0.05	<0.05	<0.05	<0.05
Methyl Isobutyl Ketone	ug/g	0.5	0.5	31	<0.50	<0.50	<0.50	<0.50
1,1,2-Trichloroethane	ug/g	0.04	0.05	0.05	<0.04	<0.04	<0.04	<0.04
Toluene	ug/g	0.05	0.2	68	<0.05	<0.05	<0.05	<0.05
Dibromochloromethane	ug/g	0.05	0.05	13	<0.05	<0.05	<0.05	<0.05
Ethylene Dibromide	ug/g	0.04	0.05	0.05	<0.04	<0.04	<0.04	<0.04
Tetrachloroethylene	ug/g	0.05	0.05	4.5	<0.05	<0.05	<0.05	<0.05
1,1,1,2-Tetrachloroethane	ug/g	0.04	0.05	0.087	<0.04	<0.04	<0.04	<0.04
Chlorobenzene	ug/g	0.05	0.05	2.4	<0.05	<0.05	<0.05	<0.05
Ethylbenzene	ug/g	0.05	0.05	9.5	<0.05	<0.05	<0.05	<0.05
m & p-Xylene	ug/g	0.05	-	-	<0.05	<0.05	<0.05	<0.05
Bromoform	ug/g	0.05	0.05	0.61	<0.05	<0.05	<0.05	<0.05
Styrene	ug/g	0.05	0.05	34	<0.05	<0.05	<0.05	<0.05
1,1,2,2-Tetrachloroethane	ug/g	0.05	0.05	0.05	<0.05	<0.05	<0.05	<0.05
o-Xylene	ug/g	0.05	-	-	<0.05	<0.05	<0.05	<0.05

TABLE A1 (CONTINUED)
SOIL ANALYTICAL RESULTS

Parameters	Units	RDL	Regulation		BH 17-4 SA-2	BH 17-5 SA-3	BH 17-6 SA-3	BH 17-106 SA-3
			MOECC Table 1	MOECC Table 3	3/2/2017	3/2/2017	3/2/2017	3/2/2017
1,3-Dichlorobenzene	ug/g	0.05	0.05	9.6	<0.05	<0.05	<0.05	<0.05
1,4-Dichlorobenzene	ug/g	0.05	0.05	0.2	<0.05	<0.05	<0.05	<0.05
1,2-Dichlorobenzene	ug/g	0.05	0.05	6.8	<0.05	<0.05	<0.05	<0.05
Xylene Mixture	ug/g	0.05	0.05	26	<0.05	<0.05	<0.05	<0.05
1,3-Dichloropropene	µg/g	0.04	0.05	0.18	<0.04	<0.04	<0.04	<0.04
n-Hexane	µg/g	0.05	0.05	46	<0.05	<0.05	<0.05	<0.05
Toluene-d8	% Recovery	-	-	-	102	118	126	118
4-Bromofluorobenzene	% Recovery	-	-	-	72	93	92	86

Notes

1. MOECC Table 1: Reg 153/04 (2011) Residential/Industrial
2. MOECC Table 3: Reg 153/04 (2011) Industrial, Commercial, Community (coarse textured soil)
3. Underline — Exceeds Table 1 Criteria
4. Shaded — Exceeds Table 3 Criteria
5. RDL: Reported Detection Limit
6. ND: Not detected
7. NA: Not applicable

TABLE A2
GROUNDWATER ANALYTICAL RESULTS

Parameters	Units	RDL	Regulation MOECC Table 3	MW-06 3/9/2017
O. Reg. 153(511) - Metals (Including Hydrides)				
Antimony	µg/L	1	20000	<1.0
Arsenic	µg/L	1	1900	<1.0
Barium	µg/L	2	29000	186
Beryllium	µg/L	0.5	67	<0.5
Boron	µg/L	10	45000	21.1
Cadmium	µg/L	0.2	2.7	<0.2
Chromium	µg/L	2	810	14.5
Cobalt	µg/L	0.5	66	4.7
Copper	µg/L	1	87	1.6
Lead	µg/L	0.5	25	<0.5
Molybdenum	µg/L	0.5	9200	8.7
Nickel	µg/L	1	490	9.6
Selenium	µg/L	1	63	1
Silver	µg/L	0.2	1.5	<0.2
Thallium	µg/L	0.3	510	<0.3
Uranium	µg/L	0.5	420	6.7
Vanadium	µg/L	0.4	250	2.2
Zinc	µg/L	5	1100	19
O. Reg. 153(511) - PAHs				
Naphthalene	µg/L	0.2	1400	<0.20
Acenaphthylene	µg/L	0.2	1.8	<0.20
Acenaphthene	µg/L	0.2	600	<0.20
Fluorene	µg/L	0.2	400	<0.20
Phenanthrene	µg/L	0.1	580	<0.10
Anthracene	µg/L	0.1	2.4	<0.10
Fluoranthene	µg/L	0.2	130	<0.20
Pyrene	µg/L	0.2	68	<0.20
Benz(a)anthracene	µg/L	0.2	4.7	<0.20
Chrysene	µg/L	0.1	1	<0.10
Benzo(b)fluoranthene	µg/L	0.1	0.75	<0.10
Benzo(k)fluoranthene	µg/L	0.1	0.4	<0.10
Benzo(a)pyrene	µg/L	0.01	0.81	<0.01
Indeno(1,2,3-cd)pyrene	µg/L	0.2	0.2	<0.20
Dibenz(a,h)anthracene	µg/L	0.2	0.52	<0.20
Benzo(g,h,i)perylene	µg/L	0.2	0.2	<0.20
2-and 1-methyl Naphthalene	µg/L	0.2	1800	<0.20
Chrysene-d12	%	-	-	74
Aroclor 1242	µg/L	0.1	-	<0.1
Aroclor 1248	µg/L	0.1	-	<0.1
Aroclor 1254	µg/L	0.1	-	<0.1
Aroclor 1260	µg/L	0.1	-	<0.1
Polychlorinated Biphenyls	µg/L	0.1	-	<0.1
Decachlorobiphenyl	%	-	-	111

TABLE A2 (CONTINUED)
GROUNDWATER ANALYTICAL RESULTS

Parameters	Units	RDL	Regulation MOECC Table 3	MW-06 3/9/2017
O. Reg. 153(511) - PHCs F1 - F4				
F1 (C6 to C10)	µg/L	25	750	<25
F1 (C6 to C10) minus BTEX	µg/L	25	750	<25
F2 (C10 to C16)	µg/L	100	150	<100
F2 (C10 to C16) minus Naphthalene	µg/L	100	-	<100
F3 (C16 to C34)	µg/L	100	500	<100
F3 (C16 to C34) minus PAHs	µg/L	100	-	<100
F4 (C34 to C50)	µg/L	100	500	<100
Gravimetric Heavy Hydrocarbons	µg/L	500	500	NA
Terphenyl	%	-	-	73
O. Reg. 153(511) - VOCs				
Dichlorodifluoromethane	µg/L	0.2	4400	<0.20
Vinyl Chloride	µg/L	0.17	0.5	<0.17
Bromomethane	µg/L	0.2	5.6	<0.20
Trichlorofluoromethane	µg/L	0.4	2500	<0.40
Acetone	µg/L	1	130000	<1.0
1,1-Dichloroethylene	µg/L	0.3	1.6	<0.30
Methylene Chloride	µg/L	0.3	610	<0.30
trans- 1,2-Dichloroethylene	µg/L	0.2	1.6	<0.20
Methyl tert-butyl ether	µg/L	0.2	190	<0.20
1,1-Dichloroethane	µg/L	0.3	320	<0.30
Methyl Ethyl Ketone	µg/L	1	470000	<1.0
cis- 1,2-Dichloroethylene	µg/L	0.2	1.6	<0.20
Chloroform	µg/L	0.2	2.4	<0.20
1,2-Dichloroethane	µg/L	0.2	1.6	<0.20
1,1,1-Trichloroethane	µg/L	0.3	640	<0.30
Carbon Tetrachloride	µg/L	0.2	0.79	<0.20
Benzene	µg/L	0.2	44	<0.20
1,2-Dichloropropane	µg/L	0.2	16	<0.20
Trichloroethylene	µg/L	0.2	1.6	0.51
Bromodichloromethane	µg/L	0.2	85000	<0.20
Methyl Isobutyl Ketone	µg/L	1	140000	<1.0
1,1,2-Trichloroethane	µg/L	0.2	4.7	<0.20
Toluene	µg/L	0.2	18000	<0.20
Dibromochloromethane	µg/L	0.1	82000	<0.10
Ethylene Dibromide	µg/L	0.1	0.25	<0.10
Tetrachloroethylene	µg/L	0.2	1.6	<0.20
1,1,1,2-Tetrachloroethane	µg/L	0.1	3.3	<0.10
Chlorobenzene	µg/L	0.1	630	<0.10
Ethylbenzene	µg/L	0.1	2300	<0.10
m & p-Xylene	µg/L	0.2	-	<0.20
Bromoform	µg/L	0.1	380	<0.10
Styrene	µg/L	0.1	1300	<0.10
1,1,2,2-Tetrachloroethane	µg/L	0.1	3.2	<0.10

TABLE A2 (CONTINUED)
GROUNDWATER ANALYTICAL RESULTS

Parameters	Units	RDL	Regulation MOECC Table 3	MW-06 3/9/2017
o-Xylene	µg/L	0.1	-	<0.10
1,3-Dichlorobenzene	µg/L	0.1	9600	<0.10
1,4-Dichlorobenzene	µg/L	0.1	8	<0.10
1,2-Dichlorobenzene	µg/L	0.1	4600	<0.10
1,3-Dichloropropene	µg/L	0.3	5.2	<0.30
Xylene Mixture	µg/L	0.2	4200	<0.20
n-Hexane	µg/L	0.2	51	<0.20
Toluene-d8	% Recovery	-	-	86
4-Bromofluorobenzene	% Recovery	-	-	86

Notes

1. MOECC Table 1: Reg 153/04 (2011) Residential/Industrial
2. MOECC Table 3: Reg 153/04 (2011) Industrial, Commercial, Community (coarse textured soil)
3. Underline — Exceeds Table 1 Criteria
4. Shaded — Exceeds Table 3 Criteria
5. RDL: Reported Detection Limit
6. ND: Not detected
7. NA: Not applicable

APPENDIX A

Record of Borehole Sheets

RECORD OF BOREHOLE 17-4

PROJECT:
OUR PROJECT No.: 61446.15
LOCATION: See Borehole Location Plan, Figure 2
BORING DATE: 3 March 2017

SHEET 1 OF 1
DATUM: Geodetic
DRILL RIG:
SPT HAMMER: 63.5 kg; drop 0.76 metres

DEPTH SCALE METRES	BORING METHOD	DESCRIPTION	STRATA PLOT	ELEV. / DEPTH (m)	NUMBER	TYPE	BLOWS/0.3m	RECOVERY (%)	LABORATORY ANALYSES	COMBUSTIBLE VAPOUR CONCENTRATION (ppm) 100 200 300 400 / COMBUSTIBLE VAPOUR CONCENTRATION (%LEL) 20 40 60 80	MONITORING WELL INSTALLATION AND NOTES
		Ground Surface		82.22							
0	Hammer Casing 100 mm Diameter	Asphaltic Concrete		82.09							Flushmount protector
		Grey, crushed sand and gravel, trace silt (BASE/SUBBASE MATERIAL)		0.13 / 81.79							
		Very stiff, brown SILTY CLAY, trace sand seams (WEATHERED CRUST)		0.43	1	50 D.O.			Metals	0	Bentonite seal
1					2	50 D.O.			PHC, VOC	5	
2											
3					3	50 D.O.				0	Filter sand TOP OF SCREEN ELEV.: 79.17 m
4					4	50 D.O.				0	32 mm Diameter, 3.05 metres long well screen
5		Grey brown, CLAYEY SILT, some sand		77.34 / 4.88	5	50 D.O.				5	
6		End of borehole		76.12 / 6.10							BOTTOM OF SCREEN ELEV.: 76.12 m

GROUNDWATER OBSERVATIONS

DATE	TIME	DEPTH (m)	ELEVATION (m)
Mar. 09/17	00:00	2.00 ▽	80.22
		▼	
		▼	

Houle Chevrier Engineering
180 Wescar Lane
R.R. 2
Carp, Ontario, K0A 1L0

LOGGED: M.L.
CHECKED:

RECORD OF BOREHOLE 17-5

PROJECT:
OUR PROJECT No.: 61446.15
LOCATION: See Borehole Location Plan, Figure 2
BORING DATE: 3 March 2017

SHEET 1 OF 1
DATUM: Geodetic
DRILL RIG:
SPT HAMMER: 63.5 kg; drop 0.76 metres

DEPTH SCALE METRES	BORING METHOD	SOIL PROFILE: DESCRIPTION	STRATA PLOT	ELEV. / DEPTH (m)	SAMPLE DATA: NUMBER	TYPE	BLOWS/0.3m	RECOVERY (%)	LABORATORY ANALYSES	COMBUSTIBLE VAPOUR CONCENTRATION (ppm) 100 200 300 400 / COMBUSTIBLE VAPOUR CONCENTRATION (%LEL) 20 40 60 80	MONITORING WELL INSTALLATION AND NOTES
		Ground Surface		81.97							
0	Hammer Casing 100 mm Diameter	Asphaltic Concrete		81.87 / 0.10							Flushmount protector
		Grey, crushed sand and gravel, trace silt (BASE/SUBBASE MATERIAL)		81.57 / 0.40							Bentonite seal
		Very stiff, brown SILTY CLAY, trace sand seams (WEATHERED CRUST)			1	50 D.O.			Metals	5	
1											
					2	50 D.O.				5	
2											
					3	50 D.O.			PHC, VOC	10	Filter sand TOP OF SCREEN ELEV.: 78.92 m
3											
					4	50 D.O.				5	
4											32 mm Diameter, 3.05 metres long well screen
				77.09 / 4.88							
5		Grey brown CLAYEY SANDY SILT			5	50 D.O.				10	
6				75.87							BOTTOM OF SCREEN ELEV.: 75.87 m
		End of borehole		6.10							

GROUNDWATER OBSERVATIONS

DATE	TIME	DEPTH (m)	ELEVATION (m)
Mar. 09/13	00:00	2.47 ▽	79.50
		▼	
		▼	

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180 Wescar Lane
R.R. 2
Carp, Ontario, K0A 1L0

LOGGED: M.L.
CHECKED:

RECORD OF BOREHOLE 17-6

PROJECT:
OUR PROJECT No.: 61446.15
LOCATION: See Borehole Location Plan, Figure 2
BORING DATE: 3 March 2017

SHEET 1 OF 1
DATUM: Geodetic
DRILL RIG:
SPT HAMMER: 63.5 kg; drop 0.76 metres

DEPTH SCALE METRES	BORING METHOD	DESCRIPTION	STRATA PLOT	ELEV. / DEPTH (m)	NUMBER	TYPE	BLOWS/0.3m	RECOVERY (%)	LABORATORY ANALYSES	COMBUSTIBLE VAPOUR CONCENTRATION (ppm) 100 200 300 400 / COMBUSTIBLE VAPOUR CONCENTRATION (%LEL) 20 40 60 80	MONITORING WELL INSTALLATION AND NOTES
		Ground Surface		81.71							
0	Hammer Casing 100 mm Diameter	Asphaltic Concrete		81.66 0.10							Flushmount protector
		Grey, crushed sand and gravel, trace silt (BASE/SUBBASE MATERIAL)		81.31							Bentonite seal
		Very stiff, brown SILTY CLAY, trace sand seams (WEATHERED CRUST)		0.40	1	50 D.O.			Metals, PCB, PAH	0	
1											
					2	50 D.O.			Metals	0	
2											
					3	50 D.O.			PHC, VOC	0	Filter sand
3											TOP OF SCREEN ELEV.: 78.66 m
					4	50 D.O.				5	
4											32 mm Diameter, 3.05 metres long well screen
				76.83							
		Grey brown CLAYEY SANDY SILT		4.88	5	50 D.O.				0	
5											
6				75.61							BOTTOM OF SCREEN ELEV.: 75.61 m
		End of borehole		6.10							

GROUNDWATER OBSERVATIONS

DATE	TIME	DEPTH (m)	ELEVATION (m)
Mar. 09/17	00:00	2.63 ▽	79.08
		▼	
		▼	

Houle Chevrier Engineering
180 Wescar Lane
R.R. 2
Carp, Ontario, K0A 1L0

LOGGED: M.L.
CHECKED:

APPENDIX B

Soil Laboratory Certificates of Analysis

AGAT Laboratories

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

CLIENT NAME: HOULE CHEVRIER
32 STEACIE DRIVE
OTTAWA, ON K2K2A9
(613) 836-1422

ATTENTION TO: Katherine Rispoli

PROJECT: 61446.15

AGAT WORK ORDER: 17Z195792

SOIL ANALYSIS REVIEWED BY: Amanjot Bhela, Inorganic Coordinator

TRACE ORGANICS REVIEWED BY: Neli Popnikolova, Senior Chemist

DATE REPORTED: Mar 20, 2017

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

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Certificate of Analysis

AGAT WORK ORDER: 17Z195792

PROJECT: 61446.15

CLIENT NAME: HOULE CHEVRIER

ATTENTION TO: Katherine Rispoli

SAMPLING SITE:

SAMPLED BY:Nicole Soucy

O. Reg. 153(511) - Metals (Including Hydrides) (Soil)

DATE RECEIVED: 2017-03-14

DATE REPORTED: 2017-03-20

		SAMPLE DESCRIPTION:		BH 17-6 SA-1
		SAMPLE TYPE:		Soil
		DATE SAMPLED:		2017-03-02
Parameter	Unit	G / S	RDL	8249755
Antimony	µg/g	1.3	0.8	<0.8
Arsenic	µg/g	18	1	2
Boron	µg/g	36	5	<5
Barium	µg/g	220	2	**335**
Beryllium	µg/g	2.5	0.5	0.7
Cadmium	µg/g	1.2	0.5	<0.5
Chromium	µg/g	70	2	**134**
Cobalt	µg/g	21	0.5	**26.3**
Copper	µg/g	92	1	53
Lead	µg/g	120	1	10
Molybdenum	µg/g	2	0.5	<0.5
Nickel	µg/g	82	1	71
Selenium	µg/g	1.5	0.4	<0.4
Silver	µg/g	0.5	0.2	<0.2
Thallium	µg/g	1	0.4	0.5
Uranium	µg/g	2.5	0.5	1.0
Vanadium	µg/g	86	1	**108**
Zinc	µg/g	290	5	135

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

Certified By: Amanjot Bhela

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Certificate of Analysis

AGAT WORK ORDER: 17Z195792

PROJECT: 61446.15

CLIENT NAME: HOULE CHEVRIER

ATTENTION TO: Katherine Rispoli

SAMPLING SITE:

SAMPLED BY:Nicole Soucy

O. Reg. 153(511) - PAHs (Soil)

DATE RECEIVED: 2017-03-14

DATE REPORTED: 2017-03-20

		SAMPLE DESCRIPTION:		BH 17-6 SA-1
		SAMPLE TYPE:		Soil
		DATE SAMPLED:		2017-03-02
Parameter	**Unit**	**G / S**	**RDL**	**8249755**
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
2-and 1-methyl Naphthalene	µg/g	0.59	0.05	<0.05
Moisture Content	%		0.1	28.0
Surrogate	**Unit**	**Acceptable Limits**		
Chrysene-d12	%	50-140		97

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

8249755 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.

Certified By: N Popnikolof

AGAT Laboratories

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Certificate of Analysis

AGAT WORK ORDER: 17Z195792

PROJECT: 61446.15

CLIENT NAME: HOULE CHEVRIER

ATTENTION TO: Katherine Rispoli

SAMPLING SITE:

SAMPLED BY:Nicole Soucy

O. Reg. 153(511) - PCBs (Soil)

DATE RECEIVED: 2017-03-14

DATE REPORTED: 2017-03-20

		SAMPLE DESCRIPTION:		BH 17-6 SA-1
		SAMPLE TYPE:		Soil
		DATE SAMPLED:		2017-03-02
Parameter	**Unit**	**G / S**	**RDL**	**8249755**
Aroclor 1242	µg/g		0.1	<0.1
Aroclor 1248	µg/g		0.1	<0.1
Aroclor 1254	µg/g		0.1	<0.1
Aroclor 1260	µg/g		0.1	<0.1
Polychlorinated Biphenyls	µg/g	0.3	0.1	<0.1
Moisture Content	%		0.1	28.0
Surrogate	**Unit**	**Acceptable Limits**		
Decachlorobiphenyl	%	60-140		120

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

8249755 Results are based on the dry weight of soil extracted.

Certified By: N Popnikolof

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Certificate of Analysis

AGAT WORK ORDER: 17Z195792

PROJECT: 61446.15

CLIENT NAME: HOULE CHEVRIER

ATTENTION TO: Katherine Rispoli

SAMPLING SITE:

SAMPLED BY:Nicole Soucy

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

DATE RECEIVED: 2017-03-14

DATE REPORTED: 2017-03-20

		SAMPLE DESCRIPTION:		BH 17-4 SA-2	BH 17-5 SA-3	BH 17-6 SA-3	BH 17-106 SA-3
		SAMPLE TYPE:		Soil	Soil	Soil	Soil
		DATE SAMPLED:		2017-03-02	2017-03-02	2017-03-02	2017-03-02
Parameter	**Unit**	**G / S**	**RDL**	**8249731**	**8249738**	**8249746**	**8249750**
F1 (C6 to C10)	µg/g	25	5	<5	<5	<5	<5
F1 (C6 to C10) minus BTEX	µg/g	25	5	<5	<5	<5	<5
F2 (C10 to C16)	µg/g	10	10	<10	<10	<10	<10
F3 (C16 to C34)	µg/g	240	50	<50	<50	<50	<50
F4 (C34 to C50)	µg/g	120	50	<50	<50	<50	<50
Gravimetric Heavy Hydrocarbons	µg/g	120	50	NA	NA	NA	NA
Moisture Content	%		0.1	27.8	28.3	27.7	27.1
Surrogate	**Unit**	**Acceptable Limits**					
Terphenyl	%	60-140		83	85	87	68

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

8249731-8249750 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 without the contribution of PAHs. Under Ontario Regulation 153, results are considered valid without determining the PAH contribution if not requested by the client.

Certified By: N Popowich

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Certificate of Analysis

AGAT WORK ORDER: 17Z195792

PROJECT: 61446.15

CLIENT NAME: HOULE CHEVRIER

ATTENTION TO: Katherine Rispoli

SAMPLING SITE:

SAMPLED BY:Nicole Soucy

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

DATE RECEIVED: 2017-03-14

DATE REPORTED: 2017-03-20

		SAMPLE DESCRIPTION:		BH 17-4 SA-2	BH 17-5 SA-3	BH 17-6 SA-3	BH 17-106 SA-3
		SAMPLE TYPE:		Soil	Soil	Soil	Soil
		DATE SAMPLED:		2017-03-02	2017-03-02	2017-03-02	2017-03-02
Parameter	Unit	G / S	RDL	8249731	8249738	8249746	8249750
Dichlorodifluoromethane	µg/g	0.05	0.05	<0.05	<0.05	<0.05	<0.05
Vinyl Chloride	ug/g	0.02	0.02	<0.02	<0.02	<0.02	<0.02
Bromomethane	ug/g	0.05	0.05	<0.05	<0.05	<0.05	<0.05
Trichlorofluoromethane	ug/g	0.25	0.05	<0.05	<0.05	<0.05	<0.05
Acetone	ug/g	0.5	0.50	<0.50	<0.50	<0.50	<0.50
1,1-Dichloroethylene	ug/g	0.05	0.05	<0.05	<0.05	<0.05	<0.05
Methylene Chloride	ug/g	0.05	0.05	<0.05	<0.05	<0.05	<0.05
Trans- 1,2-Dichloroethylene	ug/g	0.05	0.05	<0.05	<0.05	<0.05	<0.05
Methyl tert-butyl Ether	ug/g	0.05	0.05	<0.05	<0.05	<0.05	<0.05
1,1-Dichloroethane	ug/g	0.05	0.02	<0.02	<0.02	<0.02	<0.02
Methyl Ethyl Ketone	ug/g	0.5	0.50	<0.50	<0.50	<0.50	<0.50
Cis- 1,2-Dichloroethylene	ug/g	0.05	0.02	<0.02	<0.02	<0.02	<0.02
Chloroform	ug/g	0.05	0.04	<0.04	<0.04	<0.04	<0.04
1,2-Dichloroethane	ug/g	0.05	0.03	<0.03	<0.03	<0.03	<0.03
1,1,1-Trichloroethane	ug/g	0.05	0.05	<0.05	<0.05	<0.05	<0.05
Carbon Tetrachloride	ug/g	0.05	0.05	<0.05	<0.05	<0.05	<0.05
Benzene	ug/g	0.02	0.02	<0.02	<0.02	<0.02	<0.02
1,2-Dichloropropane	ug/g	0.05	0.03	<0.03	<0.03	<0.03	<0.03
Trichloroethylene	ug/g	0.05	0.03	<0.03	<0.03	<0.03	<0.03
Bromodichloromethane	ug/g	0.05	0.05	<0.05	<0.05	<0.05	<0.05
Methyl Isobutyl Ketone	ug/g	0.5	0.50	<0.50	<0.50	<0.50	<0.50
1,1,2-Trichloroethane	ug/g	0.05	0.04	<0.04	<0.04	<0.04	<0.04
Toluene	ug/g	0.2	0.05	<0.05	<0.05	<0.05	<0.05
Dibromochloromethane	ug/g	0.05	0.05	<0.05	<0.05	<0.05	<0.05
Ethylene Dibromide	ug/g	0.05	0.04	<0.04	<0.04	<0.04	<0.04
Tetrachloroethylene	ug/g	0.05	0.05	<0.05	<0.05	<0.05	<0.05
1,1,1,2-Tetrachloroethane	ug/g	0.05	0.04	<0.04	<0.04	<0.04	<0.04
Chlorobenzene	ug/g	0.05	0.05	<0.05	<0.05	<0.05	<0.05
Ethylbenzene	ug/g	0.05	0.05	<0.05	<0.05	<0.05	<0.05
m & p-Xylene	ug/g		0.05	<0.05	<0.05	<0.05	<0.05

Certified By: N Popnikolof

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Certificate of Analysis

AGAT WORK ORDER: 17Z195792

PROJECT: 61446.15

CLIENT NAME: HOULE CHEVRIER

ATTENTION TO: Katherine Rispoli

SAMPLING SITE:

SAMPLED BY:Nicole Soucy

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

DATE RECEIVED: 2017-03-14

DATE REPORTED: 2017-03-20

		SAMPLE DESCRIPTION:		BH 17-4 SA-2	BH 17-5 SA-3	BH 17-6 SA-3	BH 17-106 SA-3
		SAMPLE TYPE:		Soil	Soil	Soil	Soil
		DATE SAMPLED:		2017-03-02	2017-03-02	2017-03-02	2017-03-02
Parameter	**Unit**	**G / S**	**RDL**	**8249731**	**8249738**	**8249746**	**8249750**
Bromoform	ug/g	0.05	0.05	<0.05	<0.05	<0.05	<0.05
Styrene	ug/g	0.05	0.05	<0.05	<0.05	<0.05	<0.05
1,1,2,2-Tetrachloroethane	ug/g	0.05	0.05	<0.05	<0.05	<0.05	<0.05
o-Xylene	ug/g		0.05	<0.05	<0.05	<0.05	<0.05
1,3-Dichlorobenzene	ug/g	0.05	0.05	<0.05	<0.05	<0.05	<0.05
1,4-Dichlorobenzene	ug/g	0.05	0.05	<0.05	<0.05	<0.05	<0.05
1,2-Dichlorobenzene	ug/g	0.05	0.05	<0.05	<0.05	<0.05	<0.05
Xylene Mixture	ug/g	0.05	0.05	<0.05	<0.05	<0.05	<0.05
1,3-Dichloropropene	µg/g	0.05	0.04	<0.04	<0.04	<0.04	<0.04
n-Hexane	µg/g	0.05	0.05	<0.05	<0.05	<0.05	<0.05
Surrogate	**Unit**	**Acceptable Limits**					
Toluene-d8	% Recovery	50-140		102	118	126	118
4-Bromofluorobenzene	% Recovery	50-140		72	93	92	86

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

8249731-8249750 The sample was analysed 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: N Popowkolof

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Guideline Violation

AGAT WORK ORDER: 17Z195792

PROJECT: 61446.15

CLIENT NAME: HOULE CHEVRIER

ATTENTION TO: Katherine Rispoli

SAMPLEID	SAMPLE TITLE	GUIDELINE	ANALYSIS PACKAGE	PARAMETER	UNIT	GUIDEVALUE	RESULT
8249755	BH 17-6 SA-1	ON T1 S RPI/ICC	O. Reg. 153(511) - Metals (Including Hydrides) (Soil)	Barium	µg/g	220	335
8249755	BH 17-6 SA-1	ON T1 S RPI/ICC	O. Reg. 153(511) - Metals (Including Hydrides) (Soil)	Chromium	µg/g	70	134
8249755	BH 17-6 SA-1	ON T1 S RPI/ICC	O. Reg. 153(511) - Metals (Including Hydrides) (Soil)	Cobalt	µg/g	21	26.3
8249755	BH 17-6 SA-1	ON T1 S RPI/ICC	O. Reg. 153(511) - Metals (Including Hydrides) (Soil)	Vanadium	µg/g	86	108

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Quality Assurance

CLIENT NAME: HOULE CHEVRIER

PROJECT: 61446.15

SAMPLING SITE:

AGAT WORK ORDER: 17Z195792

ATTENTION TO: Katherine Rispoli

SAMPLED BY:Nicole Soucy

Soil Analysis

RPT Date: Mar 20, 2017			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
O. Reg. 153(511) - Metals (Including Hydrides) (Soil)															
Antimony	8223261		<0.8	<0.8	NA	< 0.8	114%	70%	130%	109%	80%	120%	111%	70%	130%
Arsenic	8223261		4	3	NA	< 1	109%	70%	130%	99%	80%	120%	113%	70%	130%
Boron	8223261		6	6	NA	< 5	76%	70%	130%	118%	80%	120%	107%	70%	130%
Barium	8223261		20	19	5.1%	< 2	103%	70%	130%	100%	80%	120%	114%	70%	130%
Beryllium	8223261		<0.5	<0.5	NA	< 0.5	96%	70%	130%	109%	80%	120%	103%	70%	130%
Cadmium	8223261		<0.5	<0.5	NA	< 0.5	115%	70%	130%	111%	80%	120%	117%	70%	130%
Chromium	8223261		6	6	NA	< 2	94%	70%	130%	115%	80%	120%	118%	70%	130%
Cobalt	8223261		3.4	3.3	3.0%	< 0.5	95%	70%	130%	114%	80%	120%	107%	70%	130%
Copper	8223261		22	22	0.0%	< 1	92%	70%	130%	117%	80%	120%	101%	70%	130%
Lead	8223261		13	12	8.0%	< 1	105%	70%	130%	103%	80%	120%	103%	70%	130%
Molybdenum	8223261		<0.5	<0.5	NA	< 0.5	99%	70%	130%	100%	80%	120%	110%	70%	130%
Nickel	8223261		6	5	18.2%	< 1	97%	70%	130%	116%	80%	120%	105%	70%	130%
Selenium	8223261		<0.4	<0.4	NA	< 0.4	126%	70%	130%	103%	80%	120%	117%	70%	130%
Silver	8223261		<0.2	<0.2	NA	< 0.2	111%	70%	130%	120%	80%	120%	127%	70%	130%
Thallium	8223261		<0.4	<0.4	NA	< 0.4	113%	70%	130%	106%	80%	120%	111%	70%	130%
Uranium	8223261		<0.5	<0.5	NA	< 0.5	100%	70%	130%	93%	80%	120%	100%	70%	130%
Vanadium	8223261		11	11	0.0%	< 1	94%	70%	130%	106%	80%	120%	116%	70%	130%
Zinc	8223261		84	77	8.7%	< 5	96%	70%	130%	115%	80%	120%	110%	70%	130%

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: Amanjot Bhela

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Quality Assurance

CLIENT NAME: HOULE CHEVRIER

AGAT WORK ORDER: 17Z195792

PROJECT: 61446.15

ATTENTION TO: Katherine Rispoli

SAMPLING SITE:

SAMPLED BY:Nicole Soucy

Trace Organics Analysis

RPT Date: Mar 20, 2017			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
O. Reg. 153(511) - VOCs (Soil)															
Dichlorodifluoromethane	8248571		< 0.05	< 0.05	NA	< 0.05	102%	50%	140%	86%	50%	140%	82%	50%	140%
Vinyl Chloride	8248571		< 0.05	< 0.05	NA	< 0.02	94%	50%	140%	103%	50%	140%	86%	50%	140%
Bromomethane	8248571		< 0.05	< 0.05	NA	< 0.05	82%	50%	140%	105%	50%	140%	104%	50%	140%
Trichlorofluoromethane	8248571		< 0.05	< 0.05	NA	< 0.05	80%	50%	140%	111%	50%	140%	110%	50%	140%
Acetone	8248571		< 0.05	< 0.05	NA	< 0.50	104%	50%	140%	96%	50%	140%	102%	50%	140%
1,1-Dichloroethylene	8248571		< 0.05	< 0.05	NA	< 0.05	82%	50%	140%	91%	60%	130%	85%	50%	140%
Methylene Chloride	8248571		< 0.05	< 0.05	NA	< 0.05	90%	50%	140%	101%	60%	130%	100%	50%	140%
Trans- 1,2-Dichloroethylene	8248571		< 0.05	< 0.05	NA	< 0.05	76%	50%	140%	86%	60%	130%	87%	50%	140%
Methyl tert-butyl Ether	8248571		< 0.05	< 0.05	NA	< 0.05	105%	50%	140%	92%	60%	130%	88%	50%	140%
1,1-Dichloroethane	8248571		< 0.05	< 0.05	NA	< 0.02	101%	50%	140%	91%	60%	130%	100%	50%	140%
Methyl Ethyl Ketone	8248571		< 0.05	< 0.05	NA	< 0.50	112%	50%	140%	111%	50%	140%	108%	50%	140%
Cis- 1,2-Dichloroethylene	8248571		< 0.05	< 0.05	NA	< 0.02	98%	50%	140%	91%	60%	130%	93%	50%	140%
Chloroform	8248571		< 0.05	< 0.05	NA	< 0.04	97%	50%	140%	93%	60%	130%	96%	50%	140%
1,2-Dichloroethane	8248571		< 0.05	< 0.05	NA	< 0.03	98%	50%	140%	90%	60%	130%	95%	50%	140%
1,1,1-Trichloroethane	8248571		< 0.05	< 0.05	NA	< 0.05	98%	50%	140%	96%	60%	130%	90%	50%	140%
Carbon Tetrachloride	8248571		< 0.05	< 0.05	NA	< 0.05	90%	50%	140%	92%	60%	130%	85%	50%	140%
Benzene	8248571		< 0.05	< 0.05	NA	< 0.02	87%	50%	140%	89%	60%	130%	87%	50%	140%
1,2-Dichloropropane	8248571		< 0.05	< 0.05	NA	< 0.03	100%	50%	140%	89%	60%	130%	84%	50%	140%
Trichloroethylene	8248571		< 0.05	< 0.05	NA	< 0.03	90%	50%	140%	87%	60%	130%	91%	50%	140%
Bromodichloromethane	8248571		< 0.05	< 0.05	NA	< 0.05	98%	50%	140%	86%	60%	130%	90%	50%	140%
Methyl Isobutyl Ketone	8248571		< 0.05	< 0.05	NA	< 0.50	104%	50%	140%	98%	50%	140%	89%	50%	140%
1,1,2-Trichloroethane	8248571		< 0.05	< 0.05	NA	< 0.04	119%	50%	140%	108%	60%	130%	103%	50%	140%
Toluene	8248571		< 0.05	< 0.05	NA	< 0.05	104%	50%	140%	107%	60%	130%	95%	50%	140%
Dibromochloromethane	8248571		< 0.05	< 0.05	NA	< 0.05	104%	50%	140%	103%	60%	130%	93%	50%	140%
Ethylene Dibromide	8248571		< 0.05	< 0.05	NA	< 0.04	109%	50%	140%	101%	60%	130%	99%	50%	140%
Tetrachloroethylene	8248571		< 0.05	< 0.05	NA	< 0.05	102%	50%	140%	103%	60%	130%	99%	50%	140%
1,1,1,2-Tetrachloroethane	8248571		< 0.05	< 0.05	NA	< 0.04	112%	50%	140%	105%	60%	130%	97%	50%	140%
Chlorobenzene	8248571		< 0.05	< 0.05	NA	< 0.05	109%	50%	140%	110%	60%	130%	102%	50%	140%
Ethylbenzene	8248571		< 0.05	< 0.05	NA	< 0.05	98%	50%	140%	97%	60%	130%	92%	50%	140%
m & p-Xylene	8248571		< 0.05	< 0.05	NA	< 0.05	101%	50%	140%	100%	60%	130%	93%	50%	140%
Bromoform	8248571		< 0.05	< 0.05	NA	< 0.05	124%	50%	140%	101%	60%	130%	90%	50%	140%
Styrene	8248571		< 0.05	< 0.05	NA	< 0.05	94%	50%	140%	97%	60%	130%	91%	50%	140%
1,1,2,2-Tetrachloroethane	8248571		< 0.05	< 0.05	NA	< 0.05	122%	50%	140%	111%	60%	130%	99%	50%	140%
o-Xylene	8248571		< 0.05	< 0.05	NA	< 0.05	105%	50%	140%	104%	60%	130%	94%	50%	140%
1,3-Dichlorobenzene	8248571		< 0.05	< 0.05	NA	< 0.05	97%	50%	140%	91%	60%	130%	82%	50%	140%
1,4-Dichlorobenzene	8248571		< 0.05	< 0.05	NA	< 0.05	104%	50%	140%	108%	60%	130%	95%	50%	140%
1,2-Dichlorobenzene	8248571		< 0.05	< 0.05	NA	< 0.05	98%	50%	140%	91%	60%	130%	81%	50%	140%
1,3-Dichloropropene	8248571		< 0.05	< 0.05	NA	< 0.04	97%	50%	140%	99%	60%	130%	80%	50%	140%
n-Hexane	8248571		< 0.05	< 0.05	NA	< 0.05	119%	50%	140%	111%	60%	130%	118%	50%	140%

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Quality Assurance

CLIENT NAME: HOULE CHEVRIER

AGAT WORK ORDER: 17Z195792

PROJECT: 61446.15

ATTENTION TO: Katherine Rispoli

SAMPLING SITE:

SAMPLED BY:Nicole Soucy

Trace Organics Analysis (Continued)

RPT Date: Mar 20, 2017			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
O. Reg. 153(511) - PHCs F1 - F4 (-BTEX) (Soil)															
F1 (C6 to C10)	8252033		< 5	< 5	NA	< 5	77%	60%	130%	99%	85%	115%	78%	70%	130%
F2 (C10 to C16)	8255627		< 10	< 10	NA	< 10	102%	60%	130%	101%	80%	120%	76%	70%	130%
F3 (C16 to C34)	8255627		< 50	< 50	NA	< 50	108%	60%	130%	103%	80%	120%	86%	70%	130%
F4 (C34 to C50)	8255627		< 50	< 50	NA	< 50	91%	60%	130%	101%	80%	120%	97%	70%	130%
O. Reg. 153(511) - PAHs (Soil)															
Naphthalene	8252561		< 0.05	< 0.05	NA	< 0.05	96%	50%	140%	90%	50%	140%	85%	50%	140%
Acenaphthylene	8252561		< 0.05	< 0.05	NA	< 0.05	98%	50%	140%	81%	50%	140%	78%	50%	140%
Acenaphthene	8252561		< 0.05	< 0.05	NA	< 0.05	94%	50%	140%	81%	50%	140%	78%	50%	140%
Fluorene	8252561		< 0.05	< 0.05	NA	< 0.05	95%	50%	140%	83%	50%	140%	78%	50%	140%
Phenanthrene	8252561		< 0.05	< 0.05	NA	< 0.05	96%	50%	140%	85%	50%	140%	78%	50%	140%
Anthracene	8252561		< 0.05	< 0.05	NA	< 0.05	101%	50%	140%	86%	50%	140%	81%	50%	140%
Fluoranthene	8252561		< 0.05	< 0.05	NA	< 0.05	111%	50%	140%	90%	50%	140%	82%	50%	140%
Pyrene	8252561		< 0.05	< 0.05	NA	< 0.05	114%	50%	140%	91%	50%	140%	82%	50%	140%
Benz(a)anthracene	8252561		< 0.05	< 0.05	NA	< 0.05	129%	50%	140%	97%	50%	140%	87%	50%	140%
Chrysene	8252561		< 0.05	< 0.05	NA	< 0.05	126%	50%	140%	103%	50%	140%	91%	50%	140%
Benzo(b)fluoranthene	8252561		< 0.05	< 0.05	NA	< 0.05	111%	50%	140%	87%	50%	140%	77%	50%	140%
Benzo(k)fluoranthene	8252561		< 0.05	< 0.05	NA	< 0.05	109%	50%	140%	93%	50%	140%	69%	50%	140%
Benzo(a)pyrene	8252561		< 0.05	< 0.05	NA	< 0.05	102%	50%	140%	92%	50%	140%	81%	50%	140%
Indeno(1,2,3-cd)pyrene	8252561		< 0.05	< 0.05	NA	< 0.05	116%	50%	140%	91%	50%	140%	70%	50%	140%
Dibenz(a,h)anthracene	8252561		< 0.05	< 0.05	NA	< 0.05	115%	50%	140%	90%	50%	140%	75%	50%	140%
Benzo(g,h,i)perylene	8252561		< 0.05	< 0.05	NA	< 0.05	108%	50%	140%	93%	50%	140%	68%	50%	140%
2-and 1-methyl Naphthalene	8252561		< 0.05	< 0.05	NA	< 0.05	116%	50%	140%	95%	50%	140%	90%	50%	140%
O. Reg. 153(511) - PCBs (Soil)															
Aroclor 1242	8252492		< 0.1	< 0.1	NA	< 0.1	NA	60%	140%	NA	60%	140%	NA	60%	140%
Aroclor 1248	8252492		< 0.1	< 0.1	NA	< 0.1	NA	60%	140%	NA	60%	140%	NA	60%	140%
Aroclor 1254	8252492		< 0.1	< 0.1	NA	< 0.1	NA	60%	140%	NA	60%	140%	NA	60%	140%
Aroclor 1260	8252492		< 0.1	< 0.1	NA	< 0.1	NA	60%	140%	NA	60%	140%	NA	60%	140%
Polychlorinated Biphenyls	8252492		< 0.1	< 0.1	NA	< 0.1	110%	60%	140%	87%	60%	140%	87%	60%	140%

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 Popnikolof

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Method Summary

CLIENT NAME: HOULE CHEVRIER

AGAT WORK ORDER: 17Z195792

PROJECT: 61446.15

ATTENTION TO: Katherine Rispoli

SAMPLING SITE:

SAMPLED BY:Nicole Soucy

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
Boron	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
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

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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
2-and 1-methyl Naphthalene	ORG-91-5106	EPA SW846 3541 & 8270	GC/MS
Moisture Content	ORG-91-5106	EPA SW-846 3541 & 8270	BALANCE
Chrysene-d12	ORG-91-5106	EPA SW846 3541 & 8270	GC/MS
Aroclor 1242	ORG-91-5113	EPA SW-846 3541 & 8082	GC/ECD
Aroclor 1248	ORG-91-5113	EPA SW-846 3541 & 8082	GC/ECD
Aroclor 1254	ORG-91-5113	EPA SW-846 3541 & 8082	GC/ECD
Aroclor 1260	ORG-91-5113	EPA SW-846 3541 & 8082	GC/ECD
Polychlorinated Biphenyls	ORG-91-5113	EPA SW-846 3541 & 8082	GC/ECD
Decachlorobiphenyl	ORG-91-5113	EPA SW-846 3541 & 8082	GC/ECD
Moisture Content		MOE E3139	BALANCE
F1 (C6 to C10)	VOL-91-5009	CCME Tier 1 Method, SW846 5035	P &T GC / FID
F1 (C6 to C10) minus BTEX	VOL-91-5009	CCME Tier 1 Method, SW846 5035	P & T GC / FID
F2 (C10 to C16)	VOL-91-5009	CCME Tier 1 Method	GC / FID
F3 (C16 to C34)	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, SW846 5035,8015	BALANCE
Terphenyl	VOL-91-5009	CCME Tier 1 Method	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
1,1-Dichloroethylene	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
Trans- 1,2-Dichloroethylene	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
1,1-Dichloroethane	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
Cis- 1,2-Dichloroethylene	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
1,2-Dichloroethane	VOL-91-5002	EPA SW-846 5035 & 8260	(P&T)GC/MS

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Method Summary

CLIENT NAME: HOULE CHEVRIER

AGAT WORK ORDER: 17Z195792

PROJECT: 61446.15

ATTENTION TO: Katherine Rispoli

SAMPLING SITE:

SAMPLED BY:Nicole Soucy

PARAMETER	AGAT S.O.P	LITERATURE REFERENCE	ANALYTICAL TECHNIQUE
1,1,1-Trichloroethane	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
1,2-Dichloropropane	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
1,1,2-Trichloroethane	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
1,1,1,2-Tetrachloroethane	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
m & p-Xylene	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
1,1,2,2-Tetrachloroethane	VOL-91-5002	EPA SW-846 5035 & 8260	(P&T)GC/MS
o-Xylene	VOL-91-5002	EPA SW-846 5035 & 8260	(P&T)GC/MS
1,3-Dichlorobenzene	VOL-91-5002	EPA SW-846 5035 & 8260	(P&T)GC/MS
1,4-Dichlorobenzene	VOL-91-5002	EPA SW-846 5035 & 8260	(P&T)GC/MS
1,2-Dichlorobenzene	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
1,3-Dichloropropene	VOL-91-5002	EPA SW-846 5035 & 8260	(P&T)GC/MS
n-Hexane	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

AGAT Laboratories

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

Chain of Custody Record

If this is a Drinking Water sample, please use Drinking Water Chain of Custody Form (potable water intended for human consumption)

Report Information:

Company: HOLLE CHEVRIER ENG. LTD.
Contact: K. RISPOLI
Address: 32 STEACIE DR.
OTTAWA, ON
Phone: (613) 836-1422 Fax:
Reports to be sent to:
1. Email: krispoli@hceng.ca
2. Email:

Project Information:

Project: 61446.15
Site Location:
Sampled By:
AGAT Quote #: PO:
Please note: If quotation number is not provided, client will be billed full price for analysis.

Invoice Information:

Bill To Same: Yes ☒ No ☐
Company:
Contact:
Address:
Email:

Regulatory Requirements:

☐ No Regulatory Requirement
(Please check all applicable boxes)

☒ Regulation 153/04
Table 1 *Indicate One*
☐ Ind/Com
☒ Res/Park
☐ Agriculture
Soil Texture *(Check One)*
☒ Coarse
☐ Fine

☐ Sewer Use
☐ Sanitary
☐ Storm
Region *Indicate One*

☐ Regulation 558
☐ CCME
☐ Prov. Water Quality Objectives (PWQO)
☐ Other
Indicate One

Is this submission for a **Record of Site Condition?** ☐ Yes ☒ No

Report Guideline on *Certificate of Analysis* ☒ Yes ☐ No

Sample Matrix Legend

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

Laboratory Use Only

Work Order #: 17719579 2
Cooler Quantity: one
Arrival Temperatures: 8.8 | 8.4 | 9.0
2.5 | 2.6 | 2.7
Custody Seal Intact: ☐ Yes ☐ No ☐ N/A
Notes: on ice

Turnaround Time (TAT) Required:

Regular TAT ☒ 5 to 7 Business Days
Rush TAT (Rush Surcharges Apply)
☐ 3 Business Days ☐ 2 Business Days ☐ 1 Business Day
OR Date Required (Rush Surcharges May Apply):
Please provide prior notification for rush TAT
**TAT is exclusive of weekends and statutory holidays*

Sample Identification	Date Sampled	Time Sampled	# of Containers	Sample Matrix	Comments/ Special Instructions	Field Filtered - Metals, Hg, CrVI (Please Circle) Y / N	Metals and Inorganics	Metal Scan	Hydride Forming Metals	Client Custom Metals	ORPs: ☐ B-HWS ☐ Cl⁻ ☐ CN⁻ ☐ EC ☐ FOC ☐ NO_3/NO_2 ☐ Cr^{6+} ☐ Total N ☐ Hg ☐ pH ☐ SAR	Nutrients: ☐ TP ☐ NH_3 ☐ TKN ☐ NO_3 ☐ NO_2 ☐ NO_3/NO_2	Volatiles: ☒ VOC ☐ BTEX ☐ THM	CCME Fractions 1 to 4	ABNs	PAHs	Chlorophenols	PCBs	Organochlorine Pesticides	TCLP Metals/Inorganics	Sewer Use
BH17-4 SA 2	MAR 2/17		3	S									X	X							
BH17-5 SA-3	"		3	S									X	X							
BH17-6 SA-3	"		3	S									X	X							
BH17-106 SA-3	"		3	S									X	X							
BH17-6 SA-1	"		3	S				X								X		X			

Samples Relinquished By (Print Name and Sign):	Date	Time	Samples Received By (Print Name and Sign):	Date	Time
Nicole Soucy	03/13/17	4:43pm	DeMelet/	13-Mar-17	18:43
UPS-to fed Ex	14-Mar-17	15h00	Milan Mar 15/17	9:20am	
Samples Relinquished By (Print Name and Sign):	Date	Time	Samples Received By (Print Name and Sign):	Date	Time

Page 1 of 1
Nº: T 028928

Document ID:DN-78-1511011

Pink Copy - Client | Yellow Copy - AGAT | White Copy- AGAT

Date Issued: Feb 18, 2016

AGAT Laboratories

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

CLIENT NAME: HOULE CHEVRIER
32 STEACIE DRIVE
OTTAWA, ON K2K2A9
(613) 836-1422

ATTENTION TO: Katherine Rispoli

PROJECT: 61446.15

AGAT WORK ORDER: 17Z210929

SOIL ANALYSIS REVIEWED BY: Amanjot Bhela, Inorganic Coordinator

DATE REPORTED: May 09, 2017

PAGES (INCLUDING COVER): 6

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

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

Certificate of Analysis

AGAT WORK ORDER: 17Z210929

PROJECT: 61446.15

CLIENT NAME: HOULE CHEVRIER

ATTENTION TO: Katherine Rispoli

SAMPLING SITE:

SAMPLED BY:

O. Reg. 153(511) - Metals (Including Hydrides) (Soil)

DATE RECEIVED: 2017-05-02

DATE REPORTED: 2017-05-09

		SAMPLE DESCRIPTION:		BH17-4 SA-1	BH17-5 SA-1	BH17-6 SA-2	BH17-106 SA-1
		SAMPLE TYPE:		Soil	Soil	Soil	Soil
		DATE SAMPLED:		2017-03-03	2017-03-03	2017-03-03	2017-03-03
Parameter	Unit	G / S	RDL	8354091	8354096	8354099	8354108
Antimony	µg/g	50	0.8	<0.8	<0.8	<0.8	<0.8
Arsenic	µg/g	18	1	2	2	2	2
Boron	µg/g	120	5	6	6	6	6
Barium	µg/g	670	2	292	310	276	319
Beryllium	µg/g	10	0.5	1.0	1.0	1.0	1.0
Cadmium	µg/g	1.9	0.5	<0.5	<0.5	<0.5	<0.5
Chromium	µg/g	160	2	132	140	125	135
Cobalt	µg/g	100	0.5	22.6	28.5	26.4	24.9
Copper	µg/g	300	1	52	54	47	51
Lead	µg/g	120	1	9	9	9	11
Molybdenum	µg/g	40	0.5	<0.5	0.7	<0.5	<0.5
Nickel	µg/g	340	1	72	75	70	71
Selenium	µg/g	5.5	0.4	<0.4	<0.4	<0.4	<0.4
Silver	µg/g	50	0.2	<0.2	<0.2	<0.2	<0.2
Thallium	µg/g	3.3	0.4	0.4	0.4	0.4	0.4
Uranium	µg/g	33	0.5	1.0	1.1	1.0	1.0
Vanadium	µg/g	86	1	**106**	**106**	**109**	**109**
Zinc	µg/g	340	5	121	130	128	124

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 - Industrial/Commercial/Community Property Use - Medium and Fine Textured Soils

Certified By: Amanjot Bhela

AGAT Laboratories

Guideline Violation

AGAT WORK ORDER: 17Z210929

PROJECT: 61446.15

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CANADA L4Z 1Y2
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FAX (905)712-5122
http://www.agatlabs.com

CLIENT NAME: HOULE CHEVRIER

ATTENTION TO: Katherine Rispoli

SAMPLEID	SAMPLE TITLE	GUIDELINE	ANALYSIS PACKAGE	PARAMETER	UNIT	GUIDEVALUE	RESULT
8354091	BH17-4 SA-1	ON T3 S ICC MFT	O. Reg. 153(511) - Metals (Including Hydrides) (Soil)	Vanadium	µg/g	86	106
8354096	BH17-5 SA-1	ON T3 S ICC MFT	O. Reg. 153(511) - Metals (Including Hydrides) (Soil)	Vanadium	µg/g	86	106
8354099	BH17-6 SA-2	ON T3 S ICC MFT	O. Reg. 153(511) - Metals (Including Hydrides) (Soil)	Vanadium	µg/g	86	109
8354108	BH17-106 SA-1	ON T3 S ICC MFT	O. Reg. 153(511) - Metals (Including Hydrides) (Soil)	Vanadium	µg/g	86	109

AGAT Laboratories

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CANADA L4Z 1Y2
TEL (905)712-5100
FAX (905)712-5122
http://www.agatlabs.com

Quality Assurance

CLIENT NAME: HOULE CHEVRIER

AGAT WORK ORDER: 17Z210929

PROJECT: 61446.15

ATTENTION TO: Katherine Rispoli

SAMPLING SITE:

SAMPLED BY:

Soil Analysis

RPT Date: May 09, 2017			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
O. Reg. 153(511) - Metals (Including Hydrides) (Soil)															
Antimony	8354163		<0.8	<0.8	NA	< 0.8	90%	70%	130%	102%	80%	120%	80%	70%	130%
Arsenic	8354163		3	3	NA	< 1	108%	70%	130%	117%	80%	120%	106%	70%	130%
Boron	8354163		6	6	NA	< 5	81%	70%	130%	112%	80%	120%	114%	70%	130%
Barium	8354163		61	64	4.8%	< 2	99%	70%	130%	107%	80%	120%	95%	70%	130%
Beryllium	8354163		<0.5	<0.5	NA	< 0.5	92%	70%	130%	110%	80%	120%	105%	70%	130%
Cadmium	8354163		<0.5	<0.5	NA	< 0.5	106%	70%	130%	103%	80%	120%	93%	70%	130%
Chromium	8354163		19	20	5.1%	< 2	99%	70%	130%	115%	80%	120%	122%	70%	130%
Cobalt	8354163		7.1	6.8	4.3%	< 0.5	93%	70%	130%	107%	80%	120%	96%	70%	130%
Copper	8354163		18	18	0.0%	< 1	91%	70%	130%	117%	80%	120%	86%	70%	130%
Lead	8354163		9	9	0.0%	< 1	101%	70%	130%	110%	80%	120%	96%	70%	130%
Molybdenum	8354163		0.6	0.6	NA	< 0.5	98%	70%	130%	106%	80%	120%	95%	70%	130%
Nickel	8354163		18	17	5.7%	< 1	94%	70%	130%	110%	80%	120%	98%	70%	130%
Selenium	8354163		<0.4	<0.4	NA	< 0.4	81%	70%	130%	108%	80%	120%	106%	70%	130%
Silver	8354163		<0.2	<0.2	NA	< 0.2	94%	70%	130%	119%	80%	120%	98%	70%	130%
Thallium	8354163		<0.4	<0.4	NA	< 0.4	105%	70%	130%	116%	80%	120%	97%	70%	130%
Uranium	8354163		<0.5	<0.5	NA	< 0.5	99%	70%	130%	107%	80%	120%	98%	70%	130%
Vanadium	8354163		26	27	3.8%	< 1	97%	70%	130%	108%	80%	120%	112%	70%	130%
Zinc	8354163		37	36	2.7%	< 5	98%	70%	130%	117%	80%	120%	96%	70%	130%

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: Amanjot Bhela

AGAT Laboratories

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

Method Summary

CLIENT NAME: HOULE CHEVRIER

AGAT WORK ORDER: 17Z210929

PROJECT: 61446.15

ATTENTION TO: Katherine Rispoli

SAMPLING SITE:

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
Boron	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
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

AGAT Laboratories

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

Chain of Custody Record

If this is a Drinking Water sample, please use Drinking Water Chain of Custody Form (potable water intended for human consumption)

Report Information:

Company: HCEL
Contact: Katherine Rispoli
Address: 32 Steacie Dr.
Ottawa, ON K2K 2A9
Phone: 613-836-1422 Fax: 613-836-9731
Reports to be sent to:
1. Email: krispoli@hceng.ca
2. Email: nsoucy@hceng.ca

Project Information:

Project: 61446.15
Site Location: Prince of Wales
Sampled By: ML
AGAT Quote #: PO:
Please note: If quotation number is not provided, client will be billed full price for analysis.

Invoice Information:

Bill To Same: Yes ☒ No ☐
Company:
Contact:
Address:
Email:

Regulatory Requirements:

☐ No Regulatory Requirement
(Please check all applicable boxes)

☒ Regulation 153/04
Table 3 *Indicate One*
☒ Ind/Com
☐ Res/Park
☐ Agriculture
Soil Texture *(Check One)*
☐ Coarse
☒ Fine

☐ Sewer Use
☐ Sanitary
☐ Storm
Region *Indicate One*

☐ Regulation 558
☐ CCME
☐ Prov. Water Quality Objectives (PWQO)
☐ Other
Indicate One

Is this submission for a **Record of Site Condition?** ☐ Yes ☒ No

Report Guideline on *Certificate of Analysis* ☒ Yes ☐ No

Laboratory Use Only

Work Order #: A22109291
Cooler Quantity: one - on ice
Arrival Temperatures: 4.3 | 4.8 | 5.1
4-2.6 | 2.0 | 1.8
Custody Seal Intact: ☐ Yes ☐ No ☐ N/A
Notes:

Turnaround Time (TAT) Required:

Regular TAT ☒ 5 to 7 Business Days
Rush TAT (Rush Surcharges Apply)
☐ 3 Business Days ☐ 2 Business Days ☐ Next Business Day
OR Date Required (Rush Surcharges May Apply):
Please provide prior notification for rush TAT
**TAT is exclusive of weekends and statutory holidays*
For 'Same Day' analysis, please contact your AGAT CPM

Sample Matrix Legend

B	Biota
GW	Ground 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	Field Filtered - Metals, Hg, CrVI (Y/N)	O. Reg 153: Metals and Inorganics (☐ All Metals ☐ 153 Metals (excl. Hydrides) ☐ Hydride Metals)	O. Reg 153: ORPs (☐ B-HWS ☐ Cr ☐ CN ☐ Cr^{6+} ☐ EC ☐ FOC ☐ Hg ☐ pH ☐ SAR)	Full Metals Scan	Regulation/Custom Metals	Nutrients: (☐ TP ☐ NH_3 ☐ TKN ☐ NO_3 ☐ NO_2 ☐ NO_3+NO_2)	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
BH17-4 SA-1	3/3/17		3	Soil					X									
BH17-5 SA-1	↓		↓	↓					X									
BH17-6 SA-2									X									
BH17-106 SA-1									X									

Samples Relinquished By (Print Name and Sign): Nicole Soucy N.S	Date: May 1/17	Time: 4:30PM	Samples Received By (Print Name and Sign): JEFF JONES	Date: 1May17	Time: 1630		
Samples Relinquished By (Print Name and Sign): UPS 2Day to FedEx	Date: 2-May-17	Time: 16h00	Samples Received By (Print Name and Sign):	Date:	Time:	Page 1 of 1	
Samples Relinquished By (Print Name and Sign):	Date:	Time:	Samples Received By (Print Name and Sign): Shawnin S	Date: May 3/17	Time: 11:00am	N°: T 041650	

APPENDIX C

Groundwater Laboratory Certificates of Analysis

AGAT Laboratories

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

CLIENT NAME: HOULE CHEVRIER
32 STEACIE DRIVE
OTTAWA, ON K2K2A9
(613) 836-1422

ATTENTION TO: Katherine Rispoli

PROJECT: 61446.15

AGAT WORK ORDER: 17Z194597

TRACE ORGANICS REVIEWED BY: Gyulhan Yalamova, Report Reviewer

WATER ANALYSIS REVIEWED BY: Parvathi Malemath, Data Reviewer

DATE REPORTED: Mar 28, 2017

PAGES (INCLUDING COVER): 13

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

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

Certificate of Analysis

AGAT WORK ORDER: 17Z194597

PROJECT: 61446.15

CLIENT NAME: HOULE CHEVRIER

ATTENTION TO: Katherine Rispoli

SAMPLING SITE:

SAMPLED BY:

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

DATE RECEIVED: 2017-03-09

DATE REPORTED: 2017-03-28

		SAMPLE DESCRIPTION:		MW-06
		SAMPLE TYPE:		Water
		DATE SAMPLED:		2017-03-09
Parameter	**Unit**	**G / S**	**RDL**	**8240298**
Naphthalene	µg/L		0.20	<0.20
Acenaphthylene	µg/L		0.20	<0.20
Acenaphthene	µg/L		0.20	<0.20
Fluorene	µg/L		0.20	<0.20
Phenanthrene	µg/L		0.10	<0.10
Anthracene	µg/L		0.10	<0.10
Fluoranthene	µg/L		0.20	<0.20
Pyrene	µg/L		0.20	<0.20
Benz(a)anthracene	µg/L		0.20	<0.20
Chrysene	µg/L		0.10	<0.10
Benzo(b)fluoranthene	µg/L		0.10	<0.10
Benzo(k)fluoranthene	µg/L		0.10	<0.10
Benzo(a)pyrene	µg/L		0.01	<0.01
Indeno(1,2,3-cd)pyrene	µg/L		0.20	<0.20
Dibenz(a,h)anthracene	µg/L		0.20	<0.20
Benzo(g,h,i)perylene	µg/L		0.20	<0.20
2-and 1-methyl Naphthalene	µg/L		0.20	<0.20
Surrogate	**Unit**	**Acceptable Limits**		
Chrysene-d12	%	50-140		74

Comments: RDL - Reported Detection Limit; G / S - Guideline / Standard

8240298 Note: The result for Benzo(b)Flouranthene is the total of the Benzo(b)&(j)Flouranthene isomers because the isomers co-elute on the GC column.

Certified By:

AGAT Laboratories

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

Certificate of Analysis

AGAT WORK ORDER: 17Z194597

PROJECT: 61446.15

CLIENT NAME: HOULE CHEVRIER

ATTENTION TO: Katherine Rispoli

SAMPLING SITE:

SAMPLED BY:

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

DATE RECEIVED: 2017-03-09

DATE REPORTED: 2017-03-28

		SAMPLE DESCRIPTION:		MW-06
		SAMPLE TYPE:		Water
		DATE SAMPLED:		2017-03-09
Parameter	**Unit**	**G / S**	**RDL**	**8240298**
Aroclor 1242	µg/L		0.1	<0.1
Aroclor 1248	µg/L		0.1	<0.1
Aroclor 1254	µg/L		0.1	<0.1
Aroclor 1260	µg/L		0.1	<0.1
Polychlorinated Biphenyls	µg/L		0.1	<0.1
Surrogate	**Unit**	**Acceptable Limits**		
Decachlorobiphenyl	%	60-140		111

Comments: RDL - Reported Detection Limit; G / S - Guideline / Standard

8240298 Results are based on the dry weight of soil extracted.

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Certificate of Analysis

AGAT WORK ORDER: 17Z194597

PROJECT: 61446.15

CLIENT NAME: HOULE CHEVRIER

ATTENTION TO: Katherine Rispoli

SAMPLING SITE:

SAMPLED BY:

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

DATE RECEIVED: 2017-03-09 **DATE REPORTED: 2017-03-28**

		SAMPLE DESCRIPTION:		MW-06
		SAMPLE TYPE:		Water
		DATE SAMPLED:		2017-03-09
Parameter	**Unit**	**G / S**	**RDL**	**8240298**
F1 (C6 to C10)	µg/L		25	<25
F1 (C6 to C10) minus BTEX	µg/L		25	<25
F2 (C10 to C16)	µg/L		100	<100
F2 (C10 to C16) minus Naphthalene	µg/L		100	<100
F3 (C16 to C34)	µg/L		100	<100
F3 (C16 to C34) minus PAHs	µg/L		100	<100
F4 (C34 to C50)	µg/L		100	<100
Gravimetric Heavy Hydrocarbons	µg/L		500	NA
Surrogate	**Unit**	**Acceptable Limits**		
Terphenyl	%	60-140		73

Comments: RDL - Reported Detection Limit; G / S - Guideline / Standard

8240298
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 nC34.
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.

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AGAT WORK ORDER: 17Z194597

PROJECT: 61446.15

CLIENT NAME: HOULE CHEVRIER

ATTENTION TO: Katherine Rispoli

SAMPLING SITE:

SAMPLED BY:

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

DATE RECEIVED: 2017-03-09

DATE REPORTED: 2017-03-28

		SAMPLE DESCRIPTION:		MW-06
		SAMPLE TYPE:		Water
		DATE SAMPLED:		2017-03-09
Parameter	Unit	G / S	RDL	8240298
Dichlorodifluoromethane	µg/L		0.20	<0.20
Vinyl Chloride	µg/L		0.17	<0.17
Bromomethane	µg/L		0.20	<0.20
Trichlorofluoromethane	µg/L		0.40	<0.40
Acetone	µg/L		1.0	<1.0
1,1-Dichloroethylene	µg/L		0.30	<0.30
Methylene Chloride	µg/L		0.30	<0.30
trans- 1,2-Dichloroethylene	µg/L		0.20	<0.20
Methyl tert-butyl ether	µg/L		0.20	<0.20
1,1-Dichloroethane	µg/L		0.30	<0.30
Methyl Ethyl Ketone	µg/L		1.0	<1.0
cis- 1,2-Dichloroethylene	µg/L		0.20	<0.20
Chloroform	µg/L		0.20	<0.20
1,2-Dichloroethane	µg/L		0.20	<0.20
1,1,1-Trichloroethane	µg/L		0.30	<0.30
Carbon Tetrachloride	µg/L		0.20	<0.20
Benzene	µg/L		0.20	<0.20
1,2-Dichloropropane	µg/L		0.20	<0.20
Trichloroethylene	µg/L		0.20	0.51
Bromodichloromethane	µg/L		0.20	<0.20
Methyl Isobutyl Ketone	µg/L		1.0	<1.0
1,1,2-Trichloroethane	µg/L		0.20	<0.20
Toluene	µg/L		0.20	<0.20
Dibromochloromethane	µg/L		0.10	<0.10
Ethylene Dibromide	µg/L		0.10	<0.10
Tetrachloroethylene	µg/L		0.20	<0.20
1,1,1,2-Tetrachloroethane	µg/L		0.10	<0.10
Chlorobenzene	µg/L		0.10	<0.10
Ethylbenzene	µg/L		0.10	<0.10
m & p-Xylene	µg/L		0.20	<0.20

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AGAT WORK ORDER: 17Z194597

PROJECT: 61446.15

CLIENT NAME: HOULE CHEVRIER

ATTENTION TO: Katherine Rispoli

SAMPLING SITE:

SAMPLED BY:

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

DATE RECEIVED: 2017-03-09

DATE REPORTED: 2017-03-28

		SAMPLE DESCRIPTION:		MW-06
		SAMPLE TYPE:		Water
		DATE SAMPLED:		2017-03-09
Parameter	**Unit**	**G / S**	**RDL**	**8240298**
Bromoform	µg/L		0.10	<0.10
Styrene	µg/L		0.10	<0.10
1,1,2,2-Tetrachloroethane	µg/L		0.10	<0.10
o-Xylene	µg/L		0.10	<0.10
1,3-Dichlorobenzene	µg/L		0.10	<0.10
1,4-Dichlorobenzene	µg/L		0.10	<0.10
1,2-Dichlorobenzene	µg/L		0.10	<0.10
1,3-Dichloropropene	µg/L		0.30	<0.30
Xylene Mixture	µg/L		0.20	<0.20
n-Hexane	µg/L		0.20	<0.20
Surrogate	**Unit**	**Acceptable Limits**		
Toluene-d8	% Recovery	50-140		86
4-Bromofluorobenzene	% Recovery	50-140		86

Comments: RDL - Reported Detection Limit; G / S - Guideline / Standard

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AGAT WORK ORDER: 17Z194597

PROJECT: 61446.15

CLIENT NAME: HOULE CHEVRIER

ATTENTION TO: Katherine Rispoli

SAMPLING SITE:

SAMPLED BY:

O. Reg. 153(511) - Metals (Including Hydrides) (Water)

DATE RECEIVED: 2017-03-09

DATE REPORTED: 2017-03-28

		SAMPLE DESCRIPTION:		MW-06
		SAMPLE TYPE:		Water
		DATE SAMPLED:		2017-03-09
Parameter	Unit	G / S	RDL	8240298
Antimony	µg/L		1.0	<1.0
Arsenic	µg/L		1.0	<1.0
Barium	µg/L		2.0	186
Beryllium	µg/L		0.5	<0.5
Boron	µg/L		10.0	21.1
Cadmium	µg/L		0.2	<0.2
Chromium	µg/L		2.0	14.5
Cobalt	µg/L		0.5	4.7
Copper	µg/L		1.0	1.6
Lead	µg/L		0.5	<0.5
Molybdenum	µg/L		0.5	8.7
Nickel	µg/L		1.0	9.6
Selenium	µg/L		1.0	1.0
Silver	µg/L		0.2	<0.2
Thallium	µg/L		0.3	<0.3
Uranium	µg/L		0.5	6.7
Vanadium	µg/L		0.4	2.2
Zinc	µg/L		5.0	19.0

Comments: RDL - Reported Detection Limit; G / S - Guideline / Standard

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Quality Assurance

CLIENT NAME: HOULE CHEVRIER

AGAT WORK ORDER: 17Z194597

PROJECT: 61446.15

ATTENTION TO: Katherine Rispoli

SAMPLING SITE:

SAMPLED BY:

Trace Organics Analysis

RPT Date: Mar 28, 2017			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
O. Reg. 153(511) - VOCs (Water)															
Dichlorodifluoromethane	8264402		< 0.20	< 0.20	NA	< 0.20	87%	50%	140%	75%	50%	140%	70%	50%	140%
Vinyl Chloride	8264402		< 0.17	< 0.17	NA	< 0.17	91%	50%	140%	109%	50%	140%	118%	50%	140%
Bromomethane	8264402		< 0.20	< 0.20	NA	< 0.20	90%	50%	140%	103%	50%	140%	123%	50%	140%
Trichlorofluoromethane	8264402		< 0.40	< 0.40	NA	< 0.40	72%	50%	140%	115%	50%	140%	94%	50%	140%
Acetone	8264402		< 1.0	< 1.0	NA	< 1.0	103%	50%	140%	92%	50%	140%	112%	50%	140%
1,1-Dichloroethylene	8264402		< 0.30	< 0.30	NA	< 0.30	73%	50%	140%	90%	60%	130%	92%	50%	140%
Methylene Chloride	8264402		< 0.30	< 0.30	NA	< 0.30	77%	50%	140%	93%	60%	130%	92%	50%	140%
trans- 1,2-Dichloroethylene	8264402		< 0.20	< 0.20	NA	< 0.20	92%	50%	140%	101%	60%	130%	104%	50%	140%
Methyl tert-butyl ether	8264402		< 0.20	< 0.20	NA	< 0.20	73%	50%	140%	76%	60%	130%	78%	50%	140%
1,1-Dichloroethane	8264402		< 0.30	< 0.30	NA	< 0.30	80%	50%	140%	115%	60%	130%	103%	50%	140%
Methyl Ethyl Ketone	8264402		< 1.0	< 1.0	NA	< 1.0	102%	50%	140%	90%	50%	140%	76%	50%	140%
cis- 1,2-Dichloroethylene	8264402		< 0.20	< 0.20	NA	< 0.20	87%	50%	140%	117%	60%	130%	105%	50%	140%
Chloroform	8264402		< 0.20	< 0.20	NA	< 0.20	108%	50%	140%	119%	60%	130%	108%	50%	140%
1,2-Dichloroethane	8264402		< 0.20	< 0.20	NA	< 0.20	104%	50%	140%	98%	60%	130%	109%	50%	140%
1,1,1-Trichloroethane	8264402		< 0.30	< 0.30	NA	< 0.30	104%	50%	140%	101%	60%	130%	106%	50%	140%
Carbon Tetrachloride	8264402		< 0.20	< 0.20	NA	< 0.20	116%	50%	140%	111%	60%	130%	74%	50%	140%
Benzene	8264402		< 0.20	< 0.20	NA	< 0.20	98%	50%	140%	117%	60%	130%	116%	50%	140%
1,2-Dichloropropane	8264402		< 0.20	< 0.20	NA	< 0.20	98%	50%	140%	103%	60%	130%	92%	50%	140%
Trichloroethylene	8264402		< 0.20	< 0.20	NA	< 0.20	103%	50%	140%	110%	60%	130%	106%	50%	140%
Bromodichloromethane	8264402		< 0.20	< 0.20	NA	< 0.20	100%	50%	140%	117%	60%	130%	103%	50%	140%
Methyl Isobutyl Ketone	8264402		< 1.0	< 1.0	NA	< 1.0	76%	50%	140%	119%	50%	140%	113%	50%	140%
1,1,2-Trichloroethane	8264402		< 0.20	< 0.20	NA	< 0.20	93%	50%	140%	100%	60%	130%	114%	50%	140%
Toluene	8264402		< 0.20	< 0.20	NA	< 0.20	93%	50%	140%	86%	60%	130%	80%	50%	140%
Dibromochloromethane	8264402		< 0.10	< 0.10	NA	< 0.10	114%	50%	140%	105%	60%	130%	105%	50%	140%
Ethylene Dibromide	8264402		< 0.10	< 0.10	NA	< 0.10	102%	50%	140%	105%	60%	130%	117%	50%	140%
Tetrachloroethylene	8264402		< 0.20	< 0.20	NA	< 0.20	97%	50%	140%	98%	60%	130%	109%	50%	140%
1,1,1,2-Tetrachloroethane	8264402		< 0.10	< 0.10	NA	< 0.10	111%	50%	140%	81%	60%	130%	101%	50%	140%
Chlorobenzene	8264402		< 0.10	< 0.10	NA	< 0.10	101%	50%	140%	96%	60%	130%	88%	50%	140%
Ethylbenzene	8264402		< 0.10	< 0.10	NA	< 0.10	79%	50%	140%	88%	60%	130%	78%	50%	140%
m & p-Xylene	8264402		< 0.20	< 0.20	NA	< 0.20	93%	50%	140%	98%	60%	130%	90%	50%	140%
Bromoform	8264402		< 0.10	< 0.10	NA	< 0.10	92%	50%	140%	101%	60%	130%	74%	50%	140%
Styrene	8264402		< 0.10	< 0.10	NA	< 0.10	80%	50%	140%	71%	60%	130%	77%	50%	140%
1,1,2,2-Tetrachloroethane	8264402		< 0.10	< 0.10	NA	< 0.10	110%	50%	140%	108%	60%	130%	112%	50%	140%
o-Xylene	8264402		< 0.10	< 0.10	NA	< 0.10	109%	50%	140%	111%	60%	130%	109%	50%	140%
1,3-Dichlorobenzene	8264402		< 0.10	< 0.10	NA	< 0.10	100%	50%	140%	120%	60%	130%	106%	50%	140%
1,4-Dichlorobenzene	8264402		< 0.10	< 0.10	NA	< 0.10	114%	50%	140%	113%	60%	130%	112%	50%	140%
1,2-Dichlorobenzene	8264402		< 0.10	< 0.10	NA	< 0.10	108%	50%	140%	102%	60%	130%	96%	50%	140%
1,3-Dichloropropene	8264402		< 0.30	< 0.30	NA	< 0.30	106%	50%	140%	97%	60%	130%	90%	50%	140%
n-Hexane	8264402		< 0.20	< 0.20	NA	< 0.20	86%	50%	140%	73%	60%	130%	71%	50%	140%

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Quality Assurance

CLIENT NAME: HOULE CHEVRIER

AGAT WORK ORDER: 17Z194597

PROJECT: 61446.15

ATTENTION TO: Katherine Rispoli

SAMPLING SITE:

SAMPLED BY:

Trace Organics Analysis (Continued)

RPT Date: Mar 28, 2017			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
O. Reg. 153(511) - PAHs (Water)															
Naphthalene		TW	< 0.20	< 0.20	NA	< 0.20	105%	50%	140%	136%	50%	140%	127%	50%	140%
Acenaphthylene		TW	< 0.20	< 0.20	NA	< 0.20	114%	50%	140%	124%	50%	140%	117%	50%	140%
Acenaphthene		TW	< 0.20	< 0.20	NA	< 0.20	122%	50%	140%	127%	50%	140%	119%	50%	140%
Fluorene		TW	< 0.20	< 0.20	NA	< 0.20	105%	50%	140%	124%	50%	140%	116%	50%	140%
Phenanthrene		TW	< 0.10	< 0.10	NA	< 0.10	75%	50%	140%	97%	50%	140%	84%	50%	140%
Anthracene		TW	< 0.10	< 0.10	NA	< 0.10	118%	50%	140%	120%	50%	140%	129%	50%	140%
Fluoranthene		TW	< 0.20	< 0.20	NA	< 0.20	110%	50%	140%	114%	50%	140%	105%	50%	140%
Pyrene		TW	< 0.20	< 0.20	NA	< 0.20	112%	50%	140%	115%	50%	140%	109%	50%	140%
Benz(a)anthracene		TW	< 0.20	< 0.20	NA	< 0.20	110%	50%	140%	84%	50%	140%	75%	50%	140%
Chrysene		TW	< 0.10	< 0.10	NA	< 0.10	84%	50%	140%	104%	50%	140%	90%	50%	140%
Benzo(b)fluoranthene		TW	< 0.10	< 0.10	NA	< 0.10	68%	50%	140%	110%	50%	140%	118%	50%	140%
Benzo(k)fluoranthene		TW	< 0.10	< 0.10	NA	< 0.10	132%	50%	140%	130%	50%	140%	126%	50%	140%
Benzo(a)pyrene		TW	< 0.01	< 0.01	NA	< 0.01	112%	50%	140%	104%	50%	140%	120%	50%	140%
Indeno(1,2,3-cd)pyrene		TW	< 0.20	< 0.20	NA	< 0.20	63%	50%	140%	57%	50%	140%	127%	50%	140%
Dibenz(a,h)anthracene		TW	< 0.20	< 0.20	NA	< 0.20	118%	50%	140%	100%	50%	140%	85%	50%	140%
Benzo(g,h,i)perylene		TW	< 0.20	< 0.20	NA	< 0.20	124%	50%	140%	121%	50%	140%	122%	50%	140%
2-and 1-methyl Naphthalene		TW	< 0.20	< 0.20	NA	< 0.20	128%	50%	140%	96%	50%	140%	111%	50%	140%
O. Reg. 153(511) - PHCs F1 - F4 (with PAHs) (Water)															
F1 (C6 to C10)	8262439		< 25	< 25	NA	< 25	75%	60%	140%	94%	60%	140%	94%	60%	140%
F2 (C10 to C16)		TW	< 100	< 100	NA	< 100	104%	60%	140%	75%	60%	140%	73%	60%	140%
F3 (C16 to C34)		TW	< 100	< 100	NA	< 100	106%	60%	140%	76%	60%	140%	71%	60%	140%
F4 (C34 to C50)		TW	< 100	< 100	NA	< 100	99%	60%	140%	81%	60%	140%	79%	60%	140%
O. Reg. 153(511) - PCBs (Water)															
Aroclor 1242	8257063		< 0.1	< 0.1	NA	< 0.1	NA	60%	140%	NA	60%	140%	NA	60%	140%
Aroclor 1248	8257063		< 0.1	< 0.1	NA	< 0.1	NA	60%	140%	NA	60%	140%	NA	60%	140%
Aroclor 1254	8257063		< 0.1	< 0.1	NA	< 0.1	NA	60%	140%	NA	60%	140%	NA	60%	140%
Aroclor 1260	8257063		< 0.1	< 0.1	NA	< 0.1	NA	60%	140%	NA	60%	140%	NA	60%	140%
Polychlorinated Biphenyls	8257063		< 0.1	< 0.1	NA	< 0.1	98%	60%	140%	97%	60%	140%	83%	60%	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:

AGAT Laboratories

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Quality Assurance

CLIENT NAME: HOULE CHEVRIER

AGAT WORK ORDER: 17Z194597

PROJECT: 61446.15

ATTENTION TO: Katherine Rispoli

SAMPLING SITE:

SAMPLED BY:

Water Analysis

RPT Date: Mar 28, 2017			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
O. Reg. 153(511) - Metals (Including Hydrides) (Water)															
Antimony	8264367		<1.0	<1.0	NA	< 1.0	99%	70%	130%	105%	80%	120%	112%	70%	130%
Arsenic	8264367		7.1	6.8	4.3%	< 1.0	96%	70%	130%	98%	80%	120%	125%	70%	130%
Barium	8264367		70.1	67.6	3.6%	< 2.0	95%	70%	130%	99%	80%	120%	79%	70%	130%
Beryllium	8264367		<0.5	<0.5	NA	< 0.5	95%	70%	130%	102%	80%	120%	111%	70%	130%
Boron	8264367		138	135	2.2%	< 10.0	99%	70%	130%	102%	80%	120%	119%	70%	130%
Cadmium	8264367		<0.2	<0.2	NA	< 0.2	100%	70%	130%	101%	80%	120%	114%	70%	130%
Chromium	8264367		15.6	15.4	1.3%	< 2.0	103%	70%	130%	104%	80%	120%	92%	70%	130%
Cobalt	8264367		<0.5	<0.5	NA	< 0.5	94%	70%	130%	103%	80%	120%	100%	70%	130%
Copper	8264367		2.1	2.3	NA	< 1.0	100%	70%	130%	97%	80%	120%	85%	70%	130%
Lead	8264367		<0.5	<0.5	NA	< 0.5	90%	70%	130%	98%	80%	120%	94%	70%	130%
Molybdenum	8264367		1.1	1.0	NA	< 0.5	100%	70%	130%	99%	80%	120%	102%	70%	130%
Nickel	8264367		<1.0	<1.0	NA	< 1.0	101%	70%	130%	109%	80%	120%	107%	70%	130%
Selenium	8264367		7.1	6.6	7.3%	< 1.0	99%	70%	130%	100%	80%	120%	108%	70%	130%
Silver	8264367		<0.2	<0.2	NA	< 0.2	94%	70%	130%	109%	80%	120%	107%	70%	130%
Thallium	8264367		<0.3	<0.3	NA	< 0.3	105%	70%	130%	110%	80%	120%	119%	70%	130%
Uranium	8264367		<0.5	<0.5	NA	< 0.5	100%	70%	130%	96%	80%	120%	96%	70%	130%
Vanadium	8264367		<0.4	<0.4	NA	< 0.4	97%	70%	130%	102%	80%	120%	105%	70%	130%
Zinc	8264367		<5.0	<5.0	NA	< 5.0	101%	70%	130%	96%	80%	120%	102%	70%	130%

Comments: NA signifies Not Applicable.
Duplicate Qualifier: As the measured result approaches the RL (Reporting Limit), 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:

AGAT Laboratories

5835 COOPERS AVENUE
MISSISSAUGA, ONTARIO
CANADA L4Z 1Y2
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FAX (905)712-5122
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Method Summary

CLIENT NAME: HOULE CHEVRIER

AGAT WORK ORDER: 17Z194597

PROJECT: 61446.15

ATTENTION TO: Katherine Rispoli

SAMPLING SITE:

SAMPLED BY:

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
2-and 1-methyl Naphthalene	ORG-91-5105	EPA SW-846 3510 & 8270	GC/MS
Chrysene-d12	ORG-91-5105	EPA SW-846 3510 & 8270	GC/MS
Aroclor 1242	ORG-91-5113	EPA SW-846 3541 & 8082	GC/ECD
Aroclor 1248	ORG-91-5113	EPA SW-846 3541 & 8082	GC/ECD
Aroclor 1254	ORG-91-5113	EPA SW-846 3541 & 8082	GC/ECD
Aroclor 1260	ORG-91-5113	EPA SW-846 3541 & 8082	GC/ECD
Polychlorinated Biphenyls	ORG-91-5113	EPA SW-846 3541 & 8082	GC/ECD
Decachlorobiphenyl	ORG-91-5113	EPA SW-846 3541 & 8082	GC/ECD
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
1,1-Dichloroethylene	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
trans- 1,2-Dichloroethylene	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
1,1-Dichloroethane	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
cis- 1,2-Dichloroethylene	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
1,2-Dichloroethane	VOL-91-5001	EPA SW-846 5030 & 8260	(P&T)GC/MS
1,1,1-Trichloroethane	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

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Method Summary

CLIENT NAME: HOULE CHEVRIER

AGAT WORK ORDER: 17Z194597

PROJECT: 61446.15

ATTENTION TO: Katherine Rispoli

SAMPLING SITE:

SAMPLED BY:

PARAMETER	AGAT S.O.P	LITERATURE REFERENCE	ANALYTICAL TECHNIQUE
Benzene	VOL-91-5001	EPA SW-846 5030 & 8260	(P&T)GC/MS
1,2-Dichloropropane	VOL-91-5001	EPA SW-846 5030 & 8260	(P&T)GC/MS
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
1,1,2-Trichloroethane	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
1,1,1,2-Tetrachloroethane	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
m & p-Xylene	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
1,1,2,2-Tetrachloroethane	VOL-91-5001	EPA SW-846 5030 & 8260	(P&T)GC/MS
o-Xylene	VOL-91-5001	EPA SW-846 5030 & 8260	(P&T)GC/MS
1,3-Dichlorobenzene	VOL-91-5001	EPA SW-846 5030 & 8260	(P&T)GC/MS
1,4-Dichlorobenzene	VOL-91-5001	EPA SW-846 5030 & 8260	(P&T)GC/MS
1,2-Dichlorobenzene	VOL-91-5001	EPA SW-846 5030 & 8260	(P&T)GC/MS
1,3-Dichloropropene	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
n-Hexane	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

AGAT Laboratories

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Chain of Custody Record

If this is a Drinking Water sample, please use Drinking Water Chain of Custody Form (potable water intended for human consumption)

Laboratory Use Only

Work Order #: 17Z194597

Cooler Quantity: two - on ice

Arrival Temperatures: 7.1 | 7.5 | 7.0
6.8 | 7.0 | 6.5

Custody Seal Intact: ☐ Yes ☐ No ☐ N/A

Notes: CT - 4.9 | 4.6 | 4.4

Report Information:

Company: Hyde Chemet-
Contact: Katherine Rispoli
Address:
Phone: Fax:
Reports to be sent to:
1. Email: KRispoli@hceng.ca
2. Email:

Regulatory Requirements: ☐ No Regulatory Requirement

(Please check all applicable boxes)

☐ Regulation 153/04
Table ____ Indicate One
☐ Ind/Com
☐ Res/Park
☐ Agriculture
Soil Texture (Check One)
☐ Coarse
☐ Fine

☐ Sewer Use
☐ Sanitary
☐ Storm
Region ____ Indicate One

☐ Regulation 558
☐ CCME
☐ Prov. Water Quality Objectives (PWQO)
☐ Other
____ Indicate One

Is this submission for a Record of Site Condition? ☐ Yes ☐ No

Report Guideline on Certificate of Analysis ☐ Yes ☐ No

Turnaround Time (TAT) Required:

Regular TAT ☐ 5 to 7 Business Days

Rush TAT (Rush Surcharges Apply)

☐ 3 Business Days ☐ 2 Business Days ☐ 1 Business Day

OR Date Required (Rush Surcharges May Apply):

Please provide prior notification for rush TAT
**TAT is exclusive of weekends and statutory holidays*

Project Information:

Project: 61446.15
Site Location:
Sampled By:
AGAT Quote #: PO:

Please note: If quotation number is not provided, client will be billed full price for analysis.

Invoice Information:

Bill To Same: Yes ☐ No ☐

Company:
Contact:
Address:
Email:

Sample Matrix Legend

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

Analyses (Check Applicable): Field Filtered - Metals, Hg, CrVI (Please Circle) Y / N; Metals and Inorganics; Metal Scan; Hydride Forming Metals; Client Custom Metals; ORPs: ☐ B-HWS ☐ Cl ☐ CN ☐ Cr^{6+} ☐ EC ☐ FOC ☐ NO_3/NO_2 ☐ Total N ☐ Hg ☐ pH ☐ SAR; Nutrients: ☐ TP ☐ NH_3 ☐ TKN ☐ NO_3 ☐ NO_2 ☐ NO_3/NO_2; Volatiles: ☐ VOC ☐ BTEX ☐ THM; CCME Fractions 1 to 4; ABNs; PAHs; Chlorophenols; PCBs; Organochlorine Pesticides; TCLP Metals/Inorganics; Sewer Use

Sample Identification	Date Sampled	Time Sampled	# of Containers	Sample Matrix	Comments/ Special Instructions	Y / N
MW-04	March 9, 2017	pm	12	GW	HOLD	
MW-05	"	pm	12	GW	HOLD	
MW-06	"	pm	12	GW	HOLD	

	Date	Time		Date	Time
Samples Relinquished By (Print Name and Sign): M. Ucone [signature]	March 9, 2017	2:44 pm	Samples Received By (Print Name and Sign): [signature]	9-Mar-17	14h44
Samples Relinquished By (Print Name and Sign): [signature] to FedEx	9-Mar-17	16h00	Samples Received By (Print Name and Sign):		
Samples Relinquished By (Print Name and Sign):			Samples Received By (Print Name and Sign): Shaunin [signature]	mar 10/17	10:45

Page 1 of 1

Nº: T 033179

geotechnical

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hydrogeology

materials testing & inspection

experience • knowledge • reliability