

2250 Speers Road
Oakville, ON

Phase Two Environmental Site Assessment



PREPARED FOR:

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solve and simplify

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List of Acronyms

APEC	-	area of potential environmental concern
bgs	-	below ground surface
BH##	-	borehole (no monitoring well)
BH##M	-	monitoring well
BTEX	-	benzene, toluene, ethylbenzene, xylenes
COC	-	contaminant of concern
COPC	-	contaminant of potential concern
CSM	-	Conceptual Site Model
ESA	-	Environmental Site Assessment
O.Reg.	-	Ontario Regulation
PCA	-	potentially contaminating activity
PGL	-	PGL Environmental Consultants
PHC	-	petroleum hydrocarbon
ppm	-	parts per million
PVC	-	polyvinyl chloride
QA/QC	-	quality assurance/quality control
RPD	-	relative percent differences
RSC	-	Record of Site Condition
SCS	-	Site Condition Standards
UST	-	underground storage tank
VOC	-	volatile organic compound

1.0 EXECUTIVE SUMMARY

PGL Environmental Consultants (PGL) conducted a Phase Two Environmental Site Assessment (ESA) for the property at 2250 Speers Road, Oakville, Ontario (the Site). This Phase Two ESA meets the mandatory requirements specified in Schedule E, Table 1 of Ontario Regulation (O.Reg. 153/04).

PGL conducted a Phase One ESA (PGL, 2019) that identified 11 potentially contaminating activities (PCAs) within the Phase One Study Area. Our assessment of these PCAs resulted in six areas of potential environmental concern (APECs). The APECs and their respective contaminants of potential concern (COPCs) are summarized below:

- **APECs 1a and 1b (PCA 34 – Metal Fabrication)** – Historical onsite metal fabricating operations have the potential to affect soil and/or groundwater across the entire Site. COPCs are metals, petroleum hydrocarbons (PHCs), and volatile organic compounds (VOCs);
- **APEC 2 (PCA 28 – Gasoline and Associated, Products Storage in Fixed Tanks)** – Historical onsite fuel storage tanks along the northwestern property boundary were identified as a risk. The former underground storage tanks (USTs) have the potential to affect soil and groundwater quality at the northwestern portion of the Site. COPCs are PHCs, benzene, toluene, ethylbenzene and xylenes, and metals;
- **APEC 3 (PCA 34 – Metal Fabrication)** – Offsite metal fabricating operations at the northeast adjacent property (2240 Speers Road) have the potential to affect groundwater quality at the northeastern portion of the Site. COPCs are VOCs and metals;
- **APEC 4 (PCA 33 – Metal Treatment, Coating, Plating and Finishing)** – Offsite chromium electroplating operations at 2230 Speers Road (75m northeast) have the potential to affect groundwater quality at the northeastern portion of the Site. COPCs are PHCs, VOCs, and metals; and
- **APEC 5 (PCA 51 – Solvent Manufacturing, Processing and Bulk Storage)** – Offsite historical use of halogenated solvents for roughly 10 years at 2270 Speers Road (75m southwest). These operations have the potential to affect groundwater quality at the southwestern portion of the Site. COPCs are VOCs.

To investigate the APECs identified by the Phase One ESA, PGL:

- Advanced three boreholes to depths ranging from 3.8m to 6.0m below ground surface (bgs);
- Installed three monitoring wells to a maximum depth of 6.0m bgs;
- Submitted soil samples for analysis of BTEX, PHC F1 to F4, pH, grain size, and select metals and inorganic parameters, and metals; and
- Submitted groundwater samples for analysis of BTEX, PHC F1 to F4, VOCs, and select metals and inorganics.

This Phase Two ESA did not identify any parameters analyzed greater than the Table 7 Site Condition Standards (SCS) in surficial soil across the Site. All other analyzed parameters met the Table 7 SCS in soil and groundwater.

PGL does not recommend any further actions at the Site.

2.0 INTRODUCTION

PGL prepared this Phase Two ESA for part of the property at 2250 Speers Road in Oakville, Ontario (Figure 1).

This Phase Two ESA has been prepared consistent with O.Reg. 153/04. The report headings, format, and content follow the requirements of O.Reg. 153/04. Additional sections have been added for the purpose of improving report clarity and completeness.

Site description, ownership, future land use, and applicable soil and groundwater standards are discussed in the following sub-sections.

2.1 Site Description

The rectangular 0.644ha Site is on the southwest side of Speers Road, roughly 950m southwest of Third Line. The Site is an industrial property with a single-storey industrial building that is vacant. The property was formerly occupied by a manufacturer of turbine components using computer numeric control machines. The future use of the Site will be mixed institutional and commercial.

Property details are summarized below. The Phase Two ESA property boundary is shown on Figure 1. A survey plan is provided in Appendix A.

Table A: Site Identification Information

Municipal Address	2250 Speers Road, Oakville, Ontario
Land Use	Industrial
Future Land Use	Mixed use institutional /commercial
Universal Transverse Mercator Coordinates*	17T 631670m E 4834930m N
Legal Description	Pt Lt 28, Con 3 Trafalgar, SDS, as in 72L559; S/T 253159.254040E Oakville/Trafalgar
PIN	24850-0631 (LT)
Site Area	0.644 hectares (1.59 acres)

Adjacent property use is as follows:

- Northeast – Industrial properties (HPG Inc.);
- Southeast – Residential properties;
- Southwest – Industrial properties (Jelinek Cork Ltd.); and
- Northwest – Speers Road followed by industrial properties.

2.2 Property Ownership

Land registry information presented in the Phase One ESA (PGL, 2019) indicated that the property was transferred to Acclaim Health and Community Care Services on March 11, 2019. Property owner and contact details are presented below.

Table B: Property Ownership Information

Property Owner	Contact Information
Acclaim Health and Community Care Services 2370 Speers Road Oakville, Ontario L6L 5M2	Angela Brewer, Chief Executive Officer Phone: (905)-827-8800 E-mail: abrewer@acclaimhealth.ca

2.3 Current and Proposed Future Uses

The Site is currently an industrial property with a single-storey industrial building that is currently vacant. The property was formerly occupied by a manufacturer of turbine components using computer numeric control machines.

The future use of the Site will be mixed institutional and commercial. The proposed plan for redevelopment will keep the existing single-storey building.

2.4 Applicable Site Condition Standards

O.Reg. 153/04, Records of Site Condition – Part XV.1 under the *Environmental Protection Act* specifies acceptable limits of contaminants in soil and groundwater in the document titled *Soil, Ground Water and Sediment Standards for Use under Part XV.1 of the Environmental Protection Act* (MOE, 2011). These standards are presented in tables defined by groundwater use (i.e., potable or non-potable) and type of remediation (full depth or stratified). Each table has chemical-specific soil standards based on property use (agricultural, residential/parkland/institutional, or industrial/community/commercial), grain-texture (medium/fine-textured or coarse-textured).

Geologic and hydrogeological parameters that influence the derivation of component values for the O.Reg.153/04 generic SCS were compared to Site-specific data and the generic values used in the derivation of the SCS. The Site-specific parameters were consistent with the defaults; therefore, the generic SCS were considered applicable at the Site.

PGL determined there is no respect in which Section 41 or 43.1 of O.Reg. 153/04 would apply to the Site, based the following:

- The property is not within an area of natural significance;
- The property does not include, nor is it adjacent, to an area of natural significance or part of such an area;
- The property does not include land that is within 30m of an area of natural significance or part of such an area;
- Surface soil pH was 7.58 and subsurface soil pH ranged from 7.34 to 7.76 at the Site;
- There are no water bodies on, adjacent to, or within 30m of the Site; and
- Bedrock is present at 2.0m bgs and therefore there are shallow soil conditions on the Site.

The O.Reg. 153/04 Table 7 SCS for Shallow Soil in a Non-Potable Groundwater Condition for residential/parkland/institutional property use and medium/fine-textured soil were used at the Site. The standards were selected based on the following Site characteristics:

- Land use at the Site is currently industrial; however, the proposed use would change land use to institutional and commercial;
- Drinking water is supplied via a municipal distribution system operated by Halton Region. The local source of drinking water supply is Lake Ontario;
- Bedrock is present at 2m bgs; and
- Results of grain-size analyses indicated that soil texture at the Site is predominantly medium/fine in the main water-bearing formation.

3.0 BACKGROUND INFORMATION

Background information such as the physical setting and past investigations conducted on the Site were used to define the APECs. A summary of relevant information obtained from previous investigations and an assessment of the quality and reliability of past investigations is provided below.

3.1 Physical Setting

The Site and area gently slope down to the southeast. The Site is at a higher elevation than the property to the southwest. There is a man-made ridge (noise-barrier) separating the industrial properties from the residential properties to the southeast. Bronte Creek is approximately 1.5km southwest of the Site and Fourteen Mile Creek is approximately 1.5km northeast of the Site. Both creeks flow southeast towards Lake Ontario which is approximately 2.1km southeast of the Site.

The Study Area gently slopes down to the southeast toward Lake Ontario. Local groundwater flow is southeasterly (PGL, 2018). Regional groundwater flow is expected to be in a southeasterly direction toward Lake Ontario about 2km south of the Site.

According to the Ministry of Natural Resources and Forestry, natural heritage area mapping (MNR, 2019), there are no Areas of Natural and Scientific Interest or wellhead protection areas identified on or adjacent to the Site, nor are there any other features that would make the Site environmentally sensitive.

3.2 Past Investigations

PGL reviewed previous investigation reports prepared for the Site. Information relevant to the Phase Two ESA is summarized below by report.

Phase One Environmental Site Assessment, 2250 Speers Road, Oakville, ON. PGL Environmental Consultants. April 2019

PGL conducted a Phase One ESA (PGL, 2019) to assess the likelihood of environmental contamination originating on subject property, as well as the potential for contamination originating from neighbouring properties to migrate to the subject property. The work was completed for Acclaim Health. We identified 11 PCAs (3 onsite PCAs and 8 offsite PCAs) within the Phase One Study Area. Based on our assessment of contaminant migration and the Phase One Conceptual Site Model (CSM), we concluded that six of these PCAs contributed to APECs. These six PCAs and their resulting APECs are summarized below.

Onsite PCAs

- PCA #1a – Historical onsite manufacturing of turbine parts from 2007 to 2019 had the potential to affect soil and/or groundwater at the Site (PCA 34 – Metal Fabrication). This PCA contributes to APEC #1a.
- PCA #1b – Historical onsite manufacturing of elevators and escalators, and waste generator of aromatic solvents from the early 1990s to early 2000s had the potential to affect soil and/or groundwater at the Site (PCA 34 – Metal Fabrication). This PCA contributes to APEC #1b.
- PCA #2 – Historical onsite fuel storage tanks along the northwestern property boundary (PCA 28 – Gasoline and Associated Products in Fixed Tanks). The former USTs had the potential to affect groundwater quality at the Site. This PCA contributes to APEC #2.

Offsite (Phase One Study Area) PCAs

- PCA #3 – The offsite manufacturing of turbine parts on the northeast adjacent property from the early 2000s to present day has the potential to affect groundwater at the Site (PCA 34 – Metal Fabrication). This PCA contributes to APEC #3.
- PCA #4 – The offsite chromium electroplating process from the mid-1990s to present day and a spill of unknown quantity of chromium to ground in 2014 had the potential to affect groundwater quality at the Site (PCA 33 – Metal Treatment, Coating, Plating and Finishing). This PCA contributes to APEC #4.
- PCA #5 – The former use of halogenated solvents from the early 1990s to early 2000s has the potential to affect groundwater at the Site (PCA 51 – Solvent Manufacturing, Processing and Bulk Storage). This PCA contributes to APEC #5.

APECs resulting from these PCAs are summarized as follows:

- **APECs 1a and 1b (PCA 34 – Metal Fabrication)** – Historical onsite metal fabricating operations have the potential to affect soil and/or groundwater across the entire Site. COPCs are metals, PHCs, and VOCs;
- **APEC 2 (PCA 28 – Gasoline and Associated, Products Storage in Fixed Tanks)** – Historical onsite fuel storage tanks along the northwestern property boundary were identified as a risk. The former USTs have the potential to affect soil and groundwater quality at the northwestern portion of the Site. COPCs are PHCs, BTEX, and metals;
- **APEC 3 (PCA 34 – Metal Fabrication)** – Offsite metal fabricating operations at the northeast adjacent property (2240 Speers Road) have the potential to affect groundwater quality at the northeastern portion of the Site. COPCs are VOCs and metals;
- **APEC 4 (PCA 33 – Metal Treatment, Coating, Plating and Finishing)** – Offsite chromium electroplating operations at 2230 Speers Road (75m northeast) have the potential to affect groundwater quality at the northeastern portion of the Site. COPCs are PHCs, VOCs, and metals; and
- **APEC 5 (PCA 51 – Solvent Manufacturing, Processing and Bulk Storage)** – Offsite historical use of halogenated solvents for roughly 10 years at 2270 Speers Road (75m southwest). These operations have the potential to affect groundwater quality at the southwestern portion of the Site. COPCs are VOCs.

This Phase One ESA identified the presence of PCAs within the Phase One Study Area. The PCAs may have affected soil and groundwater quality at the Site. Therefore, a Phase Two ESA is required prior to filing a Record of Site Condition (RSC) for the Site.

3.3 Data Corroboration and Validation

No data was used from previous investigations by others. All data included in this Phase Two ESA was collected by PGL in 2018.

4.0 SCOPE OF THE INVESTIGATION

4.1 Overview of Site Investigation

PGL conducted a subsurface investigation at the Site from May 2018 to April 2019. To assess the APECs and characterize soil and groundwater conditions at the Site, PGL:

- Collected groundwater samples from one existing well (MW1) in May 2018 to assess the groundwater quality at the Site;
- Installed three monitoring wells (BH101M to BH103M) on May 3, 2017;
- Monitored the groundwater levels on May 3, 2018, June 4, 2018, and April 2, 2019;
- Collected groundwater samples from the newly installed monitoring wells (BH101M to BH103M) on June 4, 2018; and
- Submitted soil and groundwater samples for analysis of the COPCs and other parameters to support selection of the appropriate standards.

4.2 Media Investigated

The media sampled during this work program was soil and groundwater. No water bodies are present on the Site; therefore, no surface water or sediment was available for sampling. The water table depth range during the Phase Two ESA was within the anticipated 1.5m to 5m bgs range of typical buried utilities.

The water table was measured from 1.66m to 3.74m bgs

Soil sampling and analysis activities are summarized below. Details are provided in the Sampling and Analysis Plan (Appendix B).

Soil

- May 2018 – PGL installed three monitoring wells and collected soil samples for analysis of PHC, VOC, metals, pH, and grain size.

Groundwater

- May 2018 – PGL collected a groundwater sample from one existing monitoring well and submitted for analysis of PHCs and VOCs.
- June 2018 – PGL collected groundwater samples from one existing monitoring well and three newly installed monitoring wells and submitted for analysis of PHC, VOCs, and metals.
- April 2019 – PGL collected groundwater elevations from five existing monitoring wells. No groundwater samples were submitted for analysis.

4.3 Phase One Conceptual Site Model

A CSM is a site-specific description of how contaminants enter the environment, how they are transported and distributed within the environment, and pathways through which exposure to humans and the environment can occur. The CSM provides a basis and framework for developing sampling and analysis programs, assessing risks from contaminants, addressing uncertainties, and identifying risk management/remedial strategies. Some of the key elements required for and documented in the CSM are the location and type of contaminant sources, transport/migration factors, contaminant fate/behaviour, exposure mechanism/pathways, and potential receptors (human health and ecological).

The Phase One CSM is generated based on a review of the available site information and may identify the contaminant sources and types, release mechanisms, potential exposure pathways, and potential receptors. The Phase One CSM is used to identify the media (e.g., soil, groundwater, sediment) for investigation, investigation locations and sampling depths, and parameters for laboratory analysis.

PGL assessed the uncertainties in the information gathered as part of Phase One ESA and considered these uncertainties in our analyses and presentation of the data. No potential uncertainties identified in our evaluation would significantly affect the validity of the data, conclusions, or Phase One CSM.

The Phase One CSM for the Site is based on the following figures and information from PGL's (2019) Phase One ESA:

- Figure 1 – Site Location;
- Figure 2 – Phase One Study Area;
- Figure 3 – Potentially Contaminating Activities;
- Figure 4 – Areas of Potential Environmental Concern;
- Appendix 6 – Aerial Photographs;
- Appendix 7 – Topographic Map; and
- Appendix 8 – Site Photographs.

Figures 1, 2, 3, and 4 from the Phase One ESA report have been provided in this report. The figures and photographs identify building/structures, water bodies, roads, adjacent property uses, PCAs within the Phase One Study Area, and APECs at the Site.

Based on the Phase One ESA, PGL identified three onsite and eight offsite PCAs within the Phase One Study Area. PGL assessed the PCAs for their risk of contamination to the Site, and determined that three onsite and three offsite PCAs contributed to the following six APECs:

- **APECs 1a and 1b (PCA 34 – Metal Fabrication)** – Historical onsite metal fabricating operations have the potential to affect soil and/or groundwater across the entire Site. COPCs are metals, PHCs, and VOCs;
- **APEC 2 (PCA 28 – Gasoline and Associated, Products Storage in Fixed Tanks)** – Historical onsite fuel storage tanks along the northwestern property boundary were identified as a risk. The former USTs have the potential to affect soil and groundwater quality at the northwestern portion of the Site. COPCs are PHCs, BTEX, and metals;

- **APEC 3 (PCA 34 – Metal Fabrication)** – Offsite metal fabricating operations at the northeast adjacent property (2240 Speers Road) have the potential to affect groundwater quality at the northeastern portion of the Site. COPCs are VOCs and metals;
- **APEC 4 (PCA 33 – Metal Treatment, Coating, Plating and Finishing)** – Offsite chromium electroplating operations at 2230 Speers Road (75m northeast) have the potential to affect groundwater quality at the northeastern portion of the Site. COPCs are PHCs, VOCs, and metals; and
- **APEC 5 (PCA 51 – Solvent Manufacturing, Processing and Bulk Storage)** – Offsite historical use of halogenated solvents for roughly 10 years at 2270 Speers Road (75m southwest). These operations have the potential to affect groundwater quality at the southwestern portion of the Site. COPCs are VOCs.

Typical subsurface utilities are present in the area. Underground utilities are present in the adjacent roadway. Underground services at the Site include natural gas, electricity, and telecommunications. The underground utilities are on the northwestern portion of the Site, north of the Site building. Contaminants at the Site and from offsite sources could potentially migrate along the utility corridors, given that the water table is shallower than typical utility trenches.

Local groundwater flow is to the southeast. Regional groundwater flow is expected to be southeast towards Lake Ontario.

No significant data gaps were identified during the Phase One ESA.

4.4 Deviations from Sampling and Analysis Plan

Groundwater samples could not be collected from existing well MW2 as there was an obstruction and/or the well was dry at 1.8m bgs. This is not considered a limitation as sufficient information was obtained from other locations.

No other significant deviations from the Sampling and Analysis Plan (Appendix B) were noted during this Phase Two ESA.

4.5 Impediments

No other physical impediments were encountered during the Phase Two ESA.

5.0 INVESTIGATION METHOD

The following sub-sections provide brief descriptions of the investigation methods and equipment used, subcontractor information, and details/rationale for departures from standard operating procedures. Detailed investigation methodologies are presented in the Sampling and Analysis Plan (Appendix B).

5.1 General

PGL conducted soil sampling at three boreholes. All boreholes were instrumented with monitoring wells. Boreholes were advanced using a Geoprobe 7822 DT, and soil samples were collected using 1.5m-long, 5cm-diameter macro-cores.

Groundwater samples were recovered from one existing monitoring well and three new monitoring wells installed at the Site. Groundwater sampling was completed using conventional purge and low-flow sampling methodologies.

The investigation locations targeted areas, depths, media, and COPCs considered appropriate to assess the APECs. Sample location rationale is provided in Table C.

Table C: Investigation Locations and Rationale

Sample Location	Rationale	Stratigraphic Unit	Soil COPC	Groundwater COPC	APEC
MW1	To investigate groundwater near the former tank nest	Unknown	NA	PHC, VOC	2
BH101M	To investigate the soil and groundwater quality within the former tank nest and along the northwestern portion of the Site	Fill, Bedrock	BTEX, PHC, Metals	PHC, VOC, metals	1a, 1b, 2, 5
BH102M	To investigate the soil and groundwater quality along the southwestern property line	Fill, Bedrock	BTEX, PHC, Metals	PHC, VOC	1a, 1b, 5
BH103M	To investigate the soil and groundwater quality along the northeastern property line	Fill, Bedrock	Metals	VOC, metals	1a, 1b, 3, 4

5.2 Drilling and Excavating

Three boreholes (BH101M to BH103M) were advanced at the Site on May 30, 2018. BH101M was advanced to 3.8m bgs, and BH102M and BH103M were advanced to 6.1m bgs.

Table D: Subcontractor, Drilling and Sampling Methodology Summary

Contractor	Strata Soil Sampling Inc.
Equipment Used	Geoprobe 7822DT (102mm diameter)
Measures taken to Minimize Cross Contamination	Strata used a direct-push, single-rod, sampling system. Samples were collected continuously in a sample liner. The sample does not contact the direct-push tooling.
Sample Frequency	During the drilling, samples were collected continuously and screened in the field for combustible/volatile vapours. Soil samples were selected for laboratory analysis based on field screening, visual observations, and investigation location relative to potential contaminant source.

5.3 Soil: Sampling

In May 2017, boreholes were advanced using a Geoprobe 7822 DT and soil samples were collected using 1.5m-long, 5cm-diameter macro-cores. Soil samples were recovered continuously from the sample liners.

All screening samples were collected using a gloved hand to grab samples. Based on visual and field vapour screening evidence of impact, samples were also collected using a gloved hand and deposited directly into laboratory-prepared jars.

Soil from each borehole was inspected to log the soil type and indications of impact (i.e., staining, odours, vapour screening results). Site geology is described in detail in Section 6.1. Boreholes logs are provided in Appendix C. In general, the soil profile at the Site, with increasing depth, consisted of sand and gravel or sandy silt fill and bedrock.

5.4 Soil: Field Screening Measurements

Soil samples were split immediately upon collection. Half was sampled as described above, and half was collected in plastic bags and screened in the field. Details of the equipment used for field screening are noted below. The field screening measurements are shown on the borehole logs (Appendix C).

Table E: Field Screening Information

Equipment Used	RKI Eagle 2 vapour detector
Chemicals Detected	Hydrocarbons and volatile organic compounds
Range of Measurement	0–100% lower explosive limit, or 0–50,000 parts per million (ppm)
Precision of Measurement	1% lower explosive limit, or 1 part per million (ppm)
Accuracy of Measurement	+/- 5% of reading or +/- 2% lower explosive limit (whichever is greater); or +/- 50ppm or +/- 10% of reading (whichever is greater)
Calibration Standard	40% Hexane and 100ppm isobutylene
Procedure for checking calibration	During the period of the work, calibration was completed each day, where possible, using calibration gases (Hexane and isobutylene) and either a Tedlar bag or demand flow regulator. Ambient air was screened periodically to ensure a zero reading.

Notes: ppm = parts per million

Samples were selected for analysis based on the highest vapour concentration, visual observations, or to provide coverage. Investigation location rationale is provided in the Sampling and Analysis Plan (Appendix B).

5.5 Groundwater: Monitoring Well Installation

The contractor, equipment used, measures taken to prevent cross-contamination, and frequency of sample collection during drilling are documented in Section 5.2 and are not duplicated here.

Monitoring well installation and development details for the installed wells are provided below. Installation details are summarized in Table 1 and shown on the borehole logs (Appendix C). The monitoring wells were installed by a licensed driller consistent with the requirements of Regulation 903 – Wells, and were installed at locations and depths sufficient for the purposes of this investigation.

The wells were constructed with polyvinyl chloride (PVC) well materials. The PVC screen and riser were threaded and equipped with an O-ring to provide a watertight joint. A threaded PVC cap was installed at the bottom of the well screen. A j-plug and lock were installed at the top of the well. The wells were finished with flush-mount protective covers cemented in place.

The wells (BH101M to BH103M) were constructed of 50mm inside diameter (ID) screens and risers. The wells were constructed with a 3m (10') slotted well screen to allow groundwater to enter the well. Silica sand was placed in the borehole annulus around each well screen and extended to about 0.3m above the well screen. A bentonite seal was then placed from the top of the sand pack to roughly 0.2m bgs to isolate the well screen.

No fluids were introduced to either borehole during the drilling program. The wells were developed using dedicated Waterra tubing and a surge block. Development of the wells (MW1, BH101M to BH103M) was considered complete after removal of about 10 well volumes (35L to 45L).

5.6 Groundwater: Field Measurements of Water Quality Parameters

Water quality parameters were collected using a multi-parameter water meter (Hanna Multimeter). Readings were recorded after each flow-through cell or well volume was removed. During well purging and sampling, PGL monitored pH, conductivity, temperature, and drawdown of the water column. PGL visually monitored purge water for colour and turbidity.

5.7 Groundwater: Sampling

Water levels were measured on May 3, 2018, June 4, 2018, and April 2, 2019 and groundwater samples were collected on May 3 and June 4, 2018.

Prior to groundwater purging and sampling, water levels were measured at each monitoring well using an oil/water interface probe. The submerged portion of the probe was washed with Alconox and de-ionized water, and wiped dry between each well.

All groundwater samples submitted for metals analysis were field filtered using Waterra disposable inline 0.45-micron filters.

Samples were collected directly into laboratory-supplied sample containers pre-charged with appropriate preservatives for the requested chemical analyses, and were kept cool prior to delivery to the laboratory.

5.8 Sediment: Sampling

There is no sediment at the Site.

5.9 Analytical Testing

Analytical testing was conducted by ALS Environmental of Mississauga, Ontario. ALS Environmental conducted analyses as required by *Protocol for Analytical Methods Used in the Assessment of Properties under Part XV.1 of the Environmental Protection Act* (MOE, 2011).

5.10 Residue Management Procedures

There were no residues generated during the Phase Two ESA.

5.11 Elevation Surveying

Ground surface and top of casing elevations were surveyed at each well. The elevations were surveyed relative to a permanent benchmark northwest of the Site, on the northwest side of Speers Road (top of the fire hydrant). The permanent benchmark was assumed to have an elevation of 100.0m. A closed-loop survey was completed on April 2, 2019. Elevation data is presented in Table 1.

5.12 Quality Assurance and Quality Control Measures

During the fieldwork, PGL followed the quality assurance/quality control (QA/QC) measures specified in PGL's Sampling and Analysis Plan provided in Appendix B. In general, this called for the adherence to PGL's Standard Field Procedures and the collection of samples as noted in the Sampling and Analysis Plan.

Elevation survey data was considered adequate if the survey loop was closed within 0.002m.

All samples were collected in laboratory-supplied, clean containers, and labelled in accordance with PGL's standard procedure. Required preservatives were supplied in the appropriate containers by the laboratory. All samples were submitted under a chain of custody with each cooler of soil or groundwater. PGL's Standard Field Procedures detail field screening, data collection, note taking, decontamination procedures, sampling procedures, and sample shipment.

QA/QC samples collected consisted of field duplicates. A field duplicate was collected for roughly every 10 samples submitted for analysis.

In addition to PGL's QA/QC work, the laboratory followed its own QA/QC procedures required by regulation and for its accreditation. These are detailed in the laboratory reports provided in Appendix D.

6.0 REVIEW AND EVALUATION

The following sections discuss the findings of the work conducted onsite to date. This review discusses both the historical and new data obtained and the overall interpretation of data.

6.1 Geology

Geological mapping (OGS, 2010) indicated the surficial soils near the Site are expected to comprise Halton Till deposits comprising silt to silty clay. The following soil profile was encountered, with increasing depth, during the Phase Two ESA:

- Asphalt or topsoil from surface up to 0.2m bgs;
- Sand and gravel/sandy silt fill up to 1.7m bgs;
- Sandy silt up to 2m; and
- Bedrock to the maximum depth (6.0m bgs) of investigation.

At BH101M, sand and gravel fill were encountered up to 3.6m bgs. This well was installed in the former tank nest which would explain the deeper fill layer.

Geologic cross-sections were prepared illustrating the soil profile encountered at the Site. The cross-section locations are shown on Figure 6. Cross-gradient (A-A') stratigraphic profile and along-gradient (B-B') stratigraphic profile are shown on Figure 6.

Bedrock is mapped as Queenston Formation bedrock consisting of shale, siltstone, minor limestone, and sandstone. Georgian Bay formation shale and limestone (OGS, 2007). The geology of Oakville and the surrounding area has been studied in detail by others. This data was compiled and published by the Ontario Geological Survey (Sharp, 1980). Review of the published mapping indicated that bedrock is roughly 2m bgs in the Site area.

6.2 Groundwater: Elevations and Flow Direction

Water levels were measured on May 3, 2018, June 5, 2018, and April 2, 2019. On May 3, 2018, the depth to the water table at the Site was 1.59m bgs at MW1 and dry at 1.80m bgs at MW2. On June 5, 2018, the water table ranged from 1.71m bgs (BH101M) to 4.41m bgs (BH103M). On April 2, 2019, the water table ranged from 1.57m bgs (BH101M) to 3.56m bgs (BH103M). BH101M was installed in fill in former UST backfill. The depth to groundwater at this location is not considered representative of the natural groundwater elevation. Remaining wells (BH102M and BH103M) are installed in bedrock, and the typical depth to water is below 3m bgs.

Groundwater flow direction is southeast based on groundwater elevation data. Groundwater elevation data is shown on the cross-sections (Figure 5). Regional groundwater flow direction is expected to be to the southeast.

The water table depth range observed during the Phase Two ESA is within the anticipated 1.5m to 5m bgs range of typical buried utilities. It is unlikely that service utilities are affecting groundwater flow at the Site, as the natural groundwater table is present in the bedrock.

As the groundwater is within the bedrock, it is unlikely that climatic or meteorological fluctuations can influence groundwater elevations, flow direction, or contaminant distribution outside normal seasonal variations of groundwater elevations.

6.3 Groundwater: Hydraulic Gradients

Horizontal hydraulic gradient (0.08m/m) was calculated using elevation data for the Site. The hydraulic gradient at the Site is expected to be similar.

Vertical hydraulic could not be assessed, as only shallow monitoring wells were installed at the Site.

6.4 Fine-Medium Soil Texture

Four soil samples were selected from BH102M and/or BH103M at the Site for grain-size analysis (see Table 2). Soil samples were submitted for grain-size analysis from each geologic unit encountered at the Site.

All results identified medium/fine-textured soil.

6.5 Soil: Field Screening

Soil-vapour concentrations were non-detect (less than 25ppm). No staining or odours indicative of contamination were observed during advancement of the boreholes. Field screening observations and soil-vapour concentrations are shown on the borehole logs (Appendix C).

6.6 Soil Quality

All soil results met the applicable Table 7 SCS and no areas of environmental contamination were identified. The soil results are presented in Table 5a and 5b and are shown on plan view (Figures 7a and 7b) and on cross-section (Figure 7c).

Plan View

Figure 7a Soil Results – Petroleum Hydrocarbons
Figure 7b Soil Results – Metals

Cross-Section

Figure 7c Cross Sections – Petroleum Hydrocarbons and Metals

Soil analysis results are discussed by APEC in the following sections.

6.6.1 APECs 1a and 1b – Onsite Metal Fabrication

Soil samples from BH101M, BH102M, and BH103M were assessed for PHC and/or metals. All samples met the Table 7 SCS; there were no contaminants of concern (COCs) identified in soil for APECs 1a or 1b.

6.6.2 APEC 2 – Former Onsite USTs

Soil samples from BH101M and BH102M were assessed for BTEX and PHCs. All samples met the Table 7 SCS; there were no COCs identified in soil for APEC 2.

6.6.3 APECs 3 and 4 – Offsite Metal Fabrication and Metal Treatment, Coating, Plating and Finishing

The Phase One CSM did not identify the potential for soil impacts related to the offsite metal fabrication or the offsite metal treatment, coating, plating, and finishing facilities to the northeast.

6.6.4 APEC 5 – Offsite Solvent Manufacturing, Processing and Bulk Storage

The Phase One CSM did not identify the potential for soil impacts related to the offsite solvent manufacturing, processing, and bulk storage facility to the southwest.

6.7 Groundwater Quality

All groundwater results met the applicable Table 7 SCS and no areas of environmental concern were identified. The results are presented in Tables 6a to 6c and are shown on plan view (Figures 8a to 8c) and on cross-section (Figure 8d).

Plan View

Figure 8a Groundwater Results – Petroleum Hydrocarbons
Figure 8b Groundwater Results – Volatile Organic Compounds
Figure 8c Groundwater Results – Metals

Cross-Section

Figure 8d Cross Sections – Petroleum Hydrocarbons, Volatile Organic Compounds and Metals

Groundwater analysis results are discussed by APEC below.

6.7.1 APECs 1a and 1b – Onsite Metal Fabrication

Groundwater samples from BH101M, BH102M, and BH103M were assessed for PHCs, metals, and/or VOCs. All samples met the Table 7 SCS; there were no COCs identified in groundwater for APECs 1a or 1b.

6.7.2 APEC 2 – Former Onsite USTs

Groundwater samples from MW1, BH101M, and BH102M were assessed for BTEX and PHCs. All samples met the Table 7 SCS; there were no COCs identified in groundwater for APEC 2.

6.7.3 APECs 3 and 4 – Offsite Metal Fabrication and Metal Treatment, Coating, Plating and Finishing

Groundwater samples from BH103M were assessed for VOC and metals. All groundwater samples met the Table 7 SCS; there were no COCs identified in groundwater for APEC 3 or 4.

6.7.4 APEC 5 – Offsite Solvent Manufacturing, Processing and Bulk Storage

Groundwater samples from MW1, BH101M, and BH102M were assessed for VOCs. All groundwater samples met the Table 7 SCS; there were no COCs identified in groundwater for APEC 5.

6.8 Sediment Quality

There is no sediment at the Site.

6.9 Quality Assurance and Quality Control Results

PGL evaluated the QA/QC results from the laboratory and from our fieldwork program. QA/QC measures implemented in the field included field duplicates for both soil and groundwater. Laboratory QA/QC measures included typical QC samples (e.g., lab duplicates, matrix spikes, spike blanks, method spikes, etc.). Following receipt of the data from the laboratory, PGL reviewed the data to confirm that all sample results were received, there were no obvious errors, and the quality of the data received was representative of Site conditions. PGL calculated the relative percent difference (RPD) for parent/duplicate samples to assess accuracy.

The laboratory reported detection limits met the Table 7 SCS. Review of the laboratory certificates of analysis did not identify issues with the laboratory QA/QC (e.g., RPDs for laboratory duplicates, recoveries in matrix or spiked blanks, detectable concentrations in method blanks). A review of other laboratory comments did not identify issues that would significantly bias results positively or negatively, or alter the interpretation of the results.

RPDs for parent and field duplicate sample pairs met the data quality objectives in the Sampling and Analysis Plan (Appendix B).

There were no significant QA/QC issues identified in the fieldwork.

As required by the regulation, PGL makes the following statements:

- All certificates of analysis or analytical reports received pursuant to Clause 47 (2) (b) of the regulation comply with a Subsection 47 (3);
- A certificate of analysis or analytical report has been received for each sample submitted for analysis; and
- All certificates of analysis or analytical reports received have been included in full in an appendix of the Phase Two ESA report.

The overall quality of the data collected during the field investigations is considered acceptable and suitable for its intended purpose (i.e., to identify COCs that exceed the Table 3 SCS).

6.10 Phase Two Conceptual Site Model

A CSM is a site-specific description of how contaminants enter the environment, how they are transported and distributed within the environment, and pathways through which exposure can occur. The CSM provides the basis and framework for assessing risks from contaminants, addressing uncertainties, determining source control requirements, and identifying risk management/remedial strategies. Some of the key elements required for and documented in the CSM are the location and type of contaminant sources, transport/migration factors, contaminant fate/behaviour, exposure mechanism/pathways, and potential receptors (human and ecological). The CSM describes the relationship between contaminant sources, transport mechanisms, and potential receptors.

In O.Reg. 153/04, the Phase Two CSM is initially presented in the Phase Two ESA, portions of the Phase Two CSM are then reused in the risk assessment, and finally the Phase Two CSM is submitted as a supporting document during RSC filing. Therefore, to simplify the RSC filing process, and reduce document reformatting requirements, the Phase Two CSM is presented as a standalone document in Appendix E.

7.0 CONCLUSIONS

This Phase Two ESA was conducted to investigate six APECs identified by the Phase One ESA (PGL, 2019), and characterize soil and groundwater at the Site.

To investigate the APECs, PGL:

- Collected groundwater samples from one existing well (MW1) in May 2018 to assess the groundwater quality at the Site;

- Installed three monitoring wells (BH101M to BH103M) on May 3, 2017;
- Monitored groundwater levels on May 3, 2018, June 4, 2018, and April 2, 2019;
- Collected groundwater samples from three newly installed monitoring wells (BH101M to BH103M); and
- Submitted soil and groundwater samples for analysis of the COPCs and other parameters to support selection of the appropriate standards.

This Phase Two ESA did not identify any concentrations of the parameters analyzed greater than the applicable Table 7 SCS in soil and groundwater at the Site. All parameters met the Table 7 SCS in soil and groundwater.

PGL does not recommend any further actions at the Site.

8.0 LIMITATIONS

This report is accurate at a high level for reasonably foreseeable conditions. The limitations of the work are not always obvious, and the best way to understand them is discussion with the authors in the context of your intended use. This work is a snapshot in time, so any use must consider that conclusions may change materially because of changes in site condition or regulatory context.

Only the addressee, our client, and their agents may rely on this report for the stated purpose. We warrant only that the work was done as described and is similar to the work that would be done by other qualified consultants in this area. Our contract includes limitations on liability related to professional errors and omissions.

9.0 SIGNATURES

The Phase Two ESA was carried out under the supervision of Kim Worboy, QP_{ESA}. The report was prepared by Mike Kisil, B.A. and reviewed by Kim Worboy. Kim Worboy is a Qualified Person for environmental site assessment and can confirm that the work was carried out in accordance with O.Reg. 153/04.

If you have any questions or require clarification, please contact Mike Kisil or Kim Worboy at 905-668-4908.

PGL ENVIRONMENTAL CONSULTANTS

Per:



Mike Kisil, B.A.
Environmental Consultant



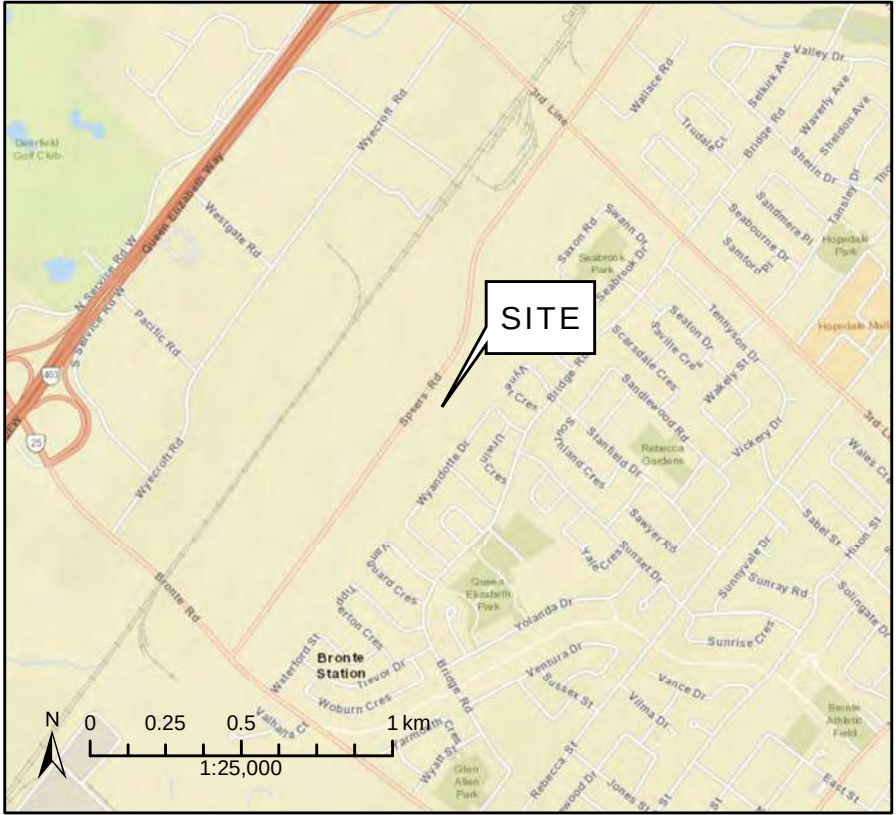
Kim Worboy, P.Eng., QP_{ESA}
Vice President, Operations

MAK/KJW/mtl/slr
r-5138-03-04-Phase Two-v2.docx

10.0 REFERENCES

- MNR. (2019). *Make a Natural Heritage map*. Retrieved 11 2015, from Ministry of Natural Resources and Forestry: <http://www.ontario.ca/page/make-natural-heritage-area-map>
- MNRF. (2017, 05 09). *Make a Map: Natural Heritage Areas*. Retrieved from Ministry of natural Resources and Forestry: http://www.giscoeapp.lrc.gov.on.ca/Mamnh/Index.html?site=MNR_NHLUPS_NaturalHeritage&viewer=NaturalHeritage&locale=en-US
- MOE. (2011). *Protocol for Analytical Methods Used in the Assessment of Properties under Part XV.1 of the Environmental Protection Act, March 9, 2004 as amended July 1, 2011*. Ministry of the Environment.
- MOE. (2011). *Soil, Ground Water and Sediment Standards for Use Under Part XV.1 of the Environmental Protection Act*. Ministry of the Environment. April 15, 2011.
- OGS. (1978). Geological Highway Map, Southern Ontario. Map 2418. Scale 1: 800,000. Ontario Geological Survey.
- OGS. (2000). *Quaternary geology, seamless coverage of the Province of Ontario; Ontario Geological Survey, Data Set 14---Revised*. Ontario Geological Survey.
- OGS. (2010). *1:250 000 scale bedrock geology of Ontario; Ontario Geological Survey, Miscellaneous Release---Data 126-Revision 1*. Ontario Geological Survey.
- OGS. (2011). *Ambient Groundwater Geochemistry Data for Southwestern Ontario; Ontario Geological Survey, Miscellaneous Release Data 283*. Ontario Geological Survey.
- PGL. (2018). *Phase 2 Environmental Site Assessment, 2250 Speers Road, Oakville, ON*. PGL Environmental Consultants Ltd. June 2018.
- PGL. (2019). *Phase One Environmental Site Assessment, 2250 Speers Road, Oakville, ON*. PGL Environmental Consultants. April 22, 2019.
- Toronto. (2015). *Toronto Official Plan*. City of Toronto. June 2015.
- Toronto. (2017, 01 23). *Toronto Maps v2*. Retrieved from City of Toronto: http://map.toronto.ca/maps/map.jsp?app=TorontoMaps_v2

Figures



— Site Boundary (Approximate)

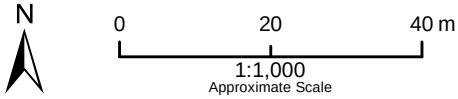
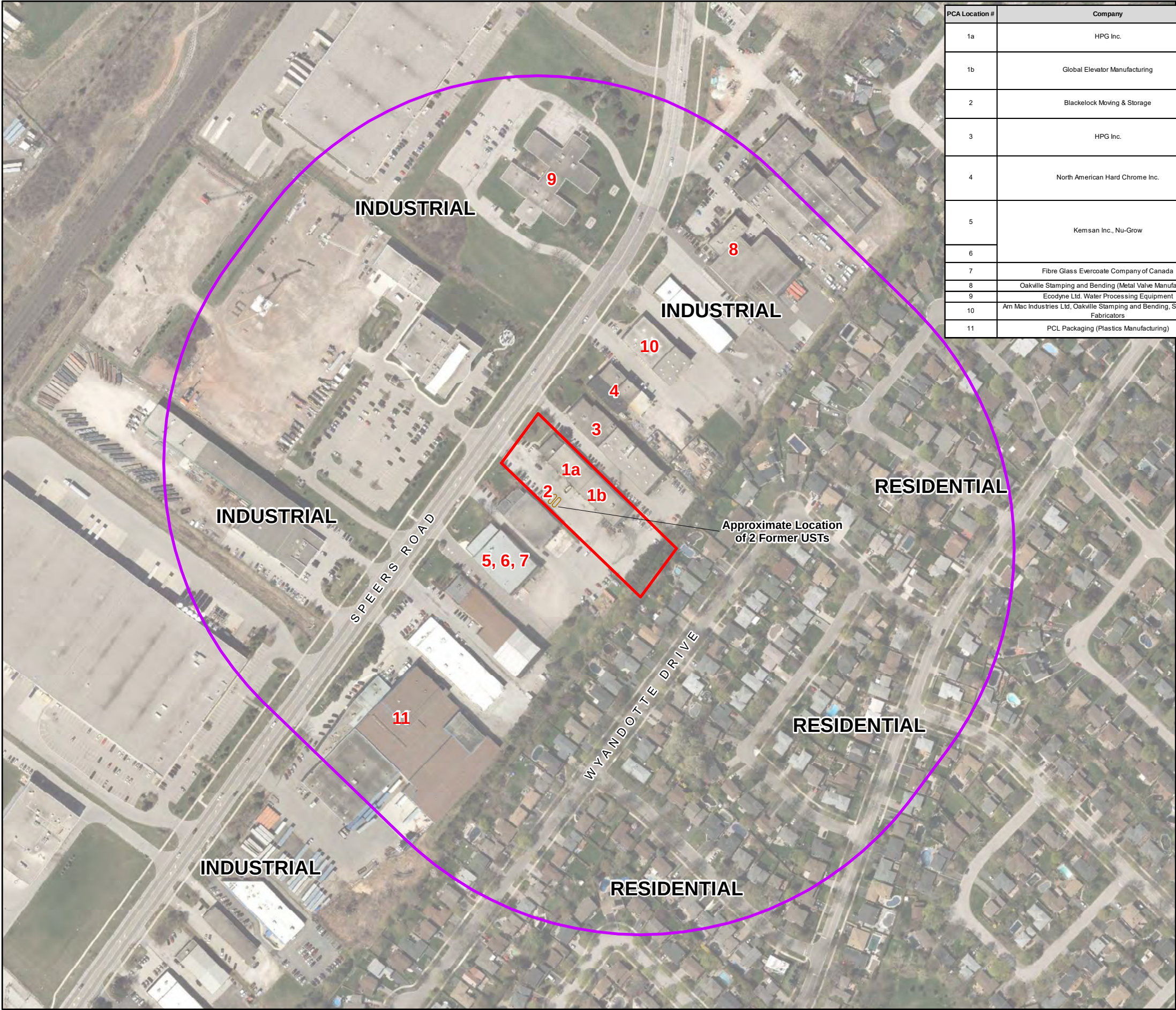


Image: ESRI Basemap Parcel: Approximate

SITE LOCATION					
2250 Speers Road, Oakville, ON					
ACCLAIM HEALTH					
	File No.:	Date:	Dwg No.:	Drawn by:	FIGURE
	5138-03.04	APR 2019	51380304-11	DPL	1



PCA Location #	Company	Address (Oakville)	Distance and Direction from Site	PCA Description	APEC (Y/N)
1a	HPG Inc.	2250 Speers Road	Onsite	PCA 34 – Metal Fabrication Manufacturer of turbine parts from the 2007 to 2019	Yes – APEC 1a
1b	Global Elevator Manufacturing			PCA 34 – Metal Fabrication Manufacturer of elevators and escalators and waste generator of aromatic solvents from the early 1990s to early 2000s	Yes – APEC 1b
2	Blacklock Moving & Storage			PCA28 - Gasoline and Associated, Products Storage in Fixed Tanks Historical operation of two private fuel tanks	Yes – APEC 2
3	HPG Inc.	2240 Speers Road	Northeast adjacent	PCA 34 – Metal Fabrication Manufacturer of turbine parts from the early 2000s to present day. An 750L spill of oily water from aboveground tank.	Yes – APEC 3
4	North American Hard Chrome Inc.	2230 Speers Road	75 m NE	PCA33- Metal Treatment, Coating, Plating and Finishing Chromium electroplating process from mid-1990s to present day. Spill of unknown quantity of chromium to ground in 2014.	Yes – APEC 4
5	Kemsan Inc., Nu-Grow	2270 Speers Road	75m SW	PCA51 – Solvent Manufacturing, Processing and Bulk Storage The use of halogenated solvents from early-1990s to early 2000s. A certificate of approval for one exhaust fan removing solvent vapours.	Yes – APEC 5
6				PCA40- Pesticides Manufacturing, Processing, Bulk Storage	No
7				PCA43 - Plastics (including Fibreglass) Manufacturing and Processing	No
8	Oakville Stamping and Bending (Metal Valve Manufacturer)	2200 Speers Road	210m NE	PCA 34 – Metal Fabrication	No
9	Ecodyne Ltd. Water Processing Equipment	2201 Speers Road	225m NNE	PCA 34 – Metal Fabrication	No
10	Am Mac Industries Ltd, Oakville Stamping and Bending, Seaway Metal Fabricators	2220 Speers Road	115m NE	PCA 34 – Metal Fabrication	No
11	PCL Packaging (Plastics Manufacturing)	2300 Speers Road	225 m SW	PCA43 - Plastics (including Fibreglass) Manufacturing and Processing	No

- Site Boundary (Approximate)
- Phase One Study Area (250m Buffer)

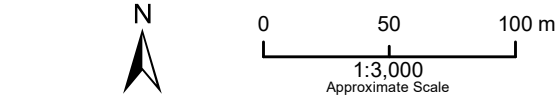


Image: ESRI Basemap Parcel: Approximate

PHASE ONE CONCEPTUAL SITE MODEL

2250 Speers Road, Oakville, ON

ACCLAIM HEALTH

PGL
ENVIRONMENTAL CONSULTANTS

File No.:
5138-03.04

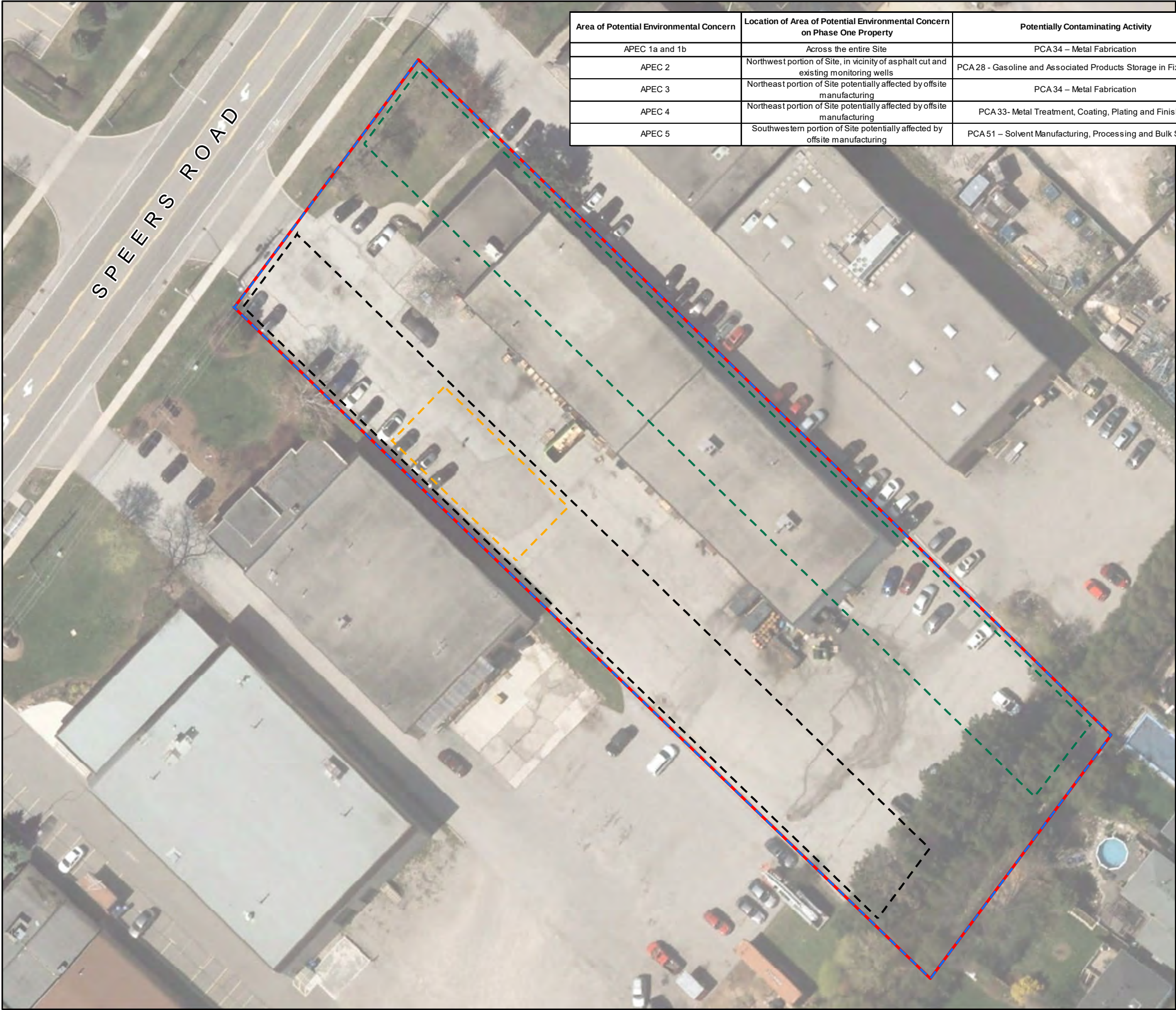
Date:
APR 2019

Dwg No.:
51380304-21

Drawn by:
DPL

FIGURE
2

Original in colour



Area of Potential Environmental Concern	Location of Area of Potential Environmental Concern on Phase One Property	Potentially Contaminating Activity	Location of PCA (onsite or offsite)	Contaminants of Potential Concern	Media Potentially Impacted (Ground water, soil and/or sediment)
APEC 1a and 1b	Across the entire Site	PCA 34 – Metal Fabrication	Onsite	PHCs, VOCs and Metals	Soil and ground water
APEC 2	Northwest portion of Site, in vicinity of asphalt cut and existing monitoring wells	PCA28 - Gasoline and Associated Products Storage in Fixed Tanks	Onsite	BTEX, PHCs, and Metals	Soil and ground water
APEC 3	Northeast portion of Site potentially affected by offsite manufacturing	PCA 34 – Metal Fabrication	Offsite	PHCs, VOCs and Metals	Groundwater
APEC 4	Northeast portion of Site potentially affected by offsite manufacturing	PCA 33- Metal Treatment, Coating, Plating and Finishing	Offsite	Metals, VOC	Groundwater
APEC 5	Southwestern portion of Site potentially affected by offsite manufacturing	PCA 51 – Solvent Manufacturing, Processing and Bulk Storage	Offsite	VOCs	Groundwater

- Site Boundary (Approximate)
- Areas of Potential Environmental Concern (APEC)
- APEC 1a and APEC 1b
- APEC 2
- APEC 3 and APEC 4
- APEC 5

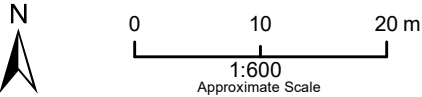
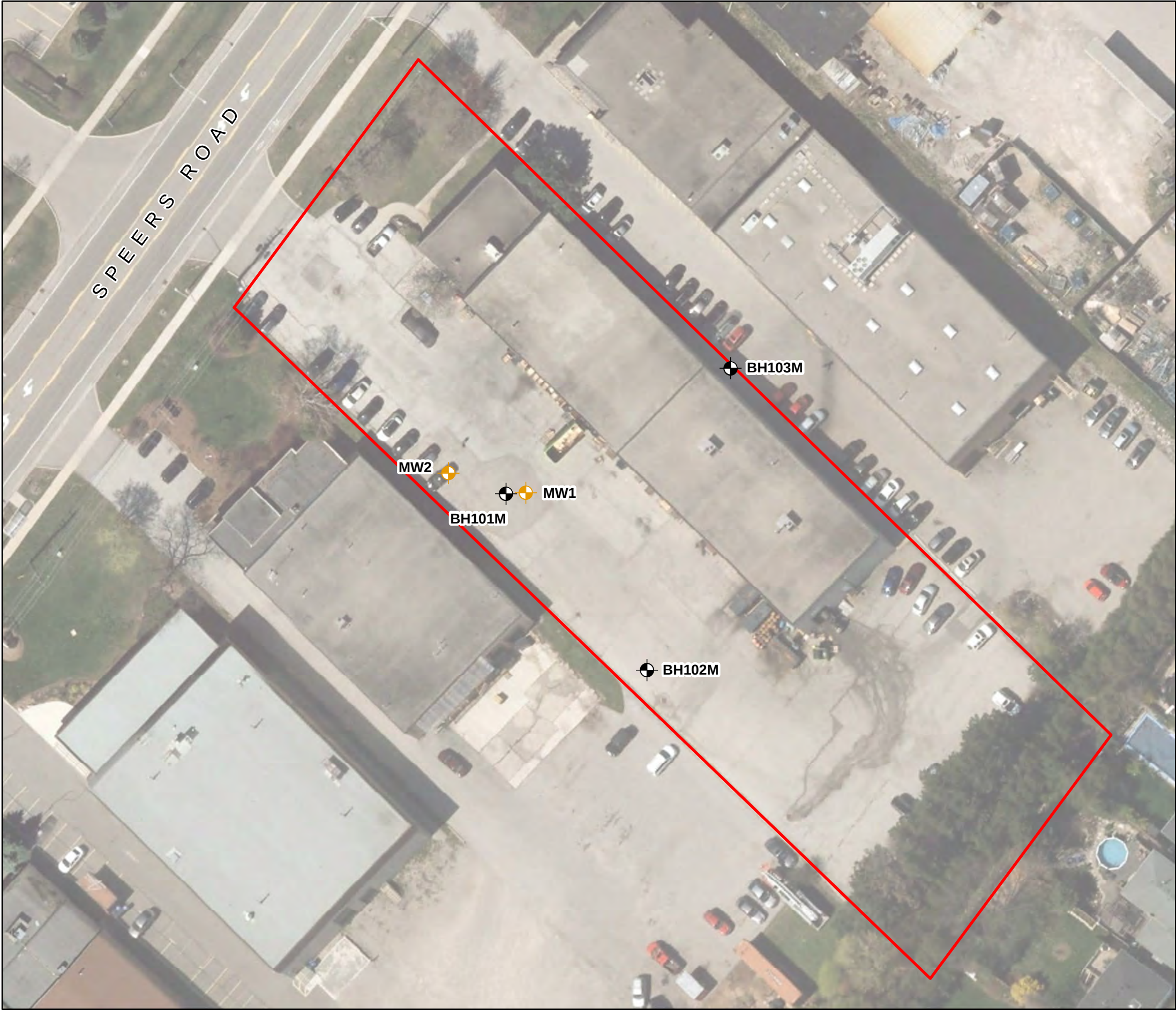


Image: ESRI Basemap Parcel: Approximate

AREAS OF POTENTIAL ENVIRONMENTAL CONCERN					
2250 Speers Road, Oakville, ON					
ACCLAIM HEALTH					
	File No.:	Date:	Dwg No.:	Drawn by:	FIGURE
	5138-03.04	APR 2019	51380304-31	DPL	3



- Site Boundary (Approximate)
- ⊕ Monitoring Well (by PGL)
- ⊕ Monitoring Well (by others)

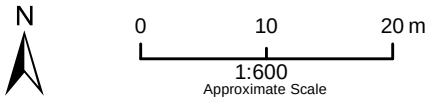


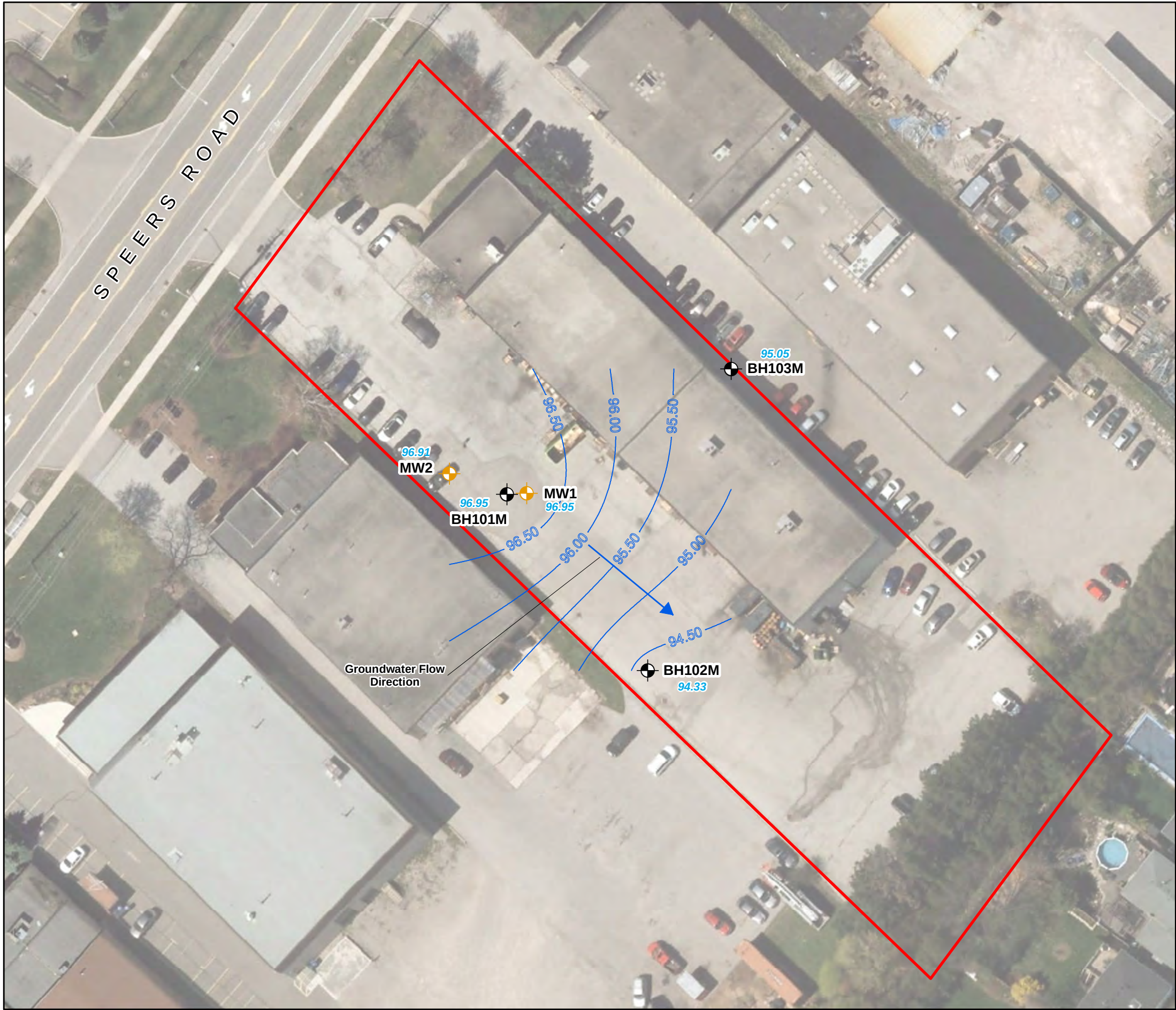
Image: ESRI Basemap Parcel: Approximate

INVESTIGATION LOCATIONS

2250 Speers Road, Oakville, ON

ACCLAIM HEALTH

	File No.:	Date:	Dwg No.:	Drawn by:	FIGURE
	5138-03.04	APR 2019	51380304-41	DPL	4



- Site Boundary (Approximate)
- Monitoring Well (by PGL)
- Monitoring Well (by others)
- Groundwater Contour (m RLD)
- Groundwater Elevation (m RLD)

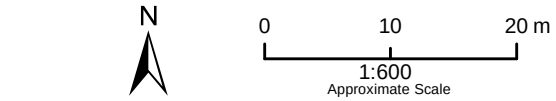
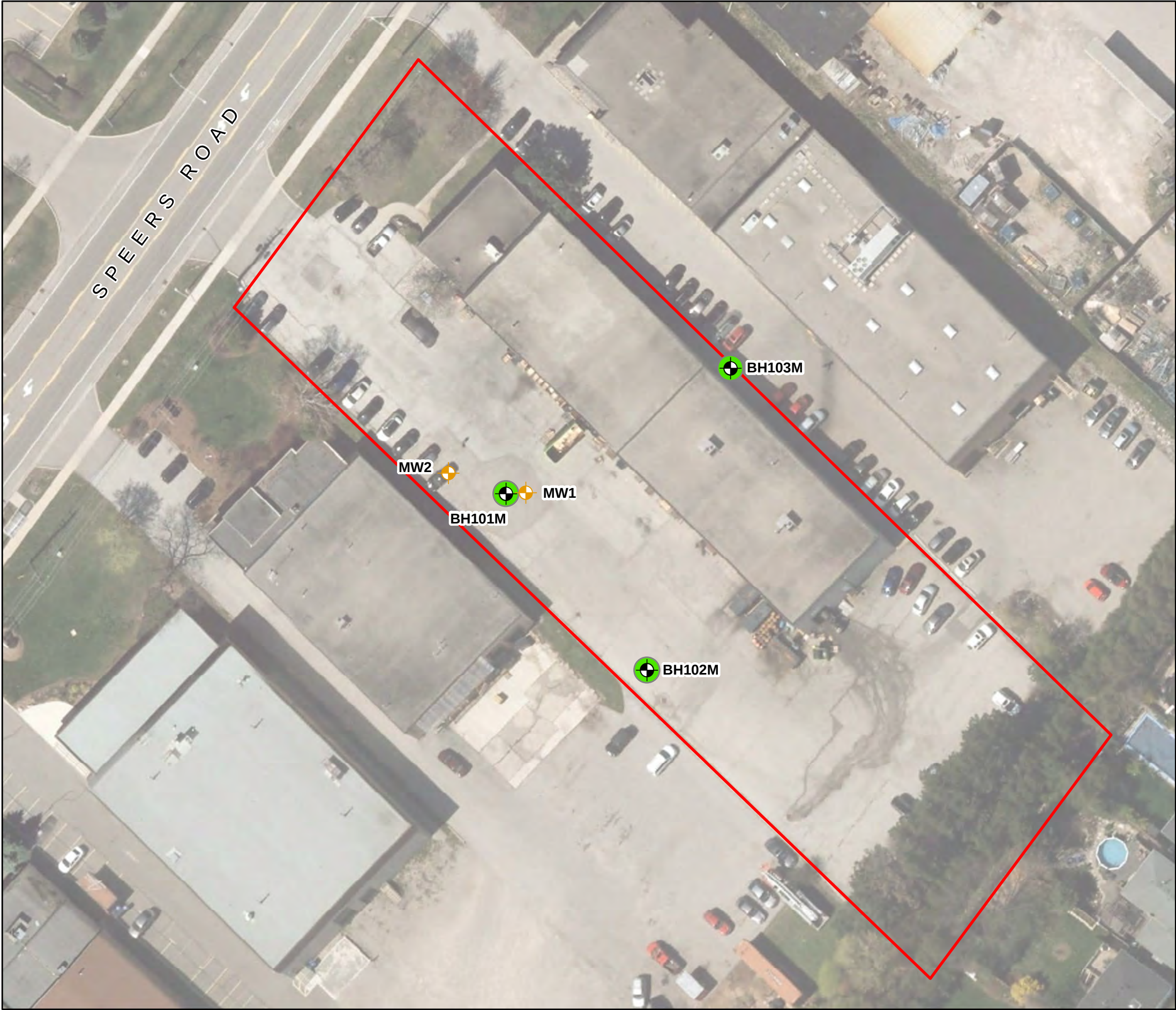


Image: ESRI Basemap Parcel: Approximate
GROUNDWATER ELEVATIONS AND FLOW DIRECTION
APRIL 2, 2019

2250 Speers Road, Oakville, ON

ACCLAIM HEALTH

	File No.:	Date:	Dwg No.:	Drawn by:	FIGURE
	5138-03.04	APR 2019	51380304-51	DPL	5



- Site Boundary (Approximate)
- Monitoring Well (by PGL)
- Monitoring Well (by others)
- Sample meets O.Reg. 153/04 Table 7 SCS

Table 7 SCS - Generic Site Condition Standards for Shallow Soils in a Non-Potable Groundwater Condition for residential/parkland/institutional property use and medium/fine-textured soil in Soil, Ground Water and Sediment Standards for Use Under Part XV.1 of the Environmental Protection Act (MOE, 2011)

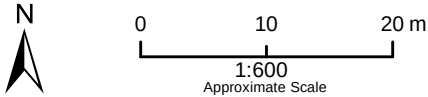
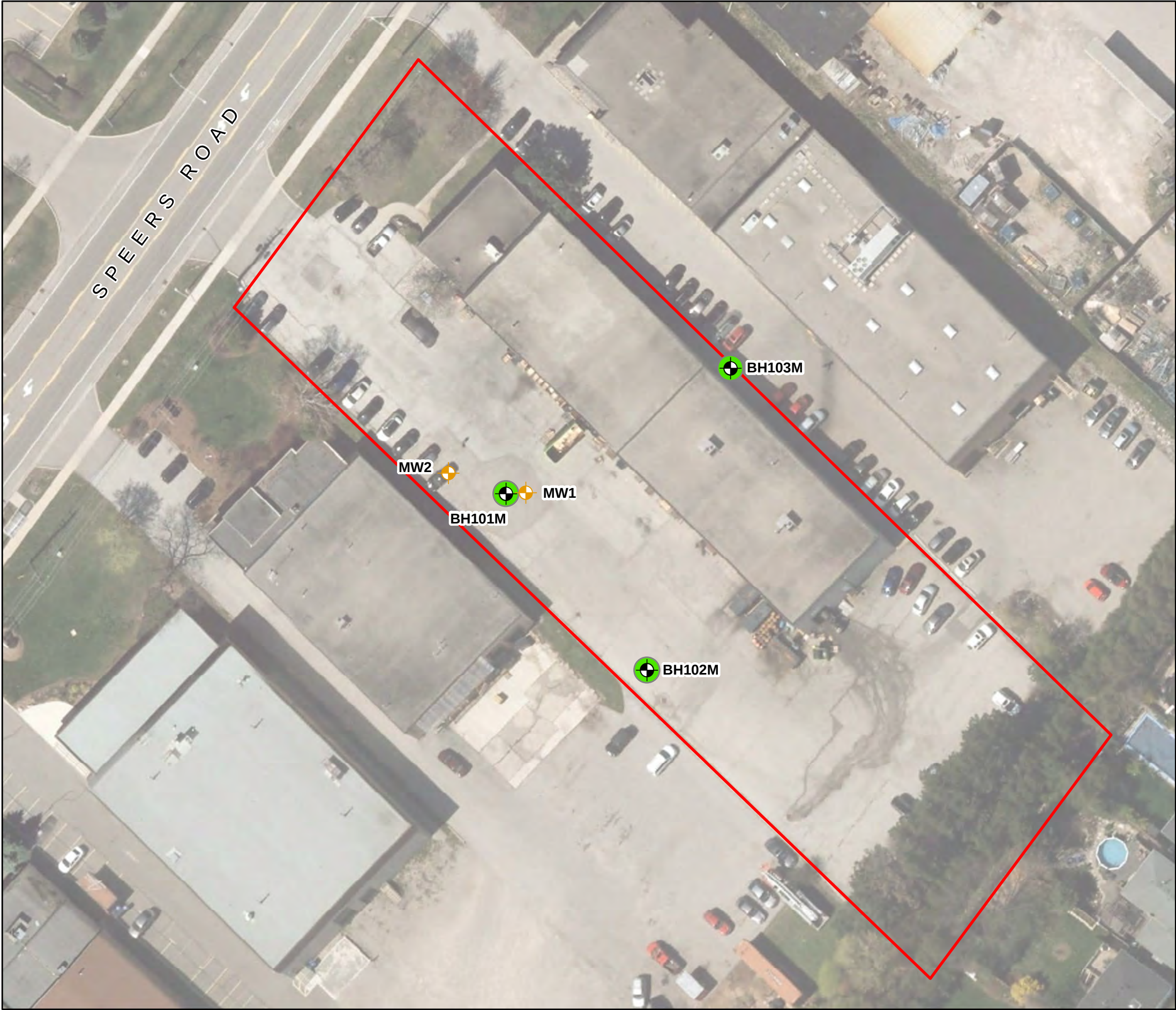


Image: ESRI Basemap Parcel: Approximate

SOIL RESULTS PETROLEUM HYDROCARBONS					
2250 Speers Road, Oakville, ON					
ACCLAIM HEALTH					
	File No.:	Date:	Dwg No.:	Drawn by:	FIGURE
	5138-03.04	APR 2019	51380304-71a	DPL	7a



- Site Boundary (Approximate)
- ⊕ Monitoring Well (by PGL)
- ⊕ Monitoring Well (by others)
- Sample meets O.Reg. 153/04 Table 7 SCS

Table 7 SCS - Generic Site Condition Standards for Shallow Soils in a Non-Potable Groundwater Condition for residential/parkland/institutional property use and medium/fine-textured soil in Soil, Ground Water and Sediment Standards for Use Under Part XV.1 of the Environmental Protection Act (MOE, 2011)

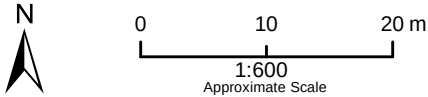
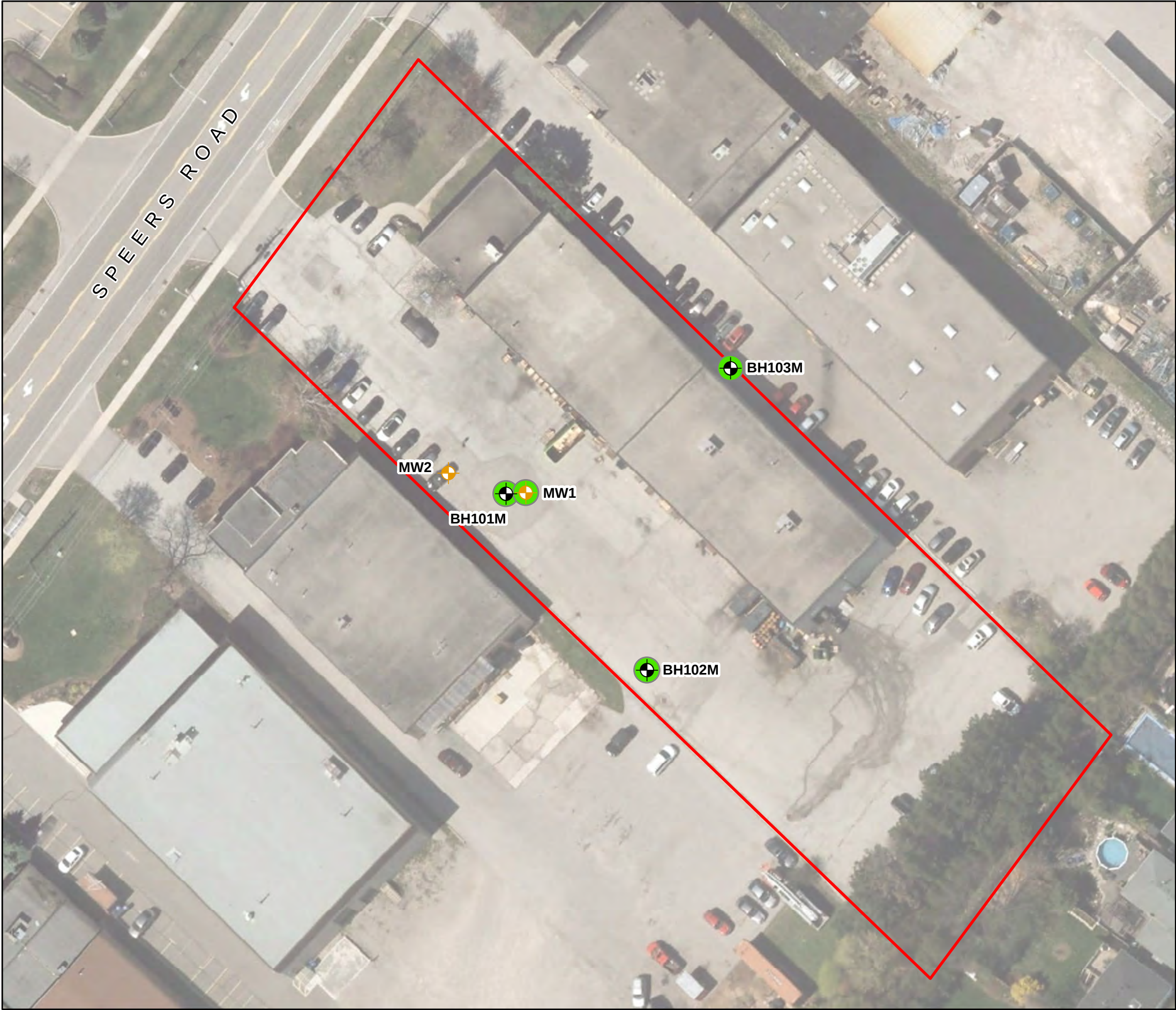


Image: ESRI Basemap Parcel: Approximate

SOIL RESULTS - METALS					
2250 Speers Road, Oakville, ON					
ACCLAIM HEALTH					
	File No.:	Date:	Dwg No.:	Drawn by:	FIGURE
	5138-03.04	APR 2019	51380304-71b	DPL	7b



- Site Boundary (Approximate)
- Monitoring Well (by PGL)
- Monitoring Well (by others)
- Sample meets O.Reg. 153/04 Table 7 SCS

Table 7 SCS - Generic Site Condition Standards for Shallow Soils in a Non-Potable Groundwater Condition for residential/parkland/institutional property use and medium/fine-textured soil in Soil, Ground Water and Sediment Standards for Use Under Part XV.1 of the Environmental Protection Act (MOE, 2011)

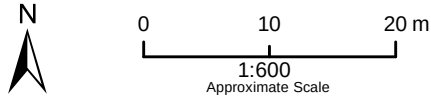
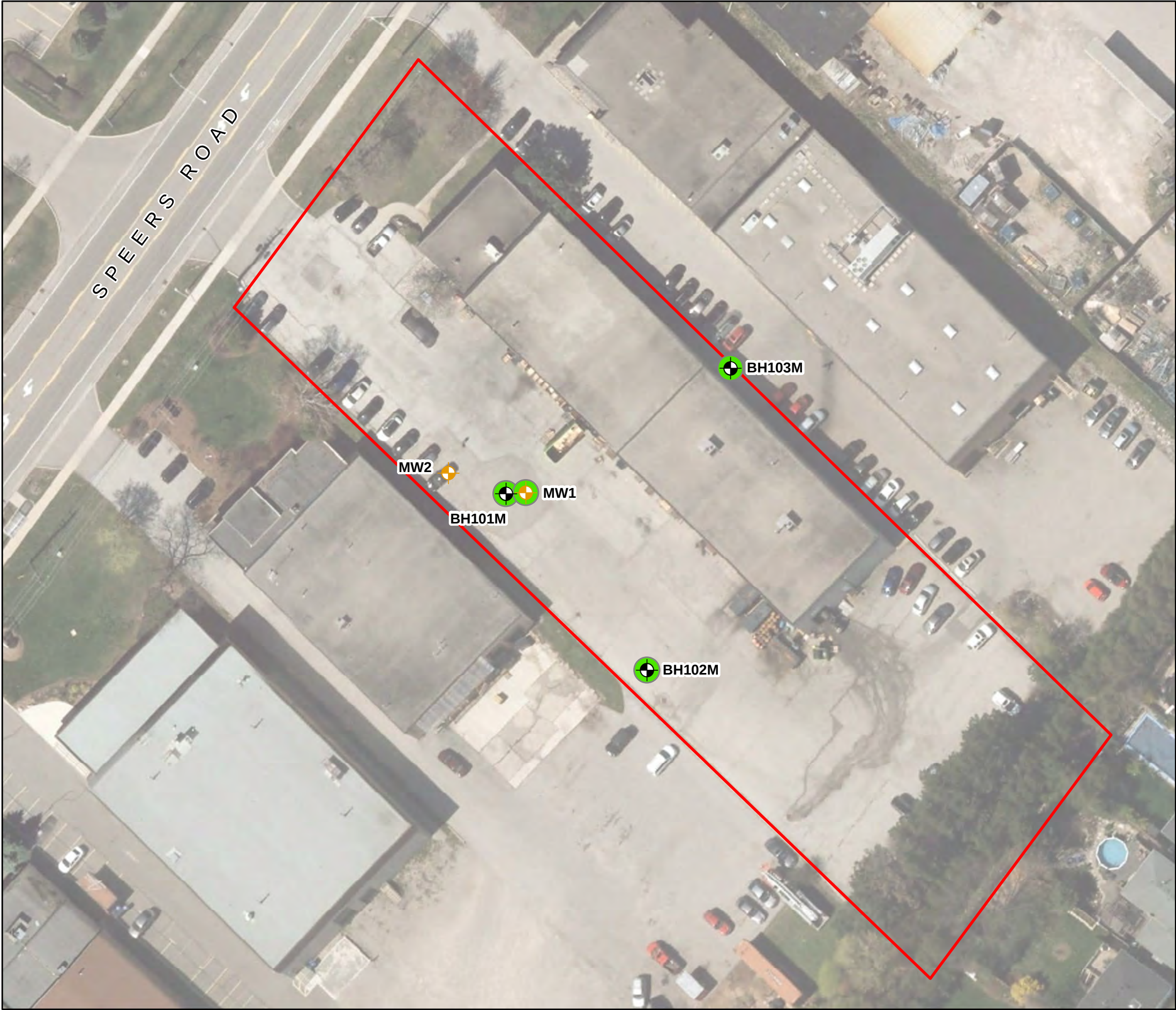


Image: ESRI Basemap Parcel: Approximate

GROUNDWATER RESULTS PETROLEUM HYDROCARBONS					
2250 Speers Road, Oakville, ON					
ACCLAIM HEALTH					
	File No.:	Date:	Dwg No.:	Drawn by:	FIGURE
	5138-03.04	APR 2019	51380304-81a	DPL	8a



- Site Boundary (Approximate)
- Monitoring Well (by PGL)
- Monitoring Well (by others)
- Sample meets O.Reg. 153/04 Table 7 SCS

Table 7 SCS - Generic Site Condition Standards for Shallow Soils in a Non-Potable Groundwater Condition for residential/parkland/institutional property use and medium/fine-textured soil in Soil, Ground Water and Sediment Standards for Use Under Part XV.1 of the Environmental Protection Act (MOE, 2011)

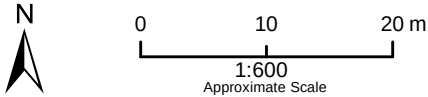
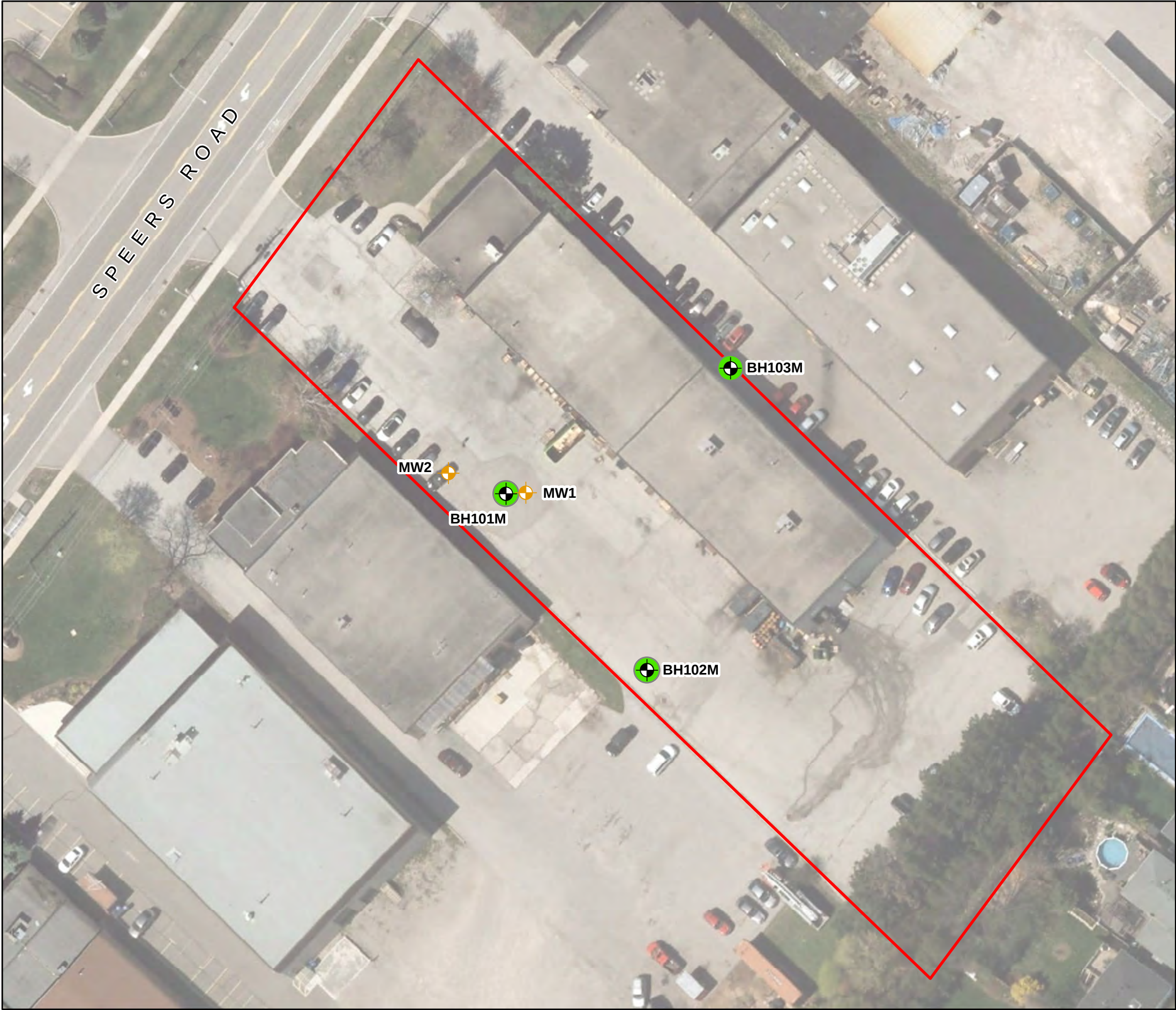


Image: ESRI Basemap Parcel: Approximate

GROUNDWATER RESULTS VOLATILE ORGANIC COMPOUNDS					
2250 Speers Road, Oakville, ON					
ACCLAIM HEALTH					
	File No.:	Date:	Dwg No.:	Drawn by:	FIGURE
	5138-03.04	APR 2019	51380304-81b	DPL	8b



- Site Boundary (Approximate)
- Monitoring Well (by PGL)
- Monitoring Well (by others)
- Sample meets O.Reg. 153/04 Table 7 SCS

Table 7 SCS - Generic Site Condition Standards for Shallow Soils in a Non-Potable Groundwater Condition for residential/parkland/institutional property use and medium/fine-textured soil in Soil, Ground Water and Sediment Standards for Use Under Part XV.1 of the Environmental Protection Act (MOE, 2011)

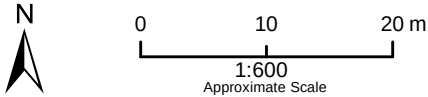
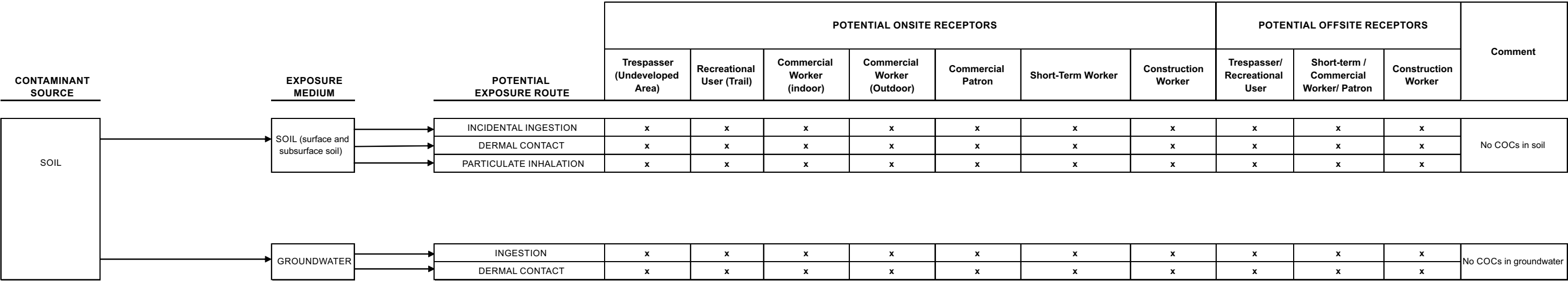


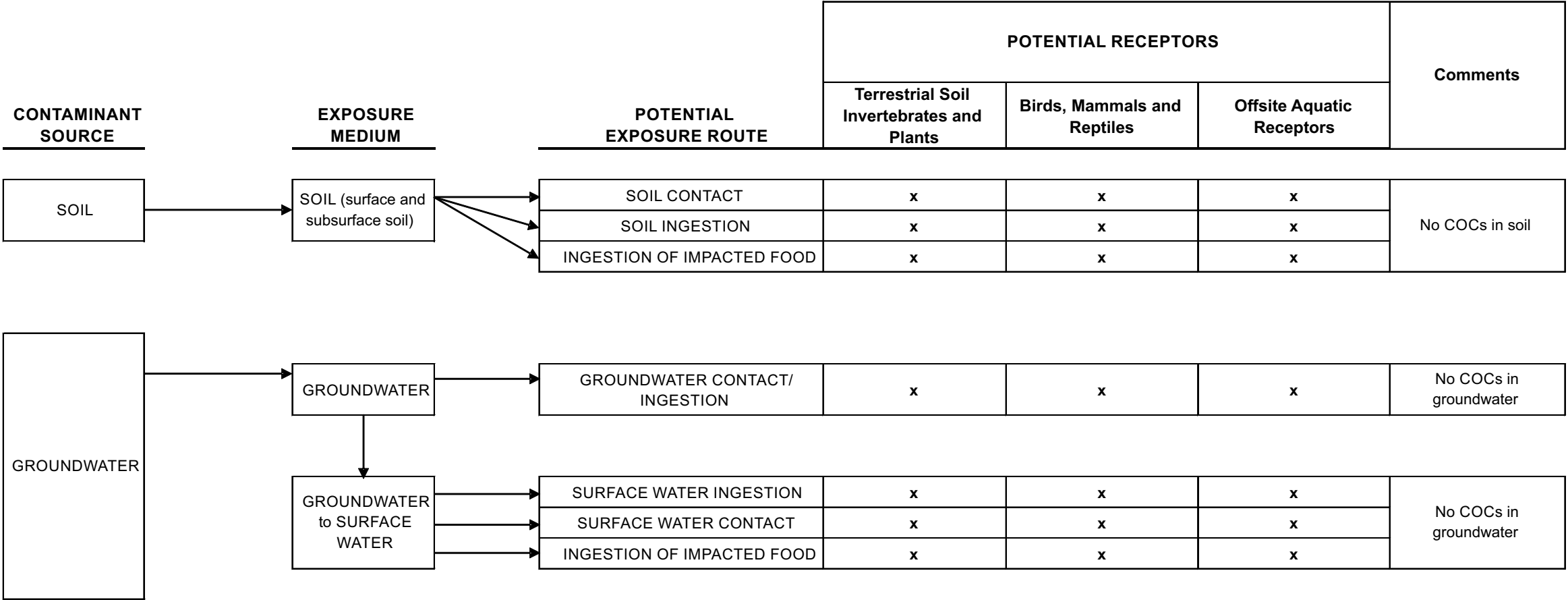
Image: ESRI Basemap Parcel: Approximate

GROUNDWATER RESULTS - METALS					
2250 Speers Road, Oakville, ON					
ACCLAIM HEALTH					
	File No.:	Date:	Dwg No.:	Drawn by:	FIGURE
	5138-03.04	APR 2019	51380304-81c	DPL	8c



Notes:

- ✓ - Indicates a potentially complete exposure pathway.
- x - Indicates pathway not applicable or incomplete



Notes:

- ✓ - Indicates a potentially complete exposure pathway.
- x - Indicates pathway not applicable or incomplete

CONCEPTUAL ECOLOGICAL EXPOSURE MODEL

2250 Speers Road, Oakville, ON

ACCLAIM HEALTH



File No.:	Date:	Dwg.:	Drawn by:	Figure
5138-03.04	APR 2019	51380304-101	DPL	

Tables

Analytical Table Notes

Soil sample results are presented as ug/g (ppm) on a dry weight basis unless otherwise noted

Groundwater sample results are presented as ug/L (ppb) unless otherwise noted

BH#M	Borehole with monitoring well installed
MW#	Monitoring well (installed by others)
PHCs	petroleum hydrocarbons
BTEX	benzene, toluene, ethylbenzene, xylenes (total)
VOC	volatile organic compounds
m btr	metres below top of riser
OVM	organic vapour meter
ppm	parts per million
LEL	lower explosive limit
RDL	reported detection limit
-	not analyzed
<	Less than stated detection limit

#	Greater than applicable Standard
---	----------------------------------

#	Maximum Concentration
---	-----------------------

Table 7 Standards
(O.Reg. 153/04)

Generic Site Condition Standards for Shallow Soil in a Non-Potable Groundwater Condition for Residential/Parkland/Institutional property use and medium/fine-textured soil in *Soil, Ground Water and Sediment Standards for Use Under Part XV.1 of the Environmental Protection Act (MOE, 2011)*

Table 1
Monitoring Well Installation Details
2250 Speers Road, Oakville, ON
Acclaim Health, PGL File 5138-03.04

Location	Installation Date	Well Type	Ground Elevation (m rld)	Top of Casing (m rld)	Borehole Depth (m btoc)	Well Depth (m btoc)	Screen Length (m)	Top of Screen (m btoc)	Top of Screen Elevation (m rld)	Bottom of Screen (m btoc)	Bottom of Screen Elevation (m rld)
Shallow Wells											
MW1	24-Oct-07	Flushmount	98.64	98.60	3.66	3.36	1.5	1.86	96.78	3.36	95.28
MW2	24-Oct-07	Flushmount	98.73	98.63	3.66	3.36	1.5	1.86	96.87	3.36	95.37
BH101M	30-May-18	Flushmount	98.61	98.52	3.80	3.80	3.0	0.80	97.81	3.80	94.81
BH102M	30-May-18	Flushmount	97.95	97.83	6.00	6.00	3.0	3.00	94.95	6.00	91.95
BH103M	30-May-18	Flushmount	98.79	98.61	6.00	6.00	3.0	3.00	95.79	6.00	92.79

Table 2
Soil Results - pH and Grain Size
2250 Speers Road, Oakville, ON
Acclaim Health, PGL File 5138-03.04

					Physical		
					% >75um	COARSE OR MED/FINE Textured	pH (Lab)
					%	-	pH_Units
RDL					1	-	0.1

Sample Location	Sample ID	Sample Depth (m bgs)	Sample Date	Analytical Report Reference Number			
SURFACE SOILS							
BH102M	BH102M-02	0.8-1.2	30-May-18	L2103936	7.1	FINE	-
BH103M	BH103M-03	1.2-1.5	30-May-18	L2103936	27.4	FINE	7.58
SUBSURFACE SOILS							
BH102M	BH102M-03	1.7-2	30-May-18	L2103936	2.3	FINE	7.76
BH103M	BH103M-04	1.5-1.9	30-May-18	L2103936	3.3	FINE	7.34
BH103M	BH103M-04_LabDup	1.5-1.9	-	L2103936	2.5	FINE	-

Table 3
Groundwater Elevations
2250 Speers Road, Oakville, ON
Acclaim Health, PGL File 5138-03.04

			03-May-18			05-Jun-18			02-Apr-19		
Location	Ground Elevation (m ald)	Riser Elevation (m ald)	Depth to Groundwater (m btor)	Depth to Groundwater (m bgs)	Groundwater Elevation (m rld)	Depth to Groundwater (m btor)	Depth to Groundwater (m bgs)	Groundwater Elevation (m rld)	Depth to Groundwater (m btor)	Depth to Groundwater (m bgs)	Groundwater Elevation (m rld)
Existing Wells											
MW1	98.64	98.60	1.59	1.63	97.01	1.87	1.91	96.73	1.652	1.69	96.95
MW2	98.73	98.63	dry @ 1.80	-	-	dry @ 1.80	-	-	1.726	1.83	96.91
Newly Installed Wells											
BH101M	98.61	98.52	-	-	-	1.71	1.80	96.81	1.568	1.66	96.95
BH102M	97.95	97.83	-	-	-	3.99	4.11	93.84	3.498	3.62	94.33
BH103M	98.79	98.61	-	-	-	4.41	4.59	94.20	3.56	3.74	95.05



Table 4
LNAPL/DNAPL Measurements
2250 Speers Road, Oakville, ON
Acclaim Health, PGL File 5138-03.04

Location	Thickness of LNAPL/DNAPL (mm)		
	03-May-18	04-Jun-18	02-Apr-19
MW1	ND	ND	ND
MW2	dry @ 1.80m	dry @ 1.80m	ND
BH101M	-	ND	ND
BH102M	-	ND	ND
BH103M	-	ND	ND

Table 5a
Soil Results - Petroleum Hydrocarbons
2250 Speers Road, Oakville, ON
Acclaim Health, PGL File 5138-03.04

	PHCs							
	Benzene	Toluene	Ethylbenzene	Xylene Total	F1-BTEX	F2 (C10-C16)	F3 (C16-C34)	F4 (C34-C50)
	µg/g	µg/g	µg/g	µg/g	µg/g	µg/g	µg/g	µg/g
RDL	0.0068	0.08	0.01	0.05	5	10	50	50
Table 7 RPI Medium/Fine Textured Soil Standards	0.17	6	15	25	65	150	1300	5600

Sample Location	Sample ID	Sample Date	Sample Analysis Date	Sample Elevation (m rld)	Sample Depth (m bgs)	Analytical Report Reference Number								
BH101M	BH101M-07	30-May-18	4-Jun-18	94.8 - 95.0	3.6-3.8	L2103936	<0.0068	<0.08	<0.018	<0.05	<5	<10	<50	<50
BH102M	BH102M-04	30-May-18	4-Jun-18	95.7 - 96.0	2-2.3	L2103936	<0.0068	<0.08	<0.018	<0.05	<5	<10	<50	<50
BH102M	Z001 (BH102M-04)	30-May-18	4-Jun-18	95.7 - 96.0	2-2.3	L2103936	<0.0068	<0.08	<0.018	<0.05	<5	<10	<50	<50
TRIP BLANK	TRIP BLANK	30-May-18	4-Jun-18	-	-	L2103936	<0.0068	<0.08	<0.018	<0.05	<5	-	-	-



Table 5b
Soil Results - Metals
2250 Speers Road, Oakville, ON
Acclaim Health, PGL File 5138-03.04

							Metals																	
							Antimony	Arsenic	Barium	Beryllium	Boron (B), Available	Cadmium	Chromium (Total)	Cobalt	Copper	Lead	Molybdenum	Nickel	Selenium	Silver	Thallium	Uranium	Vanadium	Zinc
							µg/g	µg/g	µg/g	µg/g	µg/g	µg/g	µg/g	µg/g	µg/g	µg/g	µg/g	µg/g	µg/g	µg/g	µg/g	µg/g	µg/g	µg/g
RDL							1	1	1	0.5	5	0.5	1	1	1	1	1	1	0.2	0.5	1	1	5	
Table 7 RPI Medium/Fine Textured Soil Standards							7.5	18	390	5	120	1.2	160	22	180	120	6.9	130	2.4	25	1	23	86	340

Sample Location	Sample ID	Sample Date	Sample Analysis Date	Sample Elevation (m rld)	Sample Depth (m bgs)	Analytical Report Reference Number																		
BH101M	BH101M-01	30-May-18	4-Jun-18	97.8 - 98.1	0.5-0.8	L2103936	<1	1.8	23.3	<0.5	<5	<0.5	5.7	2.4	9.2	3	<1	4.9	<1	<0.2	<0.5	<1	13	14.5
BH102M	BH102M-02	30-May-18	4-Jun-18	96.8 - 97.2	0.8-1.2	L2103936	<1	6	164	1.14	9.6	<0.5	25.2	15.4	14.2	15	1.5	25.3	<1	<0.2	<0.5	1.6	43.8	84.1
BH103M	BH103M-02	30-May-18	4-Jun-18	98.0 - 98.3	0.5-0.8	L2103936	<1	4.1	158	0.81	15.1	<0.5	40.1	10.5	13.8	11.3	1	26	<1	<0.2	<0.5	<1	34.2	67.1
BH103M	Z002 (BH103M-02)	30-May-18	4-Jun-18	98.0 - 98.3	0.5-0.8	L2103936	<1	5.9	107	0.72	11.8	<0.5	34.6	10.8	25.7	16.1	1.9	23.8	<1	<0.2	<0.5	<1	33.2	70

Table 6a
Groundwater Results - Petroleum Hydrocarbons
2250 Speers Road, Oakville, ON
Acclaim Health, PGL File 5138-03.04

						PHCs							
						Benzene	Toluene	Ethylbenzene	Xylene Total	F1-BTEX	F2 (C10-C16)	F3 (C16-C34)	F4 (C34-C50)
						µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L
RDL						0.5	0.5	0.5	0.5	25	100	250	250
Table 7 Groundwater Standards in Medium/Fine Textured Soil						0.5	320	54	72	420	150	500	500

Sample Location	Sample ID	Sample Date	Sample Analysis Date	Sample Elevation (m rld)	Analytical Report Reference Number								
MW1	MW1	3-May-18	7-May-18	95.28-96.78	L2088855	<0.5	<0.5	<0.5	<0.5	<25	<100	<250	<250
BH101M	BH101M	4-Jun-18	5-Jun-18	94.81-97.81	L2105466	<0.5	<0.5	<0.5	<0.5	<25	<100	<250	<250
BH101M	Z002 (BH101M)	4-Jun-18	5-Jun-18	94.81-97.81	L2105466	<0.5	<0.5	<0.5	<0.5	<25	<100	<250	<250
BH102M	BH102M	4-Jun-18	5-Jun-18	91.95-94.95	L2105466	<0.5	<0.5	<0.5	<0.5	<25	<100	<250	<250
BH103M	BH103M	4-Jun-18	5-Jun-18	92.79-95.79	L2105466	<0.5	<0.5	<0.5	<0.5	-	-	-	-
BH103M	Z001 (BH103M)	4-Jun-18	5-Jun-18	92.79-95.79	L2105466	<0.5	<0.5	<0.5	<0.5	-	-	-	-
FIELD BLANK	FIELD BLANK	4-Jun-18	5-Jun-18	-	L2105466	<0.5	<0.5	<0.5	<0.5	<25	-	-	-
TRIP BLANK	TRIP BLANK	4-Jun-18	5-Jun-18	-	L2105466	<0.5	<0.5	<0.5	<0.5	<25	-	-	-



Table 6b
Groundwater Results - Volatile Organic Compounds
2250 Speers Road, Oakville, ON
Acclaim Health, PGL File 5138-03.04

	VOC																							
	Acetone	Bromodichloromethane	Bromoform	Bromomethane	Carbon tetrachloride	Chlorobenzene	1,1-Dichloroethylene	Chloroform	Dibromochloromethane	1,2-Dichlorobenzene	1,3-Dichlorobenzene	1,4-Dichlorobenzene	1,1-Dichloroethane	1,2-Dichloroethane	Dichlorodifluoromethane	cis-1,2-Dichloroethylene	1,2-Dichloropropane	1,3-Dichloropropane	cis-1,3-Dichloropropene	trans-1,3-Dichloropropene	trans-1,2-Dichloroethylene	Ethylene Dibromide	Hexane	Methyl Ethyl Ketone
	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L
RDL	30	2	5	0.5	0.2	0.5	0.5	1	2	0.5	0.5	0.5	0.5	0.5	2	0.5	0.5	0.5	0.3	0.3	0.5	0.2	0.5	20
Table 7 Groundwater Standards in Medium/Fine Textured Soil	100000	67000	5	0.89	0.2	140	0.5	2	65000	150	7600	0.5	11	0.5	3500	1.6	0.58	0.5	~	~	1.6	0.2	5	21000

Sample Location	Sample ID	Sample Date	Sample Analysis Date	Sample Elevation (m rld)	Analytical Report Reference Number																												
MW1	MW1	3-May-18	4-May-18	95.28-96.78	L2088855	<30	<2	<5	<0.5	<0.2	<0.5	<0.5	<1	<2	<0.5	<0.5	<0.5	<0.5	<0.5	<2	<0.5	<0.5	<0.5	<0.3	<0.3	<0.5	<0.2	<0.5	<20				
BH101M	BH101M	4-Jun-18	5-Jun-18	94.81-97.81	L2105466	<30	<2	<5	<0.5	<0.2	<0.5	<0.5	<1	<2	<0.5	<0.5	<0.5	<0.5	<0.5	<2	<0.5	<0.5	<0.5	<0.3	<0.3	<0.5	<0.2	<0.5	<20				
BH102M	BH102M	4-Jun-18	5-Jun-18	91.95-94.95	L2105466	<30	<2	<5	<0.5	<0.2	<0.5	<0.5	<1	<2	<0.5	<0.5	<0.5	<0.5	<0.5	<2	<0.5	<0.5	<0.5	<0.3	<0.3	<0.5	<0.2	<0.5	<20				
BH103M	BH103M	4-Jun-18	5-Jun-18	92.79-95.79	L2105466	<30	<2	<5	<0.5	<0.2	<0.5	<0.5	<1	<2	<0.5	<0.5	<0.5	<0.5	<0.5	<2	<0.5	<0.5	<0.5	<0.3	<0.3	<0.5	<0.2	<0.5	<20				
BH103M	Z001 (BH103M)	4-Jun-18	5-Jun-18	92.79-95.79	L2105466	<30	<2	<5	<0.5	<0.2	<0.5	<0.5	<1	<2	<0.5	<0.5	<0.5	<0.5	<0.5	<2	<0.5	<0.5	<0.5	<0.3	<0.3	<0.5	<0.2	<0.5	<20				
FIELD BLANK	FIELD BLANK	4-Jun-18	5-Jun-18	-	L2105466	<30	<2	<5	<0.5	<0.2	<0.5	<0.5	<1	<2	<0.5	<0.5	<0.5	<0.5	<0.5	<2	<0.5	<0.5	<0.5	<0.3	<0.3	<0.5	<0.2	<0.5	<20				
TRIP BLANK	TRIP BLANK	4-Jun-18	5-Jun-18	-	L2105466	<30	<2	<5	<0.5	<0.2	<0.5	<0.5	<1	<2	<0.5	<0.5	<0.5	<0.5	<0.5	<2	<0.5	<0.5	<0.5	<0.3	<0.3	<0.5	<0.2	<0.5	<20				

Table 6b
Groundwater Results - Volatile Organic Compounds
2250 Speers Road, Oakville, ON
Acclaim Health, PGL File 5138-03.04

	VOC											
	Methyl Isobutyl Ketone	Methyl tert-butyl ether	Methylene Chloride	1,1,1,2-Tetrachloroethane	1,1,2,2-Tetrachloroethane	Styrene	1,1,1-Trichloroethane	1,1,2-Trichloroethane	Tetrachloroethylene	Trichloroethylene	Trichlorofluoromethane	Vinyl Chloride
	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L
RDL	20	2	5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	5	0.5
Table 7 Groundwater Standards in Medium/Fine Textured Soil	5200	15	26	1.1	0.5	43	23	0.5	0.5	0.5	2000	0.5

Sample Location	Sample ID	Sample Date	Sample Analysis Date	Sample Elevation (m rld)	Analytical Report Reference Number											
MW1	MW1	3-May-18	4-May-18	95.28-96.78	L2088855	<20	<2	<5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<5	<0.5
BH101M	BH101M	4-Jun-18	5-Jun-18	94.81-97.81	L2105466	<20	<2	<5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<5	<0.5
BH102M	BH102M	4-Jun-18	5-Jun-18	91.95-94.95	L2105466	<20	<2	<5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<5	<0.5
BH103M	BH103M	4-Jun-18	5-Jun-18	92.79-95.79	L2105466	<20	<2	<5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<5	<0.5
BH103M	Z001 (BH103M)	4-Jun-18	5-Jun-18	92.79-95.79	L2105466	<20	<2	<5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<5	<0.5
FIELD BLANK	FIELD BLANK	4-Jun-18	5-Jun-18	-	L2105466	<20	<2	<5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<5	<0.5
TRIP BLANK	TRIP BLANK	4-Jun-18	5-Jun-18	-	L2105466	<20	<2	<5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<5	<0.5



Table 6c
Groundwater Results - Metals
2250 Speers Road, Oakville, ON
Acclaim Health, PGL File 5138-03.04

						Metals																		
						Antimony (Filtered)	Arsenic (Filtered)	Barium (Filtered)	Beryllium (Filtered)	Boron (B), Available (Filtered)	Cadmium (Filtered)	Chromium (hexavalent)	Chromium (Filtered)	Cobalt (Filtered)	Copper (Filtered)	Lead (Filtered)	Molybdenum (Filtered)	Nickel (Filtered)	Selenium (Filtered)	Silver (Filtered)	Thallium (Filtered)	Uranium (Filtered)	Vanadium (Filtered)	Zinc (Filtered)
						µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L
RDL						1	1	1	1	100	0.05	1	5	1	2	0.5	0.5	5	0.5	0.5	0.1	0.1	5	10
Table 7 Groundwater Standards in Medium/Fine Textured Soil						16000	1500	23000	53	36000	2.1	110	640	52	69	20	7300	390	50	1.2	400	330	200	890

Sample Location	Sample ID	Sample Date	Sample Analysis Date	Sample Elevation (m rld)	Analytical Report Reference Number																			
BH101M	BH101M	4-Jun-18	5-Jun-18	94.81-97.81	L2105466	<1	<1	454	<1	<100	1.32	-	<5	<1	5.7	0.57	4.12	<5	<0.5	<0.5	0.19	3.01	<5	80
BH103M	BH103M	4-Jun-18	5-Jun-18	92.79-95.79	L2105466	<1	<1	143	<1	410	<0.05	<1	<5	<1	<2	<0.5	3.4	<5	<0.5	<0.5	<0.1	8.16	<5	<10
BH103M	Z001 (BH103M)	4-Jun-18	5-Jun-18	92.79-95.79	L2105466	<1	<1	148	<1	410	<0.05	<1	<5	<1	<2	<0.5	3.21	<5	<0.5	<0.5	<0.1	7.87	<5	<10



Table 7a
Maximum Concentrations - Soil Results
2250 Speers Road, Oakville, ON
Acclaim Health, PGL File 5138-03.04

Sample Location	BH101M	BH101M	BH102M	BH102M	BH102M	BH102M	BH103M	BH103M	BH103M	BH103M	TRIP BLANK
Sample ID	BH101M-01	BH101M-07	BH102M-02	BH102M-03	BH102M-04	Z001 (BH102M-04)	BH103M-02	Z002 (BH103M-02)	BH103M-03	BH103M-04	TRIP BLANK
Sample Date	2018-05-30	2018-05-30	2018-05-30	2018-05-30	2018-05-30	2018-05-30	2018-05-30	2018-05-30	2018-05-30	2018-05-30	2018-05-30
Sample Elevation	97.8 - 98.1	94.8 - 95.0	96.8 - 97.2	96.0 - 96.3	95.7 - 96.0	95.7 - 96.0	92.8 - 95.8	98.0 - 98.3	97.3 - 97.6	96.9 - 97.3	-
Analytical Report Reference No.	L2103936	L2103936	L2103936	L2103936	L2103936	L2103936	L2103936	L2103936	L2103936	L2103936	L2103936

Parameter			Maximum Concentration											
PHCs	Benzene	µg/g	<0.0068	-	<0.0068	-	-	<0.0068	<0.0068	-	-	-	-	<0.0068
	Toluene	µg/g	<0.08	-	<0.08	-	-	<0.08	<0.08	-	-	-	-	<0.08
	Ethylbenzene	µg/g	<0.018	-	<0.018	-	-	<0.018	<0.018	-	-	-	-	<0.018
	Xylene Total	µg/g	<0.05	-	<0.05	-	-	<0.05	<0.05	-	-	-	-	<0.05
	F1 -BTEX	µg/g	<5	-	<5	-	-	<5	<5	-	-	-	-	<5
	F2 (C10-C16)	µg/g	<10	-	<10	-	-	<10	<10	-	-	-	-	-
	F3 (C16-C34)	µg/g	<50	-	<50	-	-	<50	<50	-	-	-	-	-
	F4 (C34-C50)	µg/g	<50	-	<50	-	-	<50	<50	-	-	-	-	-
Physical	% >75µm	%	27.4	-	-	7.1	2.3	-	-	-	-	27.4	3.3	-
	pH (Lab)	pH Units	7.76	-	-	-	7.76	-	-	-	-	7.58	7.34	-
	Moisture	%	19.9	8.37	11.9	19.9	12.5	7.99	-	17.6	-	13.6	15.1	<0.1
Metals	Antimony	µg/g	<1	<1	-	<1	-	-	-	<1	<1	-	-	-
	Arsenic	µg/g	6	1.8	-	6	-	-	-	4.1	5.9	-	-	-
	Barium	µg/g	164	23.3	-	164	-	-	-	158	107	-	-	-
	Beryllium	µg/g	1.14	<0.5	-	1.14	-	-	-	0.81	0.72	-	-	-
	Boron (B), Available	µg/g	15.1	<5	-	9.6	-	-	-	15.1	11.8	-	-	-
	Cadmium	µg/g	<0.5	<0.5	-	<0.5	-	-	-	<0.5	<0.5	-	-	-
	Chromium	µg/g	40.1	5.7	-	25.2	-	-	-	40.1	34.6	-	-	-
	Cobalt	µg/g	15.4	2.4	-	15.4	-	-	-	10.5	10.8	-	-	-
	Copper	µg/g	25.7	9.2	-	14.2	-	-	-	13.8	25.7	-	-	-
	Lead	µg/g	16.1	3	-	15	-	-	-	11.3	16.1	-	-	-
	Molybdenum	µg/g	1.9	<1	-	1.5	-	-	-	1	1.9	-	-	-
	Nickel	µg/g	26	4.9	-	25.3	-	-	-	26	23.8	-	-	-
	Selenium	µg/g	<1	<1	-	<1	-	-	-	<1	<1	-	-	-
	Silver	µg/g	<0.2	<0.2	-	<0.2	-	-	-	<0.2	<0.2	-	-	-
	Thallium	µg/g	<0.5	<0.5	-	<0.5	-	-	-	<0.5	<0.5	-	-	-
	Uranium	µg/g	1.6	<1	-	1.6	-	-	-	<1	<1	-	-	-
	Vanadium	µg/g	43.8	13	-	43.8	-	-	-	34.2	33.2	-	-	-
	Zinc	µg/g	84.1	14.5	-	84.1	-	-	-	67.1	70	-	-	-

Table 7b
Maximum Concentrations - Groundwater Results
2250 Speers Road, Oakville, ON
Acclaim Health, PGL File 5138-03.02

Sample Location	MW1	BH101M	BH101M	BH102M	BH103M	BH103M	FIELD BLANK	TRIP BLANK
Sample ID	MW1	BH101M	Z002 (BH101M)	BH102M	BH103M	Z001 (BH103M)	FIELD BLANK	TRIP BLANK
Sample Date	2018-05-03	2018-06-04	2018-06-04	2018-06-04	2018-06-04	2018-06-04	2018-06-04	2018-06-04
Sample Elevation (m rld)	95.28-96.78	94.81-97.81	94.81-97.81	91.95-94.95	92.79-95.79	92.79-95.79	-	-
Analytical Report Reference No.	L2088855	L2105466	L2105466	L2105466	L2105466	L2105466	L2105466	L2105466

Parameter		Units	RD L	Maximum Concentration								
PHCs	Benzene	µg/L	0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5
	Toluene	µg/L	0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5
	Ethylbenzene	µg/L	0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5
	Xylene Total	µg/L	0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5
	F1 -BT EX	µg/L	25	<25	<25	<25	<25	-	-	<25	<25	<25
	F2 (C10-C16)	µg/L	100	<100	<100	<100	<100	-	-	-	-	-
	F3 (C16-C34)	µg/L	250	<250	<250	<250	<250	-	-	-	-	-
	F4 (C34-C50)	µg/L	250	<250	<250	<250	<250	-	-	-	-	-
Metals	Antimony (Filtered)	µg/L	1	<1	-	<1	-	-	<1	-	-	-
	Arsenic (Filtered)	µg/L	1	<1	-	<1	-	-	<1	-	-	-
	Barium (Filtered)	µg/L	1	454	-	454	-	-	143	-	-	-
	Beryllium (Filtered)	µg/L	1	<1	-	<1	-	-	<1	-	-	-
	Boron (B), Available (Filtered)	µg/L	100	410	-	<100	-	-	410	-	-	-
	Cadmium (Filtered)	µg/L	0.05	1.32	-	1.32	-	-	<0.05	-	-	-
	Chromium (hexavalent)	µg/L	1	<1	-	-	-	-	<1	-	-	-
	Chromium (Filtered)	µg/L	5	<5	-	<5	-	-	<5	-	-	-
	Cobalt (Filtered)	µg/L	1	<1	-	<1	-	-	<1	-	-	-
	Copper (Filtered)	µg/L	2	5.7	-	5.7	-	-	<2	-	-	-
	Lead (Filtered)	µg/L	0.5	0.57	-	0.57	-	-	<0.5	-	-	-
	Molybdenum (Filtered)	µg/L	0.5	4.12	-	4.12	-	-	3.4	-	-	-
	Nickel (Filtered)	µg/L	5	<5	-	<5	-	-	<5	-	-	-
	Selenium (Filtered)	µg/L	0.5	<0.5	-	<0.5	-	-	<0.5	-	-	-
	Silver (Filtered)	µg/L	0.5	<0.5	-	<0.5	-	-	<0.5	-	-	-
	Sodium (Filtered)	µg/L	500	3,040,000	-	3,040,000	-	-	263,000	-	-	-
	Thallium (Filtered)	µg/L	0.1	0.19	-	0.19	-	-	<0.1	-	-	-
	Uranium (Filtered)	µg/L	0.1	8.16	-	3.01	-	-	8.16	-	-	-
	Vanadium (Filtered)	µg/L	5	<5	-	<5	-	-	<5	-	-	-
	Zinc (Filtered)	µg/L	10	80	-	80	-	-	<10	-	-	-

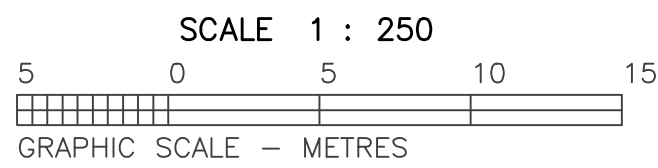
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Sample Date	2018-05-03	2018-06-04	2018-06-04	2018-06-04	2018-06-04	2018-06-04	2018-06-04	2018-06-04
Sample Elevation (m rld)	95.28-96.78	94.81-97.81	94.81-97.81	91.95-94.95	92.79-95.79	92.79-95.79	-	-
Analytical Report Reference No.	L2088855	L2105466	L2105466	L2105466	L2105466	L2105466	L2105466	L2105466

Parameter		Units	RDL	Maximum Concentration								
VOC	Acetone	µg/L	30	<30	<30	<30	-	<30	<30	<30	<30	<30
	Bromodichloromethane	µg/L	2	<2	<2	<2	-	<2	<2	<2	<2	<2
	Bromoform	µg/L	5	<5	<5	<5	-	<5	<5	<5	<5	<5
	Bromomethane	µg/L	0.5	<0.5	<0.5	<0.5	-	<0.5	<0.5	<0.5	<0.5	<0.5
	Carbon tetrachloride	µg/L	0.2	<0.2	<0.2	<0.2	-	<0.2	<0.2	<0.2	<0.2	<0.2
	Chlorobenzene	µg/L	0.5	<0.5	<0.5	<0.5	-	<0.5	<0.5	<0.5	<0.5	<0.5
	1,1-Dichloroethylene	µg/L	0.5	<0.5	<0.5	<0.5	-	<0.5	<0.5	<0.5	<0.5	<0.5
	Chloroform	µg/L	1	<1	<1	<1	-	<1	<1	<1	<1	<1
	Dibromochloromethane	µg/L	2	<2	<2	<2	-	<2	<2	<2	<2	<2
	1,2-Dichlorobenzene	µg/L	0.5	<0.5	<0.5	<0.5	-	<0.5	<0.5	<0.5	<0.5	<0.5
	1,3-Dichlorobenzene	µg/L	0.5	<0.5	<0.5	<0.5	-	<0.5	<0.5	<0.5	<0.5	<0.5
	1,4-Dichlorobenzene	µg/L	0.5	<0.5	<0.5	<0.5	-	<0.5	<0.5	<0.5	<0.5	<0.5
	1,1-Dichloroethane	µg/L	0.5	<0.5	<0.5	<0.5	-	<0.5	<0.5	<0.5	<0.5	<0.5
	1,2-Dichloroethane	µg/L	0.5	<0.5	<0.5	<0.5	-	<0.5	<0.5	<0.5	<0.5	<0.5
	Dichlorodifluoromethane	µg/L	2	<2	<2	<2	-	<2	<2	<2	<2	<2
	cis-1,2-Dichloroethylene	µg/L	0.5	<0.5	<0.5	<0.5	-	<0.5	<0.5	<0.5	<0.5	<0.5
	1,2-Dichloropropane	µg/L	0.5	<0.5	<0.5	<0.5	-	<0.5	<0.5	<0.5	<0.5	<0.5
	1,3-Dichloropropene	µg/L	0.5	<0.5	<0.5	<0.5	-	<0.5	<0.5	<0.5	<0.5	<0.5
	cis-1,3-Dichloropropene	µg/L	0.3	<0.3	<0.3	<0.3	-	<0.3	<0.3	<0.3	<0.3	<0.3
	trans-1,3-Dichloropropene	µg/L	0.3	<0.3	<0.3	<0.3	-	<0.3	<0.3	<0.3	<0.3	<0.3
	trans-1,2-Dichloroethylene	µg/L	0.5	<0.5	<0.5	<0.5	-	<0.5	<0.5	<0.5	<0.5	<0.5
	Ethylene Dibromide	µg/L	0.2	<0.2	<0.2	<0.2	-	<0.2	<0.2	<0.2	<0.2	<0.2
	Hexane	µg/L	0.5	<0.5	<0.5	<0.5	-	<0.5	<0.5	<0.5	<0.5	<0.5
	Methyl Ethyl Ketone	µg/L	20	<20	<20	<20	-	<20	<20	<20	<20	<20
	Methyl Isobutyl Ketone	µg/L	20	<20	<20	<20	-	<20	<20	<20	<20	<20
	Methyl tert-butyl ether	µg/L	2	<2	<2	<2	-	<2	<2	<2	<2	<2
	Methylene Chloride	µg/L	5	<5	<5	<5	-	<5	<5	<5	<5	<5
	1,1,1,2-Tetrachloroethane	µg/L	0.5	<0.5	<0.5	<0.5	-	<0.5	<0.5	<0.5	<0.5	<0.5
	1,1,2,2-Tetrachloroethane	µg/L	0.5	<0.5	<0.5	<0.5	-	<0.5	<0.5	<0.5	<0.5	<0.5
	Styrene	µg/L	0.5	<0.5	<0.5	<0.5	-	<0.5	<0.5	<0.5	<0.5	<0.5
	1,1,1-Trichloroethane	µg/L	0.5	<0.5	<0.5	<0.5	-	<0.5	<0.5	<0.5	<0.5	<0.5
	1,1,2-Trichloroethane	µg/L	0.5	<0.5	<0.5	<0.5	-	<0.5	<0.5	<0.5	<0.5	<0.5
	Tetrachloroethylene	µg/L	0.5	<0.5	<0.5	<0.5	-	<0.5	<0.5	<0.5	<0.5	<0.5
	Trichloroethylene	µg/L	0.5	<0.5	<0.5	<0.5	-	<0.5	<0.5	<0.5	<0.5	<0.5
	Trichlorofluoromethane	µg/L	5	<5	<5	<5	-	<5	<5	<5	<5	<5
	Vinyl Chloride	µg/L	0.5	<0.5	<0.5	<0.5	-	<0.5	<0.5	<0.5	<0.5	<0.5

Appendix A
Survey of Phase Two Property

SURVEYOR'S REAL PROPERTY REPORT – PLAN OF
PART OF LOT 28
CONCESSION 3 SOUTH OF DUNDAS STREET
(GEOGRAPHIC TOWNSHIP OF TRAFALGAR)
TOWN OF OAKVILLE
REGIONAL MUNICIPALITY OF HALTON



PART 2 – SURVEY REPORT

1. MONUMENTATION:

IN ACCORDANCE WITH THE ONTARIO REGULATION N° 525/91 UNDER THE SURVEYORS ACT.

2. COMPARISONS:

SOME DISCREPANCIES BETWEEN FIELD MEASUREMENTS AND THOSE DEPICTED ON PREVIOUS PLANS. COMPARISONS ON FACE OF THE PLAN.

3. FENCES:

AS INDICATED ON FACE OF THE PLAN.

4. EASEMENTS/RIGHTS-OF-WAY:

SUBJECT TO BELL CANADA EASEMENT OVER THE REAR 3.05m AS SET OUT IN INSTRUMENT N° 253159.
SUBJECT TO THE CORPORATION OF THE TOWN OF OAKVILLE EASEMENT OVER THE REAR 15.24m AS SET OUT IN INSTRUMENT N° 354040E.

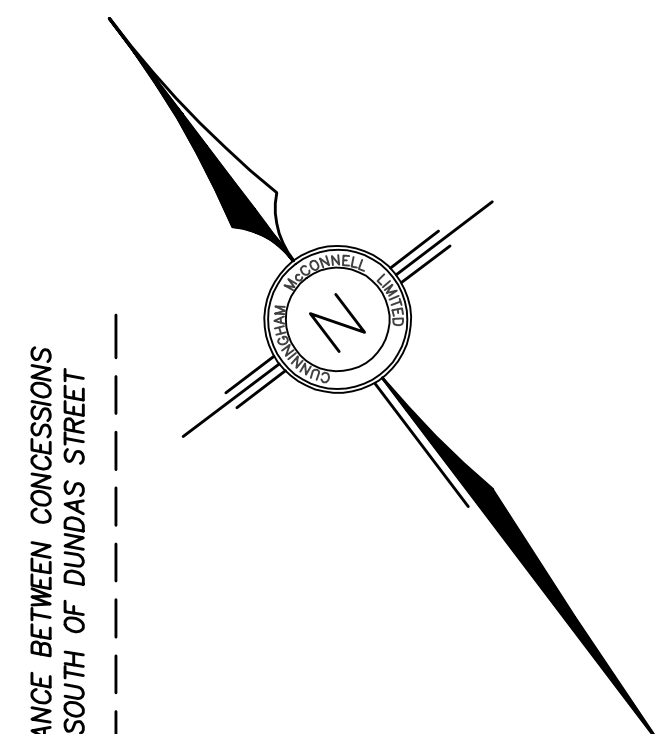
5. NOTABLE FEATURES:

ASIDE FROM FENCING, THE FOLLOWING ITEMS MAY CONSTITUTE AN ENCROACHMENT:

- (E1) THERE IS AN OVER HEAD WIRE RUNNING BETWEEN THE BUILDING ON THE SUBJECT LANDS AND THE BUILDING ADJOINING TO THE NORTHEAST (N° 2240)
(E2) BASED ON THE HYDRO CABLE LOCATES MARKINGS, THE SUBJECT BUILDING IS HYDRO SERVED FROM THE HYDRO TRANSFORMER ON THE ADJOINING LANDS.
(E3) PART OF THE SIGN ON THE SUBJECT LANDS IS WITHIN THE LIMITS OF THE PUBLIC ROAD KNOWN AS SPEERS ROAD.
(E4) PART OF THE CONCRETE CURB ALONG THE SOUTHWEST LIMIT OF THE SUBJECT LANDS IS PARTLY WITHIN THE LIMITS OF THE ADJOINING LANDS (N° 2260).
(E4) PART OF ASPHALT DRIVEWAY ASSOCIATED WITH THE LANDS ADJOINING TO THE NORTHEAST IS PARTLY WITHIN THE LIMITS OF THE SUBJECT LANDS.
(E5) PART OF THE STEEL STAIRS ON THE SUBJECT LANDS ARE PARTLY WITHIN THE LIMITS OF THE LANDS ADJOINING TO THE NORTHEAST (N° 2240).

6. ZONING:

TO BE DETERMINED BY THE ZONING DEPARTMENT OF THE TOWN OF OAKVILLE.



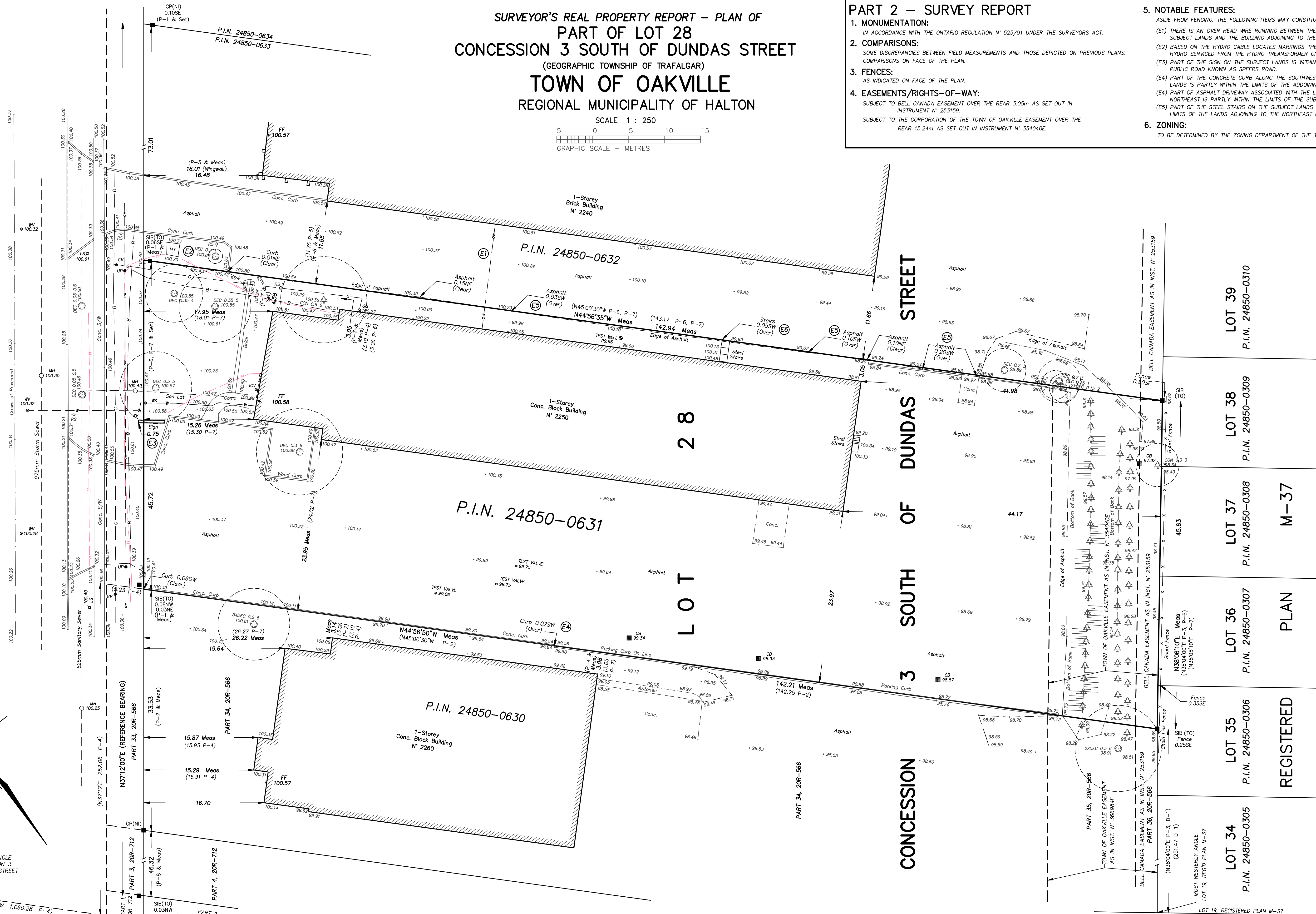
ROAD ALLOWANCE BETWEEN CONCESSIONS
2 AND 3 SOUTH OF DUNDAS STREET

SPEERS ROAD

(EXPROPRIATED BY BY-LAW N° 737)

(DEDICATED AS A PUBLIC ROAD BY BY-LAW N° 1963-42)

P.I.N. 24849-0002



Appendix B
Sampling and Analysis Plan

**2250 Speers Road
Oakville, ON**

Sampling & Analysis Plan

PREPARED FOR:

Acclaim Health
2370 Speers Road
Oakville, ON L6L 5M2

PREPARED BY:

PGL Environmental Consultants
250 Water Street, Suite 102
Whitby, ON L1N 0G5

PGL File: 5138-03.04

April 2019



solve and simplify

Table of Contents

1.0	Introduction.....	1
2.0	Objectives.....	1
3.0	Work Program.....	1
3.1	General Considerations.....	2
4.0	Quality Control.....	2
5.0	Sampling Methods.....	2
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7.1	Verification and Validation Methods	4

List of Acronyms

APEC	-	area of potential environmental concern
BH##	-	borehole
BH##M	-	monitoring well
COPC	-	contaminants of potential concern
ESA	-	Environmental Site Assessment
MW##	-	monitoring well
OVM	-	organic vapour meter
PCA	-	potentially contaminating activity
PGL	-	PGL Environmental Consultants
PHCs	-	petroleum hydrocarbons
RDL	-	reportable detection limit
RPD	-	relative percent difference
VOCs	-	volatile organic compounds

1.0 INTRODUCTION

This document is a Sampling and Analysis Plan for the Phase Two Environmental Site Assessment (ESA) work proposed for 2250 Speers Road in Oakville, Ontario (the Site).

This plan has been prepared to fulfill requirements of Ontario Regulation 153/04. The plan includes the proposed work and rationale, a quality assurance and quality control program, data quality objectives, standard operating procedures, and a description of physical constraints that limit the ability to conduct sampling and analysis at the Site.

2.0 OBJECTIVES

The specific objective of the work program is to further investigate the risks from the potentially contaminating activities (PCAs) identified by the Phase One ESA¹ and to delineate known areas of impact at the Site.

The overall objective of the work is to collect sufficient data to support filing a Record of Site Condition for the Site.

3.0 WORK PROGRAM

To meet the objectives noted above, the work will generally consist of the following:

Sample Location	Rationale	Stratigraphic Unit	Soil COPC	Groundwater COPC	APEC
MW1 and MW2 (existing wells)	To investigate groundwater in the vicinity of the former tank nest.	unknown	NA	PHC, VOC	2
BH101M	To investigate the soil and groundwater quality within the former tank nest and along northwestern portion of the Site	Fill, Bedrock	BTEX, PHC, Metals	PHC, VOC, metals	1a, 1b, 2, 5
BH102M	To investigate the soil and groundwater quality along the southwestern property line.	Fill, Bedrock	BTEX, PHC, Metals	PHC, VOC	1a, 1b, 5
BH103M	To investigate the soil and groundwater quality along the northeastern property line.	Fill, Bedrock	Metals	VOC, metals	1a, 1b, 3, 4

Notes: COPC – contaminant of potential concern
BTEX – benzene, toluene, ethylbenzene, xylenes
VOC – volatile organic compounds

APEC – area of potential environmental concern
PHC – petroleum hydrocarbons

¹ Phase One Environmental Site Assessment, 2250 Speers Road, Oakville, ON. PGL Environmental Consultants. April 2019

3.1 General Considerations

Considerations regarding the investigation's design (i.e., soil sample locations and the type and frequency of analysis) are based on the objectives and field observations. The following are general parameters to be used in the design of the fieldwork:

- The media to be sampled is soil and groundwater;
- Soil samples will be selected for analysis based on field findings (i.e., visual/olfactory observations);
- Soil sampling is conducted for the full depth of the borehole. A minimum of one sample is collected for screening from every 0.61m (2ft) vertical interval. The number of samples analyzed is defined to meet the project objectives;
- Groundwater sampling will be conducted from existing and new monitoring wells at least once. Additional sampling may be conducted as required based on results and objectives. Sample analyses will be selected based on the assessment location to meet the project objectives; and
- A water level will be obtained from each monitoring well prior to purging/sampling.

4.0 QUALITY CONTROL

PGL will conduct the following quality control sampling:

- All non-dedicated sampling and monitoring equipment will be cleaned following each use; and
- One duplicate sample will be collected for every 10 samples of soil or groundwater.

The laboratory will complete additional quality control testing (i.e., duplicates and method spikes) as required by its certification.

PGL will review analytical data for issues with quality control and data reproducibility. If unacceptable variance in the data is found, PGL will resample if possible and if required.

5.0 SAMPLING METHODS

Samples will be collected using methods and equipment noted in PGL's Standard Field Procedures. The Standard Field Procedures describe PGL's methodology for completing investigative tasks in the field and include the following items:

- 1) General
 - Field Note Taking
 - Sample Handling, Collection and Storage
 - Chain of Custody Completion
 - Equipment Maintenance and Calibration
- 2) Borehole Drilling and Soil Sampling
 - Drilling
 - Soil Sampling and Field Screening
 - Soil Classification
 - Borehole Logging
 - Monitoring Well Installation

Soil samples are to be logged and screened with a photoionization detector. Soil samples for analytical submission are to be jarred in laboratory-supplied containers as soon as possible, labelled and kept cold until transported to the laboratory.

3) Groundwater Monitoring and Sampling

- Water level monitoring
- Measuring non-aqueous phase liquid
- Groundwater sampling
- PGL well sampling form

Groundwater samples will be collected following purging of the well and confirming representative groundwater. Groundwater samples will be collected by dedicated inertial pump or dedicated bailers into laboratory-supplied bottles, labelled and kept cold until transported to the laboratory.

PGL's Standard Field Procedures are available for review upon request.

5.1 Sample Handling and Custody

Sample handling will be conducted according to PGL's *Sample Handling, Collection and Storage Standard Field Procedure*. In general, PGL will collect the samples in laboratory-supplied sample containers, containing preservatives as required. Soil samples will be stored on ice or in a refrigerator until transported to the laboratory, and will be kept cool during transportation using ice or freezer packs.

Samples will be labelled with the sample number, sample date, PGL project number, and other information as required by the laboratory. PGL will complete a laboratory-specific Chain of Custody as per PGL's *Chain of Custody Completion Standard Field Procedure* and laboratory requirements.

Sample shipment to the laboratory will be arranged by PGL as required. PGL will keep a copy of the Chain of Custody for verification of sample receipt by the laboratory.

6.0 INSTRUMENTATION

6.1 Instrument/Equipment Testing, Inspection and Maintenance

Instruments used include a pH meter, conductivity meter, interface probe, and organic vapour meter (OVM) equipped for hydrocarbon and chlorinated solvent detection. The OVM will be calibrated prior to commencing each day of fieldwork. Instruments used for the monitoring of groundwater will be inspected and maintained according to PGL's Equipment Maintenance and Calibration Standard Field Procedure. In general, the equipment will be examined for defects and cleaned daily prior to use. Defects will be recorded on PGL's Equipment Calibration/Maintenance Form and addressed before the start of fieldwork. The water level meter will be cleaned with soapy water after each use to prevent cross-contamination between monitoring wells.

6.2 Instrument/Equipment Calibration and Frequency

For this work program, the pH meter, conductivity meter, and OVM will be calibrated prior to sampling on the day of use. The calibration activity will be recorded on PGL's Equipment Calibration/Maintenance Form. Works for this task will occur in accordance with PGL's *Equipment Maintenance and Calibration Standard Field Procedure*.

7.0 QUALITY ASSURANCE

7.1 Verification and Validation Methods

The data handled by PGL will be verified by a manual check of data received and lab request. Verification and validation of laboratory analysis will be completed by calculating the relative percent difference (RPD) for parent/duplicate samples. PGL will also review the analysis of blanks, laboratory-completed duplicates, and matrix spikes and verify that these are within the laboratory-specified range.

RPDs will be calculated as follows:

$$\Delta\% = \frac{|S - D|}{\frac{1}{2}(S + D)} \times 100\%$$

Where: $\Delta\%$ = relative percent difference (RPD)
 S = sample value
 D = duplicate or replicate value

Notes:

- RPD is calculated only for result pairs with concentrations greater than 5x the reported detection limit in both samples.
- RPDs are not calculated when results are below the reported detection limits in one or both samples.

The acceptable guideline limits for various analysis groups are noted below.

Parameter Category	Expected Analytical RPD at concentrations exceeding 5x the RDL	Maximum Field Duplicates RPD at concentrations exceeding 5x the RDL
Organics in solids		
- Polycyclic aromatic hydrocarbons (PAH)	40%	60%
- 1,4-Dioxane	50%	75%
- Volatile organics	50%	75%
- Petroleum hydrocarbons (PHC)	30%	45%
- Most others*	40%	60%
Organics in water ^(a)	30%	45%
Metals in solids	30%	45%
- cyanide	35%	52.5%
- chrome (VI)	35%	52.5%
- methyl mercury	40%	60%
- HWS boron	40%	60%

Parameter Category	Expected Analytical RPD at concentrations exceeding 5x the RDL	Maximum Field Duplicates RPD at concentrations exceeding 5x the RDL
Metals in water ^(b)	20%	30%
General inorganics in solids	20%	30%
- EC	10%	15%
- FOC, chloride	35%	52.5%
- pH	0.3 pH units	0.45 pH units
General inorganics in water	20%	30%
- methyl mercury	30%	45%
Vapour	25%	37.5%

(a) Derivatized acid extractables, like chlorophenols, and pesticides will tend to be higher

(b) Metals with known high variability are: Ag, Al, Ba, Hg, K, Mo, Pb, Sn, Sr, and Ti

Where the RPD data quality objective is exceeded, we will investigate to assess whether the cause can be determined. We will also assess whether the RPD exceedance is material to the use of the data and if it affects all data in that category.

Where laboratory quality-control results indicate issues with data quality, PGL will evaluate the effect of this information and report on our findings.

Appendix C
Finalized Field Logs

CLIENT: Acclaim Health

PROJECT: 2250 Speers Road, Oakville, ON

WELL RECORD

PGL PROJECT NO: 5138-03.02

SURFACE ELEVATION: n/a

WELL NO:

BH101M

DEPTH (m)	SOIL TYPE	SOIL DESCRIPTION	SAMPLE TYPE	LABORATORY ANALYSES	PID READING (ppmv) ● VAPOUR READING (ppmv) ■	WATER LEVEL	WELL COMPLETION	COMPLETION NOTES	ELEVATION (m)
0.2	ASPHALT							Cement, J-plug	
0.4	SAND (FILL)	fine grained, brown, moist						Bentonite	
0.6			BH101M-01:	Metals	<25			Silica Sand	
0.8									
1.0									
1.2		wet below 1.2m	BH101M-02:		<25				
1.4									
1.6	GRAVEL (FILL)	grey and brown, wet	BH101M-03:		<25				
1.8									
2.0			BH101M-04:		<25				
2.2								010 50mm PVC Screen	
2.4									
2.6			BH101M-05:		<25				
2.8									
3.0									
3.2			BH101M-06:		<25				
3.4									
3.6	BEDROCK	red, wet	BH101M-07:	BTEX PHC	<25				
3.8		End of borehole at 3.80 m							

Screened interval from 0.8 m to 3.8 m below surface.
GW 1.71 mbgs
(6/4/2015)

INVESTIG. METHOD: Geoprobe 7822 DT

INVESTIG. DATE: May 30, 2018

LOGGED BY: EAF HOLE DIAM (mm): 250

Sample Notes  Macro Core Sampler

CLIENT: Acclaim Health

PROJECT: 2250 Speers Road, Oakville, ON

WELL RECORD

PGL PROJECT NO: 5138-03.02

SURFACE ELEVATION: n/a

WELL NO:

BH102M

DEPTH (m)	SOIL TYPE	SOIL DESCRIPTION	SAMPLE TYPE	LABORATORY ANALYSES	● PID READING (ppmv) ● ■ VAPOUR READING (ppmv) ■	WATER LEVEL	WELL COMPLETION	COMPLETION NOTES	ELEVATION (m)
0.2	ASPHALT							Cement, J-plug	
0.4	SAND AND GRAVEL (FILL)	brown, moist	BH102M-01	Grain Size	<25	4			
0.6	Sandy SILT (FILL)	with clay, brown, moist							
0.8									
1.0			BH102M-02	Grain Size	<25	1			
1.2				Metals					
1.4								Bentonite	
1.6									
1.8	Sandy SILT	with clay, brown, moist	BH102M-03	Grain Size	<25	1			
2.0				pH					
2.2	BEDROCK	red, dry	BH102M-04 (Z001)	BTEX	<25	1			
2.4				PHC					
2.6									
2.8								Silica Sand	
3.0									
3.2									
3.4									
3.6									
3.8									
4.0									
4.2									
4.4									
4.6								010 50mm PVC Screen	
4.8									
5.0									
5.2									
5.4									
5.6									
5.8									
6.0									
End of borehole at 6.00 m									
Screened interval from 3 m to 6 m below surface. GW 3.99 mbgs (6/4/2015)									
INVESTIG. METHOD: Geoprobe 7822 DT			Sample Notes			Macro Core Sampler			
INVESTIG. DATE: May 30, 2018									
LOGGED BY: EAF			HOLE DIAM (mm): 250						

PGL MULTI-TEST VAPOR LOG 2015 5138-03.GPJ PGL CANADA 2015.GDT 6/7/18

CLIENT: Acclaim Health

PROJECT: 2250 Speers Road, Oakville, ON

WELL RECORD

PGL PROJECT NO: 5138-03.02

SURFACE ELEVATION: n/a

WELL NO:

BH103M

DEPTH (m)	SOIL TYPE	SOIL DESCRIPTION	SAMPLE TYPE	LABORATORY ANALYSES	PID READING (ppmv) ● VAPOUR READING (ppmv) ■	WATER LEVEL	WELL COMPLETION	COMPLETION NOTES	ELEVATION (m)
0.2	TOPSOIL		BH103M-01		<25			Cement, J-plug	
0.4	Sandy SILT	with clay, reddish brown							
0.6			BH103M-02 (Z002): Metals		<25				
0.8									
1.0									
1.2			BH103M-03: Grain Size pH		<25	1		Bentonite	
1.4									
1.6			BH103M-04: Grain Size pH		<25				
1.8									
2.0	BEDROCK	red, dry							
2.2									
2.4									
2.6									
2.8			BH103M-05		<25	1		Silica Sand	
3.0									
3.2									
3.4									
3.6									
3.8									
4.0									
4.2		wet below 4m							
4.4								010 50mm PVC Screen	
4.6									
4.8									
5.0									
5.2									
5.4									
5.6									
5.8									
6.0									
End of borehole at 6.00 m									
Screened interval from 3 m to 6 m below surface. GW 4.41 mbgs (6/4/2015)									
INVESTIG. METHOD: Geoprobe 7822 DT INVESTIG. DATE: May 30, 2018 LOGGED BY: EAF HOLE DIAM (mm): 250			Sample Notes  Macro Core Sampler						

PGL MULTI-TEST VAPOR LOG 2015 5138-03.GPJ PGL CANADA 2015.GDT 6/7/18

CLIENT: Acclaim Health

PROJECT: 2250 Speers Road, Oakville, ON

WELL RECORD

PGL PROJECT NO: 5138-03.02

TOP OF PIPE (TOP) ELEVATION: 98.515 m

SURFACE ELEVATION: 98.605 m

WELL NO:

BH101M

DEPTH (m)	SOIL TYPE	SOIL DESCRIPTION	SAMPLE TYPE	LABORATORY ANALYSES	● PID READING (ppmv) ● ■ VAPOUR READING (ppmv) ■	WATER LEVEL	WELL COMPLETION	COMPLETION NOTES	ELEVATION (m)
0.2	ASPHALT							Cement, J-plug	98.4
0.4	SAND (FILL)	fine grained, brown, moist						Bentonite	98.2
0.6								Silica Sand	98.0
0.8									97.8
1.0									97.6
1.2		wet below 1.2m							97.4
1.4									97.2
1.6	GRAVEL (FILL)	grey and brown, wet							97.0
1.8									96.8
2.0									96.6
2.2								010 50mm PVC Screen	96.4
2.4									96.2
2.6									96.0
2.8									95.8
3.0									95.6
3.2									95.4
3.4									95.2
3.6	BEDROCK	red, wet							95.0

End of borehole at 3.80 m

Screened interval from 0.8 m to 3.8 m below surface.
GW 1.75 mbgs
(6/5/2018)

INVESTIG. METHOD: Geoprobe 7822 DT

INVESTIG. DATE: May 30, 2018

LOGGED BY: EAF HOLE DIAM (mm): 250

Sample Notes  Macro Core Sampler

CLIENT: Acclaim Health

PROJECT: 2250 Speers Road, Oakville, ON

WELL RECORD

PGL PROJECT NO: 5138-03.02
TOP OF PIPE (TOP) ELEVATION: 97.83 m
SURFACE ELEVATION: 97.951 m

WELL NO:

BH102M

DEPTH (m)	SOIL TYPE	SOIL DESCRIPTION	SAMPLE TYPE	LABORATORY ANALYSES	PID READING (ppmv)	VAPOUR READING (ppmv)	WATER LEVEL	WELL COMPLETION	COMPLETION NOTES	ELEVATION (m)
0.2	ASPHALT								Cement, J-plug	97.8
0.4	SAND AND GRAVEL (FILL)	brown, moist	BH102M-01		4					97.6
0.6	Sandy SILT (FILL)	with clay, brown, moist								97.4
0.8										97.2
1.0			BH102M-02:	Grain Size	1					97.0
1.2				Metals						96.8
1.4									Bentonite	96.6
1.6										96.4
1.8	Sandy SILT	with clay, brown, moist	BH102M-03:	Grain Size	1					96.2
2.0				pH						96.0
2.2	BEDROCK	red, dry	BH102M-04	(Z001):	1					95.8
2.4				BTEX						95.6
2.6				PHC						95.4
2.8										95.2
3.0									Silica Sand	95.0
3.2										94.8
3.4										94.6
3.6										94.4
3.8										94.2
4.0										94.0
4.2										93.8
4.4										93.6
4.6									010 50mm	93.4
4.8									PVC Screen	93.2
5.0										93.0
5.2										92.8
5.4										92.6
5.6										92.4
5.8										92.2
6.0										92.0

End of borehole at 6.00 m

Screened interval from 3 m to 6 m below surface.
GW 3.74 mbgs
(6/5/2018)

INVESTIG. METHOD: Geoprobe 7822 DT

INVESTIG. DATE: May 30, 2018

LOGGED BY: EAF HOLE DIAM (mm): 250

Sample Notes  Macro Core Sampler

CLIENT: Acclaim Health

PROJECT: 2250 Speers Road, Oakville, ON

WELL RECORD

PGL PROJECT NO: 5138-03.02

TOP OF PIPE (TOP) ELEVATION: 98.613 m

SURFACE ELEVATION: 98.793 m

WELL NO:

BH103M

DEPTH (m)	SOIL TYPE	SOIL DESCRIPTION	SAMPLE TYPE	LABORATORY ANALYSES	PID READING (ppmv) ● VAPOUR READING (ppmv) ■	WATER LEVEL	WELL COMPLETION	COMPLETION NOTES	ELEVATION (m)
0.2	TOPSOIL		BH103M-01		<25			Cement, J-plug	98.6
0.4	Sandy SILT	with clay, reddish brown							98.4
0.6			BH103M-02 (Z002):	Metals	<25				98.2
0.8									98.0
1.0									97.8
1.2			BH103M-03:	Grain Size	<25				97.6
1.4				pH	1			Bentonite	97.4
1.6			BH103M-04:	Grain Size	<25				97.2
1.8				pH					97.0
2.0	BEDROCK	red, dry							96.8
2.2									96.6
2.4									96.4
2.6									96.2
2.8			BH103M-05		<25				96.0
3.0								Silica Sand	95.8
3.2									95.6
3.4									95.4
3.6									95.2
3.8									95.0
4.0									94.8
4.2		wet below 4m							94.6
4.4								010 50mm PVC Screen	94.4
4.6									94.2
4.8									94.0
5.0									93.8
5.2									93.6
5.4									93.4
5.6									93.2
5.8									93.0
6.0									92.8

End of borehole at 6.00 m

Screened interval from 3 m to 6 m below surface.

GW 3.92 mbgs

(6/5/2018)

INVESTIG. METHOD: Geoprobe 7822 DT

INVESTIG. DATE: May 30, 2018

LOGGED BY: EAF

HOLE DIAM (mm): 250

Sample Notes

Macro Core Sampler

Appendix D
Certificates of Analysis



Pottinger Gaherty Environmental (Whitby)
ATTN: Paula Schuster
102 - 250 Water Street
Whitby ON L1N 0G5

Date Received: 03-MAY-18
Report Date: 07-MAY-18 12:07 (MT)
Version: FINAL

Client Phone: 905-668-4908

Certificate of Analysis

Lab Work Order #: L2088855
Project P.O. #: NOT SUBMITTED
Job Reference: 5138-00.03
C of C Numbers: 17-630089
Legal Site Desc:



Mathy Mahadera
Account Manager

[This report shall not be reproduced except in full without the written authority of the Laboratory.]

ADDRESS: 95 West Beaver Creek Road, Unit 1, Richmond Hill, ON L4B 1H2 Canada | Phone: +1 905 881 9887 | Fax: +1 905 881 8062
ALS CANADA LTD Part of the ALS Group An ALS Limited Company

ALS ENVIRONMENTAL ANALYTICAL REPORT

Sample ID Description Sampled Date Sampled Time Client ID		L2088855-1 WATER 03-MAY-18 12:00 MW1				
Grouping	Analyte					
WATER						
Volatile Organic Compounds	Acetone (ug/L)	<30				
	Benzene (ug/L)	<0.50				
	Bromodichloromethane (ug/L)	<2.0				
	Bromoform (ug/L)	<5.0				
	Bromomethane (ug/L)	<0.50				
	Carbon tetrachloride (ug/L)	<0.20				
	Chlorobenzene (ug/L)	<0.50				
	Dibromochloromethane (ug/L)	<2.0				
	Chloroform (ug/L)	<1.0				
	1,2-Dibromoethane (ug/L)	<0.20				
	1,2-Dichlorobenzene (ug/L)	<0.50				
	1,3-Dichlorobenzene (ug/L)	<0.50				
	1,4-Dichlorobenzene (ug/L)	<0.50				
	Dichlorodifluoromethane (ug/L)	<2.0				
	1,1-Dichloroethane (ug/L)	<0.50				
	1,2-Dichloroethane (ug/L)	<0.50				
	1,1-Dichloroethylene (ug/L)	<0.50				
	cis-1,2-Dichloroethylene (ug/L)	<0.50				
	trans-1,2-Dichloroethylene (ug/L)	<0.50				
	Methylene Chloride (ug/L)	<5.0				
	1,2-Dichloropropane (ug/L)	<0.50				
	cis-1,3-Dichloropropene (ug/L)	<0.30				
	trans-1,3-Dichloropropene (ug/L)	<0.30				
	1,3-Dichloropropene (cis & trans) (ug/L)	<0.50				
	Ethylbenzene (ug/L)	<0.50				
	n-Hexane (ug/L)	<0.50				
	Methyl Ethyl Ketone (ug/L)	<20				
	Methyl Isobutyl Ketone (ug/L)	<20				
	MTBE (ug/L)	<2.0				
	Styrene (ug/L)	<0.50				
	1,1,1,2-Tetrachloroethane (ug/L)	<0.50				
	1,1,2,2-Tetrachloroethane (ug/L)	<0.50				
	Tetrachloroethylene (ug/L)	<0.50				
	Toluene (ug/L)	<0.50				
	1,1,1-Trichloroethane (ug/L)	<0.50				
	1,1,2-Trichloroethane (ug/L)	<0.50				
	Trichloroethylene (ug/L)	<0.50				

* Please refer to the Reference Information section for an explanation of any qualifiers detected.

ALS ENVIRONMENTAL ANALYTICAL REPORT

Sample ID Description Sampled Date Sampled Time Client ID		L2088855-1 WATER 03-MAY-18 12:00 MW1				
Grouping	Analyte					
WATER						
Volatile Organic Compounds	Trichlorofluoromethane (ug/L)	<5.0				
	Vinyl chloride (ug/L)	<0.50				
	o-Xylene (ug/L)	<0.30				
	m+p-Xylenes (ug/L)	<0.40				
	Xylenes (Total) (ug/L)	<0.50				
	Surrogate: 4-Bromofluorobenzene (%)	87.9				
	Surrogate: 1,4-Difluorobenzene (%)	96.8				
Hydrocarbons	F1 (C6-C10) (ug/L)	<25				
	F1-BTEX (ug/L)	<25				
	F2 (C10-C16) (ug/L)	<100				
	F3 (C16-C34) (ug/L)	<250				
	F4 (C34-C50) (ug/L)	<250				
	Total Hydrocarbons (C6-C50) (ug/L)	<370				
	Chrom. to baseline at nC50	YES				
	Surrogate: 2-Bromobenzotrifluoride (%)	88.5				
	Surrogate: 3,4-Dichlorotoluene (%)	80.7				

* Please refer to the Reference Information section for an explanation of any qualifiers detected.

Reference Information

QC Samples with Qualifiers & Comments:

QC Type Description	Parameter	Qualifier	Applies to Sample Number(s)
Method Blank	F3 (C16-C34)	B	L2088855-1
Laboratory Control Sample	Acetone	MES	L2088855-1
Matrix Spike	Acetone	MS-B	L2088855-1
Matrix Spike	Methyl Ethyl Ketone	MS-B	L2088855-1

Qualifiers for Individual Parameters Listed:

Qualifier	Description
B	Method Blank exceeds ALS DQO. Associated sample results which are < Limit of Reporting or > 5 times blank level are considered reliable.
MES	Data Quality Objective was marginally exceeded (by < 10% absolute) for < 10% of analytes in a Multi-Element Scan / Multi-Parameter Scan (considered acceptable as per OMOE & CCME).
MS-B	Matrix Spike recovery could not be accurately calculated due to high analyte background in sample.

Test Method References:

ALS Test Code	Matrix	Test Description	Method Reference**
F1-F4-511-CALC-WT	Water	F1-F4 Hydrocarbon Calculated Parameters	CCME CWS-PHC, Pub #1310, Dec 2001-L

Analytical methods used for analysis of CCME Petroleum Hydrocarbons have been validated and comply with the Reference Method for the CWS PHC.

In cases where results for both F4 and F4G are reported, the greater of the two results must be used in any application of the CWS PHC guidelines and the gravimetric heavy hydrocarbons cannot be added to the C6 to C50 hydrocarbons.

In samples where BTEX and F1 were analyzed, F1-BTEX represents a value where the sum of Benzene, Toluene, Ethylbenzene and total Xylenes has been subtracted from F1.

In samples where PAHs, F2 and F3 were analyzed, F2-Naphth represents the result where Naphthalene has been subtracted from F2. F3-PAH represents a result where the sum of Benzo(a)anthracene, Benzo(a)pyrene, Benzo(b)fluoranthene, Benzo(k)fluoranthene, Dibenzo(a,h)anthracene, Fluoranthene, Indeno(1,2,3-cd)pyrene, Phenanthrene, and Pyrene has been subtracted from F3.

Unless otherwise qualified, the following quality control criteria have been met for the F1 hydrocarbon range:

1. All extraction and analysis holding times were met.
2. Instrument performance showing response factors for C6 and C10 within 30% of the response factor for toluene.
3. Linearity of gasoline response within 15% throughout the calibration range.

Unless otherwise qualified, the following quality control criteria have been met for the F2-F4 hydrocarbon ranges:

1. All extraction and analysis holding times were met.
2. Instrument performance showing C10, C16 and C34 response factors within 10% of their average.
3. Instrument performance showing the C50 response factor within 30% of the average of the C10, C16 and C34 response factors.
4. Linearity of diesel or motor oil response within 15% throughout the calibration range.

F1-HS-511-WT	Water	F1-O.Reg 153/04 (July 2011)	E3398/CCME TIER 1-HS
---------------------	-------	-----------------------------	----------------------

Fraction F1 is determined by analyzing by headspace-GC/FID.

Analysis conducted in accordance with the Protocol for Analytical Methods Used in the Assessment of Properties under Part XV.1 of the Environmental Protection Act (July 1, 2011), unless a subset of the Analytical Test Group (ATG) has been requested (the Protocol states that all analytes in an ATG must be reported).

F2-F4-511-WT	Water	F2-F4-O.Reg 153/04 (July 2011)	EPA 3511/CCME Tier 1
---------------------	-------	--------------------------------	----------------------

Petroleum Hydrocarbons (F2-F4 fractions) are extracted from water using a hexane micro-extraction technique. Instrumental analysis is by GC-FID, as per the Reference Method for the Canada-Wide Standard for Petroleum Hydrocarbons in Soil Tier 1 Method, CCME, 2001.

Analysis conducted in accordance with the Protocol for Analytical Methods Used in the Assessment of Properties under Part XV.1 of the Environmental Protection Act (July 1, 2011), unless a subset of the Analytical Test Group (ATG) has been requested (the Protocol states that all analytes in an ATG must be reported).

VOC-1,3-DCP-CALC-WT	Water	Regulation 153 VOCs	SW8260B/SW8270C
----------------------------	-------	---------------------	-----------------

VOC-511-HS-WT	Water	VOC by GCMS HS O.Reg 153/04 (July 2011)	SW846 8260
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Liquid samples are analyzed by headspace GC/MSD.

Analysis conducted in accordance with the Protocol for Analytical Methods Used in the Assessment of Properties under Part XV.1 of the Environmental Protection Act (July 1, 2011), unless a subset of the Analytical Test Group (ATG) has been requested (the Protocol states that all analytes in an ATG must be reported).

XYLENES-SUM-CALC-WT	Water	Sum of Xylene Isomer Concentrations	CALCULATION
----------------------------	-------	-------------------------------------	-------------

Total xylenes represents the sum of o-xylene and m&p-xylene.

Reference Information

** ALS test methods may incorporate modifications from specified reference methods to improve performance.

The last two letters of the above test code(s) indicate the laboratory that performed analytical analysis for that test. Refer to the list below:

Laboratory Definition Code	Laboratory Location
----------------------------	---------------------

WT	ALS ENVIRONMENTAL - WATERLOO, ONTARIO, CANADA
----	---

Chain of Custody Numbers:

17-630089

GLOSSARY OF REPORT TERMS

Surrogate - A compound that is similar in behaviour to target analyte(s), but that does not occur naturally in environmental samples. For applicable tests, surrogates are added to samples prior to analysis as a check on recovery.

mg/kg - milligrams per kilogram based on dry weight of sample.

mg/kg ww - milligrams per kilogram based on wet weight of sample.

mg/kg lwt - milligrams per kilogram based on lipid-adjusted weight of sample.

mg/L - milligrams per litre.

< - Less than.

D.L. - The reported Detection Limit, also known as the Limit of Reporting (LOR).

N/A - Result not available. Refer to qualifier code and definition for explanation.

Test results reported relate only to the samples as received by the laboratory.

UNLESS OTHERWISE STATED, ALL SAMPLES WERE RECEIVED IN ACCEPTABLE CONDITION.

Analytical results in unsigned test reports with the DRAFT watermark are subject to change, pending final QC review.



Quality Control Report

Workorder: L2088855

Report Date: 07-MAY-18

Page 1 of 5

Client: Pottinger Gaherty Environmental (Whitby)

102 - 250 Water Street

Whitby ON L1N 0G5

Contact: Paula Schuster

Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
F1-HS-511-WT Water								
Batch	R4033028							
WG2762720-1	LCS							
F1 (C6-C10)			104.5		%		80-120	04-MAY-18
WG2762720-2	MB							
F1 (C6-C10)			<25		ug/L		25	04-MAY-18
Surrogate: 3,4-Dichlorotoluene			94.5		%		60-140	04-MAY-18
F2-F4-511-WT Water								
Batch	R4033191							
WG2764722-2	LCS							
F2 (C10-C16)			101.4		%		70-130	04-MAY-18
F3 (C16-C34)			104.3		%		70-130	04-MAY-18
F4 (C34-C50)			111.4		%		70-130	04-MAY-18
WG2764722-3	LCSD	WG2764722-2						
F2 (C10-C16)		101.4	108		%	6.7	50	04-MAY-18
F3 (C16-C34)		104.3	111		%	5.9	50	04-MAY-18
F4 (C34-C50)		111.4	116		%	3.9	50	04-MAY-18
WG2764722-1	MB							
F2 (C10-C16)			<100		ug/L		100	04-MAY-18
F3 (C16-C34)			640	B	ug/L		250	04-MAY-18
F4 (C34-C50)			<250		ug/L		250	04-MAY-18
Surrogate: 2-Bromobenzotrifluoride			98.0		%		60-140	04-MAY-18
WG2764722-4	MB							
F2 (C10-C16)			<100		ug/L		100	07-MAY-18
F3 (C16-C34)			<250		ug/L		250	07-MAY-18
F4 (C34-C50)			<250		ug/L		250	07-MAY-18
Surrogate: 2-Bromobenzotrifluoride			67.1		%		60-140	07-MAY-18
VOC-511-HS-WT Water								
Batch	R4033028							
WG2762720-1	LCS							
1,1,1,2-Tetrachloroethane			93.9		%		70-130	04-MAY-18
1,1,2,2-Tetrachloroethane			106.7		%		70-130	04-MAY-18
1,1,1-Trichloroethane			96.9		%		70-130	04-MAY-18
1,1,2-Trichloroethane			105.1		%		70-130	04-MAY-18
1,1-Dichloroethane			104.7		%		70-130	04-MAY-18
1,1-Dichloroethylene			94.4		%		70-130	04-MAY-18
1,2-Dibromoethane			103.0		%		70-130	04-MAY-18
1,2-Dichlorobenzene			97.1		%		70-130	04-MAY-18

Quality Control Report

Workorder: L2088855

Report Date: 07-MAY-18

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Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
VOC-511-HS-WT		Water						
Batch	R4033028							
WG2762720-1	LCS							
1,2-Dichloroethane			114.9		%		70-130	04-MAY-18
1,2-Dichloropropane			110.6		%		70-130	04-MAY-18
1,3-Dichlorobenzene			92.3		%		70-130	04-MAY-18
1,4-Dichlorobenzene			95.9		%		70-130	04-MAY-18
Acetone			143.1	MES	%		60-140	04-MAY-18
Benzene			106.3		%		70-130	04-MAY-18
Bromodichloromethane			104.7		%		70-130	04-MAY-18
Bromoform			94.6		%		70-130	04-MAY-18
Bromomethane			106.9		%		60-140	04-MAY-18
Carbon tetrachloride			92.2		%		70-130	04-MAY-18
Chlorobenzene			96.5		%		70-130	04-MAY-18
Chloroform			105.6		%		70-130	04-MAY-18
cis-1,2-Dichloroethylene			101.2		%		70-130	04-MAY-18
cis-1,3-Dichloropropene			109.0		%		70-130	04-MAY-18
Dibromochloromethane			100.0		%		70-130	04-MAY-18
Dichlorodifluoromethane			83.1		%		50-140	04-MAY-18
Ethylbenzene			90.6		%		70-130	04-MAY-18
n-Hexane			111.3		%		70-130	04-MAY-18
m+p-Xylenes			98.7		%		70-130	04-MAY-18
Methyl Ethyl Ketone			130.1		%		60-140	04-MAY-18
Methyl Isobutyl Ketone			118.5		%		60-140	04-MAY-18
Methylene Chloride			109.6		%		70-130	04-MAY-18
MTBE			100.1		%		70-130	04-MAY-18
o-Xylene			94.1		%		70-130	04-MAY-18
Styrene			94.4		%		70-130	04-MAY-18
Tetrachloroethylene			86.5		%		70-130	04-MAY-18
Toluene			88.9		%		70-130	04-MAY-18
trans-1,2-Dichloroethylene			106.4		%		70-130	04-MAY-18
trans-1,3-Dichloropropene			99.6		%		70-130	04-MAY-18
Trichloroethylene			95.8		%		70-130	04-MAY-18
Trichlorofluoromethane			99.9		%		60-140	04-MAY-18
Vinyl chloride			100.7		%		60-140	04-MAY-18
WG2762720-2	MB							
1,1,1,2-Tetrachloroethane			<0.50		ug/L		0.5	04-MAY-18

Quality Control Report

Workorder: L2088855

Report Date: 07-MAY-18

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Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
VOC-511-HS-WT		Water						
Batch	R4033028							
WG2762720-2 MB								
1,1,2,2-Tetrachloroethane			<0.50		ug/L		0.5	04-MAY-18
1,1,1-Trichloroethane			<0.50		ug/L		0.5	04-MAY-18
1,1,2-Trichloroethane			<0.50		ug/L		0.5	04-MAY-18
1,1-Dichloroethane			<0.50		ug/L		0.5	04-MAY-18
1,1-Dichloroethylene			<0.50		ug/L		0.5	04-MAY-18
1,2-Dibromoethane			<0.20		ug/L		0.2	04-MAY-18
1,2-Dichlorobenzene			<0.50		ug/L		0.5	04-MAY-18
1,2-Dichloroethane			<0.50		ug/L		0.5	04-MAY-18
1,2-Dichloropropane			<0.50		ug/L		0.5	04-MAY-18
1,3-Dichlorobenzene			<0.50		ug/L		0.5	04-MAY-18
1,4-Dichlorobenzene			<0.50		ug/L		0.5	04-MAY-18
Acetone			<30		ug/L		30	04-MAY-18
Benzene			<0.50		ug/L		0.5	04-MAY-18
Bromodichloromethane			<2.0		ug/L		2	04-MAY-18
Bromoform			<5.0		ug/L		5	04-MAY-18
Bromomethane			<0.50		ug/L		0.5	04-MAY-18
Carbon tetrachloride			<0.20		ug/L		0.2	04-MAY-18
Chlorobenzene			<0.50		ug/L		0.5	04-MAY-18
Chloroform			<1.0		ug/L		1	04-MAY-18
cis-1,2-Dichloroethylene			<0.50		ug/L		0.5	04-MAY-18
cis-1,3-Dichloropropene			<0.30		ug/L		0.3	04-MAY-18
Dibromochloromethane			<2.0		ug/L		2	04-MAY-18
Dichlorodifluoromethane			<2.0		ug/L		2	04-MAY-18
Ethylbenzene			<0.50		ug/L		0.5	04-MAY-18
n-Hexane			<0.50		ug/L		0.5	04-MAY-18
m+p-Xylenes			<0.40		ug/L		0.4	04-MAY-18
Methyl Ethyl Ketone			<20		ug/L		20	04-MAY-18
Methyl Isobutyl Ketone			<20		ug/L		20	04-MAY-18
Methylene Chloride			<5.0		ug/L		5	04-MAY-18
MTBE			<2.0		ug/L		2	04-MAY-18
o-Xylene			<0.30		ug/L		0.3	04-MAY-18
Styrene			<0.50		ug/L		0.5	04-MAY-18
Tetrachloroethylene			<0.50		ug/L		0.5	04-MAY-18
Toluene			<0.50		ug/L		0.5	04-MAY-18



Quality Control Report

Workorder: L2088855

Report Date: 07-MAY-18

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Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
VOC-511-HS-WT	Water							
Batch	R4033028							
WG2762720-2	MB							
trans-1,2-Dichloroethylene			<0.50		ug/L		0.5	04-MAY-18
trans-1,3-Dichloropropene			<0.30		ug/L		0.3	04-MAY-18
Trichloroethylene			<0.50		ug/L		0.5	04-MAY-18
Trichlorofluoromethane			<5.0		ug/L		5	04-MAY-18
Vinyl chloride			<0.50		ug/L		0.5	04-MAY-18
Surrogate: 1,4-Difluorobenzene			95.8		%		70-130	04-MAY-18
Surrogate: 4-Bromofluorobenzene			85.8		%		70-130	04-MAY-18

Quality Control Report

Workorder: L2088855

Report Date: 07-MAY-18

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Legend:

Limit	ALS Control Limit (Data Quality Objectives)
DUP	Duplicate
RPD	Relative Percent Difference
N/A	Not Available
LCS	Laboratory Control Sample
SRM	Standard Reference Material
MS	Matrix Spike
MSD	Matrix Spike Duplicate
ADE	Average Desorption Efficiency
MB	Method Blank
IRM	Internal Reference Material
CRM	Certified Reference Material
CCV	Continuing Calibration Verification
CVS	Calibration Verification Standard
LCSD	Laboratory Control Sample Duplicate

Sample Parameter Qualifier Definitions:

Qualifier	Description
B	Method Blank exceeds ALS DQO. Associated sample results which are < Limit of Reporting or > 5 times blank level are considered reliable.
MES	Data Quality Objective was marginally exceeded (by < 10% absolute) for < 10% of analytes in a Multi-Element Scan / Multi-Parameter Scan (considered acceptable as per OMOE & CCME).

Hold Time Exceedances:

All test results reported with this submission were conducted within ALS recommended hold times.

ALS recommended hold times may vary by province. They are assigned to meet known provincial and/or federal government requirements. In the absence of regulatory hold times, ALS establishes recommendations based on guidelines published by the US EPA, APHA Standard Methods, or Environment Canada (where available). For more information, please contact ALS.

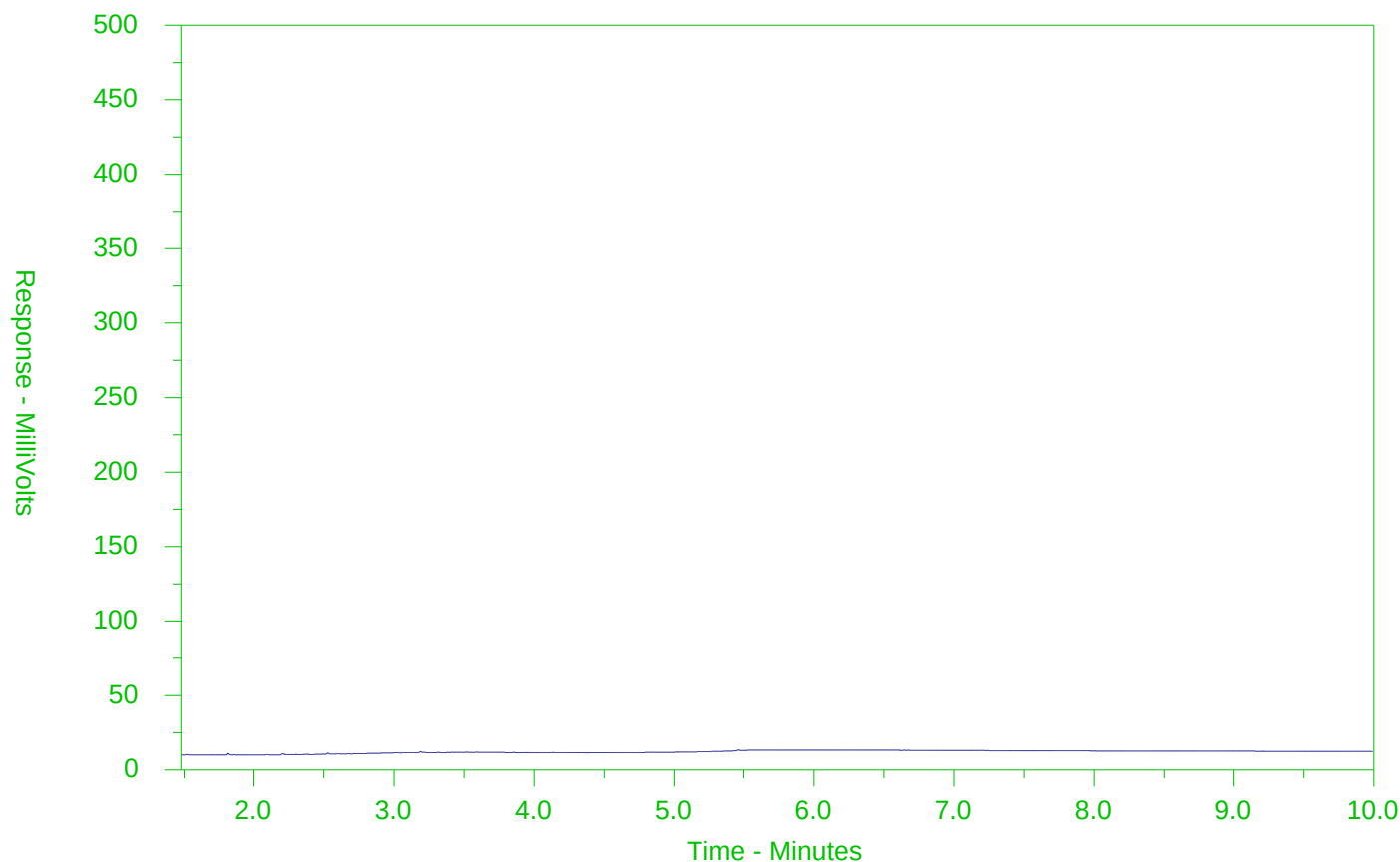
The ALS Quality Control Report is provided to ALS clients upon request. ALS includes comprehensive QC checks with every analysis to ensure our high standards of quality are met. Each QC result has a known or expected target value, which is compared against pre-determined data quality objectives to provide confidence in the accuracy of associated test results.

Please note that this report may contain QC results from anonymous Sample Duplicates and Matrix Spikes that do not originate from this Work Order.

CCME F2-F4 HYDROCARBON DISTRIBUTION REPORT



ALS Sample ID: L2088855-1
Client Sample ID: MW1



← F2 →		← F3 →		← F4 →	
nC10	nC16		nC34		nC50
174°C	287°C		481°C		575°C
346°F	549°F		898°F		1067°F
Gasoline →			← Motor Oils/Lube Oils/Grease		
← Diesel/Jet Fuels →					

The CCME F2-F4 Hydrocarbon Distribution Report (HDR) is intended to assist you in characterizing hydrocarbon products that may be present in your sample.

The scale at the bottom of the chromatogram indicates the approximate retention times of common petroleum products and four n-alkane hydrocarbon marker compounds. Retention times may vary between samples, but general patterns and distributions will remain similar.

Peak heights in this report are a function of the sample concentration, the sample amount extracted, the sample dilution factor and the scale at the left.

Note: This chromatogram was produced using GC conditions that are specific to ALS Canada CCME F2-F4 method. Refer to the ALS Canada CCME F2-F4 Hydrocarbon Library for a collection of chromatograms from common reference samples (fuels, oils, etc.). The HDR Library can be found at www.alsglobal.com.



L2088855-COFC

COC Number: 15 -

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Page 1 of 1

Canada Toll Free: 1-800-361-2222

www.alsglobal.com

Report To Contact and company name below will appear on the final report		Report Format / Distribution Select Report Format: ☒ PDF ☒ EXCEL ☒ EDD (DIGITAL) Quality Control (QC) Report with Report ☐ YES ☒ NO ☐ Compare Results to Criteria on Report - provide details below if box checked Select Distribution: ☒ EMAIL ☐ MAIL ☐ FAX				Select Service Level Below - Please confirm all EAP TATs with your AM - surcharges will apply Regular [R] ☐ Standard TAT if received by 3 pm - business days - no surcharges apply 4 day [P4] ☐ 3 day [P3] ☐ 2 day [P2] ☒ 1 Business day [E1] ☐ Same Day, Weekend or Statutory holiday [E0] ☐ Date and Time Required for all EAP TATs: dd-mm-yy hh:mm For tests that can not be performed according to the service level selected, you will be contacted.													
Company: PGL Environmental Consultants Contact: Paula Schuster Phone: 905-868-4908 Company address below will appear on the final report Street: 102 - 250 Water Street City/Province: Whitby, ON Postal Code: L1N 0G5		Email 1 or Fax pschuster@pgsgroup.com Email 2 labdata.on@pgsgroup.com Email 3				Analysis Request Indicate Filtered (F), Preserved (P) or Filtered and Preserved (F/P) below P P P P VOC BTEX F1 F2-F4 Metals & Inorganics Number of Containers													
Invoice To: Same as Report To ☒ YES ☐ NO Copy of Invoice with Report ☐ YES ☒ NO Company: PGL Environmental Consultants Contact:		Invoice Distribution Select Invoice Distribution: ☒ EMAIL ☐ MAIL ☐ FAX Email 1 or Fax pschuster@pgsgroup.com Email 2 Oil and Gas Required Fields (client use) AFE/Cost Center: PO# Major/Minor Code: Routing Code: Requisitioner: Location: ALS Contact: Mathy Sampler:																	
Project Information ALS Account # / Quote #: Job #: 5138-00.03 PO / AFE: LSD:		ALS Lab Work Order # (lab use only) W088855 R2 03																	
ALS Sample # (lab use only)		Sample Identification and/or Coordinates (This description will appear on the report)		Date (dd-mm-yy)		Time (hh:mm)		Sample Type											
		MW - 1		03-05-18		12:00		GW		X X X X 5									
Drinking Water (DW) Samples (client use) Are samples taken from a Regulated DW System? ☐ YES ☐ NO Are samples for human drinking water use? ☐ YES ☐ NO		Special Instructions / Specify Criteria to add on report by clicking on the drop-down list below (electronic COC only) Table 1 Stds. @ Reg 153/04. Do NOT INCLUDE CRITERIA ON REPORT.				SAMPLE CONDITION AS RECEIVED (lab use only) Frozen ☐ SIF Observations Yes ☐ No ☐ Ice Packs ☐ Ice Cubes ☒ Custody seal intact Yes ☐ No ☐ Cooling Initiated ☐ INITIAL COOLER TEMPERATURES °C 9.1 FINAL COOLER TEMPERATURES °C 7.6													
Released by: Garrett Fryer Date: May 3/2018 Time: 12:30		INITIAL SHIPMENT RECEPTION (lab use only) Received by: Muel Date: 03/05/18 Time: 13:21				FINAL SHIPMENT RECEPTION (lab use only) Received by: Rammeck Date: May 03 Time: 3:15													

1. If any water samples are taken from a Regulated Drinking Water (DW) System, please submit using an Authorized DW COC form.

SEPTEMBER 2014 (cont.)



Pottinger Gaherty Environmental (Whitby)
ATTN: ELIZABETH FORAN/PAULA
SCHUSTER
102 - 250 Water Street
Whitby ON L1N 0G5

Date Received: 31-MAY-18
Report Date: 06-JUN-18 14:28 (MT)
Version: FINAL

Client Phone: 905-668-4908

Certificate of Analysis

Lab Work Order #: L2103936
Project P.O. #: NOT SUBMITTED
Job Reference: 5138-03.02
C of C Numbers: 17-630095
Legal Site Desc:



Mathy Mahadera
Account Manager

[This report shall not be reproduced except in full without the written authority of the Laboratory.]

ADDRESS: 95 West Beaver Creek Road, Unit 1, Richmond Hill, ON L4B 1H2 Canada | Phone: +1 905 881 9887 | Fax: +1 905 881 8062
ALS CANADA LTD Part of the ALS Group An ALS Limited Company

ALS ENVIRONMENTAL ANALYTICAL REPORT

		Sample ID Description Sampled Date Sampled Time Client ID	L2103936-1 SOIL 30-MAY-18 BH101M-01	L2103936-3 SOIL 30-MAY-18 BH101M-07	L2103936-4 SOIL 30-MAY-18 BH102M-02	L2103936-5 SOIL 30-MAY-18 BH102M-03	L2103936-6 SOIL 30-MAY-18 BH102M-04
Grouping	Analyte						
SOIL							
Physical Tests	% Moisture (%)		8.37	11.9	19.9	12.5	7.99
	pH (pH units)					7.76	
Particle Size	% >75um (%)				7.1	2.3	
Metals	Antimony (Sb) (ug/g)		<1.0		<1.0		
	Arsenic (As) (ug/g)		1.8		6.0		
	Barium (Ba) (ug/g)		23.3		164		
	Beryllium (Be) (ug/g)		<0.50		1.14		
	Boron (B) (ug/g)		<5.0		9.6		
	Cadmium (Cd) (ug/g)		<0.50		<0.50		
	Chromium (Cr) (ug/g)		5.7		25.2		
	Cobalt (Co) (ug/g)		2.4		15.4		
	Copper (Cu) (ug/g)		9.2		14.2		
	Lead (Pb) (ug/g)		3.0		15.0		
	Molybdenum (Mo) (ug/g)		<1.0		1.5		
	Nickel (Ni) (ug/g)		4.9		25.3		
	Selenium (Se) (ug/g)		<1.0		<1.0		
	Silver (Ag) (ug/g)		<0.20		<0.20		
	Thallium (Tl) (ug/g)		<0.50		<0.50		
	Uranium (U) (ug/g)		<1.0		1.6		
	Vanadium (V) (ug/g)		13.0		43.8		
	Zinc (Zn) (ug/g)		14.5		84.1		
Volatile Organic Compounds	Benzene (ug/g)			<0.0068			<0.0068
	Ethylbenzene (ug/g)			<0.018			<0.018
	Toluene (ug/g)			<0.080			<0.080
	o-Xylene (ug/g)			<0.020			<0.020
	m+p-Xylenes (ug/g)			<0.030			<0.030
	Xylenes (Total) (ug/g)			<0.050			<0.050
	Surrogate: 4-Bromofluorobenzene (%)			124.9			105.6
	Surrogate: 1,4-Difluorobenzene (%)			125.0			106.1
Hydrocarbons	F1 (C6-C10) (ug/g)			<5.0			<5.0
	F1-BTEX (ug/g)			<5.0			<5.0
	F2 (C10-C16) (ug/g)			<10			<10
	F3 (C16-C34) (ug/g)			<50			<50
	F4 (C34-C50) (ug/g)			<50			<50
	Total Hydrocarbons (C6-C50) (ug/g)			<72			<72
	Chrom. to baseline at nC50			YES			YES
	Surrogate: 2-Bromobenzotrifluoride (%)			84.2			83.5

ALS ENVIRONMENTAL ANALYTICAL REPORT

		Sample ID Description Sampled Date Sampled Time Client ID	L2103936-7 SOIL 30-MAY-18 Z001	L2103936-8 SOIL 30-MAY-18 BH103M-02	L2103936-9 SOIL 30-MAY-18 Z002	L2103936-10 SOIL 30-MAY-18 BH103M-03	L2103936-11 SOIL 30-MAY-18 BH103M-04
Grouping	Analyte						
SOIL							
Physical Tests	% Moisture (%)		8.30	17.6	15.8	13.6	15.1
	pH (pH units)					7.58	7.34
Particle Size	% >75um (%)					27.4	3.3
Metals	Antimony (Sb) (ug/g)			<1.0	<1.0		
	Arsenic (As) (ug/g)			4.1	5.9		
	Barium (Ba) (ug/g)			158	107		
	Beryllium (Be) (ug/g)			0.81	0.72		
	Boron (B) (ug/g)			15.1	11.8		
	Cadmium (Cd) (ug/g)			<0.50	<0.50		
	Chromium (Cr) (ug/g)			40.1	34.6		
	Cobalt (Co) (ug/g)			10.5	10.8		
	Copper (Cu) (ug/g)			13.8	25.7		
	Lead (Pb) (ug/g)			11.3	16.1		
	Molybdenum (Mo) (ug/g)			1.0	1.9		
	Nickel (Ni) (ug/g)			26.0	23.8		
	Selenium (Se) (ug/g)			<1.0	<1.0		
	Silver (Ag) (ug/g)			<0.20	<0.20		
	Thallium (Tl) (ug/g)			<0.50	<0.50		
	Uranium (U) (ug/g)			<1.0	<1.0		
	Vanadium (V) (ug/g)			34.2	33.2		
	Zinc (Zn) (ug/g)			67.1	70.0		
Volatile Organic Compounds	Benzene (ug/g)		<0.0068				
	Ethylbenzene (ug/g)		<0.018				
	Toluene (ug/g)		<0.080				
	o-Xylene (ug/g)		<0.020				
	m+p-Xylenes (ug/g)		<0.030				
	Xylenes (Total) (ug/g)		<0.050				
	Surrogate: 4-Bromofluorobenzene (%)		107.2				
	Surrogate: 1,4-Difluorobenzene (%)		107.3				
Hydrocarbons	F1 (C6-C10) (ug/g)		<5.0				
	F1-BTEX (ug/g)		<5.0				
	F2 (C10-C16) (ug/g)		<10				
	F3 (C16-C34) (ug/g)		<50				
	F4 (C34-C50) (ug/g)		<50				
	Total Hydrocarbons (C6-C50) (ug/g)		<72				
	Chrom. to baseline at nC50		YES				
	Surrogate: 2-Bromobenzotrifluoride (%)		91.1				

ALS ENVIRONMENTAL ANALYTICAL REPORT

Sample ID Description Sampled Date Sampled Time Client ID		L2103936-13 SOIL 30-MAY-18 TRIP BLANK				
Grouping	Analyte					
SOIL						
Physical Tests	% Moisture (%)	<0.10				
	pH (pH units)					
Particle Size	% >75um (%)					
Metals	Antimony (Sb) (ug/g)					
	Arsenic (As) (ug/g)					
	Barium (Ba) (ug/g)					
	Beryllium (Be) (ug/g)					
	Boron (B) (ug/g)					
	Cadmium (Cd) (ug/g)					
	Chromium (Cr) (ug/g)					
	Cobalt (Co) (ug/g)					
	Copper (Cu) (ug/g)					
	Lead (Pb) (ug/g)					
	Molybdenum (Mo) (ug/g)					
	Nickel (Ni) (ug/g)					
	Selenium (Se) (ug/g)					
	Silver (Ag) (ug/g)					
	Thallium (Tl) (ug/g)					
	Uranium (U) (ug/g)					
	Vanadium (V) (ug/g)					
	Zinc (Zn) (ug/g)					
Volatile Organic Compounds	Benzene (ug/g)	<0.0068				
	Ethylbenzene (ug/g)	<0.018				
	Toluene (ug/g)	<0.080				
	o-Xylene (ug/g)	<0.020				
	m+p-Xylenes (ug/g)	<0.030				
	Xylenes (Total) (ug/g)	<0.050				
	Surrogate: 4-Bromofluorobenzene (%)	114.5				
	Surrogate: 1,4-Difluorobenzene (%)	116.7				
Hydrocarbons	F1 (C6-C10) (ug/g)	<5.0				
	F1-BTEX (ug/g)	<5.0				
	F2 (C10-C16) (ug/g)					
	F3 (C16-C34) (ug/g)					
	F4 (C34-C50) (ug/g)					
	Total Hydrocarbons (C6-C50) (ug/g)					
	Chrom. to baseline at nC50					
	Surrogate: 2-Bromobenzotrifluoride (%)					

		Sample ID Description Sampled Date Sampled Time Client ID	L2103936-1 SOIL 30-MAY-18 BH101M-01	L2103936-3 SOIL 30-MAY-18 BH101M-07	L2103936-4 SOIL 30-MAY-18 BH102M-02	L2103936-5 SOIL 30-MAY-18 BH102M-03	L2103936-6 SOIL 30-MAY-18 BH102M-04
Grouping	Analyte						
SOIL							
Hydrocarbons	Surrogate: 3,4-Dichlorotoluene (%)			129.9			100.9

Sample ID Description Sampled Date Sampled Time Client ID		L2103936-7 SOIL 30-MAY-18 Z001	L2103936-8 SOIL 30-MAY-18 BH103M-02	L2103936-9 SOIL 30-MAY-18 Z002	L2103936-10 SOIL 30-MAY-18 BH103M-03	L2103936-11 SOIL 30-MAY-18 BH103M-04
Grouping	Analyte					
SOIL						
Hydrocarbons	Surrogate: 3,4-Dichlorotoluene (%)	110.0				

		Sample ID Description Sampled Date Sampled Time Client ID	L2103936-13 SOIL 30-MAY-18 TRIP BLANK				
Grouping	Analyte						
SOIL							
Hydrocarbons	Surrogate: 3,4-Dichlorotoluene (%)	109.2					

Reference Information

Test Method References:

ALS Test Code	Matrix	Test Description	Method Reference**
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BTX-511-HS-WT

Soil

BTX-O.Reg 153/04 (July 2011)

SW846 8260

BTX is determined by extracting a soil or sediment sample as received with methanol, then analyzing by headspace-GC/MS.

Analysis conducted in accordance with the Protocol for Analytical Methods Used in the Assessment of Properties under Part XV.1 of the Environmental Protection Act (July 1, 2011).

F1-F4-511-CALC-WT

Soil

F1-F4 Hydrocarbon Calculated Parameters

CCME CWS-PHC, Pub #1310, Dec 2001-S

Analytical methods used for analysis of CCME Petroleum Hydrocarbons have been validated and comply with the Reference Method for the CWS PHC.

Hydrocarbon results are expressed on a dry weight basis.

In cases where results for both F4 and F4G are reported, the greater of the two results must be used in any application of the CWS PHC guidelines and the gravimetric heavy hydrocarbons cannot be added to the C6 to C50 hydrocarbons.

In samples where BTX and F1 were analyzed, F1-BTEX represents a value where the sum of Benzene, Toluene, Ethylbenzene and total Xylenes has been subtracted from F1.

In samples where PAHs, F2 and F3 were analyzed, F2-Naphth represents the result where Naphthalene has been subtracted from F2. F3-PAH represents a result where the sum of Benzo(a)anthracene, Benzo(a)pyrene, Benzo(b)fluoranthene, Benzo(k)fluoranthene, Dibenzo(a,h)anthracene, Fluoranthene, Indeno(1,2,3-cd)pyrene, Phenanthrene, and Pyrene has been subtracted from F3.

Unless otherwise qualified, the following quality control criteria have been met for the F1 hydrocarbon range:

1. All extraction and analysis holding times were met.
2. Instrument performance showing response factors for C6 and C10 within 30% of the response factor for toluene.
3. Linearity of gasoline response within 15% throughout the calibration range.

Unless otherwise qualified, the following quality control criteria have been met for the F2-F4 hydrocarbon ranges:

1. All extraction and analysis holding times were met.
2. Instrument performance showing C10, C16 and C34 response factors within 10% of their average.
3. Instrument performance showing the C50 response factor within 30% of the average of the C10, C16 and C34 response factors.
4. Linearity of diesel or motor oil response within 15% throughout the calibration range.

F1-HS-511-WT

Soil

F1-O.Reg 153/04 (July 2011)

E3398/CCME TIER 1-HS

Fraction F1 is determined by extracting a soil or sediment sample as received with methanol, then analyzing by headspace-GC/FID.

Analysis conducted in accordance with the Protocol for Analytical Methods Used in the Assessment of Properties under Part XV.1 of the Environmental Protection Act (July 1, 2011), unless a subset of the Analytical Test Group (ATG) has been requested (the Protocol states that all analytes in an ATG must be reported).

F2-F4-511-WT

Soil

F2-F4-O.Reg 153/04 (July 2011)

CCME Tier 1

Petroleum Hydrocarbons (F2-F4 fractions) are extracted from soil with 1:1 hexane:acetone using a rotary extractor. Extracts are treated with silica gel to remove polar organic interferences. F2, F3, & F4 are analyzed by GC-FID. F4G-sg is analyzed gravimetrically.

Notes:

1. F2 (C10-C16): Sum of all hydrocarbons that elute between nC10 and nC16.
2. F3 (C16-C34): Sum of all hydrocarbons that elute between nC16 and nC34.
3. F4 (C34-C50): Sum of all hydrocarbons that elute between nC34 and nC50.
4. F4G: Gravimetric Heavy Hydrocarbons
5. F4G-sg: Gravimetric Heavy Hydrocarbons (F4G) after silica gel treatment.
6. Where both F4 (C34-C50) and F4G-sg are reported for a sample, the larger of the two values is used for comparison against the relevant CCME guideline for F4.
7. F4G-sg cannot be added to the C6 to C50 hydrocarbon results to obtain an estimate of total extractable hydrocarbons.
8. This method is validated for use.
9. Data from analysis of validation and quality control samples is available upon request.
10. Reported results are expressed as milligrams per dry kilogram, unless otherwise indicated.

Analysis conducted in accordance with the Protocol for Analytical Methods Used in the Assessment of Properties under Part XV.1 of the Environmental Protection Act (July 1, 2011), unless a subset of the Analytical Test Group (ATG) has been requested (the Protocol states that all analytes in an ATG must be reported).

MET-200.2-CCMS-WT

Soil

Metals in Soil by CRC ICPMS

EPA 200.2/6020A (mod)

This method uses a heated strong acid digestion with HNO₃ and HCl and is intended to liberate metals that may be environmentally available. Silicate minerals are not solubilized. Dependent on sample matrix, some metals may be only partially recovered, including Al, Ba, Be, Cr, Sr, Ti, Tl, V, W, and Zr. Volatile forms of sulfur (including sulfide) may not be captured, as they may be lost during sampling, storage, or digestion. Analysis is by Collision/Reaction Cell ICPMS.

Analysis conducted in accordance with the Protocol for Analytical Methods Used in the Assessment of Properties under Part XV.1 of the Environmental Protection Act (July 1, 2011), unless a subset of the Analytical Test Group (ATG) has been requested (the Protocol states that all

Reference Information

analytes in an ATG must be reported).

MOISTURE-WT Soil % Moisture Gravimetric: Oven Dried

PH-WT Soil pH MOEE E3137A

A minimum 10g portion of the sample is extracted with 20mL of 0.01M calcium chloride solution by shaking for at least 30 minutes. The aqueous layer is separated from the soil and then analyzed using a pH meter and electrode.

Analysis conducted in accordance with the Protocol for Analytical Methods Used in the Assessment of Properties under Part XV.1 of the Environmental Protection Act (July 1, 2011).

PSA-75UM-SIEVE-WT Soil % Particles>75um (Coarse/Fine) CARTER CSSS 55.4 (modified)

An air-dried sample is reduced to < 2 mm size and mixed with a dispersing agent (sodium metaphosphate). The sample is washed through a 200 mesh (75 µm) sieve. The retained mass of sample is used to determine % sand fraction. If the percentage of sand is >50%, the soil is considered to be coarse textured soil. If the percentage of sand is <50%, the soil is considered to be fine textured.

XYLENES-SUM-CALC-WT Soil Sum of Xylene Isomer Concentrations CALCULATION

Total xylenes represents the sum of o-xylene and m&p-xylene.

** ALS test methods may incorporate modifications from specified reference methods to improve performance.

The last two letters of the above test code(s) indicate the laboratory that performed analytical analysis for that test. Refer to the list below:

Laboratory Definition Code	Laboratory Location
WT	ALS ENVIRONMENTAL - WATERLOO, ONTARIO, CANADA

Chain of Custody Numbers:

17-630095

GLOSSARY OF REPORT TERMS

Surrogate - A compound that is similar in behaviour to target analyte(s), but that does not occur naturally in environmental samples. For applicable tests, surrogates are added to samples prior to analysis as a check on recovery.

mg/kg - milligrams per kilogram based on dry weight of sample.

mg/kg ww - milligrams per kilogram based on wet weight of sample.

mg/kg lwt - milligrams per kilogram based on lipid-adjusted weight of sample.

mg/L - milligrams per litre.

< - Less than.

D.L. - The reported Detection Limit, also known as the Limit of Reporting (LOR).

N/A - Result not available. Refer to qualifier code and definition for explanation.

Test results reported relate only to the samples as received by the laboratory.

UNLESS OTHERWISE STATED, ALL SAMPLES WERE RECEIVED IN ACCEPTABLE CONDITION.

Analytical results in unsigned test reports with the DRAFT watermark are subject to change, pending final QC review.

Quality Control Report

Workorder: L2103936

Report Date: 06-JUN-18

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Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
MET-200.2-CCMS-WT		Soil						
Batch	R4069728							
WG2786743-2	CRM	WT-CANMET-TILL1						
Antimony (Sb)			98.4		%		70-130	04-JUN-18
Arsenic (As)			107.9		%		70-130	04-JUN-18
Barium (Ba)			120.6		%		70-130	04-JUN-18
Beryllium (Be)			101.1		%		70-130	04-JUN-18
Boron (B)			3.2		mg/kg		0-8.2	04-JUN-18
Cadmium (Cd)			104.1		%		70-130	04-JUN-18
Chromium (Cr)			109.9		%		70-130	04-JUN-18
Cobalt (Co)			102.8		%		70-130	04-JUN-18
Copper (Cu)			106.1		%		70-130	04-JUN-18
Lead (Pb)			97.7		%		70-130	04-JUN-18
Molybdenum (Mo)			104.1		%		70-130	04-JUN-18
Nickel (Ni)			107.2		%		70-130	04-JUN-18
Selenium (Se)			0.35		mg/kg		0.11-0.51	04-JUN-18
Silver (Ag)			0.23		mg/kg		0.13-0.33	04-JUN-18
Thallium (Tl)			0.124		mg/kg		0.077-0.18	04-JUN-18
Uranium (U)			97.9		%		70-130	04-JUN-18
Vanadium (V)			109.2		%		70-130	04-JUN-18
Zinc (Zn)			105.2		%		70-130	04-JUN-18
WG2786743-4	LCS	1+2						
Antimony (Sb)			107.0		%		80-120	04-JUN-18
Arsenic (As)			104.0		%		80-120	04-JUN-18
Barium (Ba)			108.0		%		80-120	04-JUN-18
Beryllium (Be)			97.9		%		80-120	04-JUN-18
Boron (B)			97.8		%		80-120	04-JUN-18
Cadmium (Cd)			100.6		%		80-120	04-JUN-18
Chromium (Cr)			104.4		%		80-120	04-JUN-18
Cobalt (Co)			96.0		%		80-120	04-JUN-18
Copper (Cu)			98.6		%		80-120	04-JUN-18
Lead (Pb)			96.1		%		80-120	04-JUN-18
Molybdenum (Mo)			101.6		%		80-120	04-JUN-18
Nickel (Ni)			101.0		%		80-120	04-JUN-18
Selenium (Se)			102.4		%		80-120	04-JUN-18
Silver (Ag)			99.6		%		80-120	04-JUN-18
Thallium (Tl)			98.6		%		80-120	04-JUN-18

Quality Control Report

Workorder: L2103936

Report Date: 06-JUN-18

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Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
MET-200.2-CCMS-WT	Soil							
Batch	R4069728							
WG2786743-4	LCS	1+2						
Uranium (U)			95.5		%		80-120	04-JUN-18
Vanadium (V)			104.9		%		80-120	04-JUN-18
Zinc (Zn)			96.8		%		80-120	04-JUN-18
WG2786743-1	MB							
Antimony (Sb)			<0.10		mg/kg		0.1	04-JUN-18
Arsenic (As)			<0.10		mg/kg		0.1	04-JUN-18
Barium (Ba)			<0.50		mg/kg		0.5	04-JUN-18
Beryllium (Be)			<0.10		mg/kg		0.1	04-JUN-18
Boron (B)			<5.0		mg/kg		5	04-JUN-18
Cadmium (Cd)			<0.020		mg/kg		0.02	04-JUN-18
Chromium (Cr)			<0.50		mg/kg		0.5	04-JUN-18
Cobalt (Co)			<0.10		mg/kg		0.1	04-JUN-18
Copper (Cu)			<0.50		mg/kg		0.5	04-JUN-18
Lead (Pb)			<0.50		mg/kg		0.5	04-JUN-18
Molybdenum (Mo)			<0.10		mg/kg		0.1	04-JUN-18
Nickel (Ni)			<0.50		mg/kg		0.5	04-JUN-18
Selenium (Se)			<0.20		mg/kg		0.2	04-JUN-18
Silver (Ag)			<0.10		mg/kg		0.1	04-JUN-18
Thallium (Tl)			<0.050		mg/kg		0.05	04-JUN-18
Uranium (U)			<0.050		mg/kg		0.05	04-JUN-18
Vanadium (V)			<0.20		mg/kg		0.2	04-JUN-18
Zinc (Zn)			<2.0		mg/kg		2	04-JUN-18
MOISTURE-WT	Soil							
Batch	R4066014							
WG2786677-2	LCS							
% Moisture			99.8		%		90-110	02-JUN-18
WG2786677-1	MB							
% Moisture			<0.10		%		0.1	02-JUN-18
PH-WT	Soil							
Batch	R4067312							
WG2787715-1	LCS							
pH			6.98		pH units		6.9-7.1	04-JUN-18
PSA-75UM-SIEVE-WT	Soil							



Quality Control Report

Workorder: L2103936

Report Date: 06-JUN-18

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Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
PSA-75UM-SIEVE-WT	Soil							
Batch	R4072494							
WG2790066-1	DUP	L2103936-11						
% >75um		3.3	2.5	J	%	0.8	5	06-JUN-18

Quality Control Report

Workorder: L2103936

Report Date: 06-JUN-18

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Legend:

Limit	ALS Control Limit (Data Quality Objectives)
DUP	Duplicate
RPD	Relative Percent Difference
N/A	Not Available
LCS	Laboratory Control Sample
SRM	Standard Reference Material
MS	Matrix Spike
MSD	Matrix Spike Duplicate
ADE	Average Desorption Efficiency
MB	Method Blank
IRM	Internal Reference Material
CRM	Certified Reference Material
CCV	Continuing Calibration Verification
CVS	Calibration Verification Standard
LCSD	Laboratory Control Sample Duplicate

Sample Parameter Qualifier Definitions:

Qualifier	Description
J	Duplicate results and limits are expressed in terms of absolute difference.

Hold Time Exceedances:

All test results reported with this submission were conducted within ALS recommended hold times.

ALS recommended hold times may vary by province. They are assigned to meet known provincial and/or federal government requirements. In the absence of regulatory hold times, ALS establishes recommendations based on guidelines published by the US EPA, APHA Standard Methods, or Environment Canada (where available). For more information, please contact ALS.

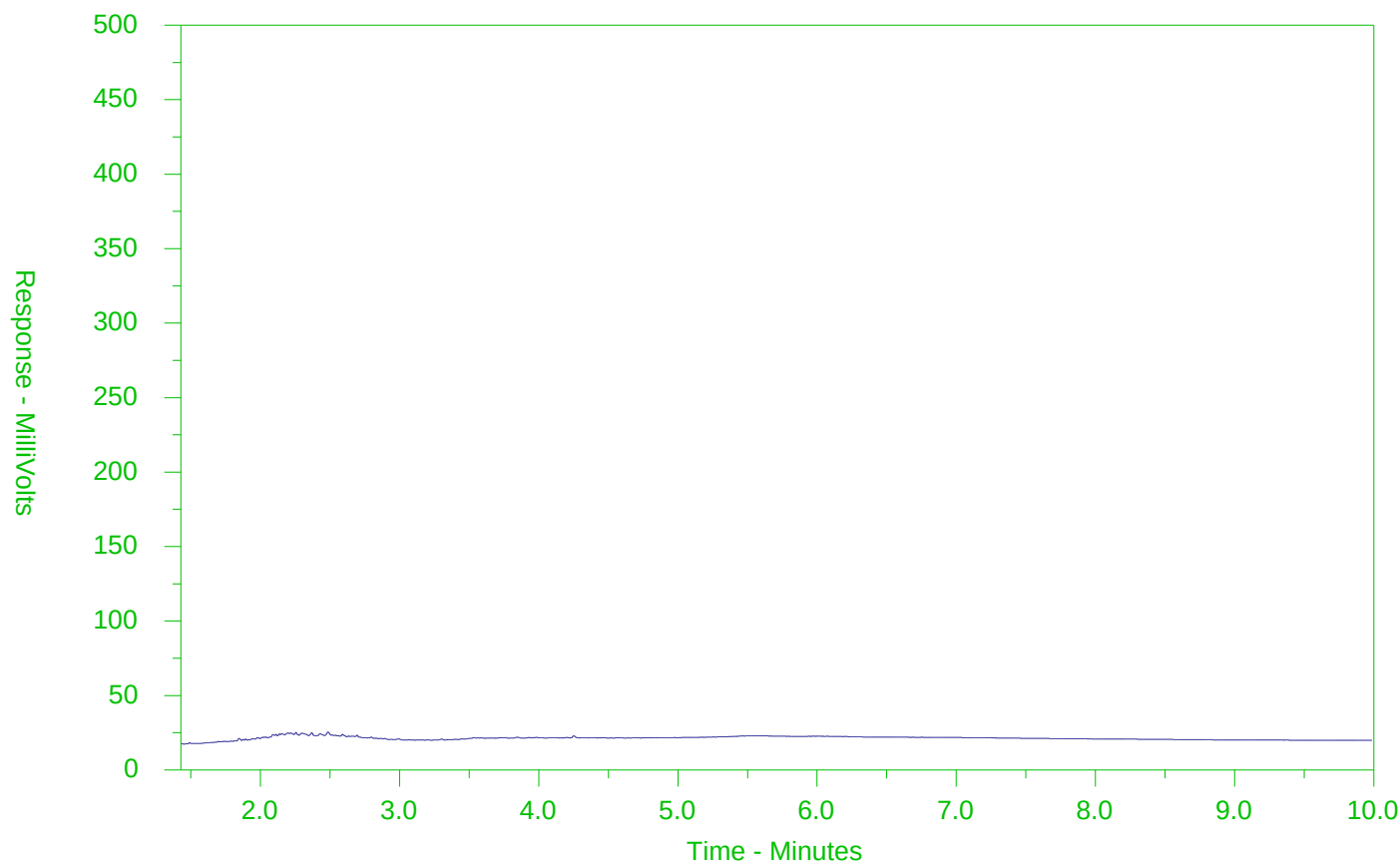
The ALS Quality Control Report is provided to ALS clients upon request. ALS includes comprehensive QC checks with every analysis to ensure our high standards of quality are met. Each QC result has a known or expected target value, which is compared against pre-determined data quality objectives to provide confidence in the accuracy of associated test results.

Please note that this report may contain QC results from anonymous Sample Duplicates and Matrix Spikes that do not originate from this Work Order.

CCME F2-F4 HYDROCARBON DISTRIBUTION REPORT



ALS Sample ID: L2103936-3
Client Sample ID: BH101M-07



← F2 →		← F3 →		← F4 →	
nC10	nC16		nC34		nC50
174°C	287°C		481°C		575°C
346°F	549°F		898°F		1067°F
Gasoline →			← Motor Oils/Lube Oils/Grease →		
← Diesel/Jet Fuels →					

The CCME F2-F4 Hydrocarbon Distribution Report (HDR) is intended to assist you in characterizing hydrocarbon products that may be present in your sample.

The scale at the bottom of the chromatogram indicates the approximate retention times of common petroleum products and four n-alkane hydrocarbon marker compounds. Retention times may vary between samples, but general patterns and distributions will remain similar.

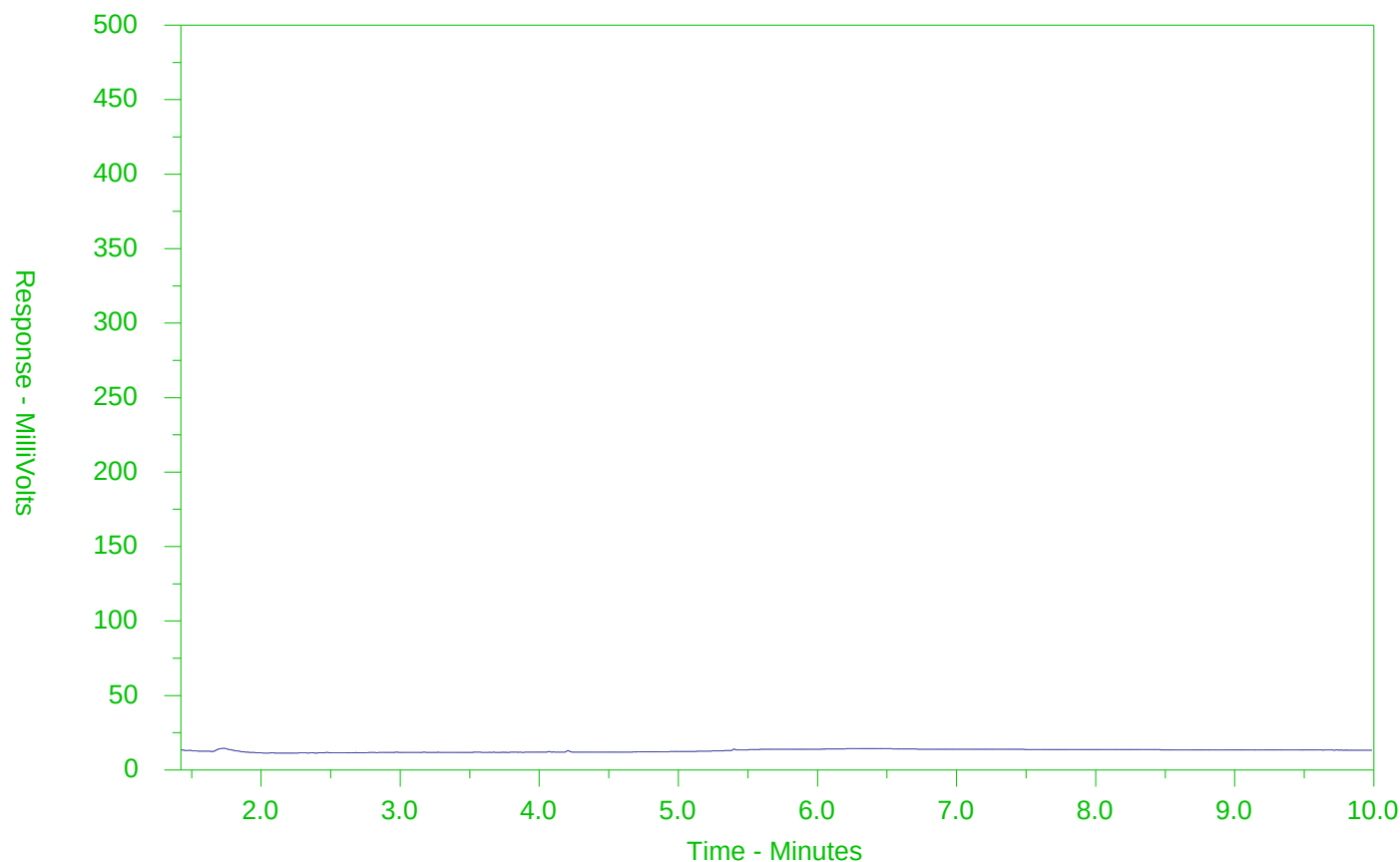
Peak heights in this report are a function of the sample concentration, the sample amount extracted, the sample dilution factor and the scale at the left.

Note: This chromatogram was produced using GC conditions that are specific to ALS Canada CCME F2-F4 method. Refer to the ALS Canada CCME F2-F4 Hydrocarbon Library for a collection of chromatograms from common reference samples (fuels, oils, etc.). The HDR Library can be found at www.alsglobal.com.

CCME F2-F4 HYDROCARBON DISTRIBUTION REPORT



ALS Sample ID: L2103936-6
Client Sample ID: BH102M-04



← F2 →		← F3 →		← F4 →	
nC10	nC16		nC34		nC50
174°C	287°C		481°C		575°C
346°F	549°F		898°F		1067°F
Gasoline →			← Motor Oils/Lube Oils/Grease →		
← Diesel/Jet Fuels →					

The CCME F2-F4 Hydrocarbon Distribution Report (HDR) is intended to assist you in characterizing hydrocarbon products that may be present in your sample.

The scale at the bottom of the chromatogram indicates the approximate retention times of common petroleum products and four n-alkane hydrocarbon marker compounds. Retention times may vary between samples, but general patterns and distributions will remain similar.

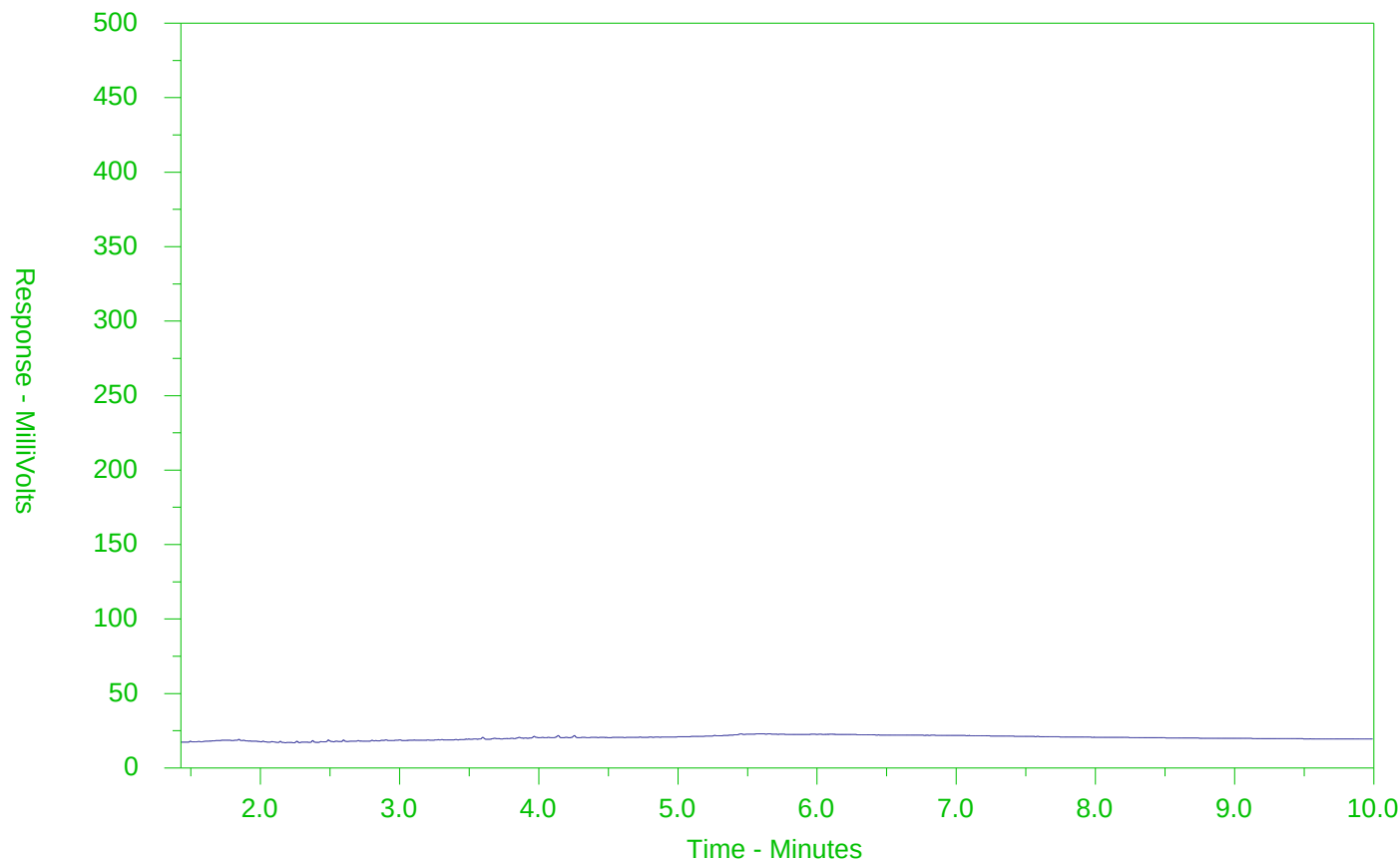
Peak heights in this report are a function of the sample concentration, the sample amount extracted, the sample dilution factor and the scale at the left.

Note: This chromatogram was produced using GC conditions that are specific to ALS Canada CCME F2-F4 method. Refer to the ALS Canada CCME F2-F4 Hydrocarbon Library for a collection of chromatograms from common reference samples (fuels, oils, etc.). The HDR Library can be found at www.alsglobal.com.

CCME F2-F4 HYDROCARBON DISTRIBUTION REPORT



ALS Sample ID: L2103936-7
Client Sample ID: Z001



← F2 →		← F3 →		← F4 →	
nC10	nC16		nC34		nC50
174°C	287°C		481°C		575°C
346°F	549°F		898°F		1067°F
Gasoline →			← Motor Oils/Lube Oils/Grease →		
← Diesel/Jet Fuels →					

The CCME F2-F4 Hydrocarbon Distribution Report (HDR) is intended to assist you in characterizing hydrocarbon products that may be present in your sample.

The scale at the bottom of the chromatogram indicates the approximate retention times of common petroleum products and four n-alkane hydrocarbon marker compounds. Retention times may vary between samples, but general patterns and distributions will remain similar.

Peak heights in this report are a function of the sample concentration, the sample amount extracted, the sample dilution factor and the scale at the left.

Note: This chromatogram was produced using GC conditions that are specific to ALS Canada CCME F2-F4 method. Refer to the ALS Canada CCME F2-F4 Hydrocarbon Library for a collection of chromatograms from common reference samples (fuels, oils, etc.). The HDR Library can be found at www.alsglobal.com.



Chain of Custody (COC) / Analytical Request Form

Canada Toll Free: 1 800 668 9878

www.alsglobal.com



L2103936-COCF

COC Number: 17 - 630095

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Report To		Contact and company name below will appear on the final report		Report Format / Distribution		Select Report Format: ☒ PDF ☒ EXCEL ☐ EDD (DIGITAL)		Select Service Level Below - Contact your AM to confirm all E&P TATs (surcharges may apply)	
Company:		PGL Environmental		Quality Control (QC) Report with Report		☐ YES ☒ NO		Regular [R] ☒ Standard TAT if received by 3 pm - business days - no surcharges apply	
Contact:		Elizabeth Brown Anna Schuster		Compare Results to Criteria on Report - provide details below if box checked		☐ YES ☒ NO		4 day [P4-20%] ☐ 3 day [P3-25%] ☐ 2 day [P2-50%] ☐	
Phone:		905-668-4908		Select Distribution: ☒ EMAIL ☐ MAIL ☐ FAX		☐ YES ☒ NO		1 Business day [E-100%]	
Company address below will appear on the final report		250 Water St. Unit 102		Email 1 or Fax: ebrown@pgl.com		☐ YES ☒ NO		Same Day, Weekend or Statutory holiday [E-200%] (Laboratory opening fees may apply)	
Street:		White ON		Email 2: pschuster@pgl.com		☐ YES ☒ NO			
City/Province:		L1W 0G5		Email 3: labdata@pgl.com		☐ YES ☒ NO			
Postal Code:				Invoice Distribution		☐ YES ☒ NO			
Invoice To		Same as Report To		Select Invoice Distribution: ☒ EMAIL ☐ MAIL ☐ FAX		☐ YES ☒ NO			
Company:		Copy of Invoice with Report		Email 1 or Fax: ebrown@pgl.com		☐ YES ☒ NO			
Contact:		Project Information		Email 2: labdata@pgl.com		☐ YES ☒ NO			
ALS Account # / Quote #:		ALS Lab Work Order # (lab use only): L2103936		AFS/Coast Center:		☐ YES ☒ NO			
Job #:		PO / AFE: 5136		Major/Minor Code:		☐ YES ☒ NO			
LSD:		Routing Code:		Requisitioner:		☐ YES ☒ NO			
ALS Sample # (lab use only)		Sample Identification and/or Coordinates (This description will appear on the report)		Date (dd-mm-yy)		Time (hh:mm)		Sample Type	
BHI01M-01		BHI01M-02		BHI01M-07		BHI02M-02		BHI02M-03	
BHI02M-04		BHI02M-05		BHI03M-01		BHI03M-02		BHI03M-03	
BHI03M-04		BHI03M-05		BHI03M-06		BHI03M-07		BHI03M-08	
BHI03M-09		BHI03M-10		BHI03M-11		BHI03M-12		BHI03M-13	
BHI03M-14		BHI03M-15		BHI03M-16		BHI03M-17		BHI03M-18	
BHI03M-19		BHI03M-20		BHI03M-21		BHI03M-22		BHI03M-23	
BHI03M-24		BHI03M-25		BHI03M-26		BHI03M-27		BHI03M-28	
BHI03M-29		BHI03M-30		BHI03M-31		BHI03M-32		BHI03M-33	
BHI03M-34		BHI03M-35		BHI03M-36		BHI03M-37		BHI03M-38	
BHI03M-39		BHI03M-40		BHI03M-41		BHI03M-42		BHI03M-43	
BHI03M-44		BHI03M-45		BHI03M-46		BHI03M-47		BHI03M-48	
BHI03M-49		BHI03M-50		BHI03M-51		BHI03M-52		BHI03M-53	
BHI03M-54		BHI03M-55		BHI03M-56		BHI03M-57		BHI03M-58	
BHI03M-59		BHI03M-60		BHI03M-61		BHI03M-62		BHI03M-63	
BHI03M-64		BHI03M-65		BHI03M-66		BHI03M-67		BHI03M-68	
BHI03M-69		BHI03M-70		BHI03M-71		BHI03M-72		BHI03M-73	
BHI03M-74		BHI03M-75		BHI03M-76		BHI03M-77		BHI03M-78	
BHI03M-79		BHI03M-80		BHI03M-81		BHI03M-82		BHI03M-83	
BHI03M-84		BHI03M-85		BHI03M-86		BHI03M-87		BHI03M-88	
BHI03M-89		BHI03M-90		BHI03M-91		BHI03M-92		BHI03M-93	
BHI03M-94		BHI03M-95		BHI03M-96		BHI03M-97		BHI03M-98	
BHI03M-99		BHI03M-100		BHI03M-101		BHI03M-102		BHI03M-103	
BHI03M-104		BHI03M-105		BHI03M-106		BHI03M-107		BHI03M-108	
BHI03M-109		BHI03M-110		BHI03M-111		BHI03M-112		BHI03M-113	
BHI03M-114		BHI03M-115		BHI03M-116		BHI03M-117		BHI03M-118	
BHI03M-119		BHI03M-120		BHI03M-121		BHI03M-122		BHI03M-123	
BHI03M-124		BHI03M-125		BHI03M-126		BHI03M-127		BHI03M-128	
BHI03M-129		BHI03M-130		BHI03M-131		BHI03M-132		BHI03M-133	
BHI03M-134		BHI03M-135		BHI03M-136		BHI03M-137		BHI03M-138	
BHI03M-139		BHI03M-140		BHI03M-141		BHI03M-142		BHI03M-143	
BHI03M-144		BHI03M-145		BHI03M-146		BHI03M-147		BHI03M-148	
BHI03M-149		BHI03M-150		BHI03M-151		BHI03M-152		BHI03M-153	
BHI03M-154		BHI03M-155		BHI03M-156		BHI03M-157		BHI03M-158	
BHI03M-159		BHI03M-160		BHI03M-161		BHI03M-162		BHI03M-163	
BHI03M-164		BHI03M-165		BHI03M-166		BHI03M-167		BHI03M-168	
BHI03M-169		BHI03M-170		BHI03M-171		BHI03M-172		BHI03M-173	
BHI03M-174		BHI03M-175		BHI03M-176		BHI03M-177		BHI03M-178	
BHI03M-179		BHI03M-180		BHI03M-181		BHI03M-182		BHI03M-183	
BHI03M-184		BHI03M-185		BHI03M-186		BHI03M-187		BHI03M-188	
BHI03M-189		BHI03M-190		BHI03M-191		BHI03M-192		BHI03M-193	
BHI03M-194		BHI03M-195		BHI03M-196		BHI03M-197		BHI03M-198	
BHI03M-199		BHI03M-200		BHI03M-201		BHI03M-202		BHI03M-203	
BHI03M-204		BHI03M-205		BHI03M-206		BHI03M-207		BHI03M-208	
BHI03M-209		BHI03M-210		BHI03M-211		BHI03M-212		BHI03M-213	
BHI03M-214		BHI03M-215		BHI03M-216		BHI03M-217		BHI03M-218	
BHI03M-219		BHI03M-220		BHI03M-221		BHI03M-222		BHI03M-223	
BHI03M-224		BHI03M-225		BHI03M-226		BHI03M-227		BHI03M-228	
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BHI03M-234		BHI03M-235		BHI03M-236		BHI03M-237		BHI03M-238	
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BHI03M-244		BHI03M-245		BHI03M-246		BHI03M-247		BHI03M-248	
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BHI03M-254		BHI03M-255		BHI03M-256		BHI03M-257		BHI03M-258	
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BHI03M-284		BHI03M-285		BHI03M-286		BHI03M-287		BHI03M-288	
BHI03M-289		BHI03M-290		BHI03M-291		BHI03M-292		BHI03M-293	
BHI03M-294		BHI03M-295		BHI03M-296		BHI03M-297		BHI03M-298	
BHI03M-299		BHI03M-300		BHI03M-301		BHI03M-302		BHI03M-303	
BHI03M-304		BHI03M-305		BHI03M-306		BHI03M-307		BHI03M-308	
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BHI03M-314		BHI03M-315		BHI03M-316		BHI03M-317		BHI03M-318	
BHI03M-319		BHI03M-320		BHI03M-321		BHI03M-322		BHI03M-323	
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BHI03M-329		BHI03M-330		BHI03M-331		BHI03M-332		BHI03M-333	
BHI03M-334		BHI03M-335		BHI03M-336		BHI03M-337		BHI03M-338	
BHI03M-339		BHI03M-340		BHI03M-341		BHI03M-342		BHI03M-343	
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BHI03M-349		BHI03M-350		BHI03M-351		BHI03M-352		BHI03M-353	
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BHI03M-359		BHI03M-360		BHI03M-361		BHI03M-362		BHI03M-363	
BHI03M-364		BHI03M-365		BHI03M-366		BHI03M-367		BHI03M-368	
BHI03M-369		BHI03M-370		BHI03M-371		BHI03M-372		BHI03M-373	
BHI03M-374		BHI03M-375		BHI03M-376		BHI03M-377		BHI03M-378	
BHI03M-379		BHI03M-380		BHI03M-381		BHI03M-382		BHI03M-383	
BHI03M-384		BHI03M-385		BHI03M-386		BHI03M-387		BHI03M-388	
BHI03M-389		BHI03M-390		BHI03M-391		BHI03M-392		BHI03M-393	
BHI03M-394		BHI03M-395		BHI03M-396		BHI03M-397		BHI03M-398	
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BHI03M-404		BHI03M-405		BHI03M-406		BHI03M-407		BHI03M-408	
BHI03M-409		BHI03M-410		BHI03M-411		BHI03M-412		BHI03M-413	
BHI03M-414		BHI03M-415		BHI03M-416		BHI03M-417		BHI03M-418	
BHI03M-419		BHI03M-420		BHI03M-421		BHI03M-422		BHI03M-423	
BHI03M-424		BHI03M-425		BHI03M-426		BHI03M-427		BHI03M-428	
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BHI03M-439		BHI03M-440		BHI03M-441		BHI03M-442		BHI03M-443	
BHI03M-444		BHI03M-445		BHI03M-446		BHI03M-447		BHI03M-448	
BHI03M-449		BHI03M-450		BHI03M-451		BHI03M-452		BHI03M-453	
BHI03M-454		BHI03M-455		BHI03M-456		BHI03M-457		BHI03M-458	
BHI03M-459		BHI03M-460		BHI03M-461		BHI03M-462		BHI03M-463	
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BHI03M-469		BHI03M-470		BHI03M-471		BHI03M-472		BHI03M-473	
BHI03M-474		BHI03M-475		BHI03M-476		BHI03M-477		BHI03M-478	
BHI03M-479		BHI03M-480		BHI03M-481		BHI03M-482		BHI03M-483	
BHI03M-484		BHI03M-485		BHI03M-486		BHI03M-487		BHI03M-488	
BHI03M-489		BHI03M-490		BHI03M-491		BHI03M-492		BHI03M-493	
BHI03M-494		BHI03M-495		BHI03M-496		BHI03M-497		BHI03M-498	
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BHI03M-514		BHI03M-515		BHI03M-516		BHI03M-517		BHI03M-518	
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BHI03M-544		BHI03M-545		BHI03M-546		BHI03M-547		BHI03M-548	
BHI03M-549		BHI03M-550		BHI03M-551		BHI03M-552		BHI03M-553	
BHI03M-554		BHI03M-555		BHI03M-556		BHI03M-557		BHI03M-558	
BHI03M-559		BHI03M-560		BHI03M-561		BHI03M-562		BHI03M-563	
BHI03M-564		BHI03M-565		BHI03M-566		BHI03M-567		BHI03M-568	
BHI03M-569		BHI03M-570		BHI03M-571		BHI03M-572		BHI03M-573	
BHI03M-574		BHI03M-575		BHI03M-576		BHI03M-577		BHI03M-578	
BHI03M-579		BHI03M-580		BHI03M-581		BHI03M-582		BHI03M-583	
BHI03M-584		BHI03M-585		BHI03M-586		BHI03M-587		BHI03M-588	
BHI03M-589		BHI03M-590		BHI03M-591		BHI03M-592		BHI03M-593	
BHI03M-594		BHI03M-595		BHI03M-596		BHI03			



Chain of Custody (COC) / Analytical Request Form

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COC Number: 17 - 622344
Page 2 of 2

Report To Contact and company name below will appear on the final report		Report Format / Distribution Select Report Format: ☒ PDF ☒ EXCEL ☐ EDI (DIGITAL) Quality Control (QC) Report with Report ☐ YES ☒ NO ☐ Compare Results to Criteria on Report - provide details below if box checked Select Distribution: ☒ EMAIL ☐ MAIL ☐ FAX	
Company: AGL Environmental Contact: Elizabeth Kavan / Paula Schuster Phone: 408-668-1408		Email 1 or Fax: ekavan@agrup.com Email 2: pschuster@agrup.com Email 3: labdata@agrup.com	
Street: 250 Water St., Unit 102 City/Province: Whitby, ON Postal Code: L1N 0B5		Invoice Distribution: ☒ EMAIL ☐ MAIL ☐ FAX	
Invoice To: Same as Report To ☒ YES ☐ NO		Select Invoice Distribution: ☒ EMAIL ☐ MAIL ☐ FAX	
Copy of Invoice with Report ☒ YES ☐ NO		Email 1 or Fax: ekavan@agrup.com Email 2: labdata@agrup.com	
Company: ALS Environmental Contact: Elizabeth Kavan / Paula Schuster		Oil and Gas Required Fields (client use) AFECost Center: Major/Minor Code: Requisitioner: Location:	
ALS Account # / Quote #: 5138-0302		ALS Contact: ALS	
Job #: 5138-0302		Date: 30-MAY-18	
PO / AFE: 5138-0302		Time (hh:mm): 12:00	
LSD: 315		Sample Type: 60.1	
ALS Lab Work Order # (lab use only): L2103436		Sampler:	
Sample Identification and/or Coordinates (This description will appear on the report): Trip Blank		Date (dd-mm-yy): 30-MAY-18	
ALS Sample # (lab use only):		Time (hh:mm):	
Are samples taken from a Regulated DW System? ☐ YES ☒ NO		Sample Type:	
Are samples for human consumption? ☐ YES ☒ NO		Time (hh:mm):	
Drinking Water (DW) Samples (client use)		Special Instructions / Specify Criteria to add on report by clicking on the drop-down list below (electronic COC only): * O.Reg 153 Table 7 * Results needed June 6 (5 day TAT)	
SHIPMENT RELEASE (client use) Released by: E. Kavan Date: 30-MAY-18 Time: 12:50		INITIAL SHIPMENT RECEPTION (lab use only) Received by: Anthony Feghly Date: May 31 2018 Time: 9:00AM	
WHITE - LABORATORY COPY YELLOW - CLIENT COPY		WHITE - LABORATORY COPY YELLOW - CLIENT COPY	
FINAL SHIPMENT RECEPTION (lab use only) Received by: Anthony Feghly Date: May 31 2018 Time: 9:00AM		FINAL SHIPMENT RECEPTION (lab use only) Received by: Anthony Feghly Date: May 31 2018 Time: 9:00AM	



Pottinger Gaherty Environmental (Whitby)
ATTN: PAULA SCHUSTER
102 - 250 WATER STREET
WHITBY ON L1N 0G5

Date Received: 04-JUN-18
Report Date: 06-JUN-18 14:22 (MT)
Version: FINAL

Client Phone: 905-668-4908

Certificate of Analysis

Lab Work Order #: L2105466
Project P.O. #: NOT SUBMITTED
Job Reference: 5138-03.02
C of C Numbers: 17-630102
Legal Site Desc:



Mathy Mahadera
Account Manager

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ADDRESS: 95 West Beaver Creek Road, Unit 1, Richmond Hill, ON L4B 1H2 Canada | Phone: +1 905 881 9887 | Fax: +1 905 881 8062
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ALS ENVIRONMENTAL ANALYTICAL REPORT

Sample ID Description Sampled Date Sampled Time Client ID		L2105466-1 WATER 04-JUN-18 12:00 BH101M	L2105466-2 WATER 04-JUN-18 12:00 BH102M	L2105466-3 WATER 04-JUN-18 12:00 BH103M	L2105466-4 WATER 04-JUN-18 12:00 Z001	L2105466-5 WATER 04-JUN-18 12:00 Z002
Grouping	Analyte					
WATER						
Dissolved Metals	Dissolved Metals Filtration Location	FIELD		FIELD	FIELD	
	Antimony (Sb)-Dissolved (ug/L)	DLHC <1.0		DLHC <1.0	DLHC <1.0	
	Arsenic (As)-Dissolved (ug/L)	DLHC <1.0		DLHC <1.0	DLHC <1.0	
	Barium (Ba)-Dissolved (ug/L)	DLHC 454		DLHC 143	DLHC 148	
	Beryllium (Be)-Dissolved (ug/L)	DLHC <1.0		DLHC <1.0	DLHC <1.0	
	Boron (B)-Dissolved (ug/L)	DLHC <100		DLHC 410	DLHC 410	
	Cadmium (Cd)-Dissolved (ug/L)	DLHC 1.32		DLHC <0.050	DLHC <0.050	
	Chromium (Cr)-Dissolved (ug/L)	DLHC <5.0		DLHC <5.0	DLHC <5.0	
	Cobalt (Co)-Dissolved (ug/L)	DLHC <1.0		DLHC <1.0	DLHC <1.0	
	Copper (Cu)-Dissolved (ug/L)	DLHC 5.7		DLHC <2.0	DLHC <2.0	
	Lead (Pb)-Dissolved (ug/L)	DLHC 0.57		DLHC <0.50	DLHC <0.50	
	Molybdenum (Mo)-Dissolved (ug/L)	DLHC 4.12		DLHC 3.40	DLHC 3.21	
	Nickel (Ni)-Dissolved (ug/L)	DLHC <5.0		DLHC <5.0	DLHC <5.0	
	Selenium (Se)-Dissolved (ug/L)	DLHC <0.50		DLHC <0.50	DLHC <0.50	
	Silver (Ag)-Dissolved (ug/L)	DLHC <0.50		DLHC <0.50	DLHC <0.50	
	Sodium (Na)-Dissolved (ug/L)	DLHC 3040000		DLHC 263000	DLHC 265000	
	Thallium (Tl)-Dissolved (ug/L)	DLHC 0.19		DLHC <0.10	DLHC <0.10	
	Uranium (U)-Dissolved (ug/L)	DLHC 3.01		DLHC 8.16	DLHC 7.87	
	Vanadium (V)-Dissolved (ug/L)	DLHC <5.0		DLHC <5.0	DLHC <5.0	
	Zinc (Zn)-Dissolved (ug/L)	DLHC 80		DLHC <10	DLHC <10	
Speciated Metals	Chromium, Hexavalent (ug/L)			<1.0	<1.0	
Volatile Organic Compounds	Acetone (ug/L)	<30	<30	<30	<30	
	Benzene (ug/L)	<0.50	<0.50	<0.50	<0.50	<0.50
	Bromodichloromethane (ug/L)	<2.0	<2.0	<2.0	<2.0	
	Bromoform (ug/L)	<5.0	<5.0	<5.0	<5.0	
	Bromomethane (ug/L)	<0.50	<0.50	<0.50	<0.50	
	Carbon tetrachloride (ug/L)	<0.20	<0.20	<0.20	<0.20	
	Chlorobenzene (ug/L)	<0.50	<0.50	<0.50	<0.50	
	Dibromochloromethane (ug/L)	<2.0	<2.0	<2.0	<2.0	
	Chloroform (ug/L)	<1.0	<1.0	<1.0	<1.0	
	1,2-Dibromoethane (ug/L)	<0.20	<0.20	<0.20	<0.20	
	1,2-Dichlorobenzene (ug/L)	<0.50	<0.50	<0.50	<0.50	
	1,3-Dichlorobenzene (ug/L)	<0.50	<0.50	<0.50	<0.50	
	1,4-Dichlorobenzene (ug/L)	<0.50	<0.50	<0.50	<0.50	
	Dichlorodifluoromethane (ug/L)	<2.0	<2.0	<2.0	<2.0	
	1,1-Dichloroethane (ug/L)	<0.50	<0.50	<0.50	<0.50	
	1,2-Dichloroethane (ug/L)	<0.50	<0.50	<0.50	<0.50	

* Please refer to the Reference Information section for an explanation of any qualifiers detected.

ALS ENVIRONMENTAL ANALYTICAL REPORT

		Sample ID Description Sampled Date Sampled Time Client ID	L2105466-6 WATER 04-JUN-18 12:00 FIELD BLANK	L2105466-7 WATER 04-JUN-18 12:00 TRIP BLANK			
Grouping	Analyte						
WATER							
Dissolved Metals	Dissolved Metals Filtration Location						
	Antimony (Sb)-Dissolved (ug/L)						
	Arsenic (As)-Dissolved (ug/L)						
	Barium (Ba)-Dissolved (ug/L)						
	Beryllium (Be)-Dissolved (ug/L)						
	Boron (B)-Dissolved (ug/L)						
	Cadmium (Cd)-Dissolved (ug/L)						
	Chromium (Cr)-Dissolved (ug/L)						
	Cobalt (Co)-Dissolved (ug/L)						
	Copper (Cu)-Dissolved (ug/L)						
	Lead (Pb)-Dissolved (ug/L)						
	Molybdenum (Mo)-Dissolved (ug/L)						
	Nickel (Ni)-Dissolved (ug/L)						
	Selenium (Se)-Dissolved (ug/L)						
	Silver (Ag)-Dissolved (ug/L)						
	Sodium (Na)-Dissolved (ug/L)						
	Thallium (Tl)-Dissolved (ug/L)						
	Uranium (U)-Dissolved (ug/L)						
	Vanadium (V)-Dissolved (ug/L)						
	Zinc (Zn)-Dissolved (ug/L)						
Speciated Metals	Chromium, Hexavalent (ug/L)						
Volatile Organic Compounds	Acetone (ug/L)		<30	<30			
	Benzene (ug/L)		<0.50	<0.50			
	Bromodichloromethane (ug/L)		<2.0	<2.0			
	Bromoform (ug/L)		<5.0	<5.0			
	Bromomethane (ug/L)		<0.50	<0.50			
	Carbon tetrachloride (ug/L)		<0.20	<0.20			
	Chlorobenzene (ug/L)		<0.50	<0.50			
	Dibromochloromethane (ug/L)		<2.0	<2.0			
	Chloroform (ug/L)		<1.0	<1.0			
	1,2-Dibromoethane (ug/L)		<0.20	<0.20			
	1,2-Dichlorobenzene (ug/L)		<0.50	<0.50			
	1,3-Dichlorobenzene (ug/L)		<0.50	<0.50			
	1,4-Dichlorobenzene (ug/L)		<0.50	<0.50			
	Dichlorodifluoromethane (ug/L)		<2.0	<2.0			
	1,1-Dichloroethane (ug/L)		<0.50	<0.50			
	1,2-Dichloroethane (ug/L)		<0.50	<0.50			

* Please refer to the Reference Information section for an explanation of any qualifiers detected.

ALS ENVIRONMENTAL ANALYTICAL REPORT

		Sample ID	L2105466-1	L2105466-2	L2105466-3	L2105466-4	L2105466-5
		Description	WATER	WATER	WATER	WATER	WATER
		Sampled Date	04-JUN-18	04-JUN-18	04-JUN-18	04-JUN-18	04-JUN-18
		Sampled Time	12:00	12:00	12:00	12:00	12:00
		Client ID	BH101M	BH102M	BH103M	Z001	Z002
Grouping	Analyte						
WATER							
Volatile Organic Compounds	1,1-Dichloroethylene (ug/L)	<0.50	<0.50	<0.50	<0.50		
	cis-1,2-Dichloroethylene (ug/L)	<0.50	<0.50	<0.50	<0.50		
	trans-1,2-Dichloroethylene (ug/L)	<0.50	<0.50	<0.50	<0.50		
	Methylene Chloride (ug/L)	<5.0	<5.0	<5.0	<5.0		
	1,2-Dichloropropane (ug/L)	<0.50	<0.50	<0.50	<0.50		
	cis-1,3-Dichloropropene (ug/L)	<0.30	<0.30	<0.30	<0.30		
	trans-1,3-Dichloropropene (ug/L)	<0.30	<0.30	<0.30	<0.30		
	1,3-Dichloropropene (cis & trans) (ug/L)	<0.50	<0.50	<0.50	<0.50		
	Ethylbenzene (ug/L)	<0.50	<0.50	<0.50	<0.50	<0.50	
	n-Hexane (ug/L)	<0.50	<0.50	<0.50	<0.50		
	Methyl Ethyl Ketone (ug/L)	<20	<20	<20	<20		
	Methyl Isobutyl Ketone (ug/L)	<20	<20	<20	<20		
	MTBE (ug/L)	<2.0	<2.0	<2.0	<2.0		
	Styrene (ug/L)	<0.50	<0.50	<0.50	<0.50		
	1,1,1,2-Tetrachloroethane (ug/L)	<0.50	<0.50	<0.50	<0.50		
	1,1,2,2-Tetrachloroethane (ug/L)	<0.50	<0.50	<0.50	<0.50		
	Tetrachloroethylene (ug/L)	<0.50	<0.50	<0.50	<0.50		
	Toluene (ug/L)	<0.50	<0.50	<0.50	<0.50	<0.50	
	1,1,1-Trichloroethane (ug/L)	<0.50	<0.50	<0.50	<0.50		
	1,1,2-Trichloroethane (ug/L)	<0.50	<0.50	<0.50	<0.50		
	Trichloroethylene (ug/L)	<0.50	<0.50	<0.50	<0.50		
	Trichlorofluoromethane (ug/L)	<5.0	<5.0	<5.0	<5.0		
	Vinyl chloride (ug/L)	<0.50	<0.50	<0.50	<0.50		
	o-Xylene (ug/L)	<0.30	<0.30	<0.30	<0.30	<0.30	
	m+p-Xylenes (ug/L)	<0.40	<0.40	<0.40	<0.40	<0.40	
	Xylenes (Total) (ug/L)	<0.50	<0.50	<0.50	<0.50	<0.50	
	Surrogate: 4-Bromofluorobenzene (%)	95.4	95.2	93.9	94.1	96.2	
	Surrogate: 1,4-Difluorobenzene (%)	100.1	99.8	99.6	100.3	99.5	
Hydrocarbons	F1 (C6-C10) (ug/L)	<25	<25			<25	
	F1-BTEX (ug/L)	<25	<25			<25	
	F2 (C10-C16) (ug/L)	<100	<100			<100	
	F3 (C16-C34) (ug/L)	<250	<250			<250	
	F4 (C34-C50) (ug/L)	<250	<250			<250	
	Total Hydrocarbons (C6-C50) (ug/L)	<370	<370			<370	
	Chrom. to baseline at nC50	YES	YES			YES	
	Surrogate: 2-Bromobenzotrifluoride (%)	85.0	97.0			90.3	
	Surrogate: 3,4-Dichlorotoluene (%)	95.3	88.8			81.9	

* Please refer to the Reference Information section for an explanation of any qualifiers detected.

ALS ENVIRONMENTAL ANALYTICAL REPORT

		Sample ID Description Sampled Date Sampled Time Client ID	L2105466-6 WATER 04-JUN-18 12:00 FIELD BLANK	L2105466-7 WATER 04-JUN-18 12:00 TRIP BLANK		
Grouping	Analyte					
WATER						
Volatile Organic Compounds	1,1-Dichloroethylene (ug/L)	<0.50	<0.50			
	cis-1,2-Dichloroethylene (ug/L)	<0.50	<0.50			
	trans-1,2-Dichloroethylene (ug/L)	<0.50	<0.50			
	Methylene Chloride (ug/L)	<5.0	<5.0			
	1,2-Dichloropropane (ug/L)	<0.50	<0.50			
	cis-1,3-Dichloropropene (ug/L)	<0.30	<0.30			
	trans-1,3-Dichloropropene (ug/L)	<0.30	<0.30			
	1,3-Dichloropropene (cis & trans) (ug/L)	<0.50	<0.50			
	Ethylbenzene (ug/L)	<0.50	<0.50			
	n-Hexane (ug/L)	<0.50	<0.50			
	Methyl Ethyl Ketone (ug/L)	<20	<20			
	Methyl Isobutyl Ketone (ug/L)	<20	<20			
	MTBE (ug/L)	<2.0	<2.0			
	Styrene (ug/L)	<0.50	<0.50			
	1,1,1,2-Tetrachloroethane (ug/L)	<0.50	<0.50			
	1,1,2,2-Tetrachloroethane (ug/L)	<0.50	<0.50			
	Tetrachloroethylene (ug/L)	<0.50	<0.50			
	Toluene (ug/L)	<0.50	<0.50			
	1,1,1-Trichloroethane (ug/L)	<0.50	<0.50			
	1,1,2-Trichloroethane (ug/L)	<0.50	<0.50			
	Trichloroethylene (ug/L)	<0.50	<0.50			
	Trichlorofluoromethane (ug/L)	<5.0	<5.0			
	Vinyl chloride (ug/L)	<0.50	<0.50			
	o-Xylene (ug/L)	<0.30	<0.30			
	m+p-Xylenes (ug/L)	<0.40	<0.40			
	Xylenes (Total) (ug/L)	<0.50	<0.50			
	Surrogate: 4-Bromofluorobenzene (%)	93.7	93.6			
	Surrogate: 1,4-Difluorobenzene (%)	100.0	99.9			
Hydrocarbons	F1 (C6-C10) (ug/L)	<25	<25			
	F1-BTEX (ug/L)	<25	<25			
	F2 (C10-C16) (ug/L)					
	F3 (C16-C34) (ug/L)					
	F4 (C34-C50) (ug/L)					
	Total Hydrocarbons (C6-C50) (ug/L)					
	Chrom. to baseline at nC50					
	Surrogate: 2-Bromobenzotrifluoride (%)					
	Surrogate: 3,4-Dichlorotoluene (%)	89.1	97.3			

* Please refer to the Reference Information section for an explanation of any qualifiers detected.

Reference Information

Qualifiers for Sample Submission Listed:

Qualifier	Description
CINT	Cooling initiated. Samples were received packed with ice or ice packs and were sampled the same day as received.

QC Samples with Qualifiers & Comments:

QC Type Description	Parameter	Qualifier	Applies to Sample Number(s)
Matrix Spike	Barium (Ba)-Dissolved	MS-B	L2105466-1, -3, -4
Matrix Spike	Boron (B)-Dissolved	MS-B	L2105466-1, -3, -4
Matrix Spike	Sodium (Na)-Dissolved	MS-B	L2105466-1, -3, -4
Matrix Spike	Uranium (U)-Dissolved	MS-B	L2105466-1, -3, -4

Qualifiers for Individual Parameters Listed:

Qualifier	Description
DLHC	Detection Limit Raised: Dilution required due to high concentration of test analyte(s).
MS-B	Matrix Spike recovery could not be accurately calculated due to high analyte background in sample.

Test Method References:

ALS Test Code	Matrix	Test Description	Method Reference**
BTX-511-HS-WT	Water	BTEX by Headspace BTX is determined by analyzing by headspace-GC/MS.	SW846 8260 (511)
CR-CR6-IC-R511-WT	Water	Hex Chrom-O.Reg 153/04 (July 2011) This analysis is carried out using procedures adapted from "Test Methods for Evaluating Solid Waste" SW-846, Method 7199, published by the United States Environmental Protection Agency (EPA). The procedure involves analysis for chromium (VI) by ion chromatography using diphenylcarbazide in a sulphuric acid solution. Chromium (III) is calculated as the difference between the total chromium and the chromium (VI) results. Analysis conducted in accordance with the Protocol for Analytical Methods Used in the Assessment of Properties under Part XV.1 of the Environmental Protection Act (July 1, 2011).	EPA 7199
F1-F4-511-CALC-WT	Water	F1-F4 Hydrocarbon Calculated Parameters	CCME CWS-PHC, Pub #1310, Dec 2001-L

Analytical methods used for analysis of CCME Petroleum Hydrocarbons have been validated and comply with the Reference Method for the CWS PHC.

In cases where results for both F4 and F4G are reported, the greater of the two results must be used in any application of the CWS PHC guidelines and the gravimetric heavy hydrocarbons cannot be added to the C6 to C50 hydrocarbons.
 In samples where BTEX and F1 were analyzed, F1-BTEX represents a value where the sum of Benzene, Toluene, Ethylbenzene and total Xylenes has been subtracted from F1.

In samples where PAHs, F2 and F3 were analyzed, F2-Naphth represents the result where Naphthalene has been subtracted from F2. F3-PAH represents a result where the sum of Benzo(a)anthracene, Benzo(a)pyrene, Benzo(b)fluoranthene, Benzo(k)fluoranthene, Dibenzo(a,h)anthracene, Fluoranthene, Indeno(1,2,3-cd)pyrene, Phenanthrene, and Pyrene has been subtracted from F3.

Unless otherwise qualified, the following quality control criteria have been met for the F1 hydrocarbon range:

1. All extraction and analysis holding times were met.
2. Instrument performance showing response factors for C6 and C10 within 30% of the response factor for toluene.
3. Linearity of gasoline response within 15% throughout the calibration range.

Unless otherwise qualified, the following quality control criteria have been met for the F2-F4 hydrocarbon ranges:

1. All extraction and analysis holding times were met.
2. Instrument performance showing C10, C16 and C34 response factors within 10% of their average.
3. Instrument performance showing the C50 response factor within 30% of the average of the C10, C16 and C34 response factors.
4. Linearity of diesel or motor oil response within 15% throughout the calibration range.

F1-HS-511-WT	Water	F1-O.Reg 153/04 (July 2011)	E3398/CCME TIER 1-HS
Fraction F1 is determined by analyzing by headspace-GC/FID.			

Analysis conducted in accordance with the Protocol for Analytical Methods Used in the Assessment of Properties under Part XV.1 of the Environmental Protection Act (July 1, 2011), unless a subset of the Analytical Test Group (ATG) has been requested (the Protocol states that all analytes in an ATG must be reported).

F2-F4-511-WT	Water	F2-F4-O.Reg 153/04 (July 2011)	EPA 3511/CCME Tier 1
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Petroleum Hydrocarbons (F2-F4 fractions) are extracted from water using a hexane micro-extraction technique. Instrumental analysis is by GC-FID, as per the Reference Method for the Canada-Wide Standard for Petroleum Hydrocarbons in Soil Tier 1 Method, CCME, 2001.

Analysis conducted in accordance with the Protocol for Analytical Methods Used in the Assessment of Properties under Part XV.1 of the Environmental Protection Act (July 1, 2011), unless a subset of the Analytical Test Group (ATG) has been requested (the Protocol states that all

Reference Information

analytes in an ATG must be reported).

MET-D-UG/L-MS-WT	Water	Diss. Metals in Water by ICPMS (ug/L)	EPA 200.8
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The metal constituents of a non-acidified sample that pass through a membrane filter prior to ICP/MS analysis.

Analysis conducted in accordance with the Protocol for Analytical Methods Used in the Assessment of Properties under Part XV.1 of the Environmental Protection Act (July 1, 2011), unless a subset of the Analytical Test Group (ATG) has been requested (the Protocol states that all analytes in an ATG must be reported).

VOC-1,3-DCP-CALC-WT	Water	Regulation 153 VOCs	SW8260B/SW8270C
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VOC-511-HS-WT	Water	VOC by GCMS HS O.Reg 153/04 (July 2011)	SW846 8260
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Liquid samples are analyzed by headspace GC/MSD.

Analysis conducted in accordance with the Protocol for Analytical Methods Used in the Assessment of Properties under Part XV.1 of the Environmental Protection Act (July 1, 2011), unless a subset of the Analytical Test Group (ATG) has been requested (the Protocol states that all analytes in an ATG must be reported).

XYLENES-SUM-CALC-WT	Water	Sum of Xylene Isomer Concentrations	CALCULATION
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Total xylenes represents the sum of o-xylene and m&p-xylene.

** ALS test methods may incorporate modifications from specified reference methods to improve performance.

The last two letters of the above test code(s) indicate the laboratory that performed analytical analysis for that test. Refer to the list below:

Laboratory Definition Code	Laboratory Location
WT	ALS ENVIRONMENTAL - WATERLOO, ONTARIO, CANADA

Chain of Custody Numbers:

17-630102

GLOSSARY OF REPORT TERMS

Surrogate - A compound that is similar in behaviour to target analyte(s), but that does not occur naturally in environmental samples. For applicable tests, surrogates are added to samples prior to analysis as a check on recovery.

mg/kg - milligrams per kilogram based on dry weight of sample.

mg/kg ww - milligrams per kilogram based on wet weight of sample.

mg/kg lwt - milligrams per kilogram based on lipid-adjusted weight of sample.

mg/L - milligrams per litre.

< - Less than.

D.L. - The reported Detection Limit, also known as the Limit of Reporting (LOR).

N/A - Result not available. Refer to qualifier code and definition for explanation.

Test results reported relate only to the samples as received by the laboratory.

UNLESS OTHERWISE STATED, ALL SAMPLES WERE RECEIVED IN ACCEPTABLE CONDITION.

Analytical results in unsigned test reports with the DRAFT watermark are subject to change, pending final QC review.



Quality Control Report

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Client: Pottinger Gaherty Environmental (Whitby)

102-250 WATER STREET

WHITBY ON L1N 0G5

Contact: PAULA SCHUSTER

Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
BTX-511-HS-WT								
Water								
Batch	R4068735							
WG2787625-1	LCS							
Benzene			108.6		%		70-130	05-JUN-18
Ethylbenzene			99.6		%		70-130	05-JUN-18
m+p-Xylenes			81.2		%		70-130	05-JUN-18
o-Xylene			101.6		%		70-130	05-JUN-18
Toluene			92.6		%		70-130	05-JUN-18
WG2787625-2	MB							
Benzene			<0.50		ug/L		0.5	05-JUN-18
Ethylbenzene			<0.50		ug/L		0.5	05-JUN-18
m+p-Xylenes			<0.40		ug/L		0.4	05-JUN-18
o-Xylene			<0.30		ug/L		0.3	05-JUN-18
Toluene			<0.50		ug/L		0.5	05-JUN-18
Surrogate: 1,4-Difluorobenzene			100.3		%		70-130	05-JUN-18
Surrogate: 4-Bromofluorobenzene			94.7		%		70-130	05-JUN-18
CR-CR6-IC-R511-WT								
Water								
Batch	R4072126							
WG2789280-2	LCS							
Chromium, Hexavalent			102.4		%		80-120	05-JUN-18
WG2789280-1	MB							
Chromium, Hexavalent			<1.0		ug/L		1	05-JUN-18
F1-HS-511-WT								
Water								
Batch	R4068735							
WG2787625-1	LCS							
F1 (C6-C10)			107.9		%		80-120	05-JUN-18
WG2787625-2	MB							
F1 (C6-C10)			<25		ug/L		25	05-JUN-18
Surrogate: 3,4-Dichlorotoluene			99.7		%		60-140	05-JUN-18
F2-F4-511-WT								
Water								
Batch	R4070027							
WG2788513-2	LCS							
F2 (C10-C16)			93.9		%		70-130	05-JUN-18
F3 (C16-C34)			91.6		%		70-130	05-JUN-18
F4 (C34-C50)			92.4		%		70-130	05-JUN-18
WG2788513-3	LCSD	WG2788513-2						
F2 (C10-C16)		93.9	89		%	5.1	50	05-JUN-18
F3 (C16-C34)		91.6	92		%	0.8	50	05-JUN-18

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Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
F2-F4-511-WT		Water						
Batch	R4070027							
WG2788513-3	LCSD	WG2788513-2						
F4 (C34-C50)		92.4	89		%	4.0	50	05-JUN-18
WG2788513-1	MB							
F2 (C10-C16)			<100		ug/L		100	05-JUN-18
F3 (C16-C34)			<250		ug/L		250	05-JUN-18
F4 (C34-C50)			<250		ug/L		250	05-JUN-18
Surrogate: 2-Bromobenzotrifluoride			84.8		%		60-140	05-JUN-18
MET-D-UG/L-MS-WT		Water						
Batch	R4069368							
WG2788531-4	DUP	L2105466-1						
Antimony (Sb)-Dissolved		<1.0	<1.0	RPD-NA	ug/L	N/A	20	05-JUN-18
Arsenic (As)-Dissolved		<1.0	<1.0	RPD-NA	ug/L	N/A	20	05-JUN-18
Barium (Ba)-Dissolved		454	448		ug/L	1.4	20	05-JUN-18
Beryllium (Be)-Dissolved		<1.0	<1.0	RPD-NA	ug/L	N/A	20	05-JUN-18
Boron (B)-Dissolved		<100	<100	RPD-NA	ug/L	N/A	20	05-JUN-18
Cadmium (Cd)-Dissolved		1.32	1.21		ug/L	8.6	20	05-JUN-18
Chromium (Cr)-Dissolved		<5.0	<5.0	RPD-NA	ug/L	N/A	20	05-JUN-18
Cobalt (Co)-Dissolved		<1.0	<1.0	RPD-NA	ug/L	N/A	20	05-JUN-18
Copper (Cu)-Dissolved		5.7	8.8	J	ug/L	3.1	4	05-JUN-18
Lead (Pb)-Dissolved		0.57	<0.50	RPD-NA	ug/L	N/A	20	05-JUN-18
Molybdenum (Mo)-Dissolved		4.12	4.01		ug/L	2.9	20	05-JUN-18
Nickel (Ni)-Dissolved		<5.0	5.8	RPD-NA	ug/L	N/A	20	05-JUN-18
Selenium (Se)-Dissolved		<0.50	<0.50	RPD-NA	ug/L	N/A	20	05-JUN-18
Silver (Ag)-Dissolved		<0.50	<0.50	RPD-NA	ug/L	N/A	20	05-JUN-18
Sodium (Na)-Dissolved		3040000	3010000		ug/L	1.0	20	05-JUN-18
Thallium (Tl)-Dissolved		0.19	0.17		ug/L	9.4	20	05-JUN-18
Uranium (U)-Dissolved		3.01	2.99		ug/L	0.7	20	05-JUN-18
Vanadium (V)-Dissolved		<5.0	<5.0	RPD-NA	ug/L	N/A	20	05-JUN-18
Zinc (Zn)-Dissolved		80	79		ug/L	1.8	20	05-JUN-18
WG2788531-2	LCS							
Antimony (Sb)-Dissolved			99.1		%		80-120	05-JUN-18
Arsenic (As)-Dissolved			98.1		%		80-120	05-JUN-18
Barium (Ba)-Dissolved			99.98		%		80-120	05-JUN-18
Beryllium (Be)-Dissolved			97.0		%		80-120	05-JUN-18
Boron (B)-Dissolved			93.8		%		80-120	05-JUN-18
Cadmium (Cd)-Dissolved			98.4		%		80-120	05-JUN-18

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Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
MET-D-UG/L-MS-WT		Water						
Batch	R4069368							
WG2788531-2	LCS							
Chromium (Cr)-Dissolved			99.9		%		80-120	05-JUN-18
Cobalt (Co)-Dissolved			99.5		%		80-120	05-JUN-18
Copper (Cu)-Dissolved			98.4		%		80-120	05-JUN-18
Lead (Pb)-Dissolved			103.0		%		80-120	05-JUN-18
Molybdenum (Mo)-Dissolved			96.1		%		80-120	05-JUN-18
Nickel (Ni)-Dissolved			98.1		%		80-120	05-JUN-18
Selenium (Se)-Dissolved			98.0		%		80-120	05-JUN-18
Silver (Ag)-Dissolved			101.0		%		80-120	05-JUN-18
Sodium (Na)-Dissolved			103.0		%		80-120	05-JUN-18
Thallium (Tl)-Dissolved			105.2		%		80-120	05-JUN-18
Uranium (U)-Dissolved			106.5		%		80-120	05-JUN-18
Vanadium (V)-Dissolved			101.0		%		80-120	05-JUN-18
Zinc (Zn)-Dissolved			96.2		%		80-120	05-JUN-18
WG2788531-1	MB							
Antimony (Sb)-Dissolved			<0.10		ug/L		0.1	05-JUN-18
Arsenic (As)-Dissolved			<0.10		ug/L		0.1	05-JUN-18
Barium (Ba)-Dissolved			<0.10		ug/L		0.1	05-JUN-18
Beryllium (Be)-Dissolved			<0.10		ug/L		0.1	05-JUN-18
Boron (B)-Dissolved			<10		ug/L		10	05-JUN-18
Cadmium (Cd)-Dissolved			<0.0050		ug/L		0.005	05-JUN-18
Chromium (Cr)-Dissolved			<0.50		ug/L		0.5	05-JUN-18
Cobalt (Co)-Dissolved			<0.10		ug/L		0.1	05-JUN-18
Copper (Cu)-Dissolved			<0.20		ug/L		0.2	05-JUN-18
Lead (Pb)-Dissolved			<0.050		ug/L		0.05	05-JUN-18
Molybdenum (Mo)-Dissolved			<0.050		ug/L		0.05	05-JUN-18
Nickel (Ni)-Dissolved			<0.50		ug/L		0.5	05-JUN-18
Selenium (Se)-Dissolved			<0.050		ug/L		0.05	05-JUN-18
Silver (Ag)-Dissolved			<0.050		ug/L		0.05	05-JUN-18
Sodium (Na)-Dissolved			<50		ug/L		50	05-JUN-18
Thallium (Tl)-Dissolved			<0.010		ug/L		0.01	05-JUN-18
Uranium (U)-Dissolved			<0.010		ug/L		0.01	05-JUN-18
Vanadium (V)-Dissolved			<0.50		ug/L		0.5	05-JUN-18
Zinc (Zn)-Dissolved			<1.0		ug/L		1	05-JUN-18
WG2788531-5	MS	L2105466-3						
Antimony (Sb)-Dissolved			104.3		%		70-130	05-JUN-18

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Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
MET-D-UG/L-MS-WT								
Water								
Batch	R4069368							
WG2788531-5 MS		L2105466-3						
Arsenic (As)-Dissolved			101.7		%		70-130	05-JUN-18
Barium (Ba)-Dissolved			N/A	MS-B	%		-	05-JUN-18
Beryllium (Be)-Dissolved			107.9		%		70-130	05-JUN-18
Boron (B)-Dissolved			N/A	MS-B	%		-	05-JUN-18
Cadmium (Cd)-Dissolved			97.8		%		70-130	05-JUN-18
Chromium (Cr)-Dissolved			99.4		%		70-130	05-JUN-18
Cobalt (Co)-Dissolved			95.3		%		70-130	05-JUN-18
Copper (Cu)-Dissolved			86.2		%		70-130	05-JUN-18
Lead (Pb)-Dissolved			91.7		%		70-130	05-JUN-18
Molybdenum (Mo)-Dissolved			98.1		%		70-130	05-JUN-18
Nickel (Ni)-Dissolved			90.5		%		70-130	05-JUN-18
Selenium (Se)-Dissolved			103.3		%		70-130	05-JUN-18
Silver (Ag)-Dissolved			97.7		%		70-130	05-JUN-18
Sodium (Na)-Dissolved			N/A	MS-B	%		-	05-JUN-18
Thallium (Tl)-Dissolved			92.5		%		70-130	05-JUN-18
Uranium (U)-Dissolved			N/A	MS-B	%		-	05-JUN-18
Vanadium (V)-Dissolved			107.5		%		70-130	05-JUN-18
VOC-511-HS-WT								
Water								
Batch	R4068735							
WG2787625-1 LCS								
1,1,1,2-Tetrachloroethane			102.0		%		70-130	05-JUN-18
1,1,2,2-Tetrachloroethane			102.5		%		70-130	05-JUN-18
1,1,1-Trichloroethane			107.3		%		70-130	05-JUN-18
1,1,2-Trichloroethane			104.5		%		70-130	05-JUN-18
1,1-Dichloroethane			109.4		%		70-130	05-JUN-18
1,1-Dichloroethylene			100.8		%		70-130	05-JUN-18
1,2-Dibromoethane			99.0		%		70-130	05-JUN-18
1,2-Dichlorobenzene			100.1		%		70-130	05-JUN-18
1,2-Dichloroethane			108.0		%		70-130	05-JUN-18
1,2-Dichloropropane			107.7		%		70-130	05-JUN-18
1,3-Dichlorobenzene			96.5		%		70-130	05-JUN-18
1,4-Dichlorobenzene			101.0		%		70-130	05-JUN-18
Acetone			100.2		%		60-140	05-JUN-18
Benzene			108.6		%		70-130	05-JUN-18

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Workorder: L2105466

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Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
VOC-511-HS-WT		Water						
Batch	R4068735							
WG2787625-1	LCS							
Bromodichloromethane			103.8		%		70-130	05-JUN-18
Bromoform			97.8		%		70-130	05-JUN-18
Bromomethane			106.3		%		60-140	05-JUN-18
Carbon tetrachloride			106.5		%		70-130	05-JUN-18
Chlorobenzene			103.2		%		70-130	05-JUN-18
Chloroform			109.7		%		70-130	05-JUN-18
cis-1,2-Dichloroethylene			103.3		%		70-130	05-JUN-18
cis-1,3-Dichloropropene			103.7		%		70-130	05-JUN-18
Dibromochloromethane			103.9		%		70-130	05-JUN-18
Dichlorodifluoromethane			86.1		%		50-140	05-JUN-18
Ethylbenzene			99.6		%		70-130	05-JUN-18
n-Hexane			115.8		%		70-130	05-JUN-18
m+p-Xylenes			81.2		%		70-130	05-JUN-18
Methyl Ethyl Ketone			112.2		%		60-140	05-JUN-18
Methyl Isobutyl Ketone			102.1		%		60-140	05-JUN-18
Methylene Chloride			103.8		%		70-130	05-JUN-18
MTBE			106.1		%		70-130	05-JUN-18
o-Xylene			101.6		%		70-130	05-JUN-18
Styrene			102.6		%		70-130	05-JUN-18
Tetrachloroethylene			98.5		%		70-130	05-JUN-18
Toluene			92.6		%		70-130	05-JUN-18
trans-1,2-Dichloroethylene			109.9		%		70-130	05-JUN-18
trans-1,3-Dichloropropene			97.3		%		70-130	05-JUN-18
Trichloroethylene			104.5		%		70-130	05-JUN-18
Trichlorofluoromethane			110.6		%		60-140	05-JUN-18
Vinyl chloride			103.5		%		60-140	05-JUN-18
WG2787625-2	MB							
1,1,1,2-Tetrachloroethane			<0.50		ug/L		0.5	05-JUN-18
1,1,2,2-Tetrachloroethane			<0.50		ug/L		0.5	05-JUN-18
1,1,1-Trichloroethane			<0.50		ug/L		0.5	05-JUN-18
1,1,2-Trichloroethane			<0.50		ug/L		0.5	05-JUN-18
1,1-Dichloroethane			<0.50		ug/L		0.5	05-JUN-18
1,1-Dichloroethylene			<0.50		ug/L		0.5	05-JUN-18
1,2-Dibromoethane			<0.20		ug/L		0.2	05-JUN-18

Quality Control Report

Workorder: L2105466

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Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
VOC-511-HS-WT		Water						
Batch	R4068735							
WG2787625-2 MB								
1,2-Dichlorobenzene			<0.50		ug/L		0.5	05-JUN-18
1,2-Dichloroethane			<0.50		ug/L		0.5	05-JUN-18
1,2-Dichloropropane			<0.50		ug/L		0.5	05-JUN-18
1,3-Dichlorobenzene			<0.50		ug/L		0.5	05-JUN-18
1,4-Dichlorobenzene			<0.50		ug/L		0.5	05-JUN-18
Acetone			<30		ug/L		30	05-JUN-18
Benzene			<0.50		ug/L		0.5	05-JUN-18
Bromodichloromethane			<2.0		ug/L		2	05-JUN-18
Bromoform			<5.0		ug/L		5	05-JUN-18
Bromomethane			<0.50		ug/L		0.5	05-JUN-18
Carbon tetrachloride			<0.20		ug/L		0.2	05-JUN-18
Chlorobenzene			<0.50		ug/L		0.5	05-JUN-18
Chloroform			<1.0		ug/L		1	05-JUN-18
cis-1,2-Dichloroethylene			<0.50		ug/L		0.5	05-JUN-18
cis-1,3-Dichloropropene			<0.30		ug/L		0.3	05-JUN-18
Dibromochloromethane			<2.0		ug/L		2	05-JUN-18
Dichlorodifluoromethane			<2.0		ug/L		2	05-JUN-18
Ethylbenzene			<0.50		ug/L		0.5	05-JUN-18
n-Hexane			<0.50		ug/L		0.5	05-JUN-18
m+p-Xylenes			<0.40		ug/L		0.4	05-JUN-18
Methyl Ethyl Ketone			<20		ug/L		20	05-JUN-18
Methyl Isobutyl Ketone			<20		ug/L		20	05-JUN-18
Methylene Chloride			<5.0		ug/L		5	05-JUN-18
MTBE			<2.0		ug/L		2	05-JUN-18
o-Xylene			<0.30		ug/L		0.3	05-JUN-18
Styrene			<0.50		ug/L		0.5	05-JUN-18
Tetrachloroethylene			<0.50		ug/L		0.5	05-JUN-18
Toluene			<0.50		ug/L		0.5	05-JUN-18
trans-1,2-Dichloroethylene			<0.50		ug/L		0.5	05-JUN-18
trans-1,3-Dichloropropene			<0.30		ug/L		0.3	05-JUN-18
Trichloroethylene			<0.50		ug/L		0.5	05-JUN-18
Trichlorofluoromethane			<5.0		ug/L		5	05-JUN-18
Vinyl chloride			<0.50		ug/L		0.5	05-JUN-18
Surrogate: 1,4-Difluorobenzene			100.3		%		70-130	05-JUN-18



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Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
VOC-511-HS-WT	Water							
Batch	R4068735							
WG2787625-2	MB							
Surrogate: 4-Bromofluorobenzene			94.7		%		70-130	05-JUN-18

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Legend:

Limit	ALS Control Limit (Data Quality Objectives)
DUP	Duplicate
RPD	Relative Percent Difference
N/A	Not Available
LCS	Laboratory Control Sample
SRM	Standard Reference Material
MS	Matrix Spike
MSD	Matrix Spike Duplicate
ADE	Average Desorption Efficiency
MB	Method Blank
IRM	Internal Reference Material
CRM	Certified Reference Material
CCV	Continuing Calibration Verification
CVS	Calibration Verification Standard
LCSD	Laboratory Control Sample Duplicate

Sample Parameter Qualifier Definitions:

Qualifier	Description
J	Duplicate results and limits are expressed in terms of absolute difference.
MS-B	Matrix Spike recovery could not be accurately calculated due to high analyte background in sample.
RPD-NA	Relative Percent Difference Not Available due to result(s) being less than detection limit.

Hold Time Exceedances:

All test results reported with this submission were conducted within ALS recommended hold times.

ALS recommended hold times may vary by province. They are assigned to meet known provincial and/or federal government requirements. In the absence of regulatory hold times, ALS establishes recommendations based on guidelines published by the US EPA, APHA Standard Methods, or Environment Canada (where available). For more information, please contact ALS.

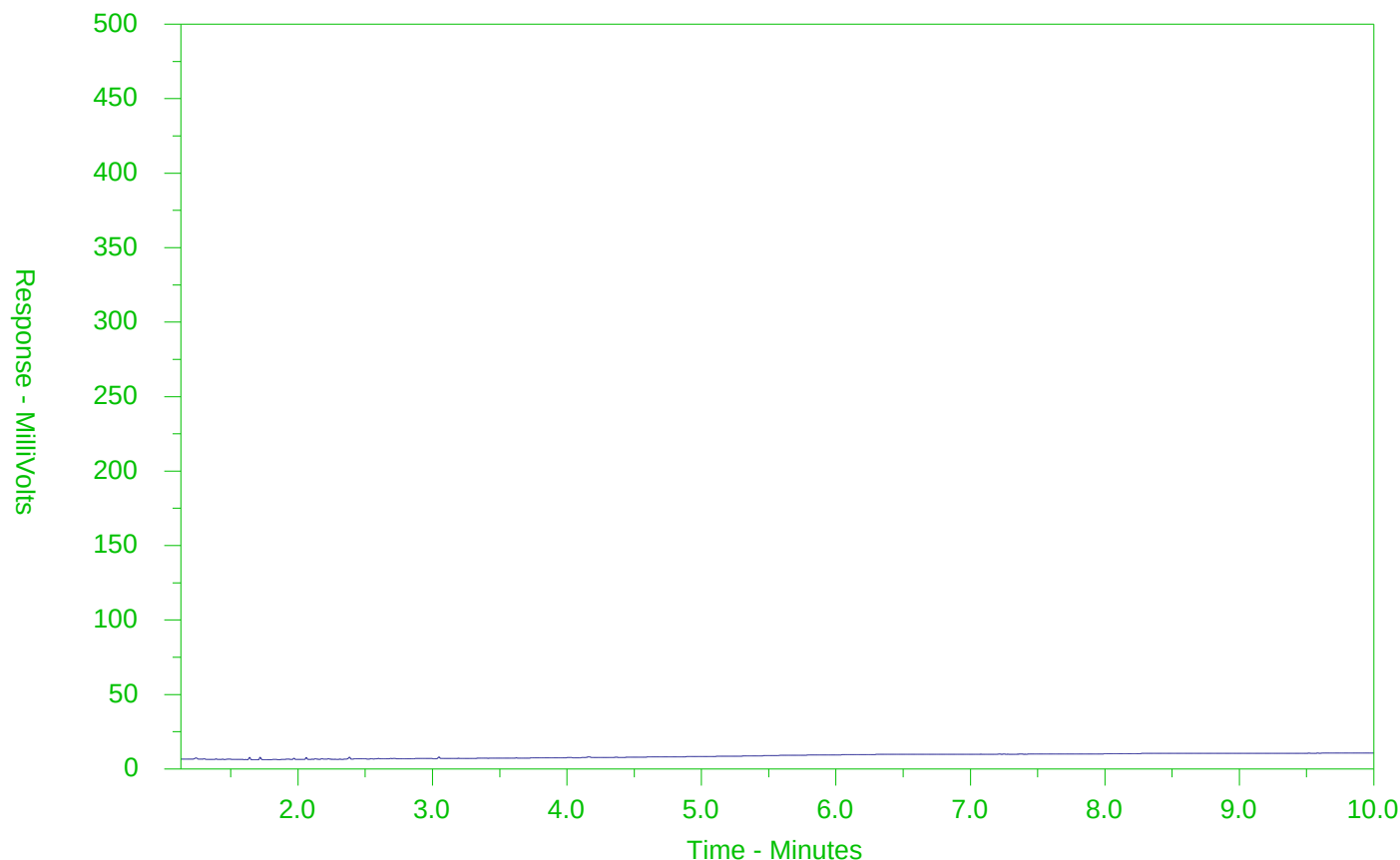
The ALS Quality Control Report is provided to ALS clients upon request. ALS includes comprehensive QC checks with every analysis to ensure our high standards of quality are met. Each QC result has a known or expected target value, which is compared against pre-determined data quality objectives to provide confidence in the accuracy of associated test results.

Please note that this report may contain QC results from anonymous Sample Duplicates and Matrix Spikes that do not originate from this Work Order.

CCME F2-F4 HYDROCARBON DISTRIBUTION REPORT



ALS Sample ID: L2105466-1
Client Sample ID: BH101M



← F2 →		← F3 →		← F4 →	
nC10	nC16		nC34		nC50
174°C	287°C		481°C		575°C
346°F	549°F		898°F		1067°F
Gasoline →			← Motor Oils/Lube Oils/Grease		
← Diesel/Jet Fuels →					

The CCME F2-F4 Hydrocarbon Distribution Report (HDR) is intended to assist you in characterizing hydrocarbon products that may be present in your sample.

The scale at the bottom of the chromatogram indicates the approximate retention times of common petroleum products and four n-alkane hydrocarbon marker compounds. Retention times may vary between samples, but general patterns and distributions will remain similar.

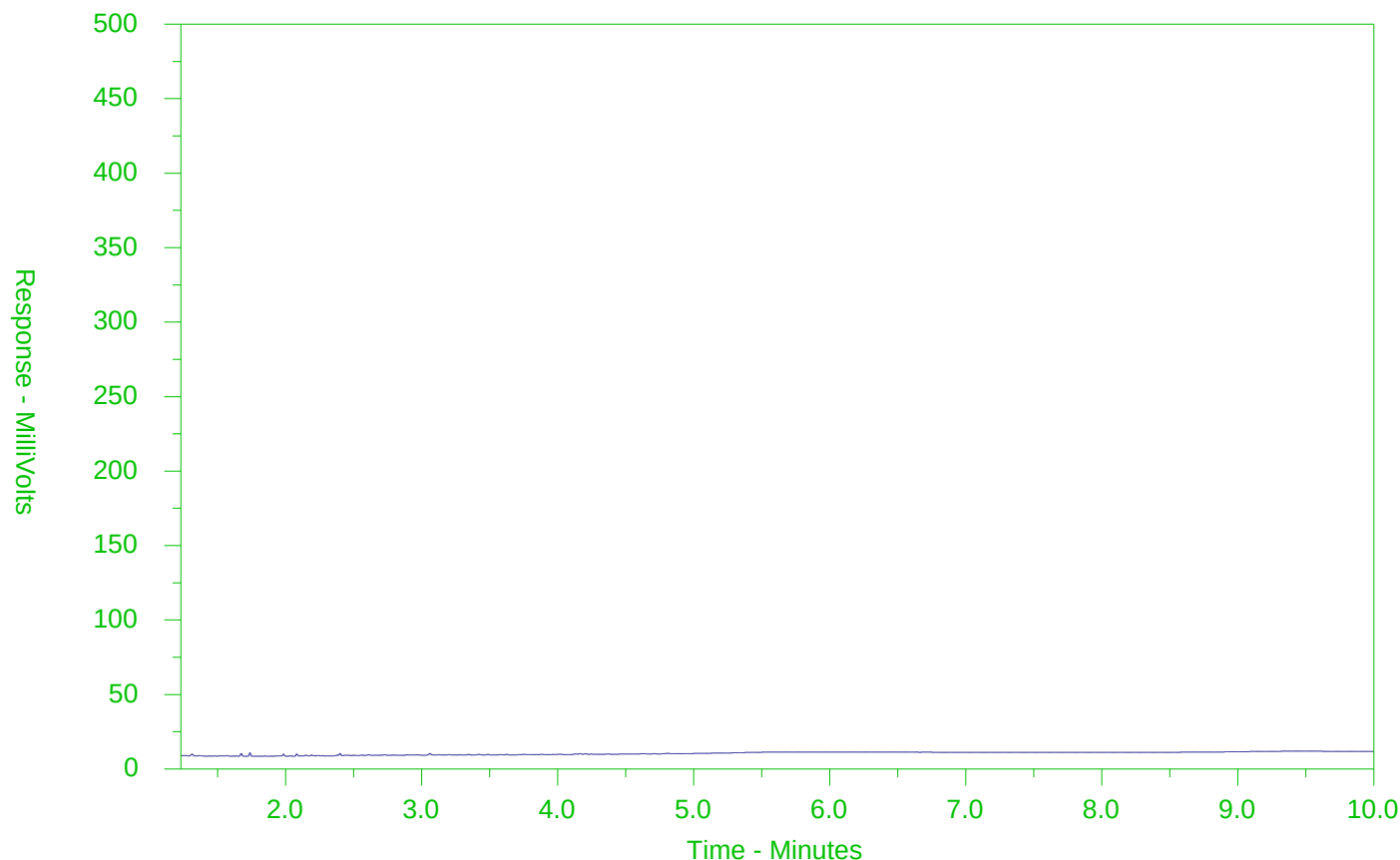
Peak heights in this report are a function of the sample concentration, the sample amount extracted, the sample dilution factor and the scale at the left.

Note: This chromatogram was produced using GC conditions that are specific to ALS Canada CCME F2-F4 method. Refer to the ALS Canada CCME F2-F4 Hydrocarbon Library for a collection of chromatograms from common reference samples (fuels, oils, etc.). The HDR Library can be found at www.alsglobal.com.

CCME F2-F4 HYDROCARBON DISTRIBUTION REPORT



ALS Sample ID: L2105466-2
Client Sample ID: BH102M



← F2 →		← F3 →		← F4 →	
nC10	nC16		nC34		nC50
174°C	287°C		481°C		575°C
346°F	549°F		898°F		1067°F
Gasoline →			← Motor Oils/Lube Oils/Grease		
← Diesel/Jet Fuels →					

The CCME F2-F4 Hydrocarbon Distribution Report (HDR) is intended to assist you in characterizing hydrocarbon products that may be present in your sample.

The scale at the bottom of the chromatogram indicates the approximate retention times of common petroleum products and four n-alkane hydrocarbon marker compounds. Retention times may vary between samples, but general patterns and distributions will remain similar.

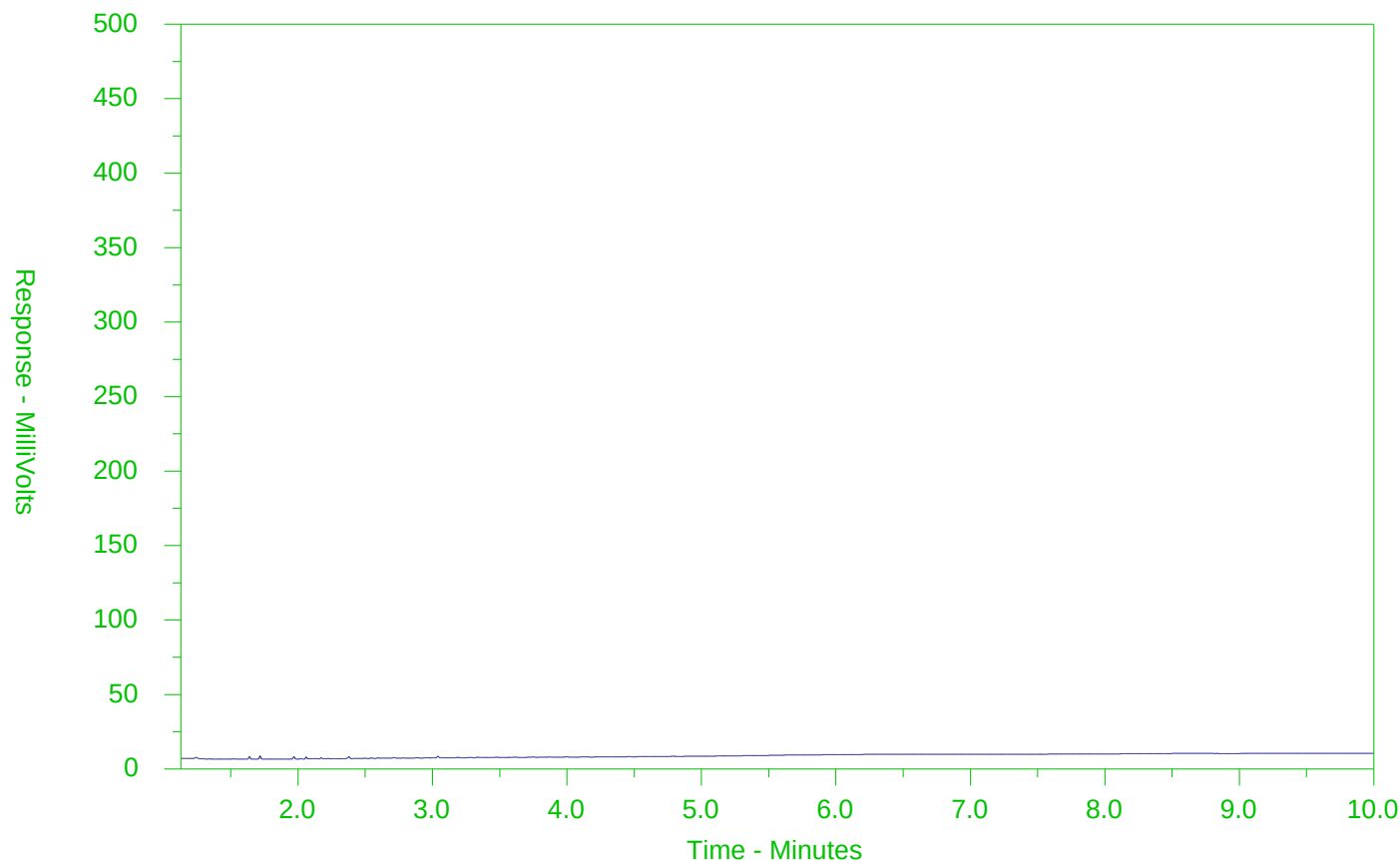
Peak heights in this report are a function of the sample concentration, the sample amount extracted, the sample dilution factor and the scale at the left.

Note: This chromatogram was produced using GC conditions that are specific to ALS Canada CCME F2-F4 method. Refer to the ALS Canada CCME F2-F4 Hydrocarbon Library for a collection of chromatograms from common reference samples (fuels, oils, etc.). The HDR Library can be found at www.alsglobal.com.

CCME F2-F4 HYDROCARBON DISTRIBUTION REPORT



ALS Sample ID: L2105466-5
Client Sample ID: Z002



← F2 →		← F3 →		← F4 →	
nC10	nC16		nC34		nC50
174°C	287°C		481°C		575°C
346°F	549°F		898°F		1067°F
Gasoline →			← Motor Oils/Lube Oils/Grease		
← Diesel/Jet Fuels →					

The CCME F2-F4 Hydrocarbon Distribution Report (HDR) is intended to assist you in characterizing hydrocarbon products that may be present in your sample.

The scale at the bottom of the chromatogram indicates the approximate retention times of common petroleum products and four n-alkane hydrocarbon marker compounds. Retention times may vary between samples, but general patterns and distributions will remain similar.

Peak heights in this report are a function of the sample concentration, the sample amount extracted, the sample dilution factor and the scale at the left.

Note: This chromatogram was produced using GC conditions that are specific to ALS Canada CCME F2-F4 method. Refer to the ALS Canada CCME F2-F4 Hydrocarbon Library for a collection of chromatograms from common reference samples (fuels, oils, etc.). The HDR Library can be found at www.alsglobal.com.



Environmental

www.alsglobal.com

Chain of Custody (COC) / Analytical Request Form

Canada Toll Free: 1 800 688 9878

COC Number: 17-630102

Affix ALS barcode label here
(lab use only)

Page 1 of 1

Report To Company: <u>Paul Whitty Environmental</u> Contact: <u>Paula Schuster</u> Phone: <u>905-668-4908</u> Company address below will appear on the final report Street: <u>250 Water St, Unit 102</u> City/Province: <u>Whitby, ON</u> Postal Code: <u>L7N 6G5</u>		Report Format / Distribution Select Report Format: ☒ PDF ☒ EXCEL ☒ EDD (DIGITAL) Quality Control (QC) Report with Report ☐ YES ☒ NO ☐ Compare Results to Criteria on Report - provide details below if box checked Select Distribution: ☒ EMAIL ☐ MAIL ☐ FAX Email 1 or Fax: <u>pschuster@psgroup.com</u> Email 2: <u>labdata@psgroup.com</u> Email 3: <u>elabor@psgroup.com</u> Invoice Distribution Select Invoice Distribution: ☒ EMAIL ☐ MAIL ☐ FAX Email 1 or Fax: <u>pschuster@psgroup.com</u> Email 2: <u>labdata@psgroup.com</u> Email 3: <u>elabor@psgroup.com</u> JPE/Cut Center: _____ Major/Minor Code: _____ Routing Code: _____ Requisitioner: _____ Location: _____		Select Service Level Below - Contact your A/E to confirm all EAP TATs (surcharges may apply) Regular (R) ☐ Standard TAT 7 received by 3 pm - business days - no surcharges apply 1 Business day (E-100%) 4 day (P4-20%) 3 day (P3-25%) 2 day (P2-50%) Same Day, Weekend or Statutory holiday (E+300%) (Laboratory opening fees may apply) ☐	
Project Information ALS Account # / Quote #: <u>5138-03-02</u> Job #: _____ PO / A/E: _____ LSD: _____		Analysis Request Indicate Flashed (F), Preserved (P) or Flashed and Preserved (FP) below Flashed (F) Preserved (P) Flashed and Preserved (FP) _____		Emergency For tests that are not to be performed according to the service level selected, you will be contacted. _____	
ALS Lab Work Order # (lab use only): <u>L2105466 ALR</u>		ALS Contact: <u>Mathy</u>		Sampler: <u>GST</u>	
Sample Identification and/or Coordinates (This description will appear on the report)		Date (dd-mm-yy)		Time (hh:mm)	
1 <u>BH101M</u>		04-06-18		12:00	
2 <u>BH102M</u>		04-06-18		12:00	
3 <u>BH103M</u>		04-06-18		12:00	
4 <u>Z001</u>		04-06-18		12:00	
5 <u>Z002</u>		04-06-18		12:00	
6 <u>FIELD BLANK</u>		04-06-18		12:00	
7 <u>TRIP BLANK</u>		04-06-18		12:00	
Drinking Water (DW) Samples (client use)		Special Instructions / Specify Criteria to add on report by clicking on the drop-down list below (electronic COC only)		Sample Condition as Received (lab use only)	
Are samples taken from a Regulated DW System? ☐ YES ☐ NO		Frozen ☐ Ice Cubes ☐ Custody seal intact ☐ Yes ☐ No		SIF Observations ☐ Yes ☐ No	
Are samples for human consumption use? ☐ YES ☐ NO		Cooling initiated ☒ Cooling initiated ☐ No		Custody seal intact ☐ Yes ☐ No	
SHIPPING RELEASE (client use)		INITIAL SHIPMENT RECEPTION (lab use only)		FINAL SHIPMENT RECEPTION (lab use only)	
Released by: <u>Graceth Tyson</u> Date: <u>20/06/17</u> Time: <u>2:30</u>		Received by: <u>Billy Emman</u> Date: <u>20/06/17</u> Time: <u>16:00</u>		Date: _____ Time: _____	
REFER TO BACK PAGE FOR ALS LOCATIONS AND SAMPLING INFORMATION Failure to complete all portions of this form may delay analysis. Please fill in this form LEGIBLY. By the use of this form the user acknowledges and agrees with the Terms and Conditions as specified on the back page of this white - report copy. 1. If any vector samples are taken from a Regulated Drinking Water (DW) System, please submit using an Authorized DW COC form.					

Appendix E
Phase Two CSM

2250 Spears Road
Oakville, ON

Phase Two Conceptual Site Model

PREPARED FOR:

Acclaim Health
2370 Speers Road
Oakville, ON L6L 5M2

PREPARED BY:

PGL Environmental Consultants
250 Water Street, Suite 102
Whitby, ON L1N 0G5

PGL File: 5138-03.04

April 24, 2019



solve and simplify

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List of Acronyms

APEC	-	area of potential environmental concern
bgs	-	below ground surface
BH##M	-	monitoring well
BTEX	-	benzene, toluene, ethylbenzene, xylenes
COC	-	contaminant of concern
COPC	-	contaminant(s) of potential concern
CSM	-	Conceptual Site Model
ESA	-	Environmental Site Assessment
FIP	-	fire insurance plan
O.Reg.	-	Ontario Regulation
PCA	-	potentially contaminating activity
PGL	-	PGL Environmental Consultants
PHCs	-	petroleum hydrocarbons
RMM	-	risk management measure
SCS	-	Site Condition Standards
VOCs	-	volatile organic compounds

1.0 INTRODUCTION

Acclaim Health retained PGL Environmental Consultants (PGL) to conduct a Phase Two Environmental Site Assessment (ESA) for the property at 2250 Speers Road in Oakville, Ontario (the Site). The Phase Two ESA will be used to support a Record of Site Condition filing under Ontario Regulation (O.Reg.) 153/04, and as such, must meet the mandatory requirements specified in Schedule E, Table 1 of O.Reg. 153/04.

Included in those requirements is the preparation of a Phase Two Conceptual Site Model (CSM) to summarize the site conditions. The Phase Two CSM is to be filed along with the Record of Site Condition, separately from the Phase Two ESA report, and thus is presented in this standalone document.

A CSM is a site-specific description of how contaminants enter the environment, how they are transported and distributed within the environment and pathways through which exposure can occur. The CSM provides the basis and framework for assessing risks from contaminants, addressing uncertainties, determining source control requirements, and identifying risk management/remedial strategies. Some of the key elements required for and documented in the CSM are the location and type of contaminant sources, transport/migration factors, contaminant fate/behaviour, exposure mechanism/pathways, and potential receptors (human and ecological). The CSM describes the relationship between contaminant sources, transport mechanisms, and potential receptors.

2.0 SITE DESCRIPTION

The Site is a roughly 0.644ha, rectangular property on the southwest side of Speers Road (Figure 1). The Site is an industrial property with a single-storey building that is currently vacant. The property was formerly occupied by a manufacturer of turbine components using computer numeric control machines.

At the time of the 2018 Site inspection, the building was comprised of roughly 10% office space (northwest) and 90% industrial space (southeast). The industrial space is divided into two areas. The central area contained raw materials, parts storage, maintenance, 2 computers numeric control (CNC) saws and 1 CNC shot peener. The southeast area contained 19 CNC milling machines. There is one bay door on the southeast side of the building.

The future use of the Site will be mixed residential and commercial. The proposed plan for redevelopment will keep the existing single-storey building.

3.0 PHASE TWO CONCEPTUAL SITE MODEL

This Phase Two CSM report was prepared to meet the mandatory requirements for Phase Two ESAs specified in Schedule E, Table 1 of O.Reg. 153/04. This report references figures and tables used in the Phase Two ESA.

4.0 APECs, PCAs, AND SUBSURFACE STRUCTURES

The Phase One ESA (PGL, 2019) identified 11 potentially contaminating activities (PCAs), three onsite and eight offsite, within the Phase One Study Area. PGL assessed the PCAs for their risk of contamination to the Site. This assessment identified six PCAs that contribute to areas of potential

environmental concern (APECs) at the Site. The PCAs, APECs, and subsurface utilities and structures on and in the area of the Site are discussed in the following sections. PCAs and APECs are summarized in Table A and Table B, respectively.

4.1 Potentially Contaminating Activities

The onsite and offsite PCAs identified by the Phase One ESA are summarized below. Surrounding property use is shown on Figure 2. The PCA locations are shown on Figure 3.

PCA #1a – Historical onsite manufacturing of turbine parts from 2007 to 2019 had the potential to affect soil and/or groundwater at the Site (PCA 34 – Metal Fabrication). This PCA contributes to APEC #1a.

PCA #1b – Historical onsite manufacturing of elevators and escalators, and waste generator of aromatic solvents from the early 1990s to early 2000s had the potential to affect soil and/or groundwater at Site (PCA 34 – Metal Fabrication). This PCA contributes to APEC #1b.

PCA #2 – Historical onsite fuel storage tanks along the northwestern property boundary (PCA 28 – Gasoline and Associated Products in Fixed Tanks). The former USTs had the potential to affect groundwater quality at the Site. This PCA contributes to APEC #2.

PCA #3 – The offsite manufacturing of turbine parts on the northeast adjacent property from the early 2000s to present day has the potential to affect groundwater at the Site (PCA 34 – Metal Fabrication). This PCA contributes to APEC #3.

PCA #4 – The offsite chromium electroplating process from the mid-1990s to present day and a spill of unknown quantity of chromium to ground in 2014 had the potential to affect groundwater quality at the Site (PCA 33 – Metal Treatment, Coating, Plating and Finishing). This PCA contributes to APEC #4.

PCA #5 – The former use of halogenated solvents from the early 1990s to early 2000s has the potential to affect groundwater at the Site (PCA 51 – Solvent Manufacturing, Processing and Bulk Storage). This PCA contributes to APEC #5

PCA #6 – The former manufacturer and distributor of rodenticides, insecticides and other pest control devices operated from the mid-1990s until the early 2000s. This operation did not result in an APEC as the property is roughly 75 southwest (cross-gradient) and the COPCs related to this activity are unlikely to have impacted the groundwater at the Site.

PCA #7 – The former manufacturer of polymeric resins operated from the mid-1980s until the late 1990s roughly 75m southwest of the Site. This operation did not result in an APEC as the chemicals related to this activity convert into rigid polymers once cured. They are unlikely to have impacted the groundwater at the Site.

PCA #8 – The manufacturer and distributor of plumbing products has operated at the property since the early 2000s. It is roughly 210m northeast and cross-gradient to the Site.

PCA #9 – The manufacturer of industrial water treatment equipment operated at this property from the early 1970s to early 2000s. It is roughly 225m north-northeast and cross-gradient to the Site.

PCA #10 – Various metal fabrication companies previously operated at this property from the early 1980s to the late 1990s. It is roughly 115m northeast and cross-gradient to the Site.

PCA #11 – The former manufacturer of plastic carryout and garbage bags operated at this location from the early 1980s until the early 2000s. It is roughly 225m southwest and cross-gradient to the Site.

Table A: PCAs Identified by the Phase One ESA

PCA Location #	Company	Address (Oakville)	Distance and Direction from Site	PCA Description	Source	APEC (Y/N)
1a	HPG Inc.	2250 Speers Road	Onsite	PCA 34 – Metal Fabrication Manufacturer of turbine parts from the 2007 to 2019	Chain of Title, Site visit	Yes – APEC 1a
1b	Global Elevator Manufacturing			PCA 34 – Metal Fabrication Manufacturer of elevators and escalators and waste generator of aromatic solvents from the early 1990s to early 2000s	Business directories, ERIS report, Opta report	Yes – APEC 1b
2	Blakelock Moving & Storage			PCA 28 - Gasoline and Associated, Products Storage in Fixed Tanks Historical operation of private fuel tanks	ERIS Report	Yes – APEC 2
3	HPG Inc.	2240 Speers Road	Northeast adjacent	PCA 34 – Metal Fabrication Manufacturer of turbine parts from the early 2000s to present day. An 750L spill of oily water from aboveground tank.	ERIS Report, Site visit	Yes – APEC 3
4	North American Hard Chrome Inc.	2230 Speers Road	75 m NE	PCA 33- Metal Treatment, Coating, Plating and Finishing Chromium electroplating process from mid-1990s to present day. Spill of unknown quantity of chromium to ground in 2014.	ERIS Report, Site visit	Yes – APEC 4
5	Kemsan Inc., Nu-Grow	2270 Speers Road	75m SW	PCA 51 – Solvent Manufacturing, Processing and Bulk Storage The use of halogenated solvents from early-1990s to early 2000s. A certificate of approval for one exhaust fan removing solvent vapours.	ERIS report	Yes – APEC 5
6				PCA 40- Pesticides Manufacturing, Processing, Bulk Storage	Business directories	No
7				PCA 43 - Plastics (including Fibreglass) Manufacturing and Processing	Business directories. ERIS report	No
8	Oakville Stamping and Bending (Metal Valve Manufacturer)	2200 Speers Road	210m NE	PCA 34 – Metal Fabrication	Business directories, ERIS report	No
9	Ecodyne Ltd. Water Processing Equipment	2201 Speers Road	225m NNE	PCA 34 – Metal Fabrication	Business directories, ERIS report	No
10	Arn Mac Industries Ltd, Oakville Stamping and Bending, Seaway Metal Fabricators	2220 Speers Road	115m NE	PCA 34 – Metal Fabrication	Business directories	No
11	PCL Packaging (Plastics Manufacturing)	2300 Speers Road	225 m SW	PCA 43 - Plastics (including Fibreglass) Manufacturing and Processing	Business directories	No

Notes: (PCA ##) - as defined in column A of Table 2 in Schedule D of Ontario Regulation 153/04.

4.2 Areas of Potential Environmental Concern

The following six APECs were identified at the Site. The APECs are shown on Figure 4.

APECs 1a and 1b (PCA 34 – Metal Fabrication) – Historical onsite metal fabricating operations had the potential to affect soil and/or groundwater across the entire Site. COPCs are metals, PHCs and VOCs.

APEC 2 (PCA 28 - Gasoline and Associated, Products Storage in Fixed Tanks) – Historical onsite fuel storage tanks along the north western property boundary were identified as a risk. The former USTs had the potential to affect soil and groundwater quality at the northwestern portion of the Site. COPCs are PHCs, BTEX and metals.

APEC 3 (PCA 34 – Metal Fabrication) – Offsite metal fabricating operations at the northeast adjacent property, 2240 Speers Road, had the potential to affect groundwater quality at the northeastern portion of the Site. COPCs are VOCs and metals.

APEC 4 (PCA 33- Metal Treatment, Coating, Plating and Finishing) – Offsite chromium electroplating operations at 2230 Speers Road (75m northeast) had the potential to affect groundwater quality at the northeastern portion of the Site. COPCs are PHCs, VOCs and metals.

APEC 5 (PCA 51 – Solvent Manufacturing, Processing and Bulk Storage) – Offsite historical use of halogenated solvents for roughly 10 years at 2270 Speers Road (75m southwest). These operations had the potential to affect groundwater quality at the southwestern portion of the Site. COPCs are VOCs.

Table B: Table of Areas of Potential Environmental Concern

(Refer to clause 16(2)(a), Schedule D, O. Reg. 153/04)

Area of Potential Environmental Concern ¹	Location of Area of Potential Environmental Concern on Phase One Property	Potentially Contaminating Activity ²	Location of PCA (onsite or offsite)	Contaminants of Potential Concern ³	Media Potentially Impacted (Ground water, soil and/or sediment)
APEC 1a and 1b	Across the entire Site	PCA 34 – Metal Fabrication	Onsite	PHCs, VOCs and Metals	Soil and ground water
APEC 2	Northwest portion of Site, in vicinity of asphalt cut and existing monitoring wells	PCA 28 - Gasoline and Associated Products Storage in Fixed Tanks	Onsite	BTEX, PHCs, and Metals	Soil and ground water
APEC 3	Northeast portion of Site potentially affected by offsite manufacturing	PCA 34 – Metal Fabrication	Offsite	VOCs and Metals	Groundwater
APEC 4	Northeast portion of Site potentially affected by offsite manufacturing	PCA 33- Metal Treatment, Coating, Plating and Finishing	Offsite	Metals, VOC	Groundwater
APEC 5	Southwestern portion of Site potentially affected by offsite manufacturing	PCA 51 – Solvent Manufacturing, Processing and Bulk Storage	Offsite	VOCs	Groundwater

Notes:

- 1 - Area of Potential Environmental Concern means the area on, in or under a phase one property where one or more contaminants are potentially present, as determined through the phase one environmental site assessment, including through, (a) identification of past or present uses on, in or under the phase one property, and (b) identification of potentially contaminating activity.
- 2 - Potentially Contaminating Activity means a use or activity set out in Column A of Table 2 of Schedule D that is occurring or has occurred in Phase One study area
- 3 - When completing this column, identify all contaminants of potential concern using the Method Groups as identified in the "Protocol for in the Assessment of Properties under Part XV.1 of the Environmental Protection Act, March 9, 2004, amended as of July 1, 2011, as specified below:
 ABNs, PCBs, Metals, Electrical Conductivity, SAR, CPs, PAHs, As, Sb, Se, Cr (VI)
 1,4-Dioxane, THMs, Na, Hg, Dioxins/Furans, PCDDs/PCDFs, VOCs, B-HWS, Methyl Mercury, OCs, BTEX, Cl⁻, high pH
 PHCs, Ca, Mg CN- low pH
- 4 - When submitting a record of site condition for filing, a copy of this table must be attached

4.3 Subsurface Structures and Utilities

Typical subsurface utilities are present in the area. Underground utilities are present in the adjacent roadway. Underground services at the Site include natural gas, electricity and telecommunications. The underground utilities are on the northwestern portion of the Site, north of the Site building.

The water table depth range observed during the Phase Two ESA, is within the anticipated 1.5m to 5m bgs range of typical buried utilities. It is unlikely that service utilities are affecting groundwater flow at the Site as the natural groundwater table is present in the bedrock.

As the groundwater is within the bedrock, it is unlikely that climatic or meteorological fluctuations can influence groundwater elevations, flow direction, or contaminant distribution outside normal seasonal variations of groundwater elevations.

5.0 PHYSICAL SETTING

The following subsections describe the physical setting of the Phase Two Property.

5.1 Stratigraphy

Geological mapping (OGS, 2010) indicated the surficial soil in the vicinity of the Site are expected to comprise Halton Till deposits comprising silt to silty clay. The following soil profile was encountered, with increasing depth, during the Phase Two ESA:

- Asphalt or topsoil from surface up to 0.2m bgs;
- Sand and gravel/sandy silt fill up to 1.7m bgs;
- Sandy silt up to 2m; and
- Bedrock to the maximum depth (6.0m bgs) of investigation.

At BH101M, sand and gravel fill was encountered up to 3.6m bgs. This well installed in the former tank nest which would explain the deeper fill layer.

Geologic cross-sections were prepared illustrating the soil profile encountered at the Site. The cross-section locations are shown on Figure 6. Cross-gradient (A-A') stratigraphic profile and along-gradient (B-B') stratigraphic profile is shown on Figure 6.

Bedrock is mapped as Queenston Formation bedrock consisting of shale, siltstone, minor limestone and sandstone. Georgian Bay formation shale and limestone (OGS, 2007). The geology of Oakville and the surrounding area has been studied in detail by others. This data was compiled and published by the Ontario Geological Survey (Sharp, 1980). Review of the published mapping indicated that in the area of the Site, bedrock is roughly 2m bgs.

5.2 Hydrogeology

5.2.1 Groundwater Elevations and Flow Direction

Water levels were measured on May 3, 2018, June 5, 2018, and April 2, 2019. On May 3, 2018, the depth to water table at the Site was 1.59m bgs at MW1 and dry at 1.80m bgs at MW2. On June 5, 2018, the water table ranged from 1.71m bgs (BH101M) to 4.41m bgs (BH103M). On

April 2, 2019, the water tables ranged from 1.57m bgs (BH101M) to 3.56m bgs (BH103M). BH101M was installed in fill in former UST backfill. The depth to groundwater at this location is not considered representative of natural groundwater elevation. Remaining wells (BH102M and BH103M) are installed in bedrock, and the typical depth to water is below 3m bgs.

Groundwater flow direction is southeast based on groundwater elevation data. Groundwater elevation data is shown on the cross-sections (Figure 5).

Regional groundwater flow direction is expected to be to the southeast.

The water table depth range observed during the Phase Two ESA, is within the anticipated 1.5m to 5m bgs range of typical buried utilities. It is unlikely that service utilities are affecting groundwater flow at the Site as the natural groundwater table is present in the bedrock.

As the groundwater is within the bedrock, it is unlikely that climatic or meteorological fluctuations can influence groundwater elevations, flow direction, or contaminant distribution outside normal seasonal variations of groundwater elevations.

5.2.2 Soil-Texture

Four soil samples were selected from BH102M and/or BH103M at the Site for grain-size analysis (see Table 2). Soil samples were submitted for grain-size analysis from each geologic unit encountered at the Site.

All results identified medium/fine-textured soil.

5.2.3 Lateral and Vertical Hydraulic Gradients

Horizontal hydraulic gradient (0.08m/m) was calculated using elevation data the Site. Hydraulic gradient at the Site is expected to be similar.

Vertical hydraulic could not be assessed as only shallow monitoring wells were installed at the Site

5.3 Applicable Site Condition Standards

O.Reg. 153/04, Records of Site Condition – Part XV.1 under the *Environmental Protection Act* specifies acceptable limits of contaminants in soil and groundwater in the document titled *Soil, Ground Water and Sediment Standards for Use under Part XV.1 of the Environmental Protection Act* (MOE, 2011). These standards are presented in tables defined by groundwater use (i.e., potable or non-potable) and type of remediation (full depth or stratified). Each table has chemical-specific soil standards based on property use (agricultural, residential/ parkland/institutional, or industrial/community/commercial), grain-texture (medium/fine-textured or coarse-textured).

Geologic and hydrogeological parameters that influence the derivation of component values for the O.Reg.153/04 generic Site Condition Standards (SCS) were compared to site-specific data and the generic values used in the derivation of the SCS. The site-specific parameters were consistent with the defaults; therefore, the generic SCS were considered applicable at the Site.

PGL determined there is no respect in which section 41 or 43.1 of O.Reg 153/04 would apply to the Site based the following:

- The property is not within an area of natural significance;
- The property does not include, nor is adjacent, to an area of natural significance or part of such an area;
- The property does not include land that is within 30m of an area of natural significance or part of such an area;
- Surface soil pH was 7.58 and subsurface soil pH ranged from 7.34 to 7.76 at the Site;
- There are no water bodies on, adjacent to, or within 30m of the Site; and
- Bedrock is present at 2.0m below ground surface (bgs) and therefore shallow soil conditions are present on the Site.

The O.Reg. 153/04 Table 7 SCS for Shallow Soil in a Non-Potable Groundwater Condition for residential/parkland/institutional property use and medium/fine-textured soil were used at the Site. The standards were selected based on the following site characteristics:

- Land use at the Site is currently industrial, however, the proposed use would change land use to residential and commercial;
- Drinking water is supplied via a municipal distribution system operated by Halton Region. The local source of drinking water supply is Lake Ontario;
- Bedrock is present at 2m bgs; and
- Results of grain-size analyses indicated that soil texture at the Site is predominantly medium/fine in the main water bearing formation.

5.4 Proposed Structures

The Site is currently industrial property with a single-storey industrial building that is currently vacant. The property was formerly occupied by a manufacturer of turbine components using computer numeric control machines.

The future use of the Site will be mixed residential and commercial. The proposed plan for redevelopment will keep the existing single-storey building.

6.0 SOIL AND GROUNDWATER CHARACTERIZATION

All soil and groundwater results met the applicable Table 7 SCS and no areas of environmental contamination (AECs) were identified.

6.1 Soil Quality

Soil analysis results are discussed by APEC. The results are presented in Table 5a, and 5b and shown on plan view (Figures 7a and 7b) and on cross section (Figure 7c). Analysis results are shown on the figures listed below.

Plan View

Figure 7a Soil Results – Petroleum Hydrocarbons
Figure 7b Soil Results – Metals

Cross-Section

Figure 7c Cross Sections – Petroleum Hydrocarbons and Metals

6.1.1 APECs 1a & 1b – Onsite Metal Fabrication

Soil samples from BH101M, BH102M and BH103M were assessed for PHC and/or metals. All samples met the Table 7 SCS; there were no COCs identified in soil for APECs 1a or 1b.

6.1.2 APEC 2 – Former Onsite USTs

Soil samples from BH101M and BH102M were assessed for BTEX and PHCs. All samples met the Table 7 SCS; there were no COCs identified in soil for APEC 2.

6.1.3 APECs 3 & 4 – Offsite Metal Fabrication and Metal Treatment, Coating, Plating and Finishing

The Phase One CSM did not identify the potential for soil impacts related to the offsite metal fabrication or the offsite metal treatment, coating, plating and finishing facilities to the northeast.

6.1.4 APEC 5 – Offsite Solvent Manufacturing, Processing and Bulk Storage

The Phase One CSM did not identify the potential for soil impacts related to the offsite solvent manufacturing, processing and bulk storage facility to the southwest.

6.2 Groundwater Quality

Groundwater analysis results are discussed by APEC. The results are presented in Table 6a, 6b, and 6c and shown on Figure 8a, 8b, and 8c and shown on plan view (Figures 8a to 8c) and on cross section (Figure 8d). Analysis results are shown on the figures listed below.

Plan View

Figure 8a Groundwater Results – Petroleum Hydrocarbons
Figure 8b Groundwater Results – Volatile Organic Compounds
Figure 8c Groundwater Results – Metals

6.2.1 APECs 1a & 1b – Onsite Metal Fabrication

Groundwater samples from BH101M, BH102M and BH103M were assessed for PHCs, metals and/or VOCs. All samples met the Table 7 SCS; there were no COCs identified in groundwater for APECs 1a or 1b.

6.2.2 APEC 2 – Former Onsite USTs

Groundwater samples from MW1, BH101M, and BH102M were assessed for BTEX and PHCs. All samples met the Table 7 SCS; there were no COCs identified in groundwater for APEC 2.

6.2.3 APECs 3 & 4 – Offsite Metal Fabrication and Metal Treatment, Coating, Plating and Finishing

Groundwater samples from BH103M were assessed for VOC and metals. All groundwater samples met the Table 7 SCS; there were no COCs identified in groundwater for APEC 3 or 4.

6.2.4 APEC 5 – Offsite Solvent Manufacturing, Processing and Bulk Storage

Groundwater samples from MW1, BH101M and BH102M were assessed for VOCs. All groundwater samples met the Table 7 SCS; there were no COCs identified in groundwater for APEC 5.

7.0 HUMAN HEALTH AND ECOLOGICAL CSM

Based on the site characterization and analytical results below, PGL did not identify any potential exposure pathways or receptors for human health and ecological receptors. These exposure pathways and receptors are discussed in the following sections.

7.1 Human Health Exposure Model

The human health CSM describes the potential exposure pathways that are likely to be present for various human receptors at the Site. The human health CSM provides a basis for examining potential health risks in a human health risk assessment. The human health CSM, which assumes no risk management measures (RMM) are in place, are presented on Figure 9. There was no soil or groundwater contamination identified for the Site. Therefore, there is no exposure to human health.

7.2 Ecological Exposure Model

The ecological CSM describes the potential exposure pathways that are likely to be present for various ecological receptors at the Site. The ecological CSM provides a basis for examining potential risks in an ecological risk assessment. The ecological CSM, which assumes no RMMs are in place, are presented on Figure 10. There was no soil or groundwater contamination identified for the Site. Therefore, there is no exposure to human health.

8.0 LIMITATIONS

PGL prepared this report for Acclaim Health, its agents, and lender exclusively. PGL accepts no responsibility for any damages that may be suffered by third parties as a result of decisions or actions based on this report.

The report's purpose is to provide the Ministry of the Environment and Climate Change and the client with an understanding of contamination on the Site. The investigations completed to support this Phase Two CSM consisted of a screening for potential contamination and, as is true for all environmental investigations, potential remains for the presence of unknown, unidentified, or unforeseen surface or subsurface contamination.

The information and findings presented herein is site-specific and was developed in a manner consistent with that level of care and skill normally exercised by environmental professionals currently practicing under similar conditions in the area. Changing assessment techniques, regulations, and site conditions means that environmental investigations and their conclusions can

quickly become dated, so this report is for use now. The report should not be used after that without PGL review/approval.

The project was conducted according to our instructions and work program. This report is neither an endorsement nor a condemnation of the subject Site. No warranty, expressed or implied, is made.

MAK/KJW/nwp

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