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**Phase Two Environmental Site Assessment
240 Ferland Street
Ottawa, Ontario**

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Metro Ottawa-Carleton Real Estate Ltd.
292 McArthur Avenue
Ottawa, ON
K1L 6P2

Phase Two Environmental Site Assessment
240 Ferland Avenue
Ottawa, Ontario

June 30, 2020
Project: 63115.04

GEMTEC Consulting Engineers and Scientists Limited
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Ottawa, ON, Canada
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June 30, 2020

File: 63115.04

Metro Ottawa-Carleton Real Estate Ltd.
292 McArthur Avenue
Ottawa, ON
K1L 6P2

Attention: Mr. Subhir Uppal

**Re: Phase Two Environmental Site Assessment
240 Ferland Street
Ottawa, ON**

Enclosed is our Phase Two Environmental Site Assessment (ESA) report for the above-noted for your review. The Phase Two ESA was completed in accordance with O.Reg 153/04 to investigate areas of potential environmental concern (APECs) identified in the 2019 Phase One ESA, and to document the environmental quality of soil and groundwater at the Subject Property.

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



Kathryn Maton, C.E.T., EP
Senior Environmental Technologist



Shaun Pelkey, M.Sc.E., P.Eng.
Principal Engineer, Vice President

KM/DP/SP

Enclosures
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EXECUTIVE SUMMARY

GEMTEC Consulting Engineers and Scientist Limited (GEMTEC) was retained by Metro Ottawa-Carleton Real Estate Ltd., to carry out a Phase Two Environmental Site Assessment (ESA) for the property located at 240 Ferland Street, in Ottawa, Ontario (the 'subject property'). A geotechnical investigation has been completed under separate cover for the project.

GEMTEC understands that the Phase Two ESA is required in support of a proposed development of a 10-unit townhome structure, with proposed zoning to remain residential. As the property will not be changing to a more sensitive land use, the filing of a Record of Site Condition (RSC), as regulated by Ontario Regulation 153/04 under the Environmental Protection Act, is not mandatory. The Phase One ESA was conducted in general accordance with O.Reg 153/04 and the CSA Group standard Z769-01 (R2018), which is the accepted standard of regulatory agencies and financial institutions.

Based on the findings of the Phase One ESA, GEMTEC identified two areas of potential environmental concern (APECs) at the subject property. These APECs are associated with the likely use of heating oil on the subject property and within the study area prior to 1995 and the importation of fill of unknown quality during construction of the former building.

The Phase Two ESA included the installation of three boreholes BH20-1 to BH20-3, all of which were completed into monitoring wells (MW20-1 to MW20-3) to a maximum depth of 6.1 metres below ground surface (m bgs) and collection of soil and groundwater samples for chemical analysis. Soil and groundwater samples were analyzed for concentrations of metals and inorganics (M&I), polycyclic aromatic hydrocarbons (PAHs) and petroleum hydrocarbons (PHCs). Analytical results were compared to the Ministry of the Environment, Conservation and Parks (MECP) Table 3 Site Condition Standards (SCS) for residential / parkland / institutional (RPI) property use in a non-potable groundwater setting and coarse textured soil.

Based on the results of the Phase Two ESA, the soil and groundwater quality at the subject property does not meet the applicable site condition standards established in the MECP document *Soil, Groundwater and Sediment Standards for Use Under Part XV.1 of the Environmental Protection Act* (SGWS), dated March 9, 2004, and amended in April 2011.

The following is a summary of the contaminants of concern identified within the soil and groundwater at the subject property:

Soil

- Elevated concentrations of M&I (barium, lead, mercury, zinc, pH and EC) above the applicable Table 3 SCS were identified at one of two sampling locations (BH20-1) on the northwest corner of the subject property from 0.76 to 1.37 m bgs (SA2 within the fill material silty sand). All other soil samples submitted for M&I analysis met the Table 3 SCS.

- Elevated concentrations of various PAHs (including acenaphthylene, anthracene, benz(a)anthracene, benzo(a)pyrene, benzo(b/j)fluoranthene, benzo(k)fluoranthene, dibenz(a,h)anthracene, fluoranthene, indeno(1,2,3-cd)pyrene, 1,2-methylnaphthalene, naphthalene, and phenanthrene) above the applicable Table 3 SCS were identified at all three borehole locations (BH20-1, BH20-2 and BH20-3) from 0.76 to 1.37 m bgs. The material within BH20-1 (SA2) and BH20-2 (SA2) was described as silty sand fill material, and the material within BH20-3 (SA2) was described as organic with wood fill material.
- Elevated concentrations of PHCs Fraction F1 to F4 including BTEX (including F1 (C6-C10), F1 (C6-C10) – BTEX, F2 (C10-C16), F3 (C16-C34), ethylbenzene and total xylenes) were identified at BH20-3 located on the northeast corner of the subject property from 0.76 to 5.33 m bgs (SA2 and SA5) within the organic with wood and silty sand native materials. A deeper sample collected from 5.33 to 5.94 m bgs within the silty sand native material met the applicable Table 3 SCS. All other PHC submitted for PHC analysis met the Table 3 SCS.

Groundwater

- Elevated concentrations of PHCs including BTEX (F2 (C10-C16)) were encountered within the groundwater of MW20-3 located on the northeast portion of the subject property.

All other groundwater samples analyzed for M&I, PAHs and PHCs including BTEX met the applicable Table 3 SCS.

Based on the results of the Phase Two ESA, a delineation program should be completed to further delineate the M&I, PAH and PHCs including BTEX exceedances encountered within the soil and groundwater.

A Remedial Options Analysis (ROA) should be developed to identify a strategy for remediation and/or management of the contamination in place that will allow for the effective redevelopment of the subject property for residential use.

The soil analytical results are representative only of the sampling locations and conditions may vary between sampling locations. The sampling was conducted to give a general overview of soil quality and final acceptance by a receiving site may require supplemental sampling.

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1.0 INTRODUCTION

1.1 Background

GEMTEC Consulting Engineers and Scientist Limited (GEMTEC) was retained by Metro Ottawa-Carleton Real Estate Ltd., to carry out a Phase Two Environmental Site Assessment (ESA) for the property located at 240 Ferland Street, in Ottawa, Ontario (the 'subject property'). The regional location plan is shown on Figure A-1. A geotechnical investigation has been completed under separate cover for the project.

GEMTEC understands that the Phase Two ESA is required in support of a proposed development of a 10-unit townhome structure, with proposed zoning to remain residential. As the property will not be changing to a more sensitive land use, the filing of a Record of Site Condition (RSC), as regulated by Ontario Regulation 153/04 under the Environmental Protection Act, is not mandatory. The Phase One ESA was conducted in general accordance with O.Reg 153/04 and the CSA Group standard Z769-01 (*R2018*), which is the accepted standard of regulatory agencies and financial institutions in the absence of a mandatory RSC.

1.2 Site Description and Property Ownership

The subject property is currently vacant following the recent demolition of a five-unit residential structure with two storeys and a basement (around November 2019). The subject property is located on the northeast quadrant of Jolliet Avenue and Ferland Street within the City of Ottawa (formerly the City of Vanier), Ontario. The subject property boundary is shown in Figure A-2 within Appendix A.

The subject property is rectangular in shape, with approximately 24 m of frontage along the east side of Ferland Avenue and extending 29 m along the north side of Jolliet Avenue, with an area of 0.07 hectares (0.17 acres). The majority of the subject property is currently vacant, and was snow covered at the time of the field investigation. It is assumed that asphalt parking areas are still present on the northwest corner and two sections along the south side of the subject property. A chain link fence is present around the perimeter of the property.

Authorization to proceed with the work was granted by Mr. Subhir Uppal of Metro Ottawa-Carleton Real Estate Ltd. on August 28, 2019. Property information for the subject property is provided in Table 1-1 below:

Table 1-1: Property Information

Criteria	Phase One Property Information
Current Property Owner	METRO DEVELOPMENT CORPORATION
Municipal Address(es)	240 Ferland Street, Ottawa, Ontario; 242 Ferland Avenue, Ottawa, Ontario; 244 Ferland Avenue, Ottawa, Ontario; 43 Jolliet Avenue, Ottawa, Ontario; and, 43A Jolliet Avenue, Ottawa, Ontario.
Property Identification Number (PIN)	04230-0317 (LT)
Legal Description	PCL 265-1, SEC 4M-25 ; LTS 265 & 266, PL 4M-25 ; VANIER/GLOUCESTER

1.3 Current and Proposed Future Uses

As described in Section 1.1, the subject property is currently vacant. GEMTEC understands that the Phase Two ESA is required for a proposed 10-unit townhome structure.

1.4 Applicable Site Condition Standard

The MECP SCS are established under Part XV.1 of the Ontario Environmental Protection Act (EPA). Tabulated generic criteria are provided in the MECP document “*Soil, Groundwater and Sediment Standards for Use Under Part XV.1 of the Environmental Protection Act*” (SGWS), dated March 9, 2004 and amended in April, 2011. The criteria are based on site sensitivity, groundwater use (potable or non-potable), property use (residential, parkland, institutional, commercial, industrial, community and agricultural/other), soil type (coarse or medium/fine textured) and restoration depth (full or stratified restoration). In addition, site-specific criteria may be established on the basis of the findings of a Risk Assessment carried out in accordance with Part IX and Schedule C of O. Reg. 153/04, as amended (July 2011).

For the purposes of this assessment, GEMTEC selected the MECP Table 3 SCS for residential / parkland / institutional (RPI) property use in a non-potable groundwater setting and coarse textured soil based on the following assumptions:

- The Rideau River is located approximately 880 m south of the subject property, which flows west towards the Ottawa River which is situated approximately 1.8 km west of the Subject property, which flows towards the north/northeast;
- Records indicated that 11 wells were identified within the study area, which were identified as monitoring wells and ‘Not a well – not used’;
- Surrounding properties are a mix of residential and commercial land use;

- The subject property is currently developed with a 5-unit residential dwelling;
- The subject property is situated within a built-up area approximately 60 m asl and is generally flat with the study area sloping gently down towards the south;
- Geology mapping suggests that the subject property consists of consists of 0 to 1 metres of clay and silt underlying erosional terraces overlying shale and minor limestone of the Billings formation (of the Ordovician age);
- The surrounding properties are serviced by municipal water obtained from a surface water source (Ottawa River);
- The subject property is not situated within a sensitive area (e.g. ANSI) or within 30 m of a waterbody;
- Soil is consistent with the definition of coarse textured soils as per O. Reg. 153/04.; and,
- Stratified soil conditions were not used for evaluating laboratory result.

2.0 BACKGROUND INFORMATION

2.1 Physical Setting

According to the “Surficial Geology of Southern Ontario” (OGS, 2010), the subject property and majority of the study area consists of clay and silt underlying erosional terraces. The surficial deposits are approximately 0 to 1 metres in thickness. Bedrock of the subject property is described as the Billings formation of the Ordovician age, and consists of shale with minor limestone (Armstrong et al., 2007).

The review indicated that the subject property is situated within a built-up area approximately 60 m above sea level (asl) and is generally flat with the study area sloping gently down towards the south.

The Rideau River is located approximately 880 m south of the subject property, which flows west towards the Ottawa River which is situated approximately 1.8 km west of the subject property, which flows towards the north/northeast.

2.2 Past Investigations

A draft Phase One ESA was completed for the subject property by GEMTEC on September 16, 2019 in general accordance of O.Reg 153/04.

Based on review of records, the interview and the site reconnaissance, potential environmental concerns were present at the subject property resulting from historical / present activities and potentially contaminating activities (PCAs) identified at the subject property and study area.

The areas of potential environmental concern (APECs) identified at the subject property include:

APEC-1 (Entire Subject Property): The subject property was likely historically heated with heating oil (prior to 1995), based on records of heating oil spills on adjacent properties, and a record of a heating system update in 1995. (28. *Gasoline and Associated Products Storage in Fixed Tanks*)

APEC-2 (Entire Subject Property): Importation of fill material over the entire Subject Property prior to 1950 when the subject property was developed (30. *Importation of Fill Material of Unknown Quality*)

A Phase Two ESA was recommended to be completed for the subject property, to investigate soil and groundwater quality in the vicinity of the identified APECs and assist in the preparation of a remedial or risk management strategy for the development of the subject property, if required

2.3 Contaminants of Concern

As outlined in the Phase One ESA (GEMTEC, 2019) Contaminants of potential concern (COPCs) in soil and groundwater, associated with past activities at the subject property and adjacent lands include: metals and inorganics (M&I), polycyclic aromatic hydrocarbons (PAHs) and petroleum hydrocarbon compounds (PHCs).

3.0 SCOPE OF THE INVESTIGATION

3.1 Overview of the Site Investigation

The Phase Two ESA was conducted in general accordance with the objectives outlined within O.Reg 153/04. The sampling methods complied with the requirements established by the MECP in the *Guidance on Sampling and Analytical Methods for Use at Contaminated Sites in Ontario*, 1996 and technical updates provided to support regulatory amendments. To meet the objective, the following tasks were completed during the Phase Two ESA:

- Preparation of a sample and analysis plan to document the rationale for the investigation, including the number of sampling points, sample frequency, analytical parameters and media to be sampled;
- Co-ordination with the drilling contractor George Downing Estate Drilling Ltd. (Downing) and public locators to obtain utility locates near the proposed borehole locations;
- Providing supervision during drilling to obtain samples of soil that are representative of the worst case conditions observed during the investigation;
- Advancement of three boreholes to a maximum depth of 6.1 metres (m). Soil samples were recovered from each borehole. All three boreholes were completed as groundwater monitoring wells, constructed with 51 mm diameter polyvinyl chloride (PVC) pipe with 1.5 m long screens and monument casings;

- Collection, screening and classifying soil samples at each borehole location for possible laboratory analysis. Soil sample headspace vapours were monitored using a combustible gas indicator (CGI) and a photoionization detector (PID), to assess the presence of VOCs and combustible petroleum contaminants;
- Selection of soil samples for submission to AGAT Laboratories (AGAT), a CALA-accredited laboratory for chemical analysis of metals and inorganics (M&I), polycyclic aromatic hydrocarbons (PAHs), and petroleum hydrocarbons (PHCs) including benzene, toluene, ethylbenzene and xylenes (BTEX);
- Field screening soil vapour concentrations and water levels in one of the monitoring wells;
- Collection of groundwater samples from the monitoring well and submission for the analysis of M&I, PAHs, PHCs and VOCs;
- Collection of quality assurance / quality control (QA/QC) duplicate samples at a frequency of 10% throughout the field program; and,
- Comparison of laboratory analytical results of soil and groundwater samples to the MECP Table 3 Site condition Standards (SCS) for residential / parkland / institutional land use for coarse textured soils.

3.2 Media Investigated

A Sampling and Analysis Plan (SAP) was developed prior to the field sampling events, which outlined the proposed sampling locations and related analysis for the soil and groundwater investigation. The sample locations are shown on Figure A-2 and SAPs are provided in Appendix C.

3.3 Phase One Conceptual Site Model

The preliminary Phase One Conceptual Site Model (CSM) presented in the Phase One ESA report (GEMTEC, 2019) includes figures and narrative that provided logical basis for the interpretation of PCAs and APECs on the subject property. The Phase One CSM is summarized as follows:

- The Rideau River is located approximately 880 m south of the subject property, which flows west towards the Ottawa River which is situated approximately 1.8 km west of the Subject property, which flows towards the north/northeast;
- Records indicated that 11 wells were identified within the study area, which were identified as monitoring wells and 'Not a well – not used';
- Surrounding properties are a mix of residential and commercial land use;
- The subject property is currently developed with a 5-unit residential dwelling;

- The subject property is situated within a built-up area approximately 60 m asl and is generally flat with the study area sloping gently down towards the south;
- Geology mapping suggests that the subject property consists of 0 to 1 metres of clay and silt underlying erosional terraces overlying shale and minor limestone of the Billings formation (of the Ordovician age);
- Based on the review of records, interviews and the site reconnaissance completed as part of the Phase One ESA, GEMTEC identified several PCAs for the study area. Based on this, two APECs were identified for the subject property. These PCAs (with a PCA code identified within Table 2 of Schedule D in O.Reg. 153/04) include:
 - 28. Gasoline and Associated Products Storage in Fixed Tanks; and,
 - 30. Importation of Fill Material of Unknown Quality.

Information considered for the development of this CSM was gathered from numerous sources (i.e. aerial photographs, city directories, environmental database searches, physical setting sources, interviews and a site reconnaissance), which reduces the potential for not identifying a former property use or PCA.

3.4 Deviations from Sampling and Analysis Plan

The SAPs prepared in advance of the Phase Two ESA sampling events are included in Appendix C. The intent of the plans was followed during the investigation, to ensure that the subsurface was adequately assessed at the APECs on the subject property. Deviations to the plans included the collection of two additional soil samples at MW20-3 were analyzed for PHCs including BTEX to vertically delineate petroleum impacted soil during the drilling program. This deviation did not impact the investigation objectives and conclusions of this report.

3.5 Impediments

There were no impediments or denial of access that prevented the completion of the original defined scope of the investigation.

4.0 INVESTIGATION METHOD

4.1 General

Soil and groundwater at the subject property was investigated at the locations shown on Figure A-2 through the advancement of boreholes and installation of monitoring wells to characterize environmental conditions at the APECs identified in the Phase One ESA. Investigation methods followed Standard Operating Procedures (SOPs), prepared by GEMTEC for the conduct of environmental investigations. The investigation methods are described in the following sections.

4.2 Drilling

GEMTEC retained Downing, a MECP-licensed driller, to conduct the drilling activities at the subject property. The drilling program was completed under the supervision of GEMTEC field staff on January 13, 2020. The boreholes were advanced to evaluate subsurface conditions, collect soil samples and install groundwater monitoring wells at the subject property. Borehole locations are presented in Figure A-2.

The drilling program included the installation of boreholes 20-1 in the northwest corner, 20-2 in the southeast corner and 20-3 in the northeast corner (see Figure A-2). Boreholes were advanced to assess soil quality and to determine if there were any impacts as a result of former / present operations at the subject property. All three boreholes were completed as monitoring wells with screen lengths of 1.52 m, to determine if contaminants of concern were present in groundwater.

The monitoring wells and details of well installation are presented in Table 4-1 below.

Table 4-1 Details of Well Installation

MW ID	Depth of MW (m bgs)	Length of Screen (m)	Screened Interval (m bgs)
20-1	5.28	1.52	3.75-5.28
20-2	6.10	1.52	4.57-6.10
20-3	6.10	1.52	4.57-6.10

Notes:

m bgs' - metres below ground surface

Soil samples were recovered from each borehole, visually inspected and logged. The borehole logs are presented in Appendix D and locations of the boreholes are presented in Figure A-2.

4.3 Soil

4.3.1 Soil Sampling

A 0.61 m stainless steel split spoon sampler was used to collect the soil samples from boreholes.

Site geological conditions were observed in the soil samples and recorded in the field log by a GEMTEC field technologist indicating the colour, odour, texture, soil type and moisture. Soil samples were collected with dedicated nitrile gloves to prevent cross-contamination between sampling locations.

The samples were split into two portions: one portion was placed into labeled polyethylene bags for field screening and another portion was jarred into the appropriate laboratory-supplied sample

containers and stored in a cooler with ice for possible laboratory analysis. Soil samples were screened for combustible vapours within 30 minutes of sampling and then any sample remaining after jarring was placed in a cooler with the jarred samples. For screening purposes, a portion of each sample was maintained in an undisturbed condition and the balance of the sample was broken up to release soil vapours. The vapour readings were measured as described in Section 4.4, and selected samples were jarred in laboratory prepared bottles for submission for laboratory analysis.

For samples considered for laboratory analysis of benzene, toluene, ethylbenzene, xylenes and F1 fraction of hydrocarbon (BTEX-F1), a core was recovered from the undisturbed portion of the bag and placed in laboratory prepared vials containing a measured amount of methanol. Efforts were made to avoid splashing the methanol during the sample placement.

A total of 13 samples including three field duplicates were submitted to AGAT Laboratories in Ottawa, Ontario. A summary of the soil samples submitted for chemical analysis are summarized in Tables B-1 to B-2, located in Appendix B.

4.4 Field Screening Measurements

Soil samples were screened using an RKI Eagle 2, which operates as a PID and CGI, to measure total organic vapours and combustible vapours. Results of field screening and the soil samples submitted to the laboratory for chemical analysis are included on the borehole logs (Appendix D).

The PID was equipped with a 10.6 electron-volt (eV) lamp, which was calibrated with a known concentration of isobutylene. This instrument detects VOCs that emit below an ionization potential of 10.6 eV, which includes a wide range of chemicals such as solvents and fuels. The detection limit of the instrument ranges from 0 to 15,000 ppm, and accuracy is +/- 10% for VOCs in the range of 0 and 2,000 ppm and +/- 20% of the reading above 2,000 ppm. The resolution of this instrument is 0.1 ppm for VOCs in the range of 0 and 1,000 ppm and 1 ppm for readings above 1,000 ppm. The PID provides an indication of organic contamination in soil but does not measure concentrations of individual contaminants.

The CGI detects combustible vapours such as those associated with fuels. This instrument measures a concentration of total combustible gas, calibrated to a known concentration of hexane. The instrument operates in the methane elimination mode. The detection limit of the instrument ranges from 0 to 11,000 ppm (i.e., 100 % LEL of hexane). The CGI has an accuracy of 25 ppm below 1,000 ppm and 5% of the lower explosive limit (LEL) between 1,000 ppm and 100% LEL. As with the PID, it provides an indication of contamination but not chemical specific concentrations.

The instrument was obtained by GEMTEC from Maxim Environmental & Safety Inc. (Maxim) for this project. Maxim calibrates their instruments on a regular basis, including prior to the use on

this project, to ensure consistent results. Site calibration of the field instrument was completed by GEMTEC each day according to the manufacturer's instructions.

4.5 Groundwater: Monitoring Well Installation

Three boreholes were instrumented as monitoring wells to enable groundwater elevation monitoring and an assessment of groundwater quality. Monitoring wells installed in 20-1, 20-2 and 20-3, referred to herein as MW20-1, MW20-2 and MW20-3, respectively, were constructed as follows:

- Monitoring wells were constructed using 51 mm diameter well screens and PVC riser pipe with 1.52 m long, No. 10 slot size well screens;
- Sand pack consisting of No. 2 silica sand were placed around the well screens to the outer diameter of 10 cm and the sand pack was extended to 0.3 m above the top of the screens;
- A bentonite seal was then placed around the PVC riser pipe up to 0.3 m of the ground surface; and,
- Each monitoring well was completed with a stick-up monument casing.

Monitoring wells were completed in accordance with R.R.O, 1990, Regulation 903 (Wells), as amended. The monitoring well construction details are shown on the attached borehole logs (Appendix D).

4.6 Groundwater: Sampling

Well development was conducted on January 14, 2020, at the newly installed monitoring wells. The depth to groundwater was measured using an interface probe with water level measurements recorded from the top of the monitoring well PVC pipe. No non-aqueous phase liquid, NAPL (i.e., free product) was noted at the monitoring well locations. The wells were then developed using Waterra© tubing and an inertial lift system to remove three well volumes of groundwater and any fine-grained material from around the well screens to ensure proper groundwater movement through the aquifer surrounding the monitoring wells.

On January 15, 2020, MW20-1, MW20-2 and MW20-3 were sampled using low-flow methods with a peristaltic pump. Measurements were recorded for groundwater temperature, pH, oxidation / reduction potential (ORP), dissolved oxygen (DO) and turbidity. These parameters provided an indication of stabilized groundwater conditions prior to sampling.

Groundwater samples were placed directly into laboratory-supplied sample containers. Samples submitted for metals analysis were filtered in the field with dedicated 0.45 micron (um) filters. Groundwater samples were placed in a cooler with ice and completed chain of custody form for submission to a laboratory. Groundwater samples were submitted for the analysis of M&I, PHCs including BTEX and PAHs.

A total of eight groundwater samples including four field duplicates were submitted to AGAT Laboratories in Ottawa, Ontario. A summary of the groundwater samples submitted for chemical analysis are summarized in Tables B-3 to B-4 (appended).

4.7 Sediment Sampling

A water body is not present at the subject property. Therefore, sediment sampling was not conducted as part of the Phase Two ESA.

4.8 Analytical Testing

Soil and groundwater samples were analyzed by AGAT Laboratories, in accordance with the requirements of O. Reg. 153/04.

Soil and groundwater samples were submitted for analysis of M&I, PAHs and PHCs including BTEX. Laboratory certificates of analysis are included in Appendix E.

4.9 Residue Management Procedures

The management of residues such as soil cuttings, purge and development groundwater and fluids from equipment cleaning was conducted as indicated in the following table.

Table 4-2 Summary of Residue Management Procedures

Residue		Management Procedure
i.	Soil cuttings from drilling	Soil cuttings from the drilling were placed into steel 205 litre drums and left on-site
ii.	Water from well development and purging	Groundwater from the development and purging of the monitoring wells was emptied into steel 205 litre drums and left on-site.
iii.	Fluids from equipment cleaning	Equipment cleaning water was emptied into steel 205 litre drums and left on-site.

4.10 Elevation Surveying

The ground surface elevations and top of PVC riser elevations of the borehole locations were surveyed using Trimble R8 global positioning equipment relative to UTM Zone 18 geodetic datum. The Trimble R8 global positioning systems obtains maximum precision of 8 millimeters (mm) horizontally, and 15 millimetres vertically.

4.11 Quality Assurance and Quality Control Measures

Quality assurance and quality control of the soil and groundwater samples were monitored and maintained in the following ways:

- This field investigation was completed under GEMTEC SOPs for soil and groundwater sampling;
- Samples were given unique identifications as they were collected, identifying the project number, date, sample location, and depth. The sample numbers were recorded in field notes for each location;
- Sample containers provided by the laboratory were used and laboratory requirements for sample size, container type, preservatives and filtering were followed;
- Non-disposable sampling equipment was cleaned using Alconox© and distilled water following each use;
- A chain-of-custody form was filled out for the sample prior to submitting the samples to the laboratory. The chain-of-custody documented sample movement from collection to receipt at the laboratory and provided sample identification, requested analysis and conditions of samples upon arrive at the laboratory (e.g. temperature, container status, etc.);
- Soil samples were randomly selected by the GEMTEC field staff for duplicate testing. The number of QC samples submitted is equivalent to a minimum of 10% of the total number of samples submitted;
- A VOC trip blank was transported to the project limits during groundwater sampling, and analyzed at the laboratory;
- Field monitoring equipment was calibrated according to industry requirements prior to the site visit including onsite calibration; and,
- Samples were randomly selected by the laboratory for Quality Assurance checks. Generally, one sample for every ten samples submitted is checked. For each parameter, there is an acceptable upper and lower limit for the measured concentration of the parameter. Measured concentrations of analyzed samples must fall within the upper and lower acceptable limits in order for the sample to be valid. If a result exceeds the upper or lower acceptable limits, the sample must be re-analyzed.

5.0 REVIEW AND RESULTS

5.1 Site Geology

The surficial geology of the subject site was obtained from the geotechnical investigation conducted by GEMTEC entitled “*Geotechnical Investigation, 240 Ferland Street, Ottawa, Ontario*” and dated February 24, 2020. Borehole logs with detailed soil descriptions and depths are included in Appendix C. The geology encountered during the investigation is detailed within the geotechnical report and summarized below.

Fill material was encountered from ground surface at all of the borehole locations. The fill material generally consists of brown, grey brown, and dark brown silty sand with varying amounts of gravel and clay, as well as brown fine to medium grained sand with trace gravel. Organic material, brick and debris from the demolition work were also noted in the fill material. The thickness of the fill material ranges from about 0.3 to 1.6 metres.

An organic deposit of peat was encountered below the fill material at all of the borehole locations at depths ranging from 0.3 to 1.6 metres below ground surface. The peat deposit is dark brown to black and contains trace wood and roots. The thickness of the peat ranges from about 0.3 metres to 1.5 metres at the borehole locations.

An organic deposit of marl was encountered below the peat at all of the borehole locations at depths ranging from 1.9 to 2.3 metres below ground surface. The marl consists of light brown silty clay with trace white shells. The thickness of the marl ranges from about 0.8 metres to 1.2 metres at the borehole locations.

A 0.4 metre thick layer of firm, grey silty clay was encountered below the marl at a depth of about 2.7 metres below ground surface in borehole 20-1. Based on sample appearance, the silty clay has a firm consistency.

A deposit of brown, fine to medium-grained sand trace silt was encountered below the marl at borehole 20-2 at a depth of about 3.1 metres below ground surface. The thickness of the sand at the borehole location is about 0.8 metres.

A deposit of grey silty sand with trace gravel was encountered below the silty clay at borehole 20-1, below the sand at borehole 20-2, and below the marl at borehole 20-3 at depths of about 3.1 and 3.8 metres below ground surface. All of the boreholes were terminated within the silty sand deposit at depths of 5.3 and 6.1 metres below ground surface.

Borehole 20-1 encountered refusal on the inferred bedrock surface at a depth of about 5.3 metres below the ground surface. It should be noted that auger refusal can occur on boulders and may not necessarily represent the surface of the bedrock.

5.2 Groundwater: Elevations and Flow Direction

The rationale for choosing locations of monitoring wells was to investigate APECs, identified in the Phase One ESA by GEMTEC. The monitoring wells were designed and installed to intersect the inferred groundwater table.

A groundwater monitoring program was completed by GEMTEC at the subject property on January 15, 2020. Free product or sheen was not observed or measured in the monitoring wells as part of this investigation. The measured water levels ranged from 3.77 to 3.90 m bgs in the wells which corresponds to groundwater elevations ranging from 52.99 to 53.05 m asl. A table showing the water levels and elevations is presented in Table 5-1 below.

Based on the measured groundwater elevations, the groundwater flow is interpreted to be towards the south. However, the groundwater gradient at the site is relatively flat at 0.003 m/m and as such, groundwater flow directions may fluctuate seasonally. The groundwater contours were prepared using groundwater elevations at the subject property measured during the sampling event on January 15, 2020. A plan of groundwater contours is shown in Figure A-3.

Table 5-1 Summary of Groundwater Levels – January 15, 2020

Monitoring Well ID	Coordinates (UTM NAD 1983 Zone 18N)		Elevation (m asl)		Free product thickness (mm)
	Easting	Northing	Ground surface	Groundwater Elevation	
MW20-1	447731.2	5032438.7	56.91	53.05	0.00
MW20-2	447741.0	5032418.8	56.90	52.99	0.00
MW20-3	447747.2	5032433.7	56.80	53.03	0.00

Notes:

m asl' - metres above sea level

5.3 Soil Quality

The locations, depths, and type of laboratory analysis of selected soil samples are provided on the borehole logs in Appendix D, and are identified in the analytical soil result tables (Tables B-1 and B-2). The certificates of analysis are presented in Appendix E.

A comparison of the analytical results for soil samples to the Table 3 SCS identified elevated levels of multiple M&I, PAH and PHC including BTEX parameters at all monitoring locations (See Figure A-4, Figure A-5 and Figure A-6).

5.3.1 Metals and Inorganics

The soil analytical results for metal and inorganics are summarized in Table B-1 and presented on Figure A-4. A total of three samples (including one QA/QC sample) from BH20-1 and BH20-2 were submitted for the analysis of M&I.

The sample collected from BH20-1 from 0.76 to 1.37 m bgs (SA2 within the silty sand fill material) had concentrations of various parameters above the Table 3 SCS including barium (591 µg/g vs the 390 µg/g standard), lead (414 µg/g vs the 120 µg/g standard), mercury (0.32 µg/g vs the 0.27 µg/g standard), zinc (370 µg/g vs the 340 µg/g standard), pH (9.38 vs the 5 to 9 standard) and electrical conductivity (EC) (3.09 mS/cm vs the 0.7 mS/cm standard).

All other M&I parameters analysed for BH20-1 and BH20-2 were either not detected or were less than the Table 3 SCS. Detection limits were below the Table 3 SCS.

5.3.2 Polycyclic Aromatic Hydrocarbons

The soil analytical results for polycyclic aromatic hydrocarbons are summarized in Table B-1 and presented on Figure A-5. A total of four samples (including one QA/QC sample) from all monitoring locations were submitted for the analysis of PAH.

The sample collected from BH20-1 from 0.76 to 1.37 m bgs (SA2 within the silty sand fill material) had concentrations of various parameters above the Table 3 SCS including acenaphthylene (0.22 µg/g vs the 0.15 µg/g standard), anthracene (0.89 µg/g vs the 0.67 µg/g standard), benz(a)anthracene (3.6 µg/g vs the 0.5 µg/g standard), benzo(a)pyrene (1.1 µg/g vs the 0.3 µg/g standard), benzo(b/j)fluoranthene (1.6 µg/g vs the 0.78 µg/g standard), benzo(k)fluoranthene (0.9 µg/g vs the 0.78 µg/g standard), dibenz(a,h)anthracene (0.18 µg/g vs the 0.1 µg/g standard), fluoranthene (5.7 µg/g vs the 0.69 µg/g standard) and indeno(1,2,3-cd)pyrene (0.55 µg/g vs the 0.38 µg/g standard).

The sample collected from BH20-2 from 0.76 to 1.37 m bgs (SA2 within the silty sand fill material) had concentrations of various parameters above the Table 3 SCS including acenaphthylene (0.62 µg/g vs the 0.15 µg/g standard), anthracene (1.3 µg/g vs the 0.67 µg/g standard), benz(a)anthracene (2.7 µg/g vs the 0.5 µg/g standard), benzo(a)pyrene (1.2 µg/g vs the 0.3 µg/g standard), benzo(b/j)fluoranthene (2.3 µg/g vs the 0.78 µg/g standard), benzo(k)fluoranthene (1.2 µg/g vs the 0.78 µg/g standard), dibenz(a,h)anthracene (0.14 µg/g vs the 0.1 µg/g standard), fluoranthene (5.7 µg/g vs the 0.69 µg/g standard), indeno(1,2,3-cd)pyrene (0.62 µg/g vs the 0.38 µg/g standard), 1,2-methylnaphthalene (57 µg/g vs the 0.99 µg/g standard), naphthalene (9 µg/g vs the 0.6 µg/g standard), and phenanthrene (16 µg/g vs the 6.2 µg/g standard).

The sample collected from BH20-3 from 0.76 to 1.37 m bgs (SA2 within the organic with wood fill material) had concentrations of 1,2-methylnaphthalene (31 µg/g) and naphthalene (13 µg/g) versus their standards of 0.99 µg/g (1,2-methylnaphthalene) and 0.6 µg/g (naphthalene), respectively.

All other PAH parameters analysed for the monitoring locations were either not detected or were less than the Table 3 SCS. Detection limits were below the Table 3 SCS.

5.3.3 Petroleum Hydrocarbons

The soil analytical results for petroleum hydrocarbons including benzene, toluene, ethylbenzene, and total xylenes are summarized in Table B-2 and presented on Figure A-6. A total of six samples (including one QA/QC sample) from all monitoring locations were submitted for the analysis of PHCs including BTEX.

Two samples collected from BH20-3 from 0.76 to 1.37 m bgs (SA2 within the organic material with wood fill) and 3.05 to 3.66 m bgs (SA5 within the silty sand native material) had concentrations of F1 (C6-C10), F1 (C6-C10) – BTEX, F2 (C10-C16) and/or F3 (C16-C34) above the Table 3 SCS. In addition, SA2 collected from 0.76 to 1.37 m bgs (SA2 within the organic

material with wood fill) had concentrations of ethylbenzene (5.9 µg/g) and total xylenes (27 µg/g) above the Table 3 SCS of 2 µg/g and 3.1 µg/g, respectively. A deeper sample collected from 5.33 to 5.94 m bgs (SA8 within the silty sand native material) had concentrations of all PHCs and BTEX below the Table 3 SCS.

All other PHC including BTEX parameters analysed for the monitoring locations were either not detected or were less than the Table 3 SCS. Detection limits were below the Table 3 SCS.

5.4 Groundwater Quality

The groundwater analytical results are presented in Tables B-3 and B-4. The Laboratory Certificate of Analysis for the groundwater samples is provided in Appendix E.

A comparison of the analytical results for groundwater samples to the Table 3 SCS identified elevated levels of PHCs at MW20-3 (See Figure A-7).

5.4.1 Metals and Inorganics

The groundwater analytical results for metal and inorganics are summarized in Table B-3. One sample from MW20-3 was submitted for the analysis of M&I.

All M&I parameters analysed were either not detected or were less than the Table 3 SCS. Detection limits were below the Table 3 SCS.

5.4.2 Polycyclic Aromatic Hydrocarbons

The groundwater analytical results for polycyclic aromatic hydrocarbons are summarized in Table B-3. A total of three samples (including one QA/QC sample) from MW20-2 and MW20-3 were submitted for the analysis of PAHs.

All PAH parameters analysed were either not detected or were less than the Table 3 SCS. Detection limits were below the Table 3 SCS.

5.4.3 Petroleum Hydrocarbons

The groundwater analytical results for petroleum hydrocarbons including benzene, toluene, ethylbenzene, and total xylenes are summarized in Table B-4 and Figure A-7. A total of four samples (including one QA/QC sample) from all three monitoring locations were submitted for the analysis of PHCs including BTEX.

MW20-3 had a concentration of F2 (C10-C16) above the Table 3 SCS (420 µg/L vs the 150 µg/L standard).

All other PHC and BTEX concentrations analysed were either not detected or were less than the Table 3 SCS. Detection limits were below the Table 3 SCS.

5.5 Quality Assurance/Quality Control

AGAT completed a variety of QA/QC measures on the soil and groundwater samples submitted as part of this sampling program. These QA/QC measures include: sample replicas, matrix spiked laboratory blanks and process blanks. Based on review of the groundwater analytical report, tap water was reportedly analysed as QC sample testing for duplicate and matrix spike due to insufficient sample volume. No other QA/QC comments were present within the report.

A laboratory supplied trip blank for VOCs was transported to the project limits during groundwater sampling activities and submitted to AGAT for VOC analysis to determine if contamination occurred during shipping and field handling procedures.

Soil and groundwater samples were randomly selected by GEMTEC field staff for field duplicate testing. Duplicate samples were selected for every 10 samples submitted for analysis. GEMTEC submitted the following field duplicate soil and groundwater samples:

Soil

- BH20-2 SA102 was a blind field duplicate of BH20-2 SA2 (0.76-1.37 m) and analyzed for M&I and PAHs; and,
- BH20-3 SA105 was a blind field duplicate of BH20-3 SA5 (3.05-3.66 m) and analyzed for PHCs including BTEX.

Groundwater

MW20-102 was a blind field duplicate of MW20-2 and analyzed for PAHs and PHCs including BTEX.

The results from the duplicate samples were used to assess the accuracy and reliability of the laboratory procedures and instruments.

A calculation of the relative percent difference (RPD) between the sample and its duplicate was performed and compared to the acceptance limits outlined in the '*Protocol for Analytical Methods Used in the Assessment of Properties*' under Part XV.1 of the Environmental Protection Act, April 2011. The RPD calculation is only applicable when both the sample and the field duplicate concentrations are greater than five times the reported detection limit.

The results are presented within Tables B-5 and B-6 within Appendix B for soil and groundwater, respectively. An unacceptable level of agreement between the results of the parent and duplicate samples were identified as follows:

Soil

- Copper at BH20-2 SA102 exceeded the RPD criteria of 30%; and,

- F2 (C10-C16) and F3 (C16-C34) at BH20-3 SA105 exceeded the RPD criteria of 30%.

The elevated RPDs may be attributed to the heterogeneity within the soil. These deviations from acceptable RPD criteria are not considered indicative of unacceptable data quality, however, where the concentrations of the contaminants approach Table 3 SCS, it should be considered that the value may be indicative of an exceedance of the standard.

Groundwater

The RPDs of the groundwater at all of the monitoring wells analyzed met the MECP Alert criteria which is considered acceptable.

5.6 Phase Two Conceptual Site Model

5.6.1 Potentially Contaminating Activities and Areas of Potential Environmental Concern

Based on the Phase One ESA completed by GEMTEC there is a potential for soil and groundwater contamination to be at the subject property (GEMTEC, 2019). Information presented in the report that contributes to the development of the CSM is summarized as follows:

- The Rideau River is located approximately 880 m south of the subject property, which flows west towards the Ottawa River which is situated approximately 1.8 km west of the Subject property, which flows towards the north/northeast;
- Records indicated that 11 wells were identified within the study area, which were identified as monitoring wells and 'Not a well – not used';
- The subject property and properties within a 250 m radius of the subject property are serviced with municipal drinking water system, as defined in the *Safe Drinking Water Act, 2002*;
- Surrounding properties are a mix of residential and commercial land use;
- The subject property is currently developed with a 5-unit residential dwelling;
- The subject property is situated within a built-up area approximately 60 m asl and is generally flat with the study area sloping gently down towards the south;
- Geology mapping suggests that the subject property consists of consists of 0 to 1 metres of clay and silt underlying erosional terraces overlying shale and minor limestone of the Billings formation (of the Ordovician age);
- Based on the review of records, interviews and the site reconnaissance completed as part of the Phase One ESA, GEMTEC identified several PCAs for the study area. Based on this, two APECS were identified for the subject property. These PCAs (with a PCA code identified within Table 2 of Schedule D in O.Reg. 153/04) include:
 - 28. Gasoline and Associated Products Storage in Fixed Tanks; and,

- 30. Importation of Fill Material of Unknown Quality.

Information considered for the development of this CSM was gathered from numerous sources (i.e. aerial photographs, city directories, environmental database searches, physical setting sources, interviews and a site reconnaissance), which reduces the potential for not identifying a former property use or PCA.

5.6.2 Physical Setting

Geological conditions encountered on the subject property during the drilling program consisted of fill materials (silty sand or sand) with the thickness ranging from 0.3 to 1.6 m underlain by peat to depths between 0.3 to 1.6 m bgs. Marl was encountered beneath the peat layer to depths between 1.9 to 2.3 m bgs which was underlain by a layer of silty sand to 2.7 m bgs in 20-1, and sand approximately 0.8 m thick. Silty sand was encountered in at all of the borehole locations to depths between 5.3 and 6.1 m bgs. Auger refusal was encountered in 20-1 at 5.3 m bgs, which was assumed bedrock surface.

5.6.3 Buildings and Structures

No buildings or structures are present on the subject property. A chain link fence is present around the perimeter of the subject property.

5.6.4 Environmental Sensitive Areas

There were no conditions on the subject property which would apply under Section 41 *Environmentally Sensitive Areas* and Section 43.1 *Shallow Soil Property or Lands Present within 30 m of a Water Body* of O.Reg 153/04.

5.6.5 Imported Soil

During the Phase Two ESA conducted by GEMTEC, no soil was imported to the subject property.

5.6.6 Soil and Groundwater Quality

A comparison of analytical results to the MECP Table 3 SCS for coarse-grained soils identified elevated M&I, PAH and PHC including BTEX concentrations for soil samples collected at BH20-1, BH20-2 and BH20-3 (See Tables B-1 and B-2):

Table 5-2 Soil Parameters that Exceed Table 3 SCS

Analytical Suite	BH ID / Sample ID	Parameter	Concentration	Table 3 SCS
Metals and Inorganics	BH20-1 SA2	Barium	591 µg/g	390 µg/g
Metals and Inorganics	BH20-1 SA2	Lead	414 µg/g	120 µg/g

Analytical Suite	BH ID / Sample ID	Parameter	Concentration	Table 3 SCS
Metals and Inorganics	BH20-1 SA2	Mercury	0.32 µg/g	0.27 µg/g
Metals and Inorganics	BH20-1 SA2	Zinc	370 µg/g	340 µg/g
Metals and Inorganics	BH20-1 SA2	pH	9.38	5 to 9
Metals and Inorganics	BH20-1 SA2	EC	3.09 mS/cm	0.7 mS/cm
PAHs	BH20-1 SA2	Acenaphthylene	0.22 µg/g	0.15 µg/g
PAHs	BH20-1 SA2	Anthracene	0.89 µg/g	0.67 µg/g
PAHs	BH20-1 SA2	Benzo(a)anthracene	3.6 µg/g	0.5 µg/g
PAHs	BH20-1 SA2	Benzo(a)pyrene	1.1 µg/g	0.3 µg/g
PAHs	BH20-1 SA2	Benz(b/j)fluoranthene	1.6 µg/g	0.78 µg/g
PAHs	BH20-1 SA2	Benzo(k)fluoranthene	0.9 µg/g	0.78 µg/g
PAHs	BH20-1 SA2	Dibenz(a,h)anthracene	0.18 µg/g	0.1 µg/g
PAHs	BH20-1 SA2	Fluoranthene	5.7 µg/g	0.69 µg/g
PAHs	BH20-1 SA2	Indeno(1,2,3-cd)pyrene	0.55 µg/g	0.38 µg/g
PAHs	BH20-2 SA102	Acenaphthylene	0.62 µg/g	0.15 µg/g
PAHs	BH20-2 SA102	Anthracene	1.3 µg/g	0.67 µg/g
PAHs	BH20-2 SA102	Benzo(a)anthracene	2.7 µg/g	0.5 µg/g
PAHs	BH20-2 SA102	Benzo(a)pyrene	1.2 µg/g	0.3 µg/g
PAHs	BH20-2 SA102	Benzo(b/j)fluoranthene	2.3 µg/g	0.78 µg/g
PAHs	BH20-2 SA102	Benzo(k)fluoranthene	1.2 µg/g	0.78 µg/g
PAHs	BH20-2 SA102	Dibenz(a,h)anthracene	0.14 µg/g	0.1 µg/g
PAHs	BH20-2 SA102	Fluoranthene	5.7 µg/g	0.69 µg/g
PAHs	BH20-2 SA102	Indeno(1,2,3-cd)pyrene	0.62 µg/g	0.38 µg/g
PAHs	BH20-2 SA102	1,2-Methylnaphthalene	57 µg/g	0.99 µg/g
PAHs	BH20-2 SA102	Naphthalene	9 µg/g	0.6 µg/g

Analytical Suite	BH ID / Sample ID	Parameter	Concentration	Table 3 SCS
PAHs	BH20-2 SA102	Phenanthrene	16 µg/g	6.2 µg/g
PAHs	BH20-3 SA2	1,2-Methylnaphthalene	31 µg/g	0.99 µg/g
PAHs	BH20-3 SA2	Naphthalene	13 µg/g	0.6 µg/g
PHCs	BH20-3 SA2	F1 (C6-C10)	390 µg/g	55 µg/g
PHCs	BH20-3 SA2	F1 (C6-C10) - BTEX	360 µg/g	55 µg/g
PHCs	BH20-3 SA2	F2 (C10-C16)	210 µg/g	98 µg/g
BTEX	BH20-3 SA2	Ethylbenzene	5.9 µg/g	2 µg/g
BTEX	BH20-3 SA2	Total Xylenes	27 µg/g	3.1 µg/g
PHCs	BH20-3 SA5	F1 (C6-C10)	180 µg/g	55 µg/g
PHCs	BH20-3 SA5	F1 (C6-C10) - BTEX	180 µg/g	55 µg/g
PHCs	BH20-3 SA5	F2 (C10-C16)	4000 µg/g	98 µg/g
PHCs	BH20-3 SA5	F3 (C16-C34)	4000 µg/g	300 µg/g

It is interpreted that the EC exceedance in the surficial soil sample is due to road salting activities occurring during the winter months.

A comparison of groundwater analytical results to the MECP Table 3 SCS for identified elevated PHCs for groundwater samples collected at BH20-1, BH20-2 and BH20-3 (See Tables B-1 and B-2) are presented in Table 5-3 below:

Table 5-3 Groundwater Parameters that Exceed Table 3 SCS

Analytical Suite	BH ID / Sample ID	Parameter	Concentration	Table 3 SCS
PHCs	MW20-3	F2 (C10-C16)	420 µg/L	150 µg/L

The analytical results indicate groundwater samples collected at each of the sampled monitoring wells met the applicable Table 3 SCS for M&I and PAHs.

6.0 CONCLUSIONS AND RECOMMENDATIONS

6.1 Summary of Phase Two Findings

Based on the results of the Phase Two ESA, the soil and groundwater quality at the subject property does not meet the applicable site condition standards established in the MECP document *Soil, Groundwater and Sediment Standards for Use Under Part XV.1 of the Environmental Protection Act* (SGWS), dated March 9, 2004, and amended in April 2011.

The following is a summary of the contaminants of concern identified within the soil and groundwater at the subject property:

Soil

- Elevated concentrations of M&I (barium, lead, mercury, zinc, pH and EC) above the applicable Table 3 SCS were identified at one of two sampling locations (BH20-1) on the northwest corner of the subject property from 0.76 to 1.37 m bgs (SA2 within the fill material silty sand). All other soil samples submitted for M&I analysis met the Table 3 SCS.
- Elevated concentrations of various PAHs (including acenaphthylene, anthracene, benz(a)anthracene, benzo(a)pyrene, benzo(b/j)fluoranthene, benzo(k)fluoranthene, dibenz(a,h)anthracene, fluoranthene, indeno(1,2,3-cd)pyrene, 1,2-methylnaphthalene, naphthalene, and phenanthrene) above the applicable Table 3 SCS were identified at all three borehole locations (BH20-1, BH20-2 and BH20-3) from 0.76 to 1.37 m bgs. The material within BH20-1 (SA2) and BH20-2 (SA2) was described as silty sand fill material, and the material within BH20-3 (SA2) was described as organic with wood fill material.
- Elevated concentrations of PHCs Fraction F1 to F4 including BTEX (including F1 (C6-C10), F1 (C6-C10) – BTEX, F2 (C10-C16), F3 (C16-C34), ethylbenzene and total xylenes) were identified at BH20-3 located on the northeast corner of the subject property from 0.76 to 5.33 m bgs (SA2 and SA5) within the organic with wood and silty sand native materials. A deeper sample collected from 5.33 to 5.94 m bgs within the silty sand native material met the applicable Table 3 SCS. All other PHC submitted for PHC analysis met the Table 3 SCS.

Groundwater

- Elevated concentrations of PHCs including BTEX (F2 (C10-C16)) were encountered within the groundwater of MW20-3 located on the northeast portion of the subject property.
- All other groundwater samples analyzed for M&I, PAHs and PHCs including BTEX met the applicable Table 3 SCS.

6.2 Recommendations

Based on the results of the Phase Two ESA, a delineation program should be completed to further delineate the M&I, PAH and PHCs including BTEX exceedances encountered within the soil and groundwater.

A Remedial Options Analysis (ROA) should be developed to identify a strategy for remediation and/or management of the contamination in place that will allow for the effective redevelopment of the subject property for residential use.

The soil analytical results are representative only of the sampling locations and conditions may vary between sampling locations. The sampling was conducted to give a general overview of soil quality and final acceptance by a receiving site may require supplemental sampling.

7.0 CLOSURE

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



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8.0 LIMITATION OF LIABILITY

This report was prepared for and the work referred to within it has been undertaken by GEMTEC Consulting Engineers and Scientists Limited for Metro Ottawa-Carleton Real Estate Ltd. It is intended for the exclusive use of Metro Ottawa-Carleton Real Estate Ltd. This report may not be relied upon by any other person or entity without the express written consent of GEMTEC, Metro Ottawa-Carleton Real Estate Ltd.. Nothing in this report is intended to provide a legal opinion.

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

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

9.0 REFERENCES

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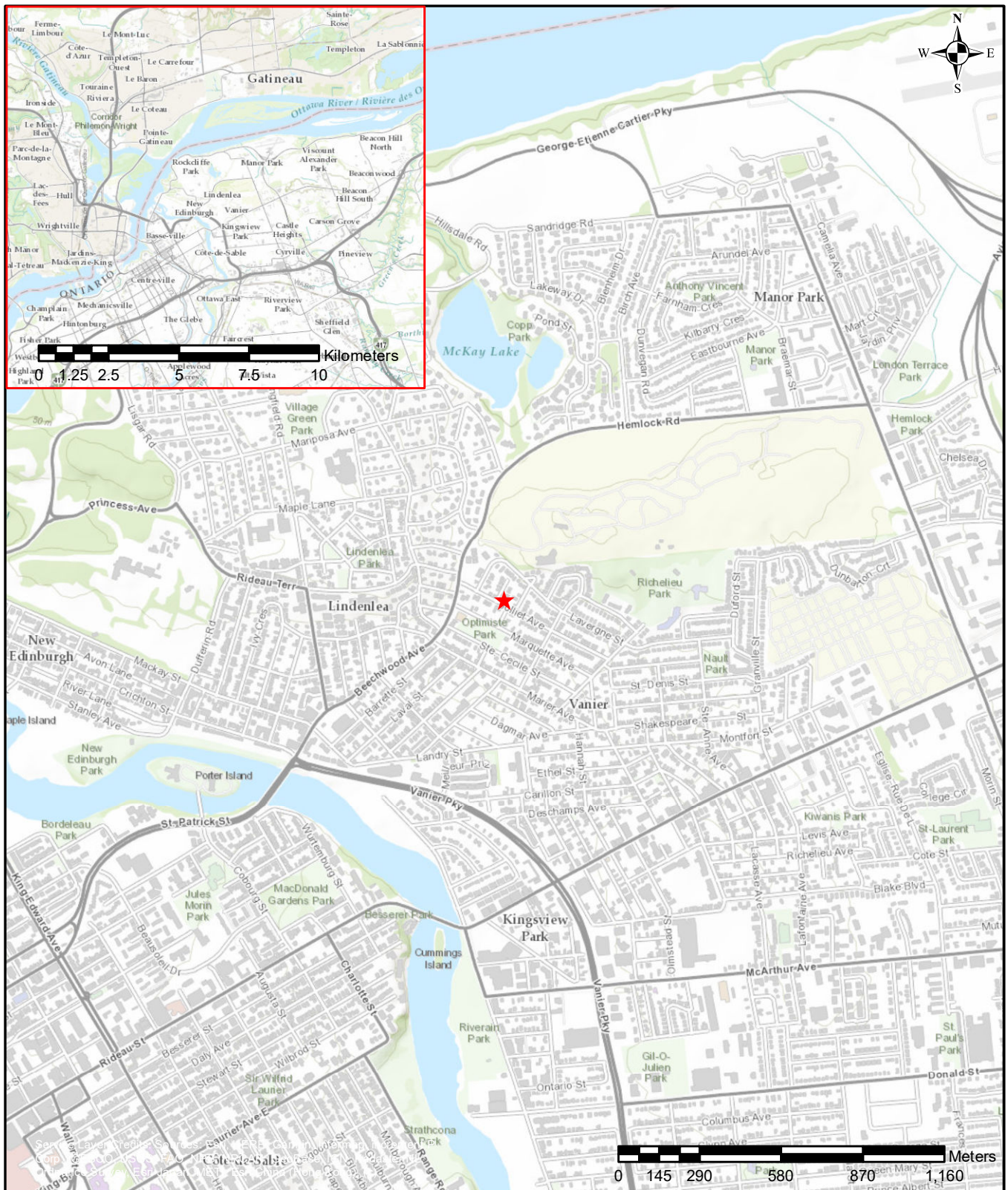
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APPENDIX A

Figures



Legend

★ Approximate Location of the Subject Property



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Project:

**Phase Two ESA
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Drawing:

Regional Site Location Plan

Project No: 63115.04

Drwn By: K.M.

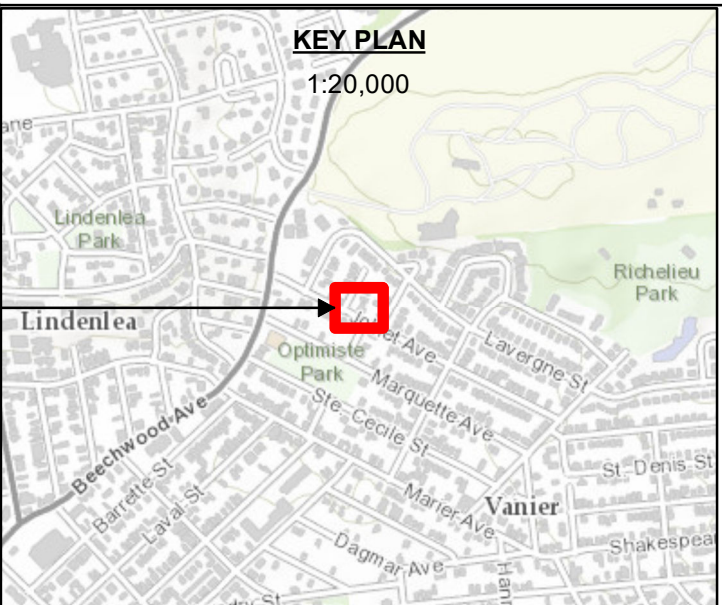
Chkd By: D.P.

Date: June 2020

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Figure: A-1

C:\Users\kathryn.maton\Documents\Projects\240 Ferland Street, Ottawa\Mapping\MXD\Phase Two ESA\Figure A-2 Monitoring Location Plan.mxd




Legend

- Subject Property
- Monitoring Location
- (99.99)** Ground Surface elevation, in metres
Geodetic Datum

References:

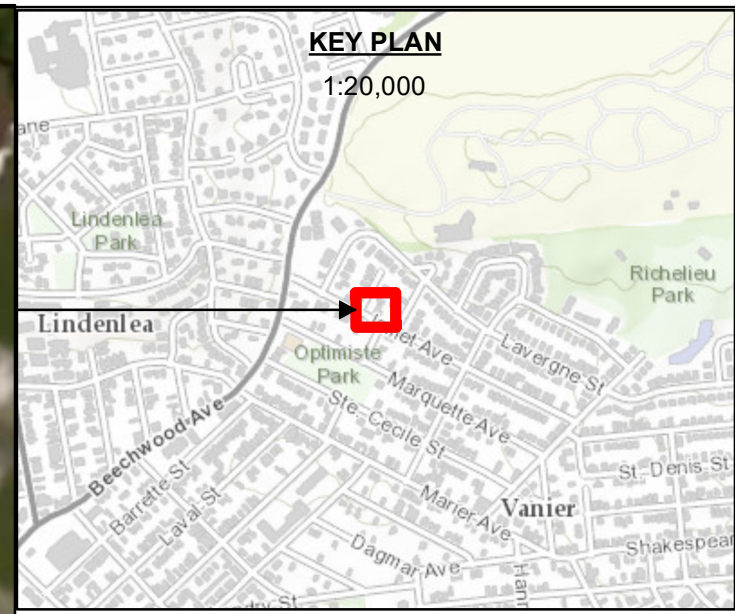
Service Layer Credits: Sources: Esri, HERE, Garmin, Intermap, increment P Corp., GEBCO, USGS, FAO, NPS, NRCAN, GeoBase, IGN, Kadaster NL, Ordnance Survey,

Scale
1:300
0 2.5 5 10 15 20 Meters

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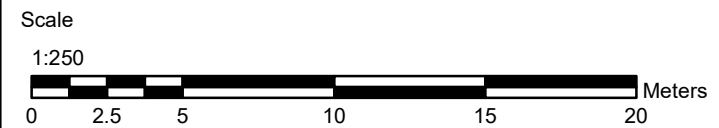
Client: Metro Ottawa-Carleton Real Estate Ltd.		Project: 63115.04	
Location 240 Ferland Street Ottawa, Ontario			
Drwn By: K.M.	Chkd By: D.P.	Title Borehole Location Plan	
Date: June 2020		Rev. 0	Figure: A-2
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- Legend**
- Subject Property
 - Monitoring Location
 - Groundwater Contours - January 15, 2020
 - ➔ Groundwater Flow Direction
 - (99.99) Groundwater Elevation (January 15, 2020)

References:

Service Layer Credits: Sources: Esri, HERE, Garmin, Intermap, increment P Corp., GEBCO, USGS, FAO, NPS, NRCAN, GeoBase, IGN, Kadaster NL, Ordnance Survey,





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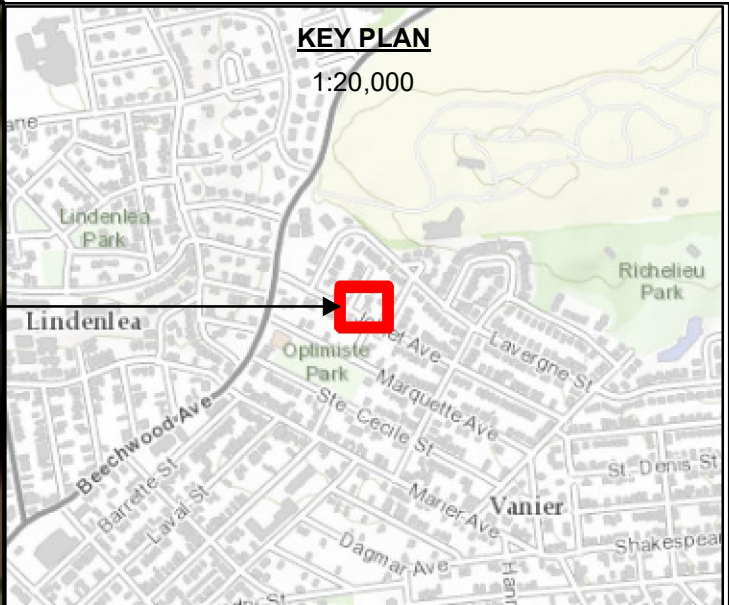
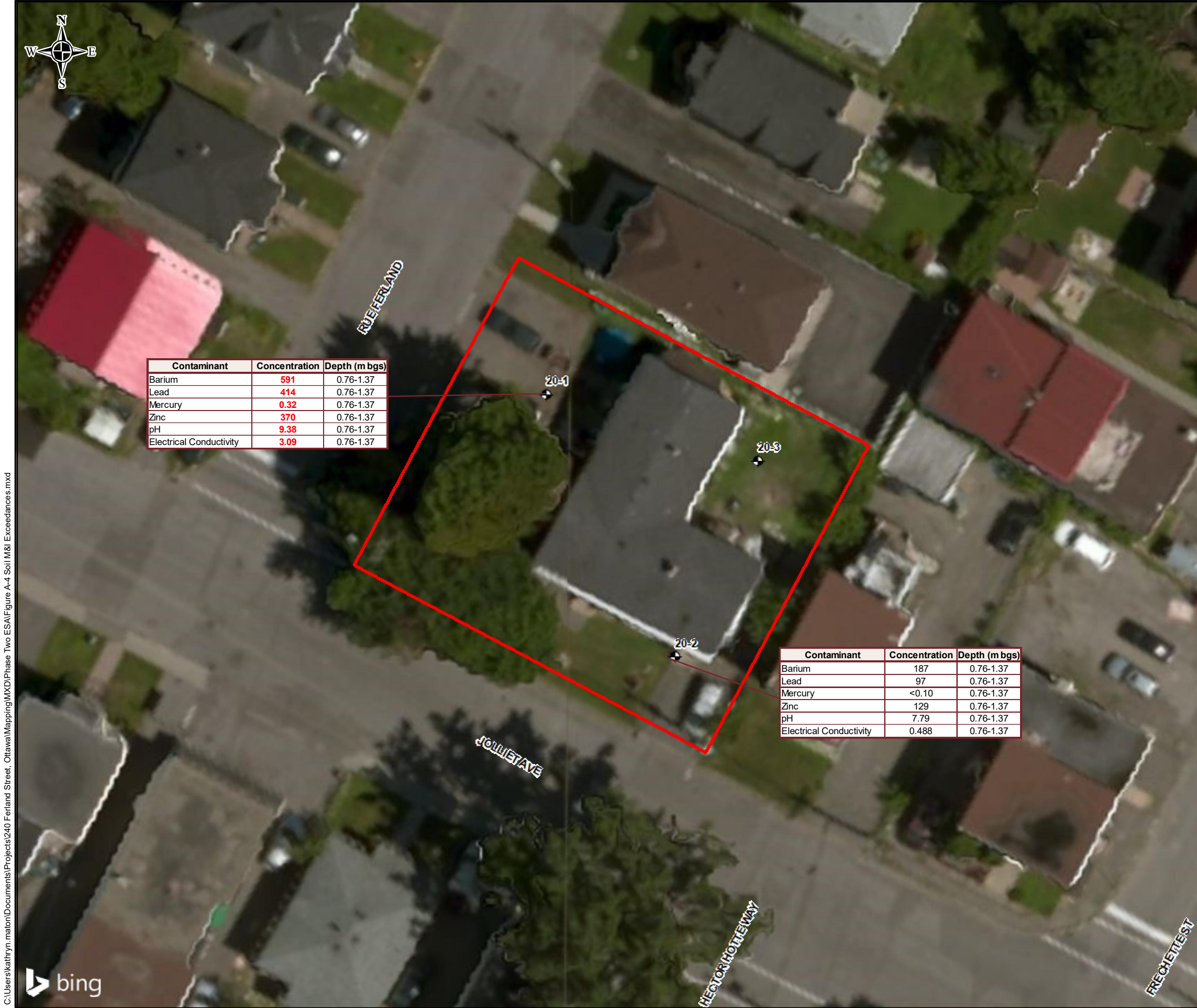
Client:	Metro Ottawa-Carleton Real Estate Ltd.	Project:	63115.04
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Location	240 Ferland Street Ottawa, Ontario		
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Drwn By:	Chkd By:	Title	
K.M.	D.P.	Groundwater Contours	

Date: June 2020	Rev.	Figure: A-3
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C:\Users\kathryn.maton\Documents\Projects\240 Ferland Street, Ottawa\Mapping\MXD\Phase Two ESA\Figure A-3 GW Contours.mxd



Legend

- Subject Property
- Monitoring Location

Parameter	MECP Table 3 SCS
Metals and Inorganics	
Barium	390
Lead	120
Mercury	0.27
Zinc	340
pH	5 to 9
Electrical Conductivity	0.7

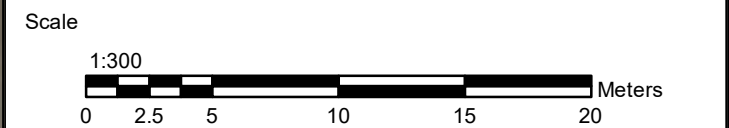
Notes:

1. All concentrations are indicated in ug/g with the exception of pH (presented in pH units) and electrical conductivity (presented in mS/cm)

2. **RED** bolded text indicates exceedance of MECP Table 3 SCS

References:

Service Layer Credits: Sources: Esri, HERE, Garmin, Intermap, increment P Corp., GEBCO, USGS, FAO, NPS, NRCAN, GeoBase, IGN, Kadaster NL, Ordnance Survey,



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Client: Metro Ottawa-Carleton Real Estate Ltd.		Project: 63115.04	
Location: 240 Ferland Street Ottawa, Ontario			
Drwn By: K.M.	Chkd By: D.P.	Title: Contaminant Distribution of Metals and Inorganics in Soil	
Date: June 2020		Rev. 0	Figure: A-4
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C:\Users\kathryn.maton\Documents\Projects\240 Ferland Street, Ottawa\Mapping\MXD\Phase Two ESA\Figure A-5 Soil PAH Exceedances.mxd



Contaminant	Concentration	Depth (m bgs)
Acenaphthylene	0.22	0.76-1.37
Anthracene	0.89	0.76-1.37
Benzo(a)anthracene	3.6	0.76-1.37
Benzo(a)pyrene	1.1	0.76-1.37
Benzo(b)fluoranthene	1.6	0.76-1.37
Benzo(k)fluoranthene	0.9	0.76-1.37
Dibenzo(a,h)anthracene	0.18	0.76-1.37
Fluoranthene	5.7	0.76-1.37
Indeno(1,2,3-cd)pyrene	0.55	0.76-1.37
1,2-Methylnaphthalene	0.18	0.76-1.37
Naphthalene	0.11	0.76-1.37
Phenanthrene	3.8	0.76-1.37

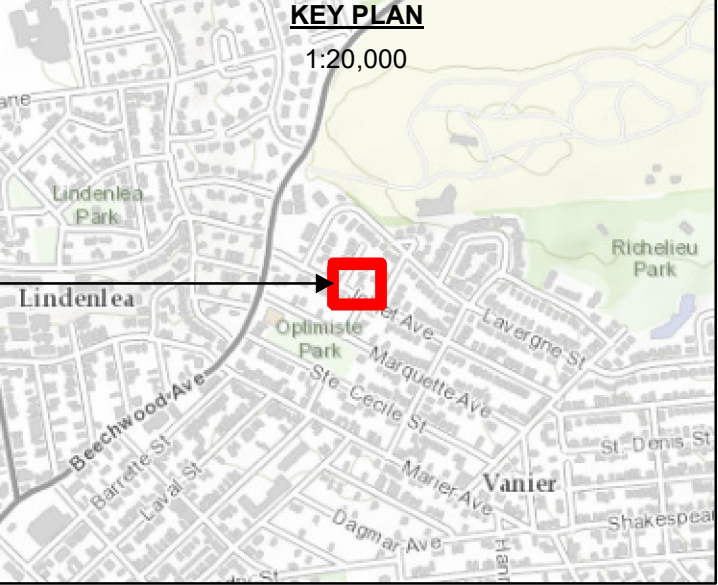
20-1

20-3

20-2

Contaminant	Concentration	Depth (m bgs)
Acenaphthylene	0.62	0.76-1.37
Anthracene	1.3	0.76-1.37
Benzo(a)anthracene	2.7	0.76-1.37
Benzo(a)pyrene	1.2	0.76-1.37
Benzo(b)fluoranthene	2.3	0.76-1.37
Benzo(k)fluoranthene	1.2	0.76-1.37
Dibenzo(a,h)anthracene	0.14	0.76-1.37
Fluoranthene	5.7	0.76-1.37
Indeno(1,2,3-cd)pyrene	0.62	0.76-1.37
1,2-Methylnaphthalene	57	0.76-1.37
Naphthalene	9	0.76-1.37
Phenanthrene	16	0.76-1.37

Contaminant	Concentration	Depth (m bgs)
Acenaphthylene	0.13	0.76-1.37
Anthracene	0.08	0.76-1.37
Benzo(a)anthracene	0.16	0.76-1.37
Benzo(a)pyrene	<0.05	0.76-1.37
Benzo(b)fluoranthene	0.1	0.76-1.37
Benzo(k)fluoranthene	0.06	0.76-1.37
Dibenzo(a,h)anthracene	<0.05	0.76-1.37
Fluoranthene	0.27	0.76-1.37
Indeno(1,2,3-cd)pyrene	<0.05	0.76-1.37
1,2-Methylnaphthalene	31	0.76-1.37
Naphthalene	13	0.76-1.37
Phenanthrene	1.1	0.76-1.37



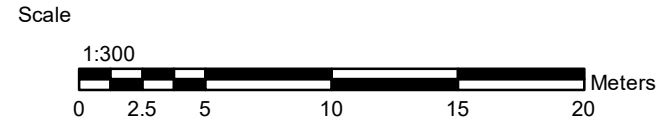
Legend

Subject Property

Monitoring Location

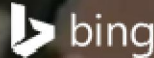
Parameter	MECP Table 3 SCS
Polycyclic Aromatic Hydrocarbons	
Acenaphthylene	0.15
Anthracene	0.67
Benzo(a)anthracene	0.5
Benzo(a)pyrene	0.3
Benzo(b)fluoranthene	0.78
Benzo(k)fluoranthene	0.78
Dibenzo(a,h)anthracene	0.1
Fluoranthene	0.69
Indeno(1,2,3-cd)pyrene	0.38
1,2-Methylnaphthalene	0.99
Naphthalene	0.6
Phenanthrene	6.2
Notes:	
1. All concentrations are indicated in ug/g unless otherwise specified	
2. RED bolded text indicates exceedance of MECP Table 3 SCS	

References:
Service Layer Credits: Sources: Esri, HERE, Garmin, Intermap, increment P Corp., GEBCO, USGS, FAO, NPS, NRCAN, GeoBase, IGN, Kadaster NL, Ordnance Survey,



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Client: Metro Ottawa-Carleton Real Estate Ltd.		Project: 63115.04	
Location		240 Ferland Street Ottawa, Ontario	
Drwn By: K.M.	Chkd By: D.P.	Title	Contaminant Distribution of PAHs in Soil
Date: June 2020		Rev. 0	Figure: A-5
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Contaminant	Concentration	Depth (m bgs)
F1 (C6-C10)	<5	3.81-4.42
F1 (C6-C10) - BTEX	<5	3.81-4.42
F2 (C10-C16)	<10	3.81-4.42
F3 (C16-C34)	<50	3.81-4.42
Ethylbenzene	<0.05	3.81-4.42
Total Xylenes	<0.05	3.81-4.42

Contaminant	Concentration	Depth (m bgs)
F1 (C6-C10)	390	0.76-1.37
F1 (C6-C10) - BTEX	360	0.76-1.37
F2 (C10-C16)	210	0.76-1.37
F3 (C16-C34)	110	0.76-1.37
Ethylbenzene	5.9	0.76-1.37
Total Xylenes	27	0.76-1.37
F1 (C6-C10)	180	3.05-3.66
F1 (C6-C10) - BTEX	180	3.05-3.66
F2 (C10-C16)	4000	3.05-3.66
F3 (C16-C34)	4000	3.05-3.66
Ethylbenzene	0.15	3.05-3.66
Total Xylenes	0.36	3.05-3.66
F1 (C6-C10)	<5	5.33-5.94
F1 (C6-C10) - BTEX	<5	5.33-5.94
F2 (C10-C16)	<10	5.33-5.94
F3 (C16-C34)	<50	5.33-5.94
Ethylbenzene	<0.05	5.33-5.94
Total Xylenes	<0.05	5.33-5.94

Contaminant	Concentration	Depth (m bgs)
F1 (C6-C10)	<5	3.81-4.42
F1 (C6-C10) - BTEX	<5	3.81-4.42
F2 (C10-C16)	<10	3.81-4.42
F3 (C16-C34)	<50	3.81-4.42
Ethylbenzene	<0.05	3.81-4.42
Total Xylenes	<0.05	3.81-4.42

KEY PLAN

1:20,000

Legend

Subject Property

Monitoring Location

Parameter	MECP Table 3 SCS
Petroleum Hydrocarbons	
F1 (C6-C10)	55
F1 (C6-C10) - BTEX	55
F2 (C10-C16)	98
F3 (C16-C34)	300
Benzene, Toluene, Ethylbenzene and Xylenes	
Ethylbenzene	2
Total Xylenes	3.1

Notes:

1. All concentrations are indicated in ug/g unless otherwise specified.

2. **RED** bolded text indicates exceedance of MECP Table 3 SCS

Scale

1:300

Meters

02.55101520

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Real Estate Ltd.

Project: 63115.04

Location

240 Ferland Street
Ottawa, Ontario

Drwn By: K.M.

Chkd By: D.P.

Title

Contaminant Distribution of
PHCs including BTEX in Soil

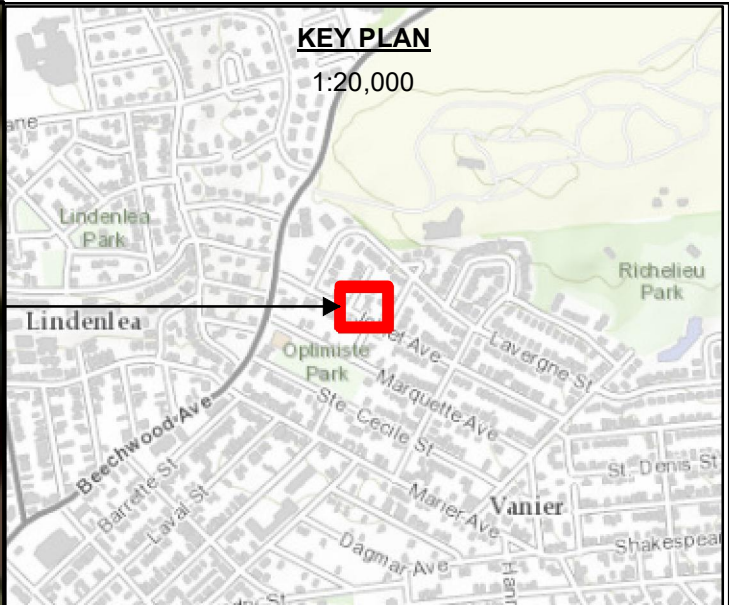
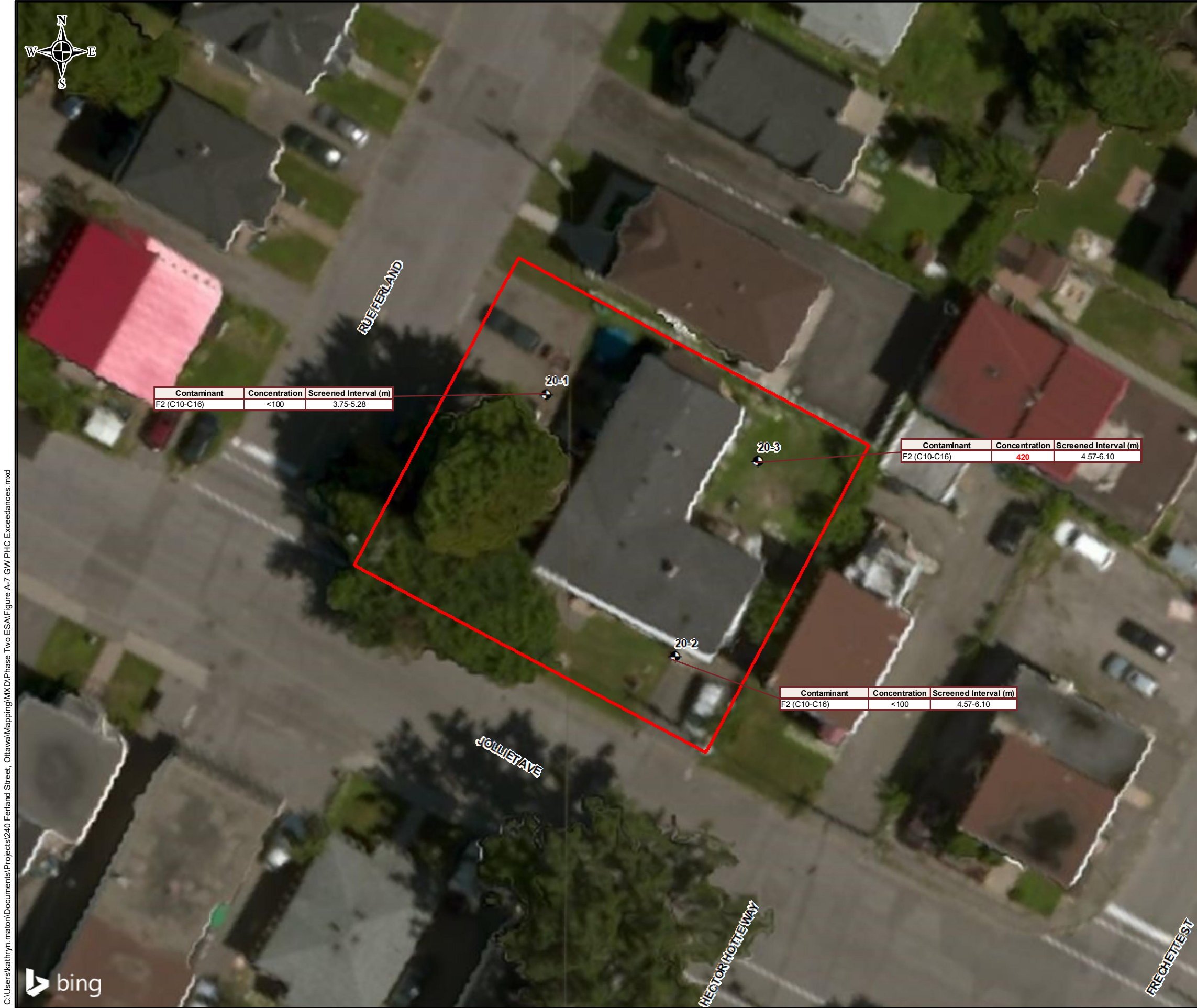
Date: June 2020

Rev. 0

Figure: A-6

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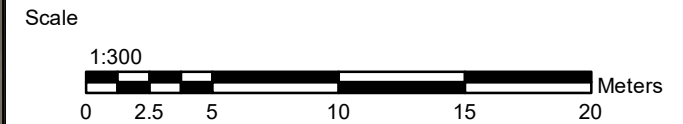


Legend

- Subject Property
- Monitoring Location

Parameter	MECP Table 3 SCS
Petroleum Hydrocarbons	
F2 (C10-C16)	150
Notes:	
1. All concentrations are indicated in ug/L unless otherwise specified.	
2. RED bolded text indicates exceedance of MECP Table 3 SCS	

References:
Service Layer Credits: Sources: Esri, HERE, Garmin, Intermap, increment P Corp., GEBCO, USGS, FAO, NPS, NRCAN, GeoBase, IGN, Kadaster NL, Ordnance Survey,



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Client:	Metro Ottawa-Carleton Real Estate Ltd.	Project:	63115.04
Location	240 Ferland Street Ottawa, Ontario		
Drwn By:	Chkd By:	Title	Contaminant Distribution of PHCs in Groundwater
K.M.	D.P.		
Date: June 2020	Rev.	0	
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APPENDIX B

Soil and Groundwater Summary Tables

Table B-1: Summary of Analytical Results in Soil
Metals, Inorganics and PAHs
Phase Two ESA, 240 Ferland Street, Ottawa, Ontario

Sample ID	MECP TABLE 3 STANDARD	REPORTING LIMIT	UNITS	BH20-1 SA2	BH20-2 SA2	BH20-2 SA102	BH20-3 SA2
Depth (m)				0.76-1.37	0.76-1.37	0.76-1.37	0.76-1.37
Lab Job #				20Z563594	20Z563594	20Z563594	20Z563594
Sampling Date				13-Jan-2020	13-Jan-2020	13-Jan-2020	13-Jan-2020
Metals and Inorganics (M&I)							
Antimony	7.5	0.8	µg/g	3.6	<0.8	<0.8	NA
Arsenic	18	1	µg/g	5	3	3	NA
Barium	390	2	µg/g	591	181	187	NA
Beryllium	4	0.5	µg/g	<0.5	<0.5	<0.5	NA
Boron (Hot Water Soluble)	1.5	0.1	µg/g	0.82	0.57	0.63	NA
Cadmium	1.2	0.5	µg/g	1.2	<0.5	<0.5	NA
Chromium	160	2	µg/g	29	52	58	NA
Chromium VI	8	0.2	µg/g	<0.2	<0.2	<0.2	NA
Cobalt	22	0.5	µg/g	5.6	10.9	12.2	NA
Copper	140	1	µg/g	21	25	35	NA
Lead	120	1	µg/g	414	97	80	NA
Mercury	0.27	0.1	µg/g	0.32	<0.10	<0.10	NA
Molybdenum	6.9	0.5	µg/g	1.3	0.6	0.6	NA
Nickel	100	1	µg/g	12	29	29	NA
Selenium	2.4	0.4	µg/g	0.4	<0.4	0.5	NA
Silver	20	0.2	µg/g	<0.2	<0.2	<0.2	NA
Thallium	1	0.4	µg/g	<0.4	<0.4	<0.4	NA
Vanadium	86	1	µg/g	24	49	52	NA
Zinc	340	5	µg/g	370	113	129	NA
pH	5 to 9	NA	pH Units	9.38	7.79	6.82	NA
Electrical Conductivity	0.7	0.005	mS/cm	3.09	0.463	0.488	NA
Sodium Adsorption Ratio	5	NA	N/A	1.32	0.714	0.744	NA
Cyanide, Free	0.051	0.04	µg/g	<0.040	<0.040	<0.040	NA
Sodium	NV	NA	µg/g	NA	NA	NA	NA
Chloride	NV	NA	µg/g	NA	NA	NA	NA
Boron (Total)	120	5	µg/g	11	<5	<5	NA
Uranium	23	0.5	µg/g	0.9	0.8	0.9	NA
Polycyclic Aromatic Hydrocarbons (PAHs)							
Acenaphthene	7.9	0.05	µg/g	0.16	<0.05	2.6	0.41
Acenaphthylene	0.15	0.05	µg/g	0.22	<0.05	0.62	0.13
Anthracene	0.67	0.05	µg/g	0.89	<0.05	1.3	0.08
Benzo(a)anthracene	0.5	0.05	µg/g	3.6	0.11	2.7	0.16
Benzo(a)pyrene	0.3	0.05	µg/g	1.1	0.1	1.2	<0.05
Benzo(b)fluoranthene	0.78	0.05	µg/g	1.6	0.15	2.3	0.1
Benzo(ghi)perylene	6.6	0.05	µg/g	0.51	0.06	0.6	<0.05
Benzo(k)fluoranthene	0.78	0.05	µg/g	0.9	0.05	1.2	0.06
Chrysene	7	0.05	µg/g	1.3	0.11	1.7	0.11
Dibenzo(a,h)anthracene	0.1	0.05	µg/g	0.18	<0.05	0.14	<0.05
Fluoranthene	0.69	0.05	µg/g	5.7	0.22	5.7	0.27
Fluorene	62	0.05	µg/g	0.29	<0.05	5.3	0.72
Indeno(1,2,3-cd)pyrene	0.38	0.05	µg/g	0.55	0.06	0.62	<0.05
1-Methylnaphthalene	NV	NA	µg/g	NA	NA	NA	NA
2-Methylnaphthalene	NV	NA	µg/g	NA	NA	NA	NA
1,2-Methylnaphthalene	0.99	0.05	µg/g	0.18	<0.05	57	31
Naphthalene	0.6	0.05	µg/g	0.11	<0.05	9	13
Phenanthrene	6.2	0.05	µg/g	3.8	0.11	16	1.1
Pyrene	78	0.05	µg/g	4.5	0.19	6	0.24

Notes:

NV : No Standard established NA: Parameter not analyzed
 MECP Table 3: Ontario Ministry of the Environment, "Soil, Ground Water and Sediment Standards for Use Under Part XV.1 of the Environmental Protection Act," March 2004, amended July 1, 2011. Full Depth Generic Site Condition Standards for Soil in a Non-Potable Ground Water Condition for Residential/Parkland/Institutional Property Use with Coarse Textured Soils.

100	Exceeds MECP Table 3 Standards
100	Detection Limit Exceeds MECP Standard

**Table B-2: Summary of Analytical Results in Soil
PHCs and BTEX
Phase Two ESA, 240 Ferland Street, Ottawa, Ontario**

Sample ID	MECP TABLE 3 STANDARD	REPORTING LIMIT	UNITS	BH20-1 SA6	BH20-2 SA6	BH20-3 SA2	BH20-3 SA5	BH20-3 SA105	BH20-3 SA8
Depth (m)				3.81-4.42	3.81-4.42	0.76-1.37	3.05-3.66	3.05-3.66	5.33-5.94
Lab Job #				20Z563594	20Z563594	20Z563594	20Z563594	20Z563594	20Z563594
Sampling Date				13-Jan-2020	13-Jan-2020	13-Jan-2020	13-Jan-2020	13-Jan-2020	13-Jan-2020
Petroleum Hydrocarbon Compounds (PHCs)									
F1 (C6-C10)	55	5	µg/g	<5	<5	390	180	150	<5
F1 (C6-C10) - BTEX	55	5	µg/g	<5	<5	360	180	150	<5
F2 (C10-C16)	98	10	µg/g	<10	<10	210	4000	2900	<10
F3 (C16-C34)	300	50	µg/g	<50	<50	110	4000	2900	<50
F4 (C34-C50)	2800	50	µg/g	<50	<50	<50	<50	<50	<50
F4 Gravimetric	2800	50	µg/g	NA	NA	NA	NA	NA	NA
Reached Baseline at C50	NV	YES/NO	NV	YES	YES	YES	YES	YES	YES
Benzene, Toluene, Ethylbenzene and Xylenes (BTEX)									
Benzene	0.21	0.02	µg/g	<0.02	<0.02	0.08	<0.02	<0.02	<0.02
Ethylbenzene	2	0.05	µg/g	<0.05	<0.05	5.9	0.15	0.14	<0.05
Toluene	2.3	0.05	µg/g	<0.05	<0.05	0.15	<0.05	<0.05	<0.05
Total Xylenes	3.1	0.05	µg/g	<0.05	<0.05	27	0.32	0.36	<0.05

Notes:	
'NV ' : No Standard established	
NA: Parameter not analyzed	
MECP Table 3: Ontario Ministry of the Environment, "Soil, Ground Water and Sediment Standards for Use Under Part XV.1 of the Environmental Protection Act, " March 2004, amended July 1, 2011. Full Depth Generic Site Condition Standards for Soil in a Non-Potable Ground Water Condition for Residential/Parkland/Institutional Property Use with Coarse Textured Soils.	
100	Exceeds MECP Table 3 Standards
100	Detection Limit Exceeds MECP Standard

**Table B-3: Summary of Analytical Results in Groundwater
Metals, Inorganics and PAHs
Phase Two ESA, 240 Ferland Street, Ottawa, Ontario**

Sample ID	MECP TABLE 3 STANDARD	REPORTING LIMIT	UNITS	MW20-2 4.57-6.10 20Z564457 15-Jan-2020	MW20-102 Duplicate of MW20-2 4.57-6.10 20Z564457 15-Jan-2020	MW20-3 4.57-6.10 20Z564447 15-Jan-2020
Screen Interval (mbgs) Lab Job # Sampling Date						
Metals and Inorganics						
Antimony	20000	1	ug/L	NA	NA	<1.0
Arsenic	1900	1	ug/L	NA	NA	<1.0
Barium	29000	2	ug/L	NA	NA	892
Beryllium	67	0.5	ug/L	NA	NA	<0.5
Boron (Total)	45000	10	ug/L	NA	NA	134
Cadmium	2.7	0.2	ug/L	NA	NA	<0.2
Chromium	810	2	ug/L	NA	NA	3.5
Chromium VI	140	5	ug/L	NA	NA	<5
Cobalt	66	0.5	ug/L	NA	NA	<0.5
Copper	87	1	ug/L	NA	NA	<1.0
Lead	25	0.5	ug/L	NA	NA	<0.5
Mercury	0.29	0.02	ug/L	NA	NA	<0.02
Molybdenum	9200	0.5	ug/L	NA	NA	3.4
Nickel	490	1	ug/L	NA	NA	<1.0
Selenium	63	1	ug/L	NA	NA	1
Silver	1.5	0.2	ug/L	NA	NA	<0.2
Thallium	510	0.3	ug/L	NA	NA	<0.3
Vanadium	250	0.4	ug/L	NA	NA	1
Zinc	1100	5	ug/L	NA	NA	<5.0
pH	5 to 9	NA	pH Units	NA	NA	7.62
Electrical Conductivity	NV	2	mS/cm	NA	NA	1220
Cyanide, Free	66	2	ug/L	NA	NA	<2
Sodium	2300000	2500	ug/L	NA	NA	54400
Chloride	2300000	500	ug/L	NA	NA	65100
Uranium	420	0.5	ug/L	NA	NA	<0.5
Polycyclic Aromatic Hydrocarbons (PAHs)						
Acenaphthene	600	0.2	ug/L	<0.20	<0.20	1.1
Acenaphthylene	1.8	0.2	ug/L	<0.20	<0.20	0.28
Anthracene	2.4	0.1	ug/L	<0.10	<0.10	0.14
Benzo(a)anthracene	4.7	0.2	ug/L	<0.20	<0.20	<0.20
Benzo(a)pyrene	0.81	0.01	ug/L	<0.01	<0.01	<0.01
Benzo(b)fluoranthene	0.75	0.1	ug/L	<0.10	<0.10	<0.10
Benzo(ghi)perylene	0.2	0.2	ug/L	<0.20	<0.20	<0.20
Benzo(k)fluoranthene	0.4	0.1	ug/L	<0.10	<0.10	<0.10
Chrysene	1	0.1	ug/L	<0.10	<0.10	<0.10
Dibenzo(a,h)anthracene	0.52	0.2	ug/L	<0.20	<0.20	<0.20
Fluoranthene	130	0.2	ug/L	<0.20	<0.20	<0.20
Fluorene	400	0.2	ug/L	<0.20	<0.20	1.4
Indeno(1,2,3-cd)pyrene	0.2	0.2	ug/L	<0.20	<0.20	<0.20
1-Methylnaphthalene	NV	NA	ug/L	NA	NA	NA
2-Methylnaphthalene	NV	NA	ug/L	NA	NA	NA
1,2-Methylnaphthalene	1800	0.2	ug/L	<0.20	<0.20	75
Naphthalene	1400	0.2	ug/L	<0.20	<0.20	52
Phenanthrene	580	0.1	ug/L	<0.10	<0.10	1.6
Pyrene	68	0.2	ug/L	<0.20	<0.20	<0.20

Notes:

NV : No Standard established
 NA: Parameter not analyzed
 MECP Table 3: Ontario Ministry of the Environment, "Soil, Ground Water and Sediment Standards for Use Under Part XV.1 of the Environmental Protection Act," March 2004, amended July 1, 2011. Full Depth Generic Site Condition Standards in a Non-Potable Ground Water for All Types of Property Use with coarse textured soils.

100	Exceeds MECP Table 3 Standards
100	Detection Limit Exceeds Applicable Standard

**Table B-4: Summary of Analytical Results in Groundwater
 PHCs and BTEX
 Phase Two ESA
 240 Ferland Street
 Ottawa, Ontario**

Sample ID Screen Interval (mbgs) Lab Job # Sampling Date	MECP TABLE 3 STANDARD	REPORTING LIMIT	UNITS	MW20-1 3.75-5.28 20Z564457 15-Jan-2020	MW20-2 4.57-6.10 20Z564457 15-Jan-2020	MW20-102 4.57-6.10 20Z564457 15-Jan-2020	MW20-3 4.57-6.10 20Z564457 15-Jan-2020
Petroleum Hydrocarbon Compounds (PHCs)							
F1 (C6-C10)	750	25	ug/L	<25	<25	<25	480
F1 (C6-C10) - BTEX	750	25	ug/L	<25	<25	<25	340
F2 (C10-C16)	150	100	ug/L	<100	<100	<100	420
F3 (C16-C34)	500	100	ug/L	<100	<100	<100	<100
F4 (C34-C50)	500	100	ug/L	<100	<100	<100	<100
F4 Gravimetric	500	NA	ug/L	NA	NA	NA	NA
Reached Baseline at C50	NV	YES/NO	NV	YES	YES	YES	YES
Benzene, Toluene, Ethylbenzene and Total Xylenes (BTEX)							
Benzene	44	0.2	ug/L	<0.20	<0.20	<0.20	1.4
Ethylbenzene	2300	0.1	ug/L	<0.10	<0.10	<0.10	25
Toluene	18000	0.2	ug/L	<0.20	<0.20	<0.20	0.48
Total Xylenes	4200	0.2	ug/L	<0.20	<0.20	<0.20	110

Notes:

'NV ' : No Standard established
 NA: Parameter not analyzed
 MECP Table 3: Ontario Ministry of the Environment, "Soil, Ground Water and Sediment Standards for Use Under Part XV.1 of the Environmental Protection Act, " March 2004, amended July 1, 2011. Full Depth Generic Site Condition Standards in a Non-Potable Ground Water for All Types of Property Use with coarse textured soils.

100	Exceeds MECP Table 3 Standards
100	Detection Limit Exceeds Applicable Standard

Table B-3: Summary of Relative Percent Differences (RPDs) in Soil
Phase Two ESA, 240 Ferland Street, Ottawa, Ontario

Parameter	MECP Alert Criteria	RDL	Sample ⁽¹⁾	Duplicate	% Difference
			BH20-2 SA2	BH20-2 SA102	
Metals and Inorganics (M&I)					
Antimony	30%	0.8	<0.8	<0.8	-
Arsenic	30%	1	3	3	-
Barium	30%	2	181	187	3.3%
Beryllium	30%	0.5	<0.5	<0.5	-
Boron (Hot Water Soluble)	40%	0.1	0.57	0.63	10.0%
Cadmium	30%	0.5	<0.5	<0.5	-
Chromium	30%	2	52	58	10.9%
Chromium VI	35%	0.2	<0.2	<0.2	-
Cobalt	30%	0.5	10.9	12.2	11.3%
Copper	30%	1	25	35	33.3%
Lead	30%	1	97	80	19.2%
Mercury	30%	0.1	<0.10	<0.10	-
Molybdenum	30%	0.5	0.6	0.6	-
Nickel	30%	1	29	29	0.0%
Selenium	30%	0.4	<0.4	0.5	-
Silver	30%	0.2	<0.2	<0.2	-
Thallium	30%	0.4	<0.4	<0.4	-
Vanadium	30%	1	49	52	5.9%
Zinc	30%	5	113	129	13.2%
pH (pH Units)	0.3	NA	7.79	6.82	0.13
Electrical Conductivity (mS/cm)	10%	0.005	0.463	0.488	5.3%
Sodium Adsorption Ratio	30%	NA	0.714	0.744	4.1%
Cyanide, Free	35%	0.04	<0.040	<0.040	-
Sodium	30%	NA	NA	NA	NA
Chloride	30%	NA	NA	NA	NA
Boron (Total)	30%	5	<5	<5	-
Uranium	30%	0.5	0.8	0.9	-

Parameter	MECP Alert Criteria	RDL	Sample ⁽¹⁾	Duplicate	% Difference
			BH20-2 SA2	BH20-2 SA102	
Polycyclic Aromatic Hydrocarbons (PAHs)					
Acenaphthene	40%	0.05	<0.05	2.6	-
Acenaphthylene	40%	0.05	<0.05	0.62	-
Anthracene	40%	0.05	<0.05	1.3	-
Benzo(a)anthracene	40%	0.05	0.11	2.7	-
Benzo(a)pyrene	40%	0.05	0.1	1.2	-
Benzo(b/j)fluoranthene	40%	0.05	0.15	2.3	-
Benzo(ghi)perylene	40%	0.05	0.06	0.6	-
Benzo(k)fluoranthene	40%	0.05	0.05	1.2	-
Chrysene	40%	0.05	0.11	1.7	-
Dibenzo(a,h)anthracene	40%	0.05	<0.05	0.14	-
Fluoranthene	40%	0.05	0.22	5.7	-
Fluorene	40%	0.05	<0.05	5.3	-
Indeno(1,2,3-cd)pyrene	40%	0.05	0.06	0.62	-
1-Methylnaphthalene	40%	NA	NA	NA	NA
2-Methylnaphthalene	40%	NA	NA	NA	NA
1-, 2-Methylnaphthalene	40%	0.05	<0.05	57	-
Naphthalene	40%	0.05	<0.05	9	-
Phenanthrene	40%	0.05	0.11	16	-
Pyrene	40%	0.05	0.19	6	-

Parameter	MECP Alert Criteria	RDL	Sample ⁽¹⁾	Duplicate	% Difference
			BH20-3 SA5	BH20-3 SA105	
Petroleum Hydrocarbon Compounds (PHCs)					
F1 (C6-C10)	30%	5	180	150	18.2%
F1 (C6-C10) - BTEX	30%	5	180	150	18.2%
F2 (C10-C16)	30%	10	4000	2900	31.9%
F3 (C16-C34)	30%	50	4000	2900	31.9%
F4 (C34-C50)	30%	50	<50	<50	-

Parameter	MECP Alert Criteria	RDL	Sample ⁽¹⁾	Duplicate	% Difference
			BH20-3 SA5	BH20-3 SA105	
Benzene, Toluene, Ethylbenzene and Xylenes (BTEX)					
Benzene	50%	0.02	<0.02	<0.02	-
Ethylbenzene	50%	0.05	0.15	0.14	-
Toluene	50%	0.05	<0.05	<0.05	-
Total Xylenes	50%	0.05	0.32	0.36	11.8%

Notes:		
(1)	All results reported in micrograms per gram (µg/g) unless otherwise noted.	
<	Parameter not detected above value specified	
% Difference	Relative Percent Difference = (X-Y)/Average(X,Y) x 100% where X is the sample and Y is the duplicate	
-	RPD could not be calculated as either one or both of the results are less than the detection limit or the results are less than 5 times the detection limit.	
50.2%	RPD exceeds MECP Alert Criteria	

**Table B-6: Summary of Relative Percent Differences (RPDs) in Groundwater
Phase Two ESA, 240 Ferland Street, Ottawa, Ontario**



Parameter	MECP Alert Criteria	RDL	Sample ⁽¹⁾	Duplicate	% Difference
			MW20-2	MW20-102	
Polycyclic Aromatic Hydrocarbons (PAHs)					
Acenaphthene	30%	0.2	<0.20	<0.20	-
Acenaphthylene	30%	0.2	<0.20	<0.20	-
Anthracene	30%	0.1	<0.10	<0.10	-
Benzo(a)anthracene	30%	0.2	<0.20	<0.20	-
Benzo(a)pyrene	30%	0.01	<0.01	<0.01	-
Benzo(b/j)fluoranthene	30%	0.1	<0.10	<0.10	-
Benzo(ghi)perylene	30%	0.2	<0.20	<0.20	-
Benzo(k)fluoranthene	30%	0.1	<0.10	<0.10	-
Chrysene	30%	0.1	<0.10	<0.10	-
Dibenzo(a,h)anthracene	30%	0.2	<0.20	<0.20	-
Fluoranthene	30%	0.2	<0.20	<0.20	-
Fluorene	30%	0.2	<0.20	<0.20	-
Indeno(1,2,3-cd)pyrene	30%	0.2	<0.20	<0.20	-
1-Methylnaphthalene	30%	NA	NA	NA	NA
2-Methylnaphthalene	30%	NA	NA	NA	NA
1,2-Methylnaphthalene	30%	0.2	<0.20	<0.20	-
Naphthalene	30%	0.2	<0.20	<0.20	-
Phenanthrene	30%	0.1	<0.10	<0.10	-
Pyrene	30%	0.2	<0.20	<0.20	-

Parameter	MECP Alert Criteria	RDL	Sample ⁽¹⁾	Duplicate	% Difference
			MW20-2	MW20-102	
Petroleum Hydrocarbon Compounds (PHCs)					
F1 (C6-C10)	30%	25	<25	<25	-
F1 (C6-C10) - BTEX	30%	25	<25	<25	-
F2 (C10-C16)	30%	100	<100	<100	-
F3 (C16-C34)	30%	100	<100	<100	-
F4 (C34-C50)	30%	100	<100	<100	-
F4 Gravimetric	30%	NA	NA	NA	NA

Parameter	MECP Alert Criteria	RDL	Sample ⁽¹⁾	Duplicate	% Difference
			MW20-2	MW20-102	
Benzene, Toluene, Ethylbenzene and Total Xylenes (BTEX)					
Benzene	30%	0.2	<0.20	<0.20	-
Ethylbenzene	30%	0.1	<0.10	<0.10	-
Toluene	30%	0.2	<0.20	<0.20	-
Total Xylenes	30%	0.2	<0.20	<0.20	-

Notes:					
(1)	All results reported in micrograms per gram (µg/L) unless otherwise noted.				
<	Parameter not detected above value specified				
% Difference	Relative Percent Difference = [(X-Y)/Average(X,Y)] x 100% where X is the sample and Y is the duplicate				
-	RPD could not be calculated as either one or both of the results are less than the detection limit or the results are less than 5 times the detection limit.				
40.5%	RPD exceeds MECP Alert Criteria				



APPENDIX C

Sampling and Analysis Plan

Soil				
Monitoring Location	Proposed Borehole Depth (m bgs)	Reg 153 Metals and Inorganics	Reg 153 PHCs F1-F4 including BTEX	Reg 153 PAHs
BH19-1	6.1 or until refusal	1	1	1
BH19-2	6.1 or until refusal	1	1	1
BH19-3	6.1 or until refusal	0	1	1
Sub total		2	3	3
Field Duplicates		1	1	1
Total Samples		3	4	4
Notes:				
*Each sample parameter requires a field duplicate				
*VOC and PHC F1 -BTEX samples (5 g of soil) to be collected with syringe and placed directly into vials with preservative (if methanol splashes, it is no longer valid and you must use a new vial.) No headspace in jars.				
*Collect VOC/PHC within the fill at location of highest HEX and ISBL concentration (if no visual evidence)				
*Collect samples within the fill material in each borehole				
*Each sample and stratigraphy encountered should be placed into separate polyethylene bags and screened with the CGI/PID meter				

Groundwater						
Monitoring Location	Proposed Monitoring Well Depth (m bgs)	Well Screen Length (m)	Reg 153 Metals and Inorganics	Reg 153 PHCs F1-F4 and BTEX	Reg 153 PAHs	Environmental Investigation Notes
MW19-1	6.1	3.05	1	1	0	Take headspace vapour readings before purging and collecting samples
MW19-2	6.1	3.05	0	1	1	
MW19-3	6.1	3.05	0	1	1	
Sub total			1	3	2	
Field Duplicates			0	1	1	
Trip Blank			0	1	0	
Total Samples			1	5	3	
Notes:						
*Parameters in select wells may change based on results of soil quality analysis results						



APPENDIX D

Borehole Logs

RECORD OF BOREHOLE 20-1

CLIENT: Metro Ottawa-Carleton Real Estate Ltd.
 PROJECT: 240 Ferland Street, Ottawa, Ontario
 JOB#: 63115.04
 LOCATION: See Borehole Location Plan, Figure 1

SHEET: 1 OF 1
 DATUM: CGVD28
 BORING DATE: Jan 13 2020

DEPTH SCALE METRES	BORING METHOD	SOIL PROFILE			SAMPLE DATA				COMBUSTIBLE VAPOUR CONCENTRATION (ppm)	ODOUR	TPH (mg/kg)	MONITORING WELL INSTALLATION AND NOTES
		DESCRIPTION	STRATA PLOT	ELEV. DEPTH (m)	NUMBER	TYPE	RECOVERY (mm)	BLOWS/0.3m	LABORATORY ANALYSES			
0	Power Auger Hollow Stem Auger (210mm OD)	Ground Surface		56.91								TOP OF PIPE Elev: 57.72 m
		Grey brown, clayey silt, trace sand and gravel (FILL MATERIAL)		56.55	1	SS	535	83	SA1A: HEX - 0, ISBL - 0, SA1B: HEX - 0, ISBL - 0			Bentonite
		Dark brown, silty sand, trace gravel and clay (FILL MATERIAL)		56.15								
1		Loose, brown, silty sand, trace gravel, brick, wood, miscellaneous building debris, organics (FILL MATERIAL)		55.39	2	SS	205	5	HEX - 0, ISBL - 0			Silica Sand
		Very loose, dark brown to black, organic material (PEAT)		55.03								
2		Very soft, light brown, silty clay, contains white shells (MARL)		54.24	3	SS	380	4	SA3A: HEX - 0, ISBL - 0, SA3B: HEX - 0, ISBL - 0			Bentonite
		Firm to stiff, grey, SILTY CLAY		53.86	4	SS	455	5	SA4A: HEX - 0, ISBL - 0, SA4B: HEX - 0, ISBL - 0			
3		Very dense, grey, SILTY SAND, trace gravel		51.63	5	SS	100	63	HEX - 0, ISBL - 0			
4					6	SS	280	64	HEX - 0, ISBL - 0			TOP OF SCREEN ELEV.: 53.16 m Silica Sand
5					7	SS	330	71	HEX - 0, ISBL - 0			1.5m long, 52mm diameter PVC Slotted Pipe
		End of Borehole Auger Refusal		5.28								BOTTOM OF SCREEN ELEV.: 51.63 m

GROUNDWATER OBSERVATIONS

DATE	DEPTH (m)	ELEVATION (m)
Jan. 15/20	3.86	53.05

RECORD OF BOREHOLE 20-2

CLIENT: Metro Ottawa-Carleton Real Estate Ltd.
 PROJECT: 240 Ferland Street, Ottawa, Ontario
 JOB#: 63115.04
 LOCATION: See Borehole Location Plan, Figure 1

SHEET: 1 OF 1
 DATUM: CGVD28
 BORING DATE: Jan 13 2020

DEPTH SCALE METRES	BORING METHOD	SOIL PROFILE			SAMPLE DATA				COMBUSTIBLE VAPOUR CONCENTRATION (ppm)	ODOUR	TPH (mg/kg)	MONITORING WELL INSTALLATION AND NOTES
		DESCRIPTION	STRATA PLOT	ELEV. DEPTH (m)	NUMBER	TYPE	RECOVERY (mm)	BLOWS/0.3m	LABORATORY ANALYSES			
0		Ground Surface		56.90								TOP OF PIPE Elev: 57.86 m
		Grey brown, silty sand, some clay (FROZEN FILL MATERIAL) Loose to compact, brown, fine to medium grained sand, trace gravel (FILL MATERIAL)		56.71 0.19	1	SS	355	10	M&I, PAH - Duplicate: SA102	SA1A: HEX - 0, ISBL - 0, SA1B: HEX - 0, ISBL - 0		Bentonite
1		Loose, brown, silty sand, trace to some clay, trace gravel, contains organics (FILL MATERIAL)		56.29 0.61	2	SS	405	6		HEX - 0, ISBL - 0		
2		Very loose, dark brown to black, organic material, trace wood and roots (PEAT)		55.27 1.63	3	SS	230	3		SA3A: HEX - 0, ISBL - 0, SA3B: HEX - 0, ISBL - 0		Silica Sand
3		Very soft, light brown, silty clay, contains white shells (MARL)		54.62 2.28	4	SS	610	WH		SA4A: HEX - 0, ISBL - 0, SA4B: HEX - 0, ISBL - 0		
4		Compact, brown, fine to medium graine SAND, trace silt		53.85 3.05	5	SS	305	13		HEX - 0, ISBL - 0		Bentonite
5		Compact to dense, grey, SILTY SAND, trace gravel		53.09 3.81	6	SS	125	25	PHC, BTEX	HEX - 0, ISBL - 0		
6					7	SS	280	17		HEX - 0, ISBL - 0		TOP OF SCREEN ELEV.: 52.33 m Silica Sand 1.5m long, 52mm diameter PVC Slotted Pipe
					8	SS	255	31		HEX - 0, ISBL - 0		
		End of Borehole		50.80 6.10								BOTTOM OF SCREEN ELEV.: 50.80 m
GROUNDWATER OBSERVATIONS												
DATE		DEPTH (m)		ELEVATION (m)								
Jan. 15/20		3.90		53.00								

RECORD OF BOREHOLE 20-3

CLIENT: Metro Ottawa-Carleton Real Estate Ltd.
 PROJECT: 240 Ferland Street, Ottawa, Ontario
 JOB#: 63115.04
 LOCATION: See Borehole Location Plan, Figure 1

SHEET: 1 OF 1
 DATUM: CGVD28
 BORING DATE: Jan 13 2020

DEPTH SCALE METRES	BORING METHOD	SOIL PROFILE			SAMPLE DATA				COMBUSTIBLE VAPOUR CONCENTRATION (ppm)	ODOUR	TPH (mg/kg)	MONITORING WELL INSTALLATION AND NOTES
		DESCRIPTION	STRATA PLOT	ELEV. DEPTH (m)	NUMBER	TYPE	RECOVERY (mm)	BLOWS/0.3m	LABORATORY ANALYSES			
0		Ground Surface		56.80								TOP OF PIPE Elev: 57.88 m
		Brown, silty sand, trace gravel, clay, and brick (FROZEN FILL MATERIAL)		56.47	1	SS	355	9	SA1A: HEX - 0, ISBL - 0, SA1B: HEX - 0, ISBL - 19			Bentonite
1		Very loose, dark brown to black, organic material, contains wood (PEAT)		0.33					HEX - 0, ISBL - 48	Strong		
					2	SS	405	3	PHC, BTEX, PAH			
2		Very soft, light brown, silty clay, contains white shells (MARL)		54.95	3	SS	610	7	SA3A: HEX - 0, ISBL - 2, SA3B: HEX - 0, ISBL - 1	Strong		Silica Sand
				1.85					HEX - 0, ISBL - 43	Strong		
3		Compact to dense, grey, SILTY SAND, trace gravel		53.75	4	SS	610	WH				
				3.05					PHC, BTEX - Duplicate: SA105			
4					5	SS	205	13	HEX - 105, ISBL - 75	Strong		Bentonite
5					6	SS	280	33	HEX - 0, ISBL - 2	Moderate		
					7	SS	380	40	HEX - 5, ISBL - 19	Slight		TOP OF SCREEN ELEV.: 52.23 m
6					8	SS	355	38	PHC, BTEX	Slight		Silica Sand 1.5m long, 52mm diameter PVC Slotted Pipe
		End of Borehole		50.70								BOTTOM OF SCREEN ELEV.: 50.70 m
				6.10								
GROUNDWATER OBSERVATIONS												
DATE		DEPTH (m)		ELEVATION (m)								
Jan. 15/20		3.77		53.03								



APPENDIX E

Certificates of Analysis

**CLIENT NAME: GEMTEC CONSULTING ENGINEERS AND SCIENTISTS
32 STEACIE DRIVE
OTTAWA, ON K2K 2A9
(613) 836-1422**

ATTENTION TO: Kathryn Maton

PROJECT: 63115.04 - Phase Two ESA

AGAT WORK ORDER: 20Z563594

SOIL ANALYSIS REVIEWED BY: Amanjot Bhela, Inorganic Supervisor

TRACE ORGANICS REVIEWED BY: Neli Popnikolova, Senior Chemist

DATE REPORTED: Jan 22, 2020

PAGES (INCLUDING COVER): 15

VERSION*: 2

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

***NOTES**

VERSION 2:V2 issued 2020-01-31 with PAH added to sample ID BH20-2 SA2. Supersedes previous version.

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



AGAT Laboratories

Certificate of Analysis

AGAT WORK ORDER: 20Z563594

PROJECT: 63115.04 - Phase Two ESA

5835 COOPERS AVENUE
MISSISSAUGA, ONTARIO
CANADA L4Z 1Y2
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CLIENT NAME: GEMTEC CONSULTING ENGINEERS AND SCIENTISTS

ATTENTION TO: Kathryn Maton

SAMPLING SITE: 240 Ferland Street, Ottawa

SAMPLED BY: K. Maton

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

DATE RECEIVED: 2020-01-14

DATE REPORTED: 2020-01-22

SAMPLE DESCRIPTION:						BH20-1 SA2	BH20-2 SA2	BH20-2 SA102
SAMPLE TYPE:						Soil	Soil	Soil
DATE SAMPLED:						2020-01-13 09:00	2020-01-13 09:00	2020-01-13 09:00
Parameter	Unit	G / S	RDL	Date Prepared	Date Analyzed	862407	862411	862413
Antimony	µg/g	7.5	0.8	2020-01-20	2020-01-20	3.6	<0.8	<0.8
Arsenic	µg/g	18	1	2020-01-20	2020-01-20	5	3	3
Barium	µg/g	390	2	2020-01-20	2020-01-20	591	181	187
Beryllium	µg/g	4	0.5	2020-01-20	2020-01-20	<0.5	<0.5	<0.5
Boron	µg/g	120	5	2020-01-20	2020-01-20	11	<5	<5
Boron (Hot Water Soluble)	µg/g	1.5	0.10	2020-01-20	2020-01-20	0.82	0.57	0.63
Cadmium	µg/g	1.2	0.5	2020-01-20	2020-01-20	1.2	<0.5	<0.5
Chromium	µg/g	160	2	2020-01-20	2020-01-20	29	52	58
Cobalt	µg/g	22	0.5	2020-01-20	2020-01-20	5.6	10.9	12.2
Copper	µg/g	140	1	2020-01-20	2020-01-20	21	25	35
Lead	µg/g	120	1	2020-01-20	2020-01-20	414	97	80
Molybdenum	µg/g	6.9	0.5	2020-01-20	2020-01-20	1.3	0.6	0.6
Nickel	µg/g	100	1	2020-01-20	2020-01-20	12	29	29
Selenium	µg/g	2.4	0.4	2020-01-20	2020-01-20	0.4	<0.4	0.5
Silver	µg/g	20	0.2	2020-01-20	2020-01-20	<0.2	<0.2	<0.2
Thallium	µg/g	1	0.4	2020-01-20	2020-01-20	<0.4	<0.4	<0.4
Uranium	µg/g	23	0.5	2020-01-20	2020-01-20	0.9	0.8	0.9
Vanadium	µg/g	86	1	2020-01-20	2020-01-20	24	49	52
Zinc	µg/g	340	5	2020-01-20	2020-01-20	370	113	129
Chromium VI	µg/g	8	0.2	2020-01-21	2020-01-21	<0.2	<0.2	<0.2
Cyanide	µg/g	0.051	0.040	2020-01-21	2020-01-21	<0.040	<0.040	<0.040
Mercury	µg/g	0.27	0.10	2020-01-20	2020-01-20	0.32	<0.10	<0.10
Electrical Conductivity	mS/cm	0.7	0.005	2020-01-20	2020-01-20	3.09	0.463	0.488
Sodium Adsorption Ratio	NA	5	NA	2020-01-20	2020-01-20	1.32	0.714	0.744
pH, 2:1 CaCl2 Extraction	pH Units		NA	2020-01-21	2020-01-21	9.38	7.79	6.82

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PROJECT: 63115.04 - Phase Two ESA

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CLIENT NAME: GEMTEC CONSULTING ENGINEERS AND SCIENTISTS

ATTENTION TO: Kathryn Maton

SAMPLING SITE: 240 Ferland Street, Ottawa

SAMPLED BY: K. Maton

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

DATE RECEIVED: 2020-01-14

DATE REPORTED: 2020-01-22

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

862407-862413 EC was determined on the DI water extract obtained from the 2:1 leaching procedure (2 parts DI water:1 part soil). pH was determined on the 0.01M CaCl₂ extract prepared at 2:1 ratio. SAR is a calculated parameter.

Analysis performed at AGAT Toronto (unless marked by *)

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ATTENTION TO: Kathryn Maton

SAMPLING SITE: 240 Ferland Street, Ottawa

SAMPLED BY: K. Maton

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

DATE RECEIVED: 2020-01-14

DATE REPORTED: 2020-01-22

SAMPLE DESCRIPTION:						BH20-1 SA2	BH20-2 SA2	BH20-2 SA102	BH20-3 SA2
SAMPLE TYPE:						Soil	Soil	Soil	Soil
DATE SAMPLED:						2020-01-13 09:00	2020-01-13 09:00	2020-01-13 09:00	2020-01-13 09:00
Parameter	Unit	G / S	RDL	Date Prepared	Date Analyzed	862407	862411	862413	862419
Naphthalene	µg/g	0.6	0.05	2020-01-17	2020-01-21	0.11	<0.05	9.0	13
Acenaphthylene	µg/g	0.15	0.05	2020-01-17	2020-01-21	0.22	<0.05	0.62	0.13
Acenaphthene	µg/g	7.9	0.05	2020-01-17	2020-01-21	0.16	<0.05	2.6	0.41
Fluorene	µg/g	62	0.05	2020-01-17	2020-01-21	0.29	<0.05	5.3	0.72
Phenanthrene	µg/g	6.2	0.05	2020-01-17	2020-01-21	3.8	0.11	16	1.1
Anthracene	µg/g	0.67	0.05	2020-01-17	2020-01-21	0.89	<0.05	1.3	0.08
Fluoranthene	µg/g	0.69	0.05	2020-01-17	2020-01-21	5.7	0.22	5.7	0.27
Pyrene	µg/g	78	0.05	2020-01-17	2020-01-21	4.5	0.19	6.0	0.24
Benz(a)anthracene	µg/g	0.5	0.05	2020-01-17	2020-01-21	3.6	0.11	2.7	0.16
Chrysene	µg/g	7	0.05	2020-01-17	2020-01-21	1.3	0.11	1.7	0.11
Benzo(b)fluoranthene	µg/g	0.78	0.05	2020-01-17	2020-01-21	1.6	0.15	2.3	0.10
Benzo(k)fluoranthene	µg/g	0.78	0.05	2020-01-17	2020-01-21	0.90	0.05	1.2	0.06
Benzo(a)pyrene	µg/g	0.3	0.05	2020-01-17	2020-01-21	1.1	0.10	1.2	<0.05
Indeno(1,2,3-cd)pyrene	µg/g	0.38	0.05	2020-01-17	2020-01-21	0.55	0.06	0.62	<0.05
Dibenz(a,h)anthracene	µg/g	0.1	0.05	2020-01-17	2020-01-21	0.18	<0.05	0.14	<0.05
Benzo(g,h,i)perylene	µg/g	6.6	0.05	2020-01-17	2020-01-21	0.51	0.06	0.60	<0.05
2-and 1-methyl Naphthalene	µg/g	0.99	0.05	2020-01-17	2020-01-21	0.18	<0.05	57	31
Moisture Content	%		0.1	2020-01-17	2020-01-21	19.4	18.3	39.7	73.0
Surrogate	Unit	Acceptable Limits							
Naphthalene-d8	%	50-140							
Acenaphthene-d10	%	50-140							
Chrysene-d12	%	50-140							

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

862407-862419 Results are based on the dry weight of the soil.
Note: The result for Benzo(b)Fluoranthene is the total of the Benzo(b)&j)Fluoranthene isomers because the isomers co-elute on the GC column.
2- and 1-Methyl Naphthalene is a calculated parameter. The calculated value is the sum of 2-Methyl Naphthalene and 1-Methyl Naphthalene.

Analysis performed at AGAT Toronto (unless marked by *)

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PROJECT: 63115.04 - Phase Two ESA

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CLIENT NAME: GEMTEC CONSULTING ENGINEERS AND SCIENTISTS

ATTENTION TO: Kathryn Maton

SAMPLING SITE: 240 Ferland Street, Ottawa

SAMPLED BY: K. Maton

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

DATE RECEIVED: 2020-01-14

DATE REPORTED: 2020-01-22

SAMPLE DESCRIPTION:						BH20-1 SA6	BH20-2 SA6	BH20-3 SA5	BH20-3 SA105	BH20-3 SA8
SAMPLE TYPE:						Soil	Soil	Soil	Soil	Soil
DATE SAMPLED:						2020-01-13 09:00	2020-01-13 09:00	2020-01-13 09:00	2020-01-13 09:00	2020-01-13 09:00
Parameter	Unit	G / S	RDL	Date Prepared	Date Analyzed	862410	862415	862416	862417	862418
Benzene	µg/g	0.21	0.02	2020-01-20	2020-01-20	<0.02	<0.02	<0.02	<0.02	<0.02
Toluene	µg/g	2.3	0.05	2020-01-20	2020-01-20	<0.05	<0.05	<0.05	<0.05	<0.05
Ethylbenzene	µg/g	2	0.05	2020-01-20	2020-01-20	<0.05	<0.05	0.15	0.14	<0.05
Xylene Mixture	µg/g	3.1	0.05	2020-01-20	2020-01-20	<0.05	<0.05	0.32	0.36	<0.05
F1 (C6 to C10)	µg/g	55	5	2020-01-20	2020-01-20	<5	<5	180	150	<5
F1 (C6 to C10) minus BTEX	µg/g	55	5	2020-01-20	2020-01-20	<5	<5	180	150	<5
F2 (C10 to C16)	µg/g	98	10	2020-01-17	2020-01-20	<10	<10	4000	2900	<10
F3 (C16 to C34)	µg/g	300	50	2020-01-17	2020-01-20	<50	<50	4000	2900	<50
F4 (C34 to C50)	µg/g	2800	50	2020-01-17	2020-01-20	<50	<50	<50	<50	<50
Gravimetric Heavy Hydrocarbons	µg/g	2800	50			NA	NA	NA	NA	NA
Moisture Content	%		0.1	2020-01-20	2020-01-20	8.5	9.5	11.6	11.6	11.3
Surrogate	Unit	Acceptable Limits								
Terphenyl	%	60-140		2020-01-17	2020-01-20	123	67	86	92	106

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ATTENTION TO: Kathryn Maton

SAMPLING SITE: 240 Ferland Street, Ottawa

SAMPLED BY: K. Maton

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

DATE RECEIVED: 2020-01-14

DATE REPORTED: 2020-01-22

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

862410-862418 Results are based on sample dry weight.
The C6-C10 fraction is calculated using Toluene response factor.
Xylenes is a calculated parameter. The calculated value is the sum of m&p-Xylene and o-Xylene.
C6-C10 (F1 minus BTEX) is a calculated parameter. The calculated value is F1 minus BTEX.
The C10 - C16, C16 - C34, and C34 - C50 fractions are calculated using the average response factor for n-C10, n-C16, and n-C34.
Gravimetric Heavy Hydrocarbons are not included in the Total C16-C50 and are only determined if the chromatogram of the C34 - C50 hydrocarbons indicates that hydrocarbons >C50 are present.
The chromatogram has returned to baseline by the retention time of nC50.
Total C6 - C50 results are corrected for BTEX contribution.
This method complies with the Reference Method for the CWS PHC and is validated for use in the laboratory.
nC6 and nC10 response factors are within 30% of Toluene response factor.
nC10, nC16 and nC34 response factors are within 10% of their average.
C50 response factor is within 70% of nC10 + nC16 + nC34 average.
Linearity is within 15%.
Extraction and holding times were met for this sample.
Fractions 1-4 are quantified with the contribution of PAHs. Under Ontario Regulation 153, results are considered valid without determining the PAH contribution if not requested by the client.
Quality Control Data is available upon request.

Analysis performed at AGAT Toronto (unless marked by *)

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PROJECT: 63115.04 - Phase Two ESA

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ATTENTION TO: Kathryn Maton

SAMPLING SITE: 240 Ferland Street, Ottawa

SAMPLED BY: K. Maton

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

DATE RECEIVED: 2020-01-14

DATE REPORTED: 2020-01-22

SAMPLE DESCRIPTION: BH20-3 SA2

SAMPLE TYPE: Soil

DATE SAMPLED: 2020-01-13
09:00

Parameter	Unit	G / S	RDL	Date Prepared	Date Analyzed	862419
Benzene	µg/g	0.21	0.06	2020-01-20	2020-01-20	0.08
Toluene	µg/g	2.3	0.15	2020-01-20	2020-01-20	0.15
Ethylbenzene	µg/g	2	0.15	2020-01-20	2020-01-20	5.9
Xylene Mixture	µg/g	3.1	0.15	2020-01-20	2020-01-20	27
F1 (C6 to C10)	µg/g	55	15	2020-01-20	2020-01-20	390
F1 (C6 to C10) minus BTEX	µg/g	55	15	2020-01-20	2020-01-20	360
F2 (C10 to C16)	µg/g	98	30	2020-01-17	2020-01-20	210
F2 (C10 to C16) minus Naphthalene	µg/g		30	2020-01-17	2020-01-20	200
F3 (C16 to C34)	µg/g	300	150	2020-01-17	2020-01-20	<150
F3 (C16 to C34) minus PAHs	µg/g		150	2020-01-17	2020-01-20	<150
F4 (C34 to C50)	µg/g	2800	150	2020-01-17	2020-01-20	<150
Gravimetric Heavy Hydrocarbons	µg/g	2800	150			NA
Moisture Content	%		0.3	2020-01-20	2020-01-20	73.0
Surrogate	Unit	Acceptable Limits				
Terphenyl	%	60-140		2020-01-17	2020-01-20	85

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N Popmukolof



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AGAT WORK ORDER: 20Z563594

PROJECT: 63115.04 - Phase Two ESA

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CLIENT NAME: GEMTEC CONSULTING ENGINEERS AND SCIENTISTS

ATTENTION TO: Kathryn Maton

SAMPLING SITE: 240 Ferland Street, Ottawa

SAMPLED BY: K. Maton

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

DATE RECEIVED: 2020-01-14

DATE REPORTED: 2020-01-22

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

862419 Results are based on sample dry weight.
Due to high moisture content of the sample the reporting detection limit has been raised.
The C6-C10 fraction is calculated using toluene response factor.
Xylenes total is a calculated parameter. The calculated value is the sum of m&p-Xylene and o-Xylene.
C6-C10 (F1 minus BTEX) is a calculated parameter. The calculated value is F1 minus BTEX.
The C10 - C16, C16 - C34, and C34 - C50 fractions are calculated using the average response factor for n-C10, n-C16, and n-C34.
Gravimetric Heavy Hydrocarbons are not included in the Total C16-C50 and are only determined if the chromatogram of the C34 - C50 hydrocarbons indicates that hydrocarbons >C50 are present.
The chromatogram has returned to baseline by the retention time of nC50.
Total C6 - C50 results are corrected for BTEX and PAH contributions.
C>10 - C16 (F2- Naphthalene) is a calculated parameter. The calculated value is F2 - Naphthalene.
C>16 - C34 (F3-PAH) is a calculated parameter. The calculated value is F3-PAH (PAH: sum of Phenanthrene, Benzo(a)anthracene, Benzo(b)fluoranthene, Benzo(k)fluoranthene, Benzo(a)pyrene, Fluoranthene, Dibenzo(a,h)anthracene, Indeno(1,2,3-c,d)pyrene and Pyrene).
This method complies with the Reference Method for the CWS PHC and is validated for use in the laboratory.
nC10, nC16 and nC34 response factors are within 10% of their average.
C50 response factor is within 70% of nC10 + nC16 + nC34 average.
Linearity is within 15%.
Extraction and holding times were met for this sample.

Analysis performed at AGAT Toronto (unless marked by *)

Certified By:



Guideline Violation

AGAT WORK ORDER: 20Z563594

PROJECT: 63115.04 - Phase Two ESA

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SAMPLEID	SAMPLE TITLE	GUIDELINE	ANALYSIS PACKAGE	PARAMETER	UNIT	GUIDEVALUE	RESULT
862407	BH20-1 SA2	ON T3 S RPI CT	O. Reg. 153(511) - Metals & Inorganics (Soil)	Barium	µg/g	390	591
862407	BH20-1 SA2	ON T3 S RPI CT	O. Reg. 153(511) - Metals & Inorganics (Soil)	Electrical Conductivity	mS/cm	0.7	3.09
862407	BH20-1 SA2	ON T3 S RPI CT	O. Reg. 153(511) - Metals & Inorganics (Soil)	Lead	µg/g	120	414
862407	BH20-1 SA2	ON T3 S RPI CT	O. Reg. 153(511) - Metals & Inorganics (Soil)	Mercury	µg/g	0.27	0.32
862407	BH20-1 SA2	ON T3 S RPI CT	O. Reg. 153(511) - Metals & Inorganics (Soil)	Zinc	µg/g	340	370
862407	BH20-1 SA2	ON T3 S RPI CT	O. Reg. 153(511) - PAHs (Soil)	Acenaphthylene	µg/g	0.15	0.22
862407	BH20-1 SA2	ON T3 S RPI CT	O. Reg. 153(511) - PAHs (Soil)	Anthracene	µg/g	0.67	0.89
862407	BH20-1 SA2	ON T3 S RPI CT	O. Reg. 153(511) - PAHs (Soil)	Benz(a)anthracene	µg/g	0.5	3.6
862407	BH20-1 SA2	ON T3 S RPI CT	O. Reg. 153(511) - PAHs (Soil)	Benzo(a)pyrene	µg/g	0.3	1.1
862407	BH20-1 SA2	ON T3 S RPI CT	O. Reg. 153(511) - PAHs (Soil)	Benzo(b)fluoranthene	µg/g	0.78	1.6
862407	BH20-1 SA2	ON T3 S RPI CT	O. Reg. 153(511) - PAHs (Soil)	Benzo(k)fluoranthene	µg/g	0.78	0.90
862407	BH20-1 SA2	ON T3 S RPI CT	O. Reg. 153(511) - PAHs (Soil)	Dibenz(a,h)anthracene	µg/g	0.1	0.18
862407	BH20-1 SA2	ON T3 S RPI CT	O. Reg. 153(511) - PAHs (Soil)	Fluoranthene	µg/g	0.69	5.7
862407	BH20-1 SA2	ON T3 S RPI CT	O. Reg. 153(511) - PAHs (Soil)	Indeno(1,2,3-cd)pyrene	µg/g	0.38	0.55
862413	BH20-2 SA102	ON T3 S RPI CT	O. Reg. 153(511) - PAHs (Soil)	2-and 1-methyl Naphthalene	µg/g	0.99	57
862413	BH20-2 SA102	ON T3 S RPI CT	O. Reg. 153(511) - PAHs (Soil)	Acenaphthylene	µg/g	0.15	0.62
862413	BH20-2 SA102	ON T3 S RPI CT	O. Reg. 153(511) - PAHs (Soil)	Anthracene	µg/g	0.67	1.3
862413	BH20-2 SA102	ON T3 S RPI CT	O. Reg. 153(511) - PAHs (Soil)	Benz(a)anthracene	µg/g	0.5	2.7
862413	BH20-2 SA102	ON T3 S RPI CT	O. Reg. 153(511) - PAHs (Soil)	Benzo(a)pyrene	µg/g	0.3	1.2
862413	BH20-2 SA102	ON T3 S RPI CT	O. Reg. 153(511) - PAHs (Soil)	Benzo(b)fluoranthene	µg/g	0.78	2.3
862413	BH20-2 SA102	ON T3 S RPI CT	O. Reg. 153(511) - PAHs (Soil)	Benzo(k)fluoranthene	µg/g	0.78	1.2
862413	BH20-2 SA102	ON T3 S RPI CT	O. Reg. 153(511) - PAHs (Soil)	Dibenz(a,h)anthracene	µg/g	0.1	0.14
862413	BH20-2 SA102	ON T3 S RPI CT	O. Reg. 153(511) - PAHs (Soil)	Fluoranthene	µg/g	0.69	5.7
862413	BH20-2 SA102	ON T3 S RPI CT	O. Reg. 153(511) - PAHs (Soil)	Indeno(1,2,3-cd)pyrene	µg/g	0.38	0.62
862413	BH20-2 SA102	ON T3 S RPI CT	O. Reg. 153(511) - PAHs (Soil)	Naphthalene	µg/g	0.6	9.0
862413	BH20-2 SA102	ON T3 S RPI CT	O. Reg. 153(511) - PAHs (Soil)	Phenanthrene	µg/g	6.2	16
862416	BH20-3 SA5	ON T3 S RPI CT	O. Reg. 153(511) - PHCs F1 - F4 (Soil)	F1 (C6 to C10)	µg/g	55	180
862416	BH20-3 SA5	ON T3 S RPI CT	O. Reg. 153(511) - PHCs F1 - F4 (Soil)	F1 (C6 to C10) minus BTEX	µg/g	55	180
862416	BH20-3 SA5	ON T3 S RPI CT	O. Reg. 153(511) - PHCs F1 - F4 (Soil)	F2 (C10 to C16)	µg/g	98	4000
862416	BH20-3 SA5	ON T3 S RPI CT	O. Reg. 153(511) - PHCs F1 - F4 (Soil)	F3 (C16 to C34)	µg/g	300	4000
862417	BH20-3 SA105	ON T3 S RPI CT	O. Reg. 153(511) - PHCs F1 - F4 (Soil)	F1 (C6 to C10)	µg/g	55	150
862417	BH20-3 SA105	ON T3 S RPI CT	O. Reg. 153(511) - PHCs F1 - F4 (Soil)	F1 (C6 to C10) minus BTEX	µg/g	55	150
862417	BH20-3 SA105	ON T3 S RPI CT	O. Reg. 153(511) - PHCs F1 - F4 (Soil)	F2 (C10 to C16)	µg/g	98	2900
862417	BH20-3 SA105	ON T3 S RPI CT	O. Reg. 153(511) - PHCs F1 - F4 (Soil)	F3 (C16 to C34)	µg/g	300	2900
862419	BH20-3 SA2	ON T3 S RPI CT	O. Reg. 153(511) - PAHs (Soil)	2-and 1-methyl Naphthalene	µg/g	0.99	31
862419	BH20-3 SA2	ON T3 S RPI CT	O. Reg. 153(511) - PAHs (Soil)	Naphthalene	µg/g	0.6	13
862419	BH20-3 SA2	ON T3 S RPI CT	O. Reg. 153(511) - PHCs F1 - F4 (with PAHs) (Soil)	Ethylbenzene	µg/g	2	5.9
862419	BH20-3 SA2	ON T3 S RPI CT	O. Reg. 153(511) - PHCs F1 - F4 (with PAHs) (Soil)	F1 (C6 to C10)	µg/g	55	390
862419	BH20-3 SA2	ON T3 S RPI CT	O. Reg. 153(511) - PHCs F1 - F4 (with PAHs) (Soil)	F1 (C6 to C10) minus BTEX	µg/g	55	360
862419	BH20-3 SA2	ON T3 S RPI CT	O. Reg. 153(511) - PHCs F1 - F4 (with PAHs) (Soil)	F2 (C10 to C16)	µg/g	98	210
862419	BH20-3 SA2	ON T3 S RPI CT	O. Reg. 153(511) - PHCs F1 - F4 (with PAHs) (Soil)	Xylene Mixture	µg/g	3.1	27

Quality Assurance

CLIENT NAME: GEMTEC CONSULTING ENGINEERS AND SCIENTISTS

AGAT WORK ORDER: 20Z563594

PROJECT: 63115.04 - Phase Two ESA

ATTENTION TO: Kathryn Maton

SAMPLING SITE: 240 Ferland Street, Ottawa

SAMPLED BY: K. Maton

Soil Analysis

RPT Date: Jan 22, 2020			DUPLICATE			Method Blank	REFERENCE MATERIAL			METHOD BLANK SPIKE			MATRIX SPIKE		
PARAMETER	Batch	Sample Id	Dup #1	Dup #2	RPD		Measured Value	Acceptable Limits		Recovery	Acceptable Limits		Recovery	Acceptable Limits	
								Lower	Upper		Lower	Upper		Lower	Upper
O. Reg. 153(511) - Metals & Inorganics (Soil)															
Antimony	865815		<0.8	<0.8	NA	< 0.8	128%	70%	130%	100%	80%	120%	88%	70%	130%
Arsenic	865815		3	3	NA	< 1	117%	70%	130%	103%	80%	120%	105%	70%	130%
Barium	865815		24	24	0.0%	< 2	113%	70%	130%	95%	80%	120%	97%	70%	130%
Beryllium	865815		<0.5	<0.5	NA	< 0.5	94%	70%	130%	111%	80%	120%	97%	70%	130%
Boron	865815		5	6	NA	< 5	96%	70%	130%	96%	80%	120%	87%	70%	130%
Boron (Hot Water Soluble)	865611		0.19	0.18	NA	< 0.10	98%	60%	140%	95%	70%	130%	91%	60%	140%
Cadmium	865815		<0.5	<0.5	NA	< 0.5	92%	70%	130%	99%	80%	120%	97%	70%	130%
Chromium	865815		9	9	NA	< 2	101%	70%	130%	100%	80%	120%	101%	70%	130%
Cobalt	865815		4.1	4.1	0.0%	< 0.5	97%	70%	130%	99%	80%	120%	97%	70%	130%
Copper	865815		14	14	0.0%	< 1	91%	70%	130%	105%	80%	120%	96%	70%	130%
Lead	865815		10	10	0.0%	< 1	104%	70%	130%	97%	80%	120%	91%	70%	130%
Molybdenum	865815		<0.5	<0.5	NA	< 0.5	93%	70%	130%	92%	80%	120%	93%	70%	130%
Nickel	865815		8	8	0.0%	< 1	97%	70%	130%	100%	80%	120%	96%	70%	130%
Selenium	865815		<0.4	<0.4	NA	< 0.4	122%	70%	130%	95%	80%	120%	98%	70%	130%
Silver	865815		<0.2	<0.2	NA	< 0.2	101%	70%	130%	100%	80%	120%	90%	70%	130%
Thallium	865815		<0.4	<0.4	NA	< 0.4	112%	70%	130%	98%	80%	120%	93%	70%	130%
Uranium	865815		<0.5	<0.5	NA	< 0.5	114%	70%	130%	96%	80%	120%	99%	70%	130%
Vanadium	865815		17	17	0.0%	< 1	102%	70%	130%	96%	80%	120%	95%	70%	130%
Zinc	865815		49	49	0.0%	< 5	101%	70%	130%	102%	80%	120%	105%	70%	130%
Chromium VI	863228		< 0.2	< 0.2	NA	< 0.2	86%	80%	120%	82%	70%	130%	96%	70%	130%
Cyanide	866994		<0.040	<0.040	NA	< 0.040	102%	70%	130%	106%	80%	120%	104%	70%	130%
Mercury	865815		<0.10	<0.10	NA	< 0.10	114%	70%	130%	100%	80%	120%	97%	70%	130%
Electrical Conductivity	865611		0.793	0.788	0.6%	< 0.005	101%	90%	110%	NA			NA		
Sodium Adsorption Ratio	865611		0.535	0.524	2.1%	NA	NA			NA			NA		
pH, 2:1 CaCl2 Extraction	862411	862411	7.79	7.76	0.4%	NA	100%	80%	120%	NA			NA		

Comments: NA signifies Not Applicable.

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

pH duplicates QA acceptance criteria was met relative as stated in Table 5-15 of Analytical Protocol document.

Certified By:




Quality Assurance

CLIENT NAME: GEMTEC CONSULTING ENGINEERS AND SCIENTISTS

AGAT WORK ORDER: 20Z563594

PROJECT: 63115.04 - Phase Two ESA

ATTENTION TO: Kathryn Maton

SAMPLING SITE: 240 Ferland Street, Ottawa

SAMPLED BY: K. Maton

Trace Organics Analysis

RPT Date: Jan 22, 2020			DUPLICATE			Method Blank	REFERENCE MATERIAL		METHOD BLANK SPIKE			MATRIX SPIKE			
PARAMETER	Batch	Sample Id	Dup #1	Dup #2	RPD		Measured Value	Acceptable Limits		Recovery	Acceptable Limits		Recovery	Acceptable Limits	
								Lower	Upper		Lower	Upper		Lower	Upper

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

Naphthalene	869928		< 0.05	< 0.05	NA	< 0.05	98%	50%	140%	81%	50%	140%	81%	50%	140%
Acenaphthylene	869928		< 0.05	< 0.05	NA	< 0.05	101%	50%	140%	82%	50%	140%	82%	50%	140%
Acenaphthene	869928		< 0.05	< 0.05	NA	< 0.05	98%	50%	140%	81%	50%	140%	81%	50%	140%
Fluorene	869928		< 0.05	< 0.05	NA	< 0.05	104%	50%	140%	86%	50%	140%	85%	50%	140%
Phenanthrene	869928		< 0.05	< 0.05	NA	< 0.05	111%	50%	140%	94%	50%	140%	90%	50%	140%
Anthracene	869928		< 0.05	< 0.05	NA	< 0.05	119%	50%	140%	100%	50%	140%	85%	50%	140%
Fluoranthene	869928		< 0.05	< 0.05	NA	< 0.05	117%	50%	140%	105%	50%	140%	105%	50%	140%
Pyrene	869928		< 0.05	< 0.05	NA	< 0.05	113%	50%	140%	107%	50%	140%	106%	50%	140%
Benz(a)anthracene	869928		< 0.05	< 0.05	NA	< 0.05	70%	50%	140%	87%	50%	140%	108%	50%	140%
Chrysene	869928		< 0.05	< 0.05	NA	< 0.05	118%	50%	140%	107%	50%	140%	99%	50%	140%
Benzo(b)fluoranthene	869928		< 0.05	< 0.05	NA	< 0.05	88%	50%	140%	84%	50%	140%	93%	50%	140%
Benzo(k)fluoranthene	869928		< 0.05	< 0.05	NA	< 0.05	98%	50%	140%	81%	50%	140%	95%	50%	140%
Benzo(a)pyrene	869928		< 0.05	< 0.05	NA	< 0.05	113%	50%	140%	97%	50%	140%	108%	50%	140%
Indeno(1,2,3-cd)pyrene	869928		< 0.05	< 0.05	NA	< 0.05	104%	50%	140%	80%	50%	140%	83%	50%	140%
Dibenz(a,h)anthracene	869928		< 0.05	< 0.05	NA	< 0.05	101%	50%	140%	84%	50%	140%	89%	50%	140%
Benzo(g,h,i)perylene	869928		< 0.05	< 0.05	NA	< 0.05	100%	50%	140%	77%	50%	140%	81%	50%	140%

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

Benzene	867013		< 0.02	< 0.02	NA	< 0.02	101%	60%	130%	96%	60%	130%	86%	60%	130%
Toluene	867013		< 0.05	< 0.05	NA	< 0.05	93%	60%	130%	93%	60%	130%	93%	60%	130%
Ethylbenzene	867013		< 0.05	< 0.05	NA	< 0.05	86%	60%	130%	87%	60%	130%	85%	60%	130%
Xylene Mixture	867013		< 0.05	< 0.05	NA	< 0.05	78%	60%	130%	87%	60%	130%	87%	60%	130%
F1 (C6 to C10)	867013		< 5	< 5	NA	< 5	97%	60%	130%	98%	85%	115%	74%	70%	130%
F2 (C10 to C16)	864633		< 10	< 10	NA	< 10	119%	60%	130%	80%	80%	120%	85%	70%	130%
F3 (C16 to C34)	864633		< 50	< 50	NA	< 50	104%	60%	130%	81%	80%	120%	98%	70%	130%
F4 (C34 to C50)	864633		< 50	< 50	NA	< 50	96%	60%	130%	116%	80%	120%	103%	70%	130%

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

Certified By:



Method Summary

CLIENT NAME: GEMTEC CONSULTING ENGINEERS AND SCIENTISTS
AGAT WORK ORDER: 20Z563594
PROJECT: 63115.04 - Phase Two ESA
ATTENTION TO: Kathryn Maton
SAMPLING SITE: 240 Ferland Street, Ottawa
SAMPLED BY: K. Maton

PARAMETER	AGAT S.O.P	LITERATURE REFERENCE	ANALYTICAL TECHNIQUE
Soil Analysis			
Antimony	MET-93-6103	modified from EPA 3050B and EPA 6020B and ON MOECC	ICP-MS
Arsenic	MET-93-6103	modified from EPA 3050B and EPA 6020B and ON MOECC	ICP-MS
Barium	MET-93-6103	modified from EPA 3050B and EPA 6020B and ON MOECC	ICP-MS
Beryllium	MET-93-6103	modified from EPA 3050B and EPA 6020B and ON MOECC	ICP-MS
Boron	MET-93-6103	modified from EPA 3050B and EPA 6020B and ON MOECC	ICP-MS
Boron (Hot Water Soluble)	MET-93-6104	EPA SW 846 6010C; MSA, Part 3, Ch.21	ICP/OES
Cadmium	MET-93-6103	modified from EPA 3050B and EPA 6020B and ON MOECC	ICP-MS
Chromium	MET-93-6103	modified from EPA 3050B and EPA 6020B and ON MOECC	ICP-MS
Cobalt	MET-93-6103	modified from EPA 3050B and EPA 6020B and ON MOECC	ICP-MS
Copper	MET-93-6103	modified from EPA 3050B and EPA 6020B and ON MOECC	ICP-MS
Lead	MET-93-6103	modified from EPA 3050B and EPA 6020B and ON MOECC	ICP-MS
Molybdenum	MET-93-6103	modified from EPA 3050B and EPA 6020B and ON MOECC	ICP-MS
Nickel	MET-93-6103	modified from EPA 3050B and EPA 6020B and ON MOECC	ICP-MS
Selenium	MET-93-6103	modified from EPA 3050B and EPA 6020B and ON MOECC	ICP-MS
Silver	MET-93-6103	modified from EPA 3050B and EPA 6020B and ON MOECC	ICP-MS
Thallium	MET-93-6103	modified from EPA 3050B and EPA 6020B and ON MOECC	ICP-MS
Uranium	MET-93-6103	modified from EPA 3050B and EPA 6020B and ON MOECC	ICP-MS
Vanadium	MET-93-6103	modified from EPA 3050B and EPA 6020B and ON MOECC	ICP-MS
Zinc	MET-93-6103	modified from EPA 3050B and EPA 6020B and ON MOECC	ICP-MS
Chromium VI	INOR-93-6068	SW 846 Method 3060A; Method 7196A	SPECTROPHOTOMETER
Cyanide	INOR-93-6052	MOE CN-3015 & E 3009 A; SM 4500 CN	TECHNICON AUTO ANALYZER
Mercury	MET-93-6103	modified from EPA 3050B and EPA 6020B and ON MOECC	ICP-MS
Electrical Conductivity	INOR-93-6036	McKeague 4.12, SM 2510 B	EC METER
Sodium Adsorption Ratio	INOR-93-6007	McKeague 4.12 & 3.26 & EPA SW-846 6010C	ICP/OES
pH, 2:1 CaCl ₂ Extraction	INOR-93-6031	MSA part 3 & SM 4500-H+ B	PH METER

Method Summary

CLIENT NAME: GEMTEC CONSULTING ENGINEERS AND SCIENTISTS
AGAT WORK ORDER: 20Z563594
PROJECT: 63115.04 - Phase Two ESA
ATTENTION TO: Kathryn Maton
SAMPLING SITE: 240 Ferland Street, Ottawa
SAMPLED BY: K. Maton

PARAMETER	AGAT S.O.P	LITERATURE REFERENCE	ANALYTICAL TECHNIQUE
Trace Organics Analysis			
Naphthalene	ORG-91-5106	modified from EPA 3541 and EPA 8270E	GC/MS
Acenaphthylene	ORG-91-5106	modified from EPA 3541 and EPA 8270E	GC/MS
Acenaphthene	ORG-91-5106	modified from EPA 3541 and EPA 8270E	GC/MS
Fluorene	ORG-91-5106	modified from EPA 3541 and EPA 8270E	GC/MS
Phenanthrene	ORG-91-5106	modified from EPA 3541 and EPA 8270E	GC/MS
Anthracene	ORG-91-5106	modified from EPA 3541 and EPA 8270E	GC/MS
Fluoranthene	ORG-91-5106	modified from EPA 3541 and EPA 8270E	GC/MS
Pyrene	ORG-91-5106	modified from EPA 3541 and EPA 8270E	GC/MS
Benz(a)anthracene	ORG-91-5106	modified from EPA 3541 and EPA 8270E	GC/MS
Chrysene	ORG-91-5106	modified from EPA 3541 and EPA 8270E	GC/MS
Benzo(b)fluoranthene	ORG-91-5106	modified from EPA 3541 and EPA 8270E	GC/MS
Benzo(k)fluoranthene	ORG-91-5106	modified from EPA 3541 and EPA 8270E	GC/MS
Benzo(a)pyrene	ORG-91-5106	modified from EPA 3541 and EPA 8270E	GC/MS
Indeno(1,2,3-cd)pyrene	ORG-91-5106	modified from EPA 3541 and EPA 8270E	GC/MS
Dibenz(a,h)anthracene	ORG-91-5106	modified from EPA 3541 and EPA 8270E	GC/MS
Benzo(g,h,i)perylene	ORG-91-5106	modified from EPA 3541 and EPA 8270E	GC/MS
2-and 1-methyl Naphthalene	ORG-91-5106	modified from EPA 3541 and EPA 8270E	GC/MS
Moisture Content	ORG-91-5106	Tier 1 Method	BALANCE
Naphthalene-d8	ORG-91-5106	modified from EPA 3541 and EPA 8270E	GC/MS
Acenaphthene-d10	ORG-91-5106	modified from EPA 3541 and EPA 8270E	GC/MS
Chrysene-d12	ORG-91-5106	modified from EPA 3541 and EPA 8270E	GC/MS
Benzene	VOL-91-5009	EPA SW-846 5035 & 8260D	P&T GC/MS
Toluene	VOL-91-5009	EPA SW-846 5035 & 8260D	P&T GC/MS
Ethylbenzene	VOL-91-5009	EPA SW-846 5035 & 8260D	P&T GC/MS
Xylene Mixture	VOL-91-5009	EPA SW-846 5035 & 8260D	P&T GC/MS
F1 (C6 to C10)	VOL-91-5009	CCME Tier 1 Method	P&T GC/FID
F1 (C6 to C10) minus BTEX	VOL-91-5009	CCME Tier 1 Method	P&T GC/FID
F2 (C10 to C16)	VOL-91-5009	CCME Tier 1 Method	GC/FID
F3 (C16 to C34)	VOL-91-5009	CCME Tier 1 Method	GC/FID
F4 (C34 to C50)	VOL-91-5009	CCME Tier 1 Method	GC/FID
Gravimetric Heavy Hydrocarbons	VOL-91-5009	CCME Tier 1 Method	BALANCE
Moisture Content	VOL-91-5009	CCME Tier 1 Method	BALANCE
Terphenyl	VOL-91-5009		GC/FID

Method Summary

CLIENT NAME: GEMTEC CONSULTING ENGINEERS AND SCIENTISTS**AGAT WORK ORDER:** 20Z563594**PROJECT:** 63115.04 - Phase Two ESA**ATTENTION TO:** Kathryn Maton**SAMPLING SITE:** 240 Ferland Street, Ottawa**SAMPLED BY:** K. Maton

PARAMETER	AGAT S.O.P	LITERATURE REFERENCE	ANALYTICAL TECHNIQUE
Benzene	VOL-91-5009	EPA SW-846 5035 & 8260	P&T GC/MS
Toluene	VOL-91-5009	EPA SW-846 5035 & 8260	P&T GC/MS
Ethylbenzene	VOL-91-5009	EPA SW-846 5035 & 8260	P&T GC/MS
Xylene Mixture	VOL-91-5009	EPA SW-846 5035 & 8260	P&T GC/MS
F1 (C6 to C10)	VOL-91-5009	CCME Tier 1 Method	P&T GC/FID
F2 (C10 to C16) minus Naphthalene	VOL-91-5009	CCME Tier 1 Method	GC/FID
F3 (C16 to C34)	VOL-91-5009	CCME Tier 1 Method	GC/FID
F3 (C16 to C34) minus PAHs	VOL-91-5009	CCME Tier 1 Method	GC/FID



AGAT Laboratories

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

Chain of Custody Record

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

Report Information:

Company: GEMTEC
Contact: Kathryn Maton
Address: 32 Steacie Drive
Ottawa, ON K2K 2A9
Phone: 613-836-1422/613-223-5885 Fax: _____
Reports to be sent to: kathryn.maton@gemtec.ca
1. Email: _____
2. Email: _____

Project Information:

Project: 63115.04 - Phase Two ESA
Site Location: 240 Ferland Street, Ottawa
Sampled By: K. Maton
AGAT Quote #: _____ PO: _____
Please note: If quotation number is not provided, client will be billed full price for analysis.

Invoice Information:

Bill To Same: Yes ☒ No ☐

Company: _____
Contact: _____
Address: _____
Email: accountspayable@gemtec.ca

Regulatory Requirements:

☐ No Regulatory Requirement

☒ Regulation 153/04

☐ Sewer Use

☐ Regulation 558

Table 3 Indicate One

☐ Ind/Com

☐ Sanitary

☒ Res/Park
☐ Agriculture

☐ Storm

☒ Prov. Water Quality Objectives (PWQO)

Soil Texture (Check One)

Region _____ Indicate One

☒ Coarse

☐ Other

☐ Fine

☐ MISA

_____ Indicate One

Is this submission for a
Record of Site Condition?

☒ Yes ☐ No

Report Guideline on
Certificate of Analysis

☒ Yes ☐ No

Sample Matrix Legend

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

Field Filtered - Metals, Hg, CrVI

O. Reg 153

Metals and Inorganics

All Metals ☐ 153 Metals (excl. Hydrides)
Hydride Metals ☐ 153 Metals (incl. Hydrides)

ORPs: ☐ B-HWS ☐ Cl⁻ ☐ CN
☐ Cr⁶⁺ ☐ EC ☐ FOC ☐ Hg
☐ pH ☐ SAR

Full Metals Scan

Regulation/Custom Metals

Nutrients: ☐ TP ☐ NH₄⁺ ☐ TKN
☐ NO₃⁻ ☐ NO₂⁻ ☐ NO₃⁻+NO₂⁻

Volatiles: ☐ VOC ☒ APEX ☐ THM

PHCs F1 - F4

ABNs

PAHs

PCBs: ☐ Total ☐ Aroclors

Organochlorine Pesticides

TOLP: ☐ M&I ☐ VOCs ☐ ABNs ☐ BialP ☐ PCBs

Sewer Use

Potentially Hazardous or High Concentration (Y/N)

Sample Identification	Date Sampled	Time Sampled	# of Containers	Sample Matrix	Comments/ Special Instructions	Y/N	Metals and Inorganics	ORPs	Nutrients	Volatiles	PHCs F1 - F4	ABNs	PAHs	PCBs	Organochlorine Pesticides	TOLP	Sewer Use	Potentially Hazardous or High Concentration (Y/N)
BH20-1 SA2	13/01/20	9am	1	Soil			X											
BH20-1 SA6			2				X				X							
BH20-2 SA2			3				X											
BH20-2 SA102			1				X											
BH20-2 SA6			2							X								
BH20-3 SA5					Limited sample													
BH20-3 SA105																		
BH20-3 SA8																		
BH20-3 SA2					Limited sample		X											
BH20-3 SA3B					HOLD													
BH20-2 SA102																		

Samples Relinquished By (Print Name and Sign): <u>K. Maton</u>	Date: <u>14/01/20</u>	Time: <u>11:17</u>	Samples Received By (Print Name and Sign): <u>U. Be the let/3aw</u>	Date: <u>2020/01/14</u>	Time: <u>13h40</u>
Samples Relinquished By (Print Name and Sign): <u>Up/101014</u>	Date: <u>2020/01/14</u>	Time: <u>16:00</u>	Samples Received By (Print Name and Sign): <u>Sharmir</u>	Date: <u>Jan 15/2020</u>	Time: <u>10:10am</u>
Samples Relinquished By (Print Name and Sign): <u>Up/101014</u>	Date: <u>2020/01/14</u>	Time: <u>16:00</u>	Samples Received By (Print Name and Sign): <u>Sharmir</u>	Date: <u>Jan 15/2020</u>	Time: <u>10:10am</u>

Laboratory Use Only

Work Order #: 202563594

Cooler Quantity: one-ice

Arrival Temperatures: 2.5 3.5 3.4

LT-2.9 2.6 3.3

Custody Seal Intact: ☐ Yes ☐ No ☐ N/A

Notes: _____

Turnaround Time (TAT) Required:

Regular TAT ☒ 5 to 7 Business Days

Rush TAT (Rush Surcharges Apply)

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

OR Date Required (Rush Surcharges May Apply): _____

Please provide prior notification for rush TAT

*TAT is exclusive of weekends and statutory holidays

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

CLIENT NAME: GEMTEC CONSULTING ENGINEERS AND SCIENTISTS
32 STEACIE DRIVE
OTTAWA, ON K2K 2A9
(613) 836-1422

ATTENTION TO: Kathryn Maton

PROJECT: 63115.04 - Phase Two ESA

AGAT WORK ORDER: 20Z564447

WATER ANALYSIS REVIEWED BY: Yris Verastegui, Report Reviewer

DATE REPORTED: Jan 23, 2020

PAGES (INCLUDING COVER): 5

VERSION*: 1

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

*NOTES

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



Certificate of Analysis

AGAT WORK ORDER: 20Z564447

PROJECT: 63115.04 - Phase Two ESA

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

CLIENT NAME: GEMTEC CONSULTING ENGINEERS AND SCIENTISTS

ATTENTION TO: Kathryn Maton

SAMPLING SITE: 240 Ferland Street, Ottawa

SAMPLED BY: K. Maton

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

DATE RECEIVED: 2020-01-16

DATE REPORTED: 2020-01-23

SAMPLE DESCRIPTION: MW20-3						
SAMPLE TYPE: Water						
DATE SAMPLED: 2020-01-15						
Parameter	Unit	G / S	RDL	Date Prepared	Date Analyzed	866891
Antimony	µg/L	20000	1.0	2020-01-20	2020-01-20	<1.0
Arsenic	µg/L	1900	1.0	2020-01-20	2020-01-20	<1.0
Barium	µg/L	29000	2.0	2020-01-20	2020-01-20	892
Beryllium	µg/L	67	0.5	2020-01-20	2020-01-20	<0.5
Boron	µg/L	45000	10.0	2020-01-20	2020-01-20	134
Cadmium	µg/L	2.7	0.2	2020-01-20	2020-01-20	<0.2
Chromium	µg/L	810	2.0	2020-01-20	2020-01-20	3.5
Cobalt	µg/L	66	0.5	2020-01-20	2020-01-20	<0.5
Copper	µg/L	87	1.0	2020-01-20	2020-01-20	<1.0
Lead	µg/L	25	0.5	2020-01-20	2020-01-20	<0.5
Molybdenum	µg/L	9200	0.5	2020-01-20	2020-01-20	3.4
Nickel	µg/L	490	1.0	2020-01-20	2020-01-20	<1.0
Selenium	µg/L	63	1.0	2020-01-20	2020-01-20	1.0
Silver	µg/L	1.5	0.2	2020-01-20	2020-01-20	<0.2
Thallium	µg/L	510	0.3	2020-01-20	2020-01-20	<0.3
Uranium	µg/L	420	0.5	2020-01-20	2020-01-20	<0.5
Vanadium	µg/L	250	0.4	2020-01-20	2020-01-20	1.0
Zinc	µg/L	1100	5.0	2020-01-20	2020-01-20	<5.0
Mercury	µg/L	0.29	0.02	2020-01-20	2020-01-20	<0.02
Chromium VI	µg/L	140	5	2020-01-22	2020-01-22	<5
Cyanide	µg/L	66	2	2020-01-20	2020-01-20	<2
Sodium	µg/L	2300000	2500	2020-01-23	2020-01-23	54400
Chloride	µg/L	2300000	500	2020-01-20	2020-01-20	65100
Electrical Conductivity	uS/cm		2	2020-01-17	2020-01-17	1220
pH	pH Units		NA	2020-01-17	2020-01-17	7.62

Comments: RDL - Reported Detection Limit; G / S - Guideline / Standard: Refers to Table 3: Full Depth Generic Site Condition Standards in a Non-Potable Ground Water Condition - Non-Potable Ground Water - All Types of Property Uses - Coarse Textured Soils

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

866891 Elevated RDLs indicate the degree of sample dilutions prior to the analysis to keep analytes within the calibration range, reduce matrix interference and/or to avoid contaminating the instrument.

Analysis performed at AGAT Toronto (unless marked by *)

Certified By:

Iris Veraestegui



Quality Assurance

CLIENT NAME: GEMTEC CONSULTING ENGINEERS AND SCIENTISTS

AGAT WORK ORDER: 20Z564447

PROJECT: 63115.04 - Phase Two ESA

ATTENTION TO: Kathryn Maton

SAMPLING SITE: 240 Ferland Street, Ottawa

SAMPLED BY: K. Maton

Water Analysis															
RPT Date: Jan 23, 2020			DUPLICATE			Method Blank	REFERENCE MATERIAL			METHOD BLANK SPIKE			MATRIX SPIKE		
PARAMETER	Batch	Sample Id	Dup #1	Dup #2	RPD		Measured Value	Acceptable Limits		Recovery	Acceptable Limits		Recovery	Acceptable Limits	
								Lower	Upper		Lower	Upper		Lower	Upper
O. Reg. 153(511) - Metals & Inorganics (Water)															
Antimony	868772		<1.0	<1.0	NA	< 1.0	101%	70%	130%	93%	80%	120%	98%	70%	130%
Arsenic	868772		<1.0	<1.0	NA	< 1.0	100%	70%	130%	103%	80%	120%	118%	70%	130%
Barium	868772		108	111	2.7%	< 2.0	106%	70%	130%	106%	80%	120%	110%	70%	130%
Beryllium	868772		<0.5	<0.5	NA	< 0.5	98%	70%	130%	108%	80%	120%	103%	70%	130%
Boron	868772		107	102	4.8%	< 10.0	101%	70%	130%	103%	80%	120%	102%	70%	130%
Cadmium	868772		<0.2	<0.2	NA	< 0.2	100%	70%	130%	116%	80%	120%	119%	70%	130%
Chromium	868772		15.1	14.7	2.7%	< 2.0	100%	70%	130%	105%	80%	120%	104%	70%	130%
Cobalt	868772		<0.5	<0.5	NA	< 0.5	98%	70%	130%	102%	80%	120%	98%	70%	130%
Copper	868772		<1.0	<1.0	NA	< 1.0	99%	70%	130%	102%	80%	120%	94%	70%	130%
Lead	868772		<0.5	<0.5	NA	< 0.5	101%	70%	130%	106%	80%	120%	101%	70%	130%
Molybdenum	868772		<0.5	<0.5	NA	< 0.5	100%	70%	130%	101%	80%	120%	104%	70%	130%
Nickel	868772		<1.0	<1.0	NA	< 1.0	97%	70%	130%	104%	80%	120%	95%	70%	130%
Selenium	868772		1.2	1.1	NA	< 1.0	101%	70%	130%	103%	80%	120%	121%	70%	130%
Silver	868772		<0.2	<0.2	NA	< 0.2	100%	70%	130%	105%	80%	120%	94%	70%	130%
Thallium	868772		<0.3	<0.3	NA	< 0.3	100%	70%	130%	105%	80%	120%	102%	70%	130%
Uranium	868772		<0.5	<0.5	NA	< 0.5	96%	70%	130%	102%	80%	120%	115%	70%	130%
Vanadium	868772		0.8	0.8	NA	< 0.4	93%	70%	130%	100%	80%	120%	101%	70%	130%
Zinc	868772		<5.0	<5.0	NA	< 5.0	103%	70%	130%	103%	80%	120%	101%	70%	130%
Mercury	864914		<0.02	<0.02	NA	< 0.02	101%	70%	130%	101%	80%	120%	104%	70%	130%
Chromium VI	876180		<5	<5	NA	< 5	102%	70%	130%	101%	80%	120%	102%	70%	130%
Cyanide	866891	866891	<2	<2	NA	< 2	100%	70%	130%	96%	80%	120%	89%	70%	130%
Sodium	869744		4750	4840	1.9%	< 500	93%	70%	130%	95%	80%	120%	95%	70%	130%
Chloride	868772		37800	34900	8.0%	< 100	90%	70%	130%	96%	70%	130%	107%	70%	130%
Electrical Conductivity	867131		677	689	1.8%	< 2	NA	90%	110%	NA			NA		
pH	867131		9.68	10.1	4.2%	NA	NA	90%	110%	NA			NA		

Comments: NA signifies Not Applicable.

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

Certified By:

Iris Veraestegui



Method Summary

CLIENT NAME: GEMTEC CONSULTING ENGINEERS AND SCIENTISTS

AGAT WORK ORDER: 20Z564447

PROJECT: 63115.04 - Phase Two ESA

ATTENTION TO: Kathryn Maton

SAMPLING SITE: 240 Ferland Street, Ottawa

SAMPLED BY: K. Maton

PARAMETER	AGAT S.O.P	LITERATURE REFERENCE	ANALYTICAL TECHNIQUE
Water Analysis			
Antimony	MET-93-6103	EPA SW-846 6020A & 200.8	ICP-MS
Arsenic	MET-93-6103	EPA SW-846 6020A & 200.8	ICP-MS
Barium	MET-93-6103	EPA SW-846 6020A & 200.8	ICP-MS
Beryllium	MET-93-6103	EPA SW-846 6020A & 200.8	ICP-MS
Boron	MET-93-6103	EPA SW-846 6020A & 200.8	ICP-MS
Cadmium	MET-93-6103	EPA SW-846 6020A & 200.8	ICP-MS
Chromium	MET-93-6103	EPA SW-846 6020A & 200.8	ICP-MS
Cobalt	MET-93-6103	EPA SW-846 6020A & 200.8	ICP-MS
Copper	MET-93-6103	EPA SW-846 6020A & 200.8	ICP-MS
Lead	MET-93-6103	EPA SW-846 6020A & 200.8	ICP-MS
Molybdenum	MET-93-6103	EPA SW-846 6020A & 200.8	ICP-MS
Nickel	MET-93-6103	EPA SW-846 6020A & 200.8	ICP-MS
Selenium	MET-93-6103	EPA SW-846 6020A & 200.8	ICP-MS
Silver	MET-93-6103	EPA SW-846 6020A & 200.8	ICP-MS
Thallium	MET-93-6103	EPA SW-846 6020A & 200.8	ICP-MS
Uranium	MET-93-6103	EPA SW-846 6020A & 200.8	ICP-MS
Vanadium	MET-93-6103	EPA SW-846 6020A & 200.8	ICP-MS
Zinc	MET-93-6103	EPA SW-846 6020A & 200.8	ICP-MS
Mercury	MET-93-6100	modified from EPA 245.2 and SM 3112 B	CVAAS
Chromium VI	INOR-93-6034	SM 3500-Cr B	SPECTROPHOTOMETER
Cyanide	INOR-93-6052	MOE METHOD CN- 3015 & SM 4500 CN- I	TECHNICON AUTO ANALYZER
Sodium	MET-93-6105	EPA SW-846 6010C & 200.7	ICP/OES
Chloride	INOR-93-6004	SM 4110 B	ION CHROMATOGRAPH
Electrical Conductivity	INOR-93-6000	SM 2510 B	PC TITRATE
pH	INOR-93-6000	SM 4500-H+ B	PC TITRATE

CLIENT NAME: GEMTEC CONSULTING ENGINEERS AND SCIENTISTS
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(613) 836-1422

ATTENTION TO: Kathryn Maton

PROJECT: 63115.04 - Phase Two ESA

AGAT WORK ORDER: 20Z564457

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

DATE REPORTED: Jan 24, 2020

PAGES (INCLUDING COVER): 10

VERSION*: 1

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

*NOTES

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



Certificate of Analysis

AGAT WORK ORDER: 20Z564457

PROJECT: 63115.04 - Phase Two ESA

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<http://www.agatlabs.com>

CLIENT NAME: GEMTEC CONSULTING ENGINEERS AND SCIENTISTS

ATTENTION TO: Kathryn Maton

SAMPLING SITE: 240 Ferland Street, Ottawa

SAMPLED BY: K. Maton

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

DATE RECEIVED: 2020-01-16

DATE REPORTED: 2020-01-24

		SAMPLE DESCRIPTION:				MW20-2	MW20-102	MW20-3
		SAMPLE TYPE:				Water	Water	Water
		DATE SAMPLED:				2020-01-15	2020-01-15	2020-01-15
Parameter	Unit	G / S	RDL	Date Prepared	Date Analyzed	866997	866998	866999
Naphthalene	µg/L	1400	0.20	2020-01-22	2020-01-23	<0.20	<0.20	52
Acenaphthylene	µg/L	1.8	0.20	2020-01-22	2020-01-23	<0.20	<0.20	0.28
Acenaphthene	µg/L	600	0.20	2020-01-22	2020-01-23	<0.20	<0.20	1.1
Fluorene	µg/L	400	0.20	2020-01-22	2020-01-23	<0.20	<0.20	1.4
Phenanthrene	µg/L	580	0.10	2020-01-22	2020-01-23	<0.10	<0.10	1.6
Anthracene	µg/L	2.4	0.10	2020-01-22	2020-01-23	<0.10	<0.10	0.14
Fluoranthene	µg/L	130	0.20	2020-01-22	2020-01-23	<0.20	<0.20	<0.20
Pyrene	µg/L	68	0.20	2020-01-22	2020-01-23	<0.20	<0.20	<0.20
Benz(a)anthracene	µg/L	4.7	0.20	2020-01-22	2020-01-23	<0.20	<0.20	<0.20
Chrysene	µg/L	1	0.10	2020-01-22	2020-01-23	<0.10	<0.10	<0.10
Benzo(b)fluoranthene	µg/L	0.75	0.10	2020-01-22	2020-01-23	<0.10	<0.10	<0.10
Benzo(k)fluoranthene	µg/L	0.4	0.10	2020-01-22	2020-01-23	<0.10	<0.10	<0.10
Benzo(a)pyrene	µg/L	0.81	0.01	2020-01-22	2020-01-23	<0.01	<0.01	<0.01
Indeno(1,2,3-cd)pyrene	µg/L	0.2	0.20	2020-01-22	2020-01-23	<0.20	<0.20	<0.20
Dibenz(a,h)anthracene	µg/L	0.52	0.20	2020-01-22	2020-01-23	<0.20	<0.20	<0.20
Benzo(g,h,i)perylene	µg/L	0.2	0.20	2020-01-22	2020-01-23	<0.20	<0.20	<0.20
2-and 1-methyl Naphthalene	µg/L	1800	0.20	2020-01-22	2020-01-23	<0.20	<0.20	75
Surrogate	Unit	Acceptable Limits						
Naphthalene-d8	%	50-140		2020-01-22	2020-01-23	96	97	97
Acenaphthene-d10	%	50-140		2020-01-22	2020-01-23	89	88	88
Chrysene-d12	%	50-140		2020-01-22	2020-01-23	118	93	98

Comments: RDL - Reported Detection Limit; G / S - Guideline / Standard: Refers to Table 3: Full Depth Generic Site Condition Standards in a Non-Potable Ground Water Condition - Non-Potable Ground Water - All Types of Property Uses - Coarse Textured Soils

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

866997-866999 Note: The result for Benzo(b)Fluoranthene is the total of the Benzo(b)&(j)Fluoranthene isomers because the isomers co-elute on the GC column. 2- and 1-Methyl Naphthalene is a calculated parameter. The calculated value is the sum of 2-Methyl Naphthalene and 1-Methyl Naphthalene.

Analysis performed at AGAT Toronto (unless marked by *)

Certified By:



Certificate of Analysis

AGAT WORK ORDER: 20Z564457

PROJECT: 63115.04 - Phase Two ESA

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<http://www.agatlabs.com>

CLIENT NAME: GEMTEC CONSULTING ENGINEERS AND SCIENTISTS

ATTENTION TO: Kathryn Maton

SAMPLING SITE: 240 Ferland Street, Ottawa

SAMPLED BY: K. Maton

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

DATE RECEIVED: 2020-01-16

DATE REPORTED: 2020-01-24

SAMPLE DESCRIPTION: MW20-1						
SAMPLE TYPE: Water						
DATE SAMPLED: 2020-01-15						
Parameter	Unit	G / S	RDL	Date Prepared	Date Analyzed	866996
Benzene	µg/L	44	0.20	2020-01-21	2020-01-21	<0.20
Toluene	µg/L	18000	0.20	2020-01-21	2020-01-21	<0.20
Ethylbenzene	µg/L	2300	0.10	2020-01-21	2020-01-21	<0.10
Xylene Mixture	µg/L	4200	0.20	2020-01-21	2020-01-21	<0.20
F1 (C6 - C10)	µg/L	750	25	2020-01-21	2020-01-21	<25
F1 (C6 to C10) minus BTEX	µg/L	750	25	2020-01-21	2020-01-21	<25
F2 (C10 to C16)	µg/L	150	100	2020-01-23	2020-01-23	<100
F3 (C16 to C34)	µg/L	500	100	2020-01-23	2020-01-23	<100
F4 (C34 to C50)	µg/L	500	100	2020-01-23	2020-01-23	<100
Gravimetric Heavy Hydrocarbons	µg/L	500	500	2020-01-23	2020-01-23	NA
Surrogate	Unit	Acceptable Limits				
Terphenyl	%	60-140		2020-01-23	2020-01-23	112

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

866996 The C6-C10 fraction is calculated using Toluene response factor.
Xylenes total is a calculated parameter. The calculated value is the sum of m&p-Xylene and o-Xylene.
C6-C10 (F1 minus BTEX) is a calculated parameter. The calculated value is F1 minus BTEX.
The C10 - C16, C16 - C34, and C34 - C50 fractions are calculated using the average response factor for n-C10, n-C16, and n-C34.
Gravimetric Heavy Hydrocarbons are not included in the Total C16 - C50 and are only determined if the chromatogram of the C34 - C50 Hydrocarbons indicated that hydrocarbons >C50 are present.
The chromatogram has returned to baseline by the retention time of n-C50.
Total C6-C50 results are corrected for BTEX contribution.
This method complies with the Reference Method for the CWS PHC and is validated for use in the laboratory.
n-C6 and n-C10 response factors are within 30% of Toluene response factor.
n-C10, n-C16 and n-C34 response factors are within 10% of their average.
C50 response factor is within 70% of n-C10 + n-C16 n-C34 average.
Linearity is within 15%.
Extraction and holding times were met for this sample.
Fractions 1-4 are quantified with the contribution of PAHs. Under Ontario Regulation 153/04, results are considered valid without determining the PAH contribution if not requested by the client.
NA = Not Applicable

Analysis performed at AGAT Toronto (unless marked by *)

Certified By:



Certificate of Analysis

AGAT WORK ORDER: 20Z564457

PROJECT: 63115.04 - Phase Two ESA

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CLIENT NAME: GEMTEC CONSULTING ENGINEERS AND SCIENTISTS

ATTENTION TO: Kathryn Maton

SAMPLING SITE: 240 Ferland Street, Ottawa

SAMPLED BY: K. Maton

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

DATE RECEIVED: 2020-01-16

DATE REPORTED: 2020-01-24

				SAMPLE DESCRIPTION:		MW20-2	MW20-102	MW20-3
				SAMPLE TYPE:		Water	Water	Water
				DATE SAMPLED:		2020-01-15	2020-01-15	2020-01-15
Parameter	Unit	G / S	RDL	Date Prepared	Date Analyzed	866997	866998	866999
Benzene	µg/L	44	0.20	2020-01-21	2020-01-21	<0.20	<0.20	1.4
Toluene	µg/L	18000	0.20	2020-01-21	2020-01-21	<0.20	<0.20	0.48
Ethylbenzene	µg/L	2300	0.10	2020-01-21	2020-01-21	<0.10	<0.10	25
Xylene Mixture	µg/L	4200	0.20	2020-01-21	2020-01-21	<0.20	<0.20	110
F1 (C6-C10)	µg/L	750	25	2020-01-21	2020-01-21	<25	<25	480
F1 (C6 to C10) minus BTEX	µg/L	750	25	2020-01-21	2020-01-21	<25	<25	340
F2 (C10 to C16)	µg/L	150	100	2020-01-23	2020-01-23	<100	<100	420
F2 (C10 to C16) minus Naphthalene	µg/L		100	2020-01-23	2020-01-23	<100	<100	370
F3 (C16 to C34)	µg/L	500	100	2020-01-23	2020-01-23	<100	<100	<100
F3 (C16 to C34) minus PAHs	µg/L		100	2020-01-23	2020-01-23	<100	<100	<100
F4 (C34 to C50)	µg/L	500	100	2020-01-23	2020-01-23	<100	<100	<100
Gravimetric Heavy Hydrocarbons	µg/L	500	500	2020-01-23	2020-01-23	NA	NA	NA
Surrogate	Unit	Acceptable Limits						
Terphenyl	%	60-140		2020-01-23	2020-01-23	108	107	97

Comments: RDL - Reported Detection Limit; G / S - Guideline / Standard: Refers to Table 3: Full Depth Generic Site Condition Standards in a Non-Potable Ground Water Condition - Non-Potable Ground Water - All Types of Property Uses - Coarse Textured Soils

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

866997-866999

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

Xylenes total is a calculated parameter. The calculated value is the sum of m&p-Xylene and o-Xylene.

C6-C10 (F1 minus BTEX) is a calculated parameter. The calculated value is F1 minus BTEX.

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

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

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

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

C>10 - C16 (F2- Naphthalene) is a calculated parameter. The calculated value is F2 - Naphthalene.

C>16 - C34 (F3-PAH) is a calculated parameter. The calculated value is F3-PAH (PAH: sum of Phenanthrene, Benzo(a)anthracene, Benzo(b)fluoranthene, Benzo(k)fluoranthene, Benzo(a)pyrene, Fluoranthene, Dibenzo(a,h)anthracene, Indeno(1,2,3-c,d)pyrene and Pyrene).

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

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

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

Linearity is within 15%.

Extraction and holding times were met for this sample.

Analysis performed at AGAT Toronto (unless marked by *)

Certified By:



AGAT Laboratories

Certificate of Analysis

AGAT WORK ORDER: 20Z564457

PROJECT: 63115.04 - Phase Two ESA

5835 COOPERS AVENUE
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CLIENT NAME: GEMTEC CONSULTING ENGINEERS AND SCIENTISTS

ATTENTION TO: Kathryn Maton

SAMPLING SITE: 240 Ferland Street, Ottawa

SAMPLED BY: K. Maton

O. Reg. 153(511) - PHCs F1/BTEX (Water)

DATE RECEIVED: 2020-01-16

DATE REPORTED: 2020-01-24

SAMPLE DESCRIPTION: Trip Blank						
SAMPLE TYPE: Water						
DATE SAMPLED: 2020-01-15 14:07						
Parameter	Unit	G / S	RDL	Date Prepared	Date Analyzed	868272
Benzene	µg/L	44	0.20	2020-01-21	2020-01-21	<0.20
Toluene	µg/L	18000	0.20	2020-01-21	2020-01-21	<0.20
Ethylbenzene	µg/L	2300	0.10	2020-01-21	2020-01-21	<0.10
Xylene Mixture	µg/L	4200	0.20	2020-01-21	2020-01-21	<0.20
F1 (C6-C10)	µg/L	750	25	2020-01-21	2020-01-21	<25
F1 (C6 to C10) minus BTEX	µg/L	750	25	2020-01-21	2020-01-21	<25

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

868272 The C6-C10 fraction is calculated using Toluene response factor.
Total C6-C10 results are corrected for BTEX contributions.
Xylenes total is a calculated parameter. The calculated value is the sum of m&p-Xylene and o-Xylene.
C6-C10 (F1 minus BTEX) is a calculated parameter. The calculated value is F1 minus BTEX.
This method complies with the Reference Method for the CWS PHC and is validated for use in the laboratory.
nC6 and nC10 response factors are within 30% of Toluene response factor.
Extraction and holding times were met for this sample.
NA = Not Applicable

Analysis performed at AGAT Toronto (unless marked by *)

Certified By:



AGAT Laboratories

Guideline Violation

AGAT WORK ORDER: 20Z564457

PROJECT: 63115.04 - Phase Two ESA

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CLIENT NAME: GEMTEC CONSULTING ENGINEERS AND SCIENTISTS

ATTENTION TO: Kathryn Maton

SAMPLEID	SAMPLE TITLE	GUIDELINE	ANALYSIS PACKAGE	PARAMETER	UNIT	GUIDEVALUE	RESULT
866999	MW20-3	ON T3 NPGW CT	O. Reg. 153(511) - PHCs F1 - F4 (with PAHs) (Water)	F2 (C10 to C16)	µg/L	150	420

Quality Assurance

CLIENT NAME: GEMTEC CONSULTING ENGINEERS AND SCIENTISTS

AGAT WORK ORDER: 20Z564457

PROJECT: 63115.04 - Phase Two ESA

ATTENTION TO: Kathryn Maton

SAMPLING SITE: 240 Ferland Street, Ottawa

SAMPLED BY: K. Maton

Trace Organics Analysis

RPT Date: Jan 24, 2020			DUPLICATE			Method Blank	REFERENCE MATERIAL		METHOD BLANK SPIKE			MATRIX SPIKE			
PARAMETER	Batch	Sample Id	Dup #1	Dup #2	RPD		Measured Value	Acceptable Limits		Recovery	Acceptable Limits		Recovery	Acceptable Limits	
								Lower	Upper		Lower	Upper		Lower	Upper

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

Benzene	867916		< 0.20	< 0.20	NA	< 0.20	94%	50%	140%	90%	60%	130%	87%	50%	140%
Toluene	867916		< 0.20	< 0.20	NA	< 0.20	91%	50%	140%	88%	60%	130%	81%	50%	140%
Ethylbenzene	867916		< 0.10	< 0.10	NA	< 0.10	90%	50%	140%	89%	60%	130%	81%	50%	140%
Xylene Mixture	867916		< 0.20	< 0.20	NA	< 0.20	78%	50%	140%	87%	60%	130%	89%	50%	140%
F1 (C6 - C10)	867916		< 25	< 25	NA	< 25	83%	60%	140%	90%	60%	140%	92%	60%	140%

F2 (C10 to C16)		TW	< 100	< 100	NA	< 100	109%	60%	140%	106%	60%	140%	100%	60%	140%
F3 (C16 to C34)		TW	< 100	< 100	NA	< 100	103%	60%	140%	125%	60%	140%	117%	60%	140%
F4 (C34 to C50)		TW	< 100	< 100	NA	< 100	91%	60%	140%	117%	60%	140%	97%	60%	140%

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

Naphthalene		TW	< 0.20	< 0.20	NA	< 0.20	114%	50%	140%	102%	50%	140%	102%	50%	140%
Acenaphthylene		TW	< 0.20	< 0.20	NA	< 0.20	111%	50%	140%	100%	50%	140%	96%	50%	140%
Acenaphthene		TW	< 0.20	< 0.20	NA	< 0.20	108%	50%	140%	99%	50%	140%	99%	50%	140%
Fluorene		TW	< 0.20	< 0.20	NA	< 0.20	111%	50%	140%	101%	50%	140%	100%	50%	140%
Phenanthrene		TW	< 0.10	< 0.10	NA	< 0.10	109%	50%	140%	97%	50%	140%	96%	50%	140%

Anthracene		TW	< 0.10	< 0.10	NA	< 0.10	87%	50%	140%	89%	50%	140%	87%	50%	140%
Fluoranthene		TW	< 0.20	< 0.20	NA	< 0.20	110%	50%	140%	97%	50%	140%	95%	50%	140%
Pyrene		TW	< 0.20	< 0.20	NA	< 0.20	117%	50%	140%	97%	50%	140%	94%	50%	140%
Benz(a)anthracene		TW	< 0.20	< 0.20	NA	< 0.20	110%	50%	140%	82%	50%	140%	85%	50%	140%
Chrysene		TW	< 0.10	< 0.10	NA	< 0.10	116%	50%	140%	95%	50%	140%	85%	50%	140%

Benzo(b)fluoranthene		TW	< 0.10	< 0.10	NA	< 0.10	86%	50%	140%	85%	50%	140%	85%	50%	140%
Benzo(k)fluoranthene		TW	< 0.10	< 0.10	NA	< 0.10	85%	50%	140%	85%	50%	140%	89%	50%	140%
Benzo(a)pyrene		TW	< 0.01	< 0.01	NA	< 0.01	111%	50%	140%	107%	50%	140%	104%	50%	140%
Indeno(1,2,3-cd)pyrene		TW	< 0.20	< 0.20	NA	< 0.20	107%	50%	140%	86%	50%	140%	87%	50%	140%
Dibenz(a,h)anthracene		TW	< 0.20	< 0.20	NA	< 0.20	99%	50%	140%	86%	50%	140%	90%	50%	140%

Benzo(g,h,i)perylene		TW	< 0.20	< 0.20	NA	< 0.20	119%	50%	140%	82%	50%	140%	90%	50%	140%
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Comments: Tap water analysis has been performed as QC sample testing for duplicate and matrix spike due to insufficient sample volume. When the average of the sample and duplicate results is less than 5x the RDL, the Relative Percent Difference (RPD) will be indicated as Not Applicable (NA).

Certified By:



Method Summary

CLIENT NAME: GEMTEC CONSULTING ENGINEERS AND SCIENTISTS

AGAT WORK ORDER: 20Z564457

PROJECT: 63115.04 - Phase Two ESA

ATTENTION TO: Kathryn Maton

SAMPLING SITE: 240 Ferland Street, Ottawa

SAMPLED BY: K. Maton

PARAMETER	AGAT S.O.P	LITERATURE REFERENCE	ANALYTICAL TECHNIQUE
Trace Organics Analysis			
Naphthalene	ORG-91-5105	modified from EPA 3510C and EPA 8270E	GC/MS
Acenaphthylene	ORG-91-5105	modified from EPA 3510C and EPA 8270E	GC/MS
Acenaphthene	ORG-91-5105	modified from EPA 3510C and EPA 8270E	GC/MS
Fluorene	ORG-91-5105	modified from EPA 3510C and EPA 8270E	GC/MS
Phenanthrene	ORG-91-5105	modified from EPA 3510C and EPA 8270E	GC/MS
Anthracene	ORG-91-5105	modified from EPA 3510C and EPA 8270E	GC/MS
Fluoranthene	ORG-91-5105	modified from EPA 3510C and EPA 8270E	GC/MS
Pyrene	ORG-91-5105	modified from EPA 3510C and EPA 8270E	GC/MS
Benz(a)anthracene	ORG-91-5105	modified from EPA 3510C and EPA 8270E	GC/MS
Chrysene	ORG-91-5105	modified from EPA 3510C and EPA 8270E	GC/MS
Benzo(b)fluoranthene	ORG-91-5105	modified from EPA 3510C and EPA 8270E	GC/MS
Benzo(k)fluoranthene	ORG-91-5105	modified from EPA 3510C and EPA 8270E	GC/MS
Benzo(a)pyrene	ORG-91-5105	modified from EPA 3510C and EPA 8270E	GC/MS
Indeno(1,2,3-cd)pyrene	ORG-91-5105	modified from EPA 3510C and EPA 8270E	GC/MS
Dibenz(a,h)anthracene	ORG-91-5105	modified from EPA 3510C and EPA 8270E	GC/MS
Benzo(g,h,i)perylene	ORG-91-5105	modified from EPA 3510C and EPA 8270E	GC/MS
2-and 1-methyl Naphthalene	ORG-91-5105	modified from EPA 3510C and EPA 8270E	GC/MS
Naphthalene-d8	ORG-91-5105	modified from EPA 3510C and EPA 8270E	GC/MS
Acenaphthene-d10	ORG-91-5105	modified from EPA 3510C and EPA 8270E	GC/MS
Chrysene-d12	ORG-91-5105	modified from EPA 3541 and EPA 8270E	GC/MS
Benzene	VOL-91-5010	MOE PHC-E3421	P&T GC/MS
Toluene	VOL-91-5010	MOE PHC-E3421	P&T GC/MS
Ethylbenzene	VOL-91-5010	MOE PHC-E3421	P&T GC/MS
Xylene Mixture	VOL-91-5010	MOE PHC-E3421	P&T GC/MS
F1 (C6 - C10)	VOL-91- 5010	MOE PHC-E3421	P&T GC/FID
F1 (C6 to C10) minus BTEX	VOL-91-5010	MOE PHC-E3421	P&T GC/FID
F2 (C10 to C16)	VOL-91-5010	MOE PHC-E3421	GC/FID
F3 (C16 to C34)	VOL-91-5010	MOE PHC-E3421	GC/FID
F4 (C34 to C50)	VOL-91-5010	MOE PHC-E3421	GC/FID
Gravimetric Heavy Hydrocarbons	VOL-91-5010	MOE PHC-E3421	BALANCE
Terphenyl	VOL-91-5010	MOE PHC-E3421	GC/FID
Benzene	VOL-91-5010	MOE PHC E3421	P&T GC/MS
Toluene	VOL-91-5010	MOE PHC E3421	P&T GC/MS

Method Summary

CLIENT NAME: GEMTEC CONSULTING ENGINEERS AND SCIENTISTS

AGAT WORK ORDER: 20Z564457

PROJECT: 63115.04 - Phase Two ESA

ATTENTION TO: Kathryn Maton

SAMPLING SITE: 240 Ferland Street, Ottawa

SAMPLED BY: K. Maton

PARAMETER	AGAT S.O.P	LITERATURE REFERENCE	ANALYTICAL TECHNIQUE
Ethylbenzene	VOL-91-5010	MOE PHC E3421	P&T GC/MS
Xylene Mixture	VOL-91-5010	MOE PHC E3421	P&T GC/MS
F1 (C6-C10)	VOL-91- 5010	MOE PHC-E3421	P&T GC/FID
F1 (C6 to C10) minus BTEX	VOL-91-5010	MOE PHC E3421	P&T GC/FID
F2 (C10 to C16)	VOL-91-5010	MOE PHC E3421	GC/FID
F2 (C10 to C16) minus Naphthalene	VOL-91-5010	MOE PHC E3421	GC/FID
F3 (C16 to C34)	VOL-91-5010	MOE PHC E3421	GC/FID
F3 (C16 to C34) minus PAHs	VOL-91-5010	MOE PHC E3421	GC/FID
F4 (C34 to C50)	VOL-91-5010	MOE PHC E3421	GC/FID
Gravimetric Heavy Hydrocarbons	VOL-91-5010	MOE PHC E3421	BALANCE
Terphenyl	VOL-91-5010		GC/FID
F1 (C6-C10)	VOL-91- 5010	MOE E3421	(P&T)GC/FID



AGAT Laboratories

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

Chain of Custody Record

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

Report Information:

Company: GEMTEC
Contact: Kathryn Maton
Address: 32 Steacie Drive
Ottawa, ON K2K 2A9
Phone: 613-836-1422/613-223-5885 Fax: _____
Reports to be sent to: kathryn.maton@gemtec.ca
1. Email: _____
2. Email: _____

Project Information:

Project: 63115.04 - Phase Two ESA
Site Location: 240 Ferland Street, Ottawa
Sampled By: K. Maton
AGAT Quote #: _____ PO: _____
Please note: If quotation number is not provided, client will be billed full price for analysis.

Invoice Information:

Bill To Same: Yes ☒ No ☐
Company: _____
Contact: _____
Address: _____
Email: accountspayable@gemtec.ca

Regulatory Requirements:

☐ No Regulatory Requirement
(Please check all applicable boxes)
☒ Regulation 153/04
Table 3
☐ Ind/Com
☒ Res/Park
☐ Agriculture
Soil Texture (Check One)
☒ Coarse
☐ Fine
☐ Sewer Use
☐ Sanitary
☐ Storm
☐ Regulation 558
☒ CCME
☐ Prov. Water Quality Objectives (PWQO)
☐ Other
Region: _____
Indicate One

Is this submission for a Record of Site Condition?

☒ Yes ☐ No

Report Guideline on Certificate of Analysis

☒ Yes ☐ No

Sample Matrix Legend

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

Sample Identification	Date Sampled	Time Sampled	# of Containers	Sample Matrix	Comments/ Special Instructions	Y/N	Metals <input type="checkbox"/> All Metals <input type="checkbox"/> Hydrocarbons	ORPs: <input type="checkbox"/> <input type="checkbox"/> Cr ⁶⁺ <input type="checkbox"/> pH	Full Metals	Regulation	Nutrient <input type="checkbox"/> NO ₃	Volatiles	PHCs F1	ABNs	PAHs	PCBs: <input type="checkbox"/> <input type="checkbox"/> Organochlorine	TCLP: <input type="checkbox"/> <input type="checkbox"/> Sewer Use				Potential
MW 20-1	15/01/20	12:30	45	GW.		Y						X	X								
MW 20-2	↓	13:15	5	↓		↓						X	X		X						
MW 20-102	↓	↓	5	↓		↓						X	X		X						
MW 20-3	↓	14:07	5	↓		↓						X	X		X						

Samples Relinquished By (Print Name and Sign): K. Maton	Date: 16/01/20	Time: 08:53	Samples Received By (Print Name and Sign): Ubertine	Date: 20/01/16	Time: 11h39
Samples Relinquished By (Print Name and Sign): W. D. Fed Ex	Date: 20/01/16	Time: 16h00	Samples Received By (Print Name and Sign): Chonmin	Date: 17/2020	Time: 9:10a
Samples Relinquished By (Print Name and Sign):	Date:	Time:	Samples Received By (Print Name and Sign):	Date:	Time:

Laboratory Use Only

Work Order #: 202564457
Cooler Quantity: one-on ice
Arrival Temperatures: 2.4 | 2.3 | 2.3
LT-1.6 | 2.0 | 1.9
Custody Seal Intact: ☐ Yes ☐ No ☐ N/A
Notes:

Turnaround Time (TAT) Required:

Regular TAT ☒ 5 to 7 Business Days

Rush TAT (Rush Surcharges Apply)

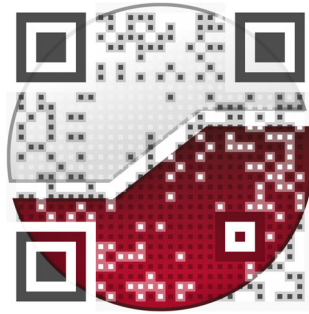
☐ 3 Business Days ☐ 2 Business Days ☐ Next Business Day

OR Date Required (Rush Surcharges May Apply):

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

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

experience • knowledge • integrity



civil
geotechnical
environmental
field services
materials testing

civil
géotechnique
environnementale
surveillance de chantier
service de laboratoire des matériaux

expérience • connaissance • intégrité

