Phase Two Environmental Site Assessment
233 Argyle Avenue, Ottawa, Ontario

Client:
Smart Living Properties

Type of Document:
Draft

Project Name:
Phase Two Environmental Site Assessment

Project Number:
OTT-262765-A0

Prepared By:
Mark McCalla, P. Geo., Senior Geoscientist

Reviewed By:
Patricia Stelmack, M.Sc., P. Eng., Team Lead/Senior Project Manager

EXP Services Inc.
100-2650 Queensview Drive
Ottawa, Ontario K2B 8H6
t: +1.613.688.1899
f: +1.613.225.7337

Date Submitted:
2021-04-23

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Executive Summary

EXP Services Inc. (EXP) was retained by Smart Living Properties to complete a Phase Two Environmental Site Assessment (ESA) of the property located at 233 Argyle Avenue in Ottawa, Ontario hereinafter referred to as the 'Phase Two property'. The objective of the Phase Two ESA investigation is to assess the quality of the soil and groundwater conditions within the area of potential environmental concern (APEC) identified in a Phase Two ESA prepared by EXP.

EXP understands that the most recent use of the Phase Two property is commercial and that the proposed future use is commercial and residential. Therefore, as per the amendments to Ontario Regulation 153/04 that came into effect on December 4, 2019, a Record of Site Condition (RSC) is required.

The Phase One property is located at 233 Argyle Avenue in Ottawa, Ontario. The subject property is located on the north side of Argyle Avenue, approximately 75 m west of O'Connor Street. The site is rectangular in shape and has an approximate area of 0.05 ha. The Site consists of a three-storey building with a full basement. The building was formerly a residence which has been converted to office space. At the time of this investigation only the first of the three floors were occupied. A parking lot is present on the north side of the property.

The Site is legally described as East Part of Lot 13, Plan 30 Argyle North, City of Ottawa. The Phase One property has the property identification number (PIN) 041230034.

Based on a review of historical aerial photographs, and other records review, it appears the subject site was first developed as a residential property prior to 1912.

There are no water bodies on the subject site. The closest body of water is the Rideau Canal, approximately 600 m to the east. Topographically, the Phase One property is relatively flat. Based on local topography, the groundwater flow at the Phase One property is anticipated to be north towards the Ottawa River.

There are no areas of natural or scientific interest (ANSI) within the Phase One study area.

EXP prepared a report entitled *Phase One Environmental Site Assessment,* 233 Argyle Avenue*, Ottawa, Ontario* dated March 19, 2021. Based on the results of the Phase One ESA, EXP identified one area of potential environmental concern (APEC).

Table EX.1: Areas of Potential Environmental Concern

Area of Potential Environmental Concern (APEC)	Location of APEC on Phase One Property	Potentially Contaminating Activity (PCA)	Location of PCA (On-Site or Off-Site)	Contaminants of Potential Concern	Media Potentially Impacted (Groundwater, Soil and/or Sediment)
APEC #1	Area near west property line	PCA #28 – Gasoline and Associated Products Storage in Fixed Tanks	Off-Site	Benzene, Toluene, Ethylbenzene, Xylene (BTEX), petroleum hydrocarbons (PHC)	Groundwater
APEC #2	Area near west property line	PCA#37 – Operation of Dry-Cleaning Equipment)	Off-Site	Volatile Organic Compounds (VOC)	Groundwater
APEC #3	Entire Phase One property	PCA#30 – Imported Fill Material of Unknown Quality	On-Site	BTEX, PHC, VOC, metals	Soil
APEC #4	Southwest corner of building interior	PCA #28 – Gasoline and Associated Products Storage in Fixed Tanks	On-Site	BTEX and PHC	Soil and Groundwater

The scope of work for the Phase Two ESA was as follows:

- Drilling four boreholes on the subject property and completing them as monitoring wells;
- Submitting soil and groundwater samples for laboratory analysis VOC, PHC, PAH and metals;
- Comparing the results of the groundwater chemical analyses to applicable criteria, as set out by the Ontario Ministry of the Environment, Conservation and Parks (MECP);
- Conducting an elevation survey of the four monitoring wells that were sampled;
- Conducting a hydraulic conductivity test in two of the monitoring wells; and,
- Preparing a report summarizing the results of the assessment activities.

Based on the Phase Two ESA results, the following summary is provided:

- Between March 16 and 19, 2021, a total of 4 boreholes (MW21-1 to MW21-4) were advanced at the Phase Two property and each was completed with a monitoring well.
- Based on the drilling program, the soil consisted of crushed gravel fill under the driveway. Underlying the crushed stone fill was silty sand fill to a depth of 2.5 m. Underlying the fill was sandy clay to a depth of 8 m and then sandy silt was observed to the maximum depth drilled of 12.8 m. Bedrock was not encountered during drilling, however cone refusal was at 21.3 m indicating bedrock may be at that depth.
- The hydraulic conductivity of the soil was calculated to be 1.5 to 1.7 x 10^{-7} cm/s;
- Four (4) soil samples and one (1) blind duplicate were submitted for VOC, PAH, PHC, and metals analyses. The concentrations of the tested parameters were less than the MECP 2011 Table 3 SCS, with the exception of metals and PAH in two of the four fill samples. Assuming that the top 1.5 m of fill at the Phase Two property is impacted by metals and PAH, the resulting volume of impacted soil is estimated to be 650 m^3.
- All groundwater samples had concentrations of the analyzed parameters that were less than the provincial MECP Table 3 standards;
- Based on the above, soil remediation is recommended for the Phase Two property; and
- If the wells are no longer needed, they should be decommissioned in accordance with Ontario Regulation 903.

The Qualified Person can confirm that the Phase Two Environmental Site Assessment was conducted per the requirements of Ontario Regulation 153/04, as amended, and in accordance with generally accepted professional practices.

This executive summary is a brief synopsis of the report and should not be read in lieu of reading the report in its entirety.

1.0 Introduction

EXP Services Inc. (EXP) was retained by Smart Living Properties to complete a Phase Two Environmental Site Assessment (ESA) of the property located at 233 Argyle Avenue in Ottawa, Ontario hereinafter referred to as the 'Phase Two property'. The objective of the Phase Two ESA investigation is to assess the quality of the soil and groundwater conditions within the areas of potential environmental concern (APEC) identified in a Phase One ESA prepared by EXP.

The most recent use of the property is commercial and the proposed future use is commercial and residential. Therefore, as per Ontario Regulation 153/04, a Record of Site Condition (RSC) is required.

This report has been prepared in accordance with the Phase Two ESA standard as defined by Ontario Regulation 153/04 (as amended), and in accordance with generally accepted professional practices. Subject to this standard of care, EXP makes no express or implied warranties regarding its services and no third-party beneficiaries are intended. Limitation of liability, scope of report and third-party reliance are outlined in Section 7 of this report.

Mark Devlin, B.Sc. conducted field assessment work and Mark McCalla, P. Geo, was the report author for this project and is a Qualified Person, as defined by Ontario Regulation 153/04. Patricia Stelmack, M.Sc., P.Eng. reviewed the report.

1.1 Site Description

The Phase Two property is located at 233 Argyle Avenue in Ottawa, Ontario. The subject property is located on the north side of Argyle Avenue, approximately 75 m west of O'Connor Street. The site is rectangular in shape and has an approximate area of 0.05 ha. The Site consists of a three-storey building with a full basement. The building was formerly a residence which has been converted to office space. At the time of this investigation only the first of the three floors were occupied. A parking lot is present on the north side of the property.

A site Location Plan is provided as Figure 1 and a Site Plan is provided as Figure 2 in Appendix C.

The Phase Two property is legally described as East Part of Lot 13, Plan 30 Argyle North, City of Ottawa. The Phase Two property has the property identification number (PIN) 041230034.

1.2 Property Ownership

The Phase Two property is owned by Smart Living Properties. Authorization to proceed with this investigation was provided by Mr. Jeremy Silburt. Contact information for Mr. Silburt is 226 Argyle Avenue, Ottawa, Ontario, K2P 1B9.

1.3 Current and Proposed Future Use

The Phase One property consists of a three-storey building with a full basement. The building was formerly a residence which has been converted to office space. At the time of this investigation only the first of the three floors were occupied. A parking lot is present on the north side of the property. The proposed land use is residential.

1.4 Applicable Site Condition Standards

Analytical results obtained for soil and groundwater samples were compared to Site Condition Standards (SCS) established under subsection 169.4(1) of the Environmental Protection Act, and presented in the document entitled *Soil, Ground Water and Sediment Standards for Use Under Part XV.1 of the Environmental Protection Act*, 2011. This document provides tabulated background SCS (Table 1) applicable to environmentally sensitive sites and effects-based generic SCS (Tables 2 to 9) applicable to non-environmentally sensitive sites. The effects-based SCS (Tables 2 to 9) are protective of human health and the environment for different groundwater conditions (potable and non-potable), land use scenarios (residential, parkland,

institutional, commercial, industrial, community and agricultural/other), soil texture (coarse or medium/fine) and restoration depth (full or stratified).

Table 1 to 9 SCS are summarized as follows:

- Table 1 – applicable to sites where background concentrations must be met (full depth), such as sensitive sites where site-specific criteria have not been derived
- Table 2 – applicable to sites with potable groundwater and full depth restoration
- Table 3 – applicable to sites with non-potable groundwater and full depth restoration
- Table 4 – applicable to sites with potable groundwater and stratified restoration
- Table 5 – applicable to sites with non-potable groundwater and stratified restoration
- Table 6 – applicable to sites with potable groundwater and shallow soils (bedrock encountered at depths of 2 metres or less across one-third or more of the site)
- Table 7 – applicable to sites with non-potable groundwater and shallow soils (bedrock encountered at depths of 2 metres or less across one-third or more of the site)
- Table 8 – applicable to sites with potable groundwater and that are within 30 m of a water body
- Table 9 – applicable to sites with non-potable groundwater and that are within 30 m of a water body

Application of the generic or background SCS to a specific site is based on a consideration of site conditions related to soil pH, thickness and extent of overburden material, and proximity to an area of environmental sensitivity or of natural significance. For some chemical parameters, consideration is also given to soil textural classification with SCS having been derived for both coarse and medium-fine textured soil conditions.

For assessment purposes, EXP selected the 2011 Table 3 SCS in a non-potable groundwater condition for residential/ parkland/institutional property use. The selection of this category was based on the following factors:

- Bedrock is greater than 2 metres below grade across the subject property;
- There are no surface water bodies within 30 metres of the subject property;
- The Phase Two property is not located within an area of natural significance, does not include nor is adjacent to an area of natural significance, and does not include land that is within 30 metres of an area of natural significance;
- Potable water for the Phase Two property is provided by the City of Ottawa through its water distribution system and no potable water wells were identified to be within 250 metres of the Phase Two property;
- The Phase Two property is not located in an area designated in a municipal official plan as a well-head protection area;
- The Phase Two property is planned for residential use; and
- It is the opinion of the Qualified Person who oversaw this work that the Phase Two property is not a sensitive site.

2.0 Background Information

2.1 Physical Setting

The Phase Two property has a municipal address of 233 Argyle Avenue in Ottawa, Ontario.. The Phase One property is rectangular in shape and has an approximate area of 0.05 ha. The Phase One property consists of a three-storey building with a full basement. The building was formerly a residence which has been converted to office space. At the time of this investigation only the first of the three floors were occupied. A parking lot is present on the north side of the property.

A site plan showing the site is presented as Figure 2 in Appendix A.

The Phase Two property is located in a mixed commercial/residential area. Potable water is available from the City of Ottawa, and there are no potable water wells nearby.

There are no water bodies on the subject site. The closest body of water is the Rideau Canal, approximately 600 m to the east. Topographically, the Phase One property is relatively flat. Based on local topography, the groundwater flow at the Phase One property is anticipated to be northerly towards the Ottawa River.

In accordance with Section 41 of the Ontario Regulation 153/04 (as amended), the Phase Two property is not an environmentally sensitive area. In addition, the Phase Two property is not located within an area of natural significance and it does not include land that is within 30 metres of an area of natural significance.

The Phase Two property is not a shallow soil property as defined in Section 43.1 of the regulation. It does not include all or part of a water body or is adjacent to a water body or includes land that is within 30 metres of a water body.

Bedrock in the general area of the Phase Two property consists of limestone, dolostone and shale of the Ottawa Group. Native surficial soil consists of fine textured glaciomarine deposits of silt and clay.

2.2 Past Investigations

The following reports were reviewed for the Phase One property as part of the Phase Two ESA:

1. Paterson Group, *Phase I Environmental Site Assessment, 233 Argyle Avenue, Ottawa, Ontario*, November 2019.

The Phase I ESA indicated that the Site was developed as a residential property prior to 1912. The Site remained residential in use until it was converted to commercial office space in the 1970s. The property manager was interviewed during a Phase I ESA conducted in 2019 by Paterson. The property manager indicated the previous owner had owned the property for the last 30 years. The building has used natural gas fire furnaces and a hydronic heating system since at least this time.

The report identified a dry-cleaning operation to the west, and two retail fuel outlets to the northwest. Based on the distance (approximately 150 m) and cross-gradient location of the retail fuel outlets from the subject site, these activities were not considered to have impacted the subject site. No additional environmental work was recommended

EXP prepared a report entitled *Phase One Environmental Site Assessment, 233 Argyle Avenue, Ottawa, Ontario* dated March 19, 2021. The following PCAs were identified:

- **PCA 1** – 255 Argyle Avenue – Former retail fuel outlet, four gasoline USTs on the property (PCA#28 – Gasoline and Associated Products Stored in Fixed Tanks), located 50 m west of the Site. This may affect the area designated APEC 1.
- **PCA 2** – Block between Catherine Street and Isabella Street – Former CN rail line (PCA #46 – Rail Yards, Tracks and Spurs), located 150 m south of the Site. Based on intervening distance, this does not result in an APEC being identified on the Phase Two property.

- **PCA 3** – 431 Bank Street – Former dry cleaner (PCA#37 – Operation of Dry-Cleaning Equipment), located 180 m northwest of the Phase One property. Based on intervening distance and being down-gradient in terms of the assumed direction of groundwater flow, this does not result in an APEC being identified on the Phase Two property.
- **PCA 4** – 249 Argyle Avenue – Former dry cleaner (PCA#37 – Operation of Dry-Cleaning Equipment), located 30 m west of the Phase One property. This may affect the area designated APEC 2.
- **PCA 5** – 455 Bank Street – Former retail fuel outlet (PCA#28 – Gasoline and Associated Products Stored in Fixed Tanks), located adjacent to 100 m to the northwest of the Phase One property. Based on intervening distance and being down-gradient in terms of the assumed direction of groundwater flow, this does not result in an APEC being identified on the Phase Two property.
- **PCA 6** – 210 Catherine Street – Former retail fuel outlet (PCA#28 – Gasoline and Associated Products Stored in Fixed Tanks), located adjacent to 130 m to the south of the Phase One property. Based on intervening distance this does not result in an APEC being identified on the Phase Two property.
- **PCA 7** – 233 Catherine Street – Two former fuel USTs on the east exterior side of the Department of National Defence garage (PCA#28 – Gasoline and Associated Products Stored in Fixed Tanks), located 130 m south of the Phase One property. Based on intervening distance does not result in an APEC being identified on the Phase Two property.
- **PCA 8** – 233 Catherine Street – Former Department of National Defence garage (PCA#10 – Commercial Autobody Shops), located 130 m south of the Phase One property. Based on intervening distance this does not result in an APEC being identified on the Phase Two property.
- **PCA 9** – 448 Bank Street – Former retail fuel outlet (PCA#28 – Gasoline and Associated Products Stored in Fixed Tanks), located adjacent to 140 m to the west of the Phase One property. Based on intervening distance and being cross-gradient in terms of the assumed direction of groundwater flow, this does not result in an APEC being identified on the Phase Two property.
- **PCA 10** – 41 Flora Street – Former automotive service garage (PCA#10 – Commercial Autobody Shop), located 150 m west of the Phase One property. Based on intervening distance and being cross-gradient in terms of the assumed direction of groundwater flow, this does not result in an APEC being identified on the Phase Two property.
- **PCA 11** – 510 Bank Street – Former 460 -gallon fuel UST (PCA#28 – Gasoline and Associated Products Stored in Fixed Tanks), located 160 m southwest of the Phase One property. Based on intervening distance this does not result in an APEC being identified on the Phase Two property.
- **PCA 12** – 380 McLeod Street – Former 920 -gallon fuel UST (PCA#28 – Gasoline and Associated Products Stored in Fixed Tanks), located 170 m west of the Phase One property. Based on intervening distance this does not result in an APEC being identified on the Phase Two property.
- **PCA 13** – 512 Bank Street – Former automotive service garage (PCA#10 – Commercial Autobody Shop), located 150 m southwest of the Phase One property. Based on intervening distance and being cross-gradient in terms of the assumed direction of groundwater flow, this does not result in an APEC being identified on the Phase Two property.
- **PCA 14** – 233 Catherine Street – Former automotive service garage (PCA#10 – Commercial Autobody Shop), located 230 m southwest of the Phase One property. Based on intervening distance and being cross-gradient in terms of the assumed direction of groundwater flow, this does not result in an APEC being identified on the Phase Two property.
- **PCA 15** – 340 Catherine Street – Former retail fuel outlet (PCA#28 – Gasoline and Associated Products Stored in Fixed Tanks), located 250 m southwest of the Phase One property. Based on intervening distance this does not result in an APEC being identified on the Phase Two property.

- **PCA 16** – 234 Catherine Street – Former automotive service garage (PCA#10 – Commercial Autobody Shop), located 250 m southwest of the Phase One property. Based on intervening distance and being cross-gradient in terms of the assumed direction of groundwater flow, this does not result in an APEC being identified on the Phase Two property.
- **PCA 17** – 512 Bank Street – Former retail fuel outlet (PCA#28 – Gasoline and Associated Products Stored in Fixed Tanks), located 150 m southwest of the Phase One property. Based on intervening distance and being cross-gradient in terms of the assumed direction of groundwater flow, this does not result in an APEC being identified on the Phase Two property.
- **PCA 18** – 203 Catherine Street – Former fuel UST (PCA#28 – Gasoline and Associated Products Stored in Fixed Tanks), located 80 m south of the Phase One property. Based on intervening distance this does not result in an APEC being identified on the Phase Two property.
- **PCA 19** – 180 Argyle Avenue – Two 4,000-gallon fuel oil ASTs in basement (PCA#28 – Gasoline and Associated Products Stored in Fixed Tanks), located 100 m southwest of the Phase One property. Based on intervening distance this does not result in an APEC being identified on the Phase Two property.
- **PCA 20** – 410 Gladstone Avenue – Automotive service garage (PCA#10 – Commercial Autobody Shop), located 230 m west of the Phase One property. Based on intervening distance and being cross-gradient in terms of the assumed direction of groundwater flow, this does not result in an APEC being identified on the Phase Two property.
- **PCA 21** – 233 Argyle Avenue (Subject Site) – Assumed fill beneath building and parking lot (PCA#30 – Imported Fill Material of Unknown Quality). This may affect the area designated APEC 3.
- **PCA 22** – 233 Argyle Avenue (Subject Site) – Assumed former furnace oil AST (PCA#28 – Gasoline and associated products storage in fixed tanks). This may affect the area designated APEC 4.

No other PCAs that took place within the Phase Two study area were identified.

Based on the results of the Phase One ESA, EXP identified four areas of potential environmental concern (APEC). Table 2.1 provides details of the APEC.

Table 2.1: Findings of Phase I ESA

Area of Potential Environmental Concern (APEC)	Location of APEC on Phase One Property	Potentially Contaminating Activity (PCA)	Location of PCA (On-Site or Off-Site)	Contaminants of Potential Concern	Media Potentially Impacted (Groundwater, Soil and/or Sediment)
APEC #1	Area near west property line	PCA #28 – Gasoline and Associated Products Storage in Fixed Tanks	Off-Site	Benzene, Toluene, Ethylbenzene, Xylene (BTEX), petroleum hydrocarbons (PHC)	Groundwater
APEC #2	Area near west property line	PCA#37 – Operation of Dry-Cleaning Equipment)	Off-Site	Volatile Organic Compounds (VOC)	Groundwater
APEC #3	Entire Phase One property	PCA#30 – Imported Fill Material of Unknown Quality	On-Site	BTEX, PHC, VOC, metals	Soil
APEC #4	Southwest corner of building interior	PCA #28 – Gasoline and Associated Products Storage in Fixed Tanks	On-Site	BTEX and PHC	Soil and Groundwater

The location of the APEC is shown in Figure 2 in Appendix A.

The Phase One ESA was conducted per the requirements of Ontario Regulation 153/04, as amended, and in accordance with generally accepted professional practices. The Phase One conceptual site model is provided as Figure 3 and 4 in Appendix A.

3.0 Scope of the Investigation

3.1 Overview of Site Investigation

The purpose of the Phase Two ESA was to investigate the groundwater quality at the Phase Two property and to characterize conditions in the groundwater related to the PCA described above within the APEC shown on Figure 2 in Appendix A.

3.2 Scope of Work

The scope of work for the Phase Two ESA was as follows:

- Drilling four boreholes on the subject property and completing them as monitoring wells;
- Submitting soil and groundwater samples from the monitoring wells for laboratory analysis of VOC, PHC, PAH, and metals;
- Comparing the results of the groundwater chemical analyses to applicable criteria, as set out by the Ontario Ministry of the Environment, Conservation and Parks (MECP);
- Conducting an elevation survey of the four monitoring wells that were sampled;
- Conducting a hydraulic conductivity test in one of the monitoring wells; and,
- Preparing a report summarizing the results of the assessment activities.

This report has been prepared in accordance with the Phase Two ESA standard as defined by Ontario Regulation 153/04 (as amended), and in accordance with generally accepted professional practices. Subject to this standard of care, EXP makes no express or implied warranties regarding its services and no third-party beneficiaries are intended. Limitation of liability, scope of report and third-party reliance are outlined in Section 8 of this report.

3.3 Media Investigated

The Phase Two ESA included the investigation of soil and groundwater on the Phase Two property. As there are no water bodies on the Phase Two property, no surface water or sediment sampling was required.

The contaminants of potential concern (COPC) identified in the Phase One ESA were identified as target parameters for this Phase Two ESA. The APEC and COPC identified in the Phase One ESA are outlined in Section 2.2.

3.4 Phase One Conceptual Site Model

The Phase Two property was first developed prior to 1912 as a residential building. The Phase Two property is currently occupied by a residence. The municipal address for the Phase Two property is 233 Argyle Avenue in Ottawa, ON.

The following on-site PCA were identified:

- PCA #28 – Gasoline and Associated Products Storage in Fixed Tanks
- PCA #30 – Imported Fill Material of Unknown Quality

The following off-site PCA were identified:

- PCA#10 – Commercial Autobody Shops
- PCA #37 – Operation of Dry Cleaning Equipment (where chemicals are used)
- PCA #28 – Gasoline and Associated Products Storage in Fixed Tanks

- PCA #46 – Rail Yards, Tracks and Spurs

The Phase One conceptual site model is provided as Figure 3 in Appendix A. The locations of the APEC that may be affected by the PCA are shown on Figure 2 in Appendix A.

The following APEC were identified:

- APEC #1 – Area near west property line (PCA #28 – Gasoline and Associated Products Storage in Fixed Tanks (**PCA 1**)).
- APEC #2 – Area near west property line (PCA #37 – Operation of Dry Cleaning Equipment (where chemicals are used) (**PCA 4**))
- APEC #3 – Entire Phase One property (PCA #30 – Imported Fill Material of Unknown Quality (**PCA 21**))
- APEC #4 – Southwest corner of building basement ((PCA #28 – Gasoline and Associated Products Storage in Fixed Tanks (**PCA 22**))

3.5 Deviations from Sampling and Analysis Plan

The field investigative and sampling program was carried out following the requirements of the Phase Two property, as described in Section 4. No significant deviations from the sampling and analysis plan (SAAP), as provided in Appendix C, were reported that affected the sampling and data quality objectives for the Phase Two property.

3.6 Impediments

No physical impediments were encountered during the field investigation. The entire Phase Two property was accessible at the time of the investigation.

4.0 Investigation Methodology

4.1 General

The site investigative activities consisted of the drilling of boreholes to facilitate the collection of soil samples for visual inspection, to record relevant geotechnical information and the installation of monitoring wells for hydrogeological property characterization and the collection of groundwater samples for chemical analysis.

4.2 Borehole Drilling

Prior to the commencement of drilling, the locations of underground public utilities including telephone, natural gas and electrical lines were marked at the subject property by public locating companies. A private utility locating contractor was also retained to clear the individual borehole locations.

On March 16, 2021, one borehole (MW21-2) was drilled within the basement of the on-site building. On March 18 and 19, 2021 three boreholes (MW21-1, MW21-3, and MW21-4) were drilled on the exterior of the subject property. These boreholes were completed by Strata Drilling Ltd, a licensed well contractor, using a manual crew for the interior borehole and a geoprobe track-mounted drill rig for the exterior boreholes. Boreholes were augured to a maximum depth of 15.8 m and a cone was driven to refusal on inferred bedrock (22.6 m) in MW21-4.

EXP staff continuously monitored the drilling activities to log the stratigraphy observed from the recovered samples, to record the depth of the samples, and to record total depths of borings. Field observations are documented on the borehole logs provided in Appendix D.

The locations of the boreholes and monitoring wells are presented on Figure 2 in Appendix A.

4.3 Soil: Sampling

Soil sampling was completed on the Phase Two property to address the identified APECs.

4.4 Field Screening Measurements

Soil samples were screened during the borehole advancement. Soil samples were placed in a sealed Ziploc plastic bag and allowed to reach ambient temperature prior to field screening with a combustible vapour meter calibrated to hexane gas prior to use. The field screening measurements were made by inserting the instrument's probe into the plastic bag while manipulating the sample to ensure volatilization of the soil gases. These 'headspace' readings provide a real-time indication of the relative concentration of combustible vapours encountered in the subsurface during drilling and are used to aid in the assessment of the vertical and horizontal extent of potential impacts and the selection of soil samples for analysis.

Readings of organic vapour concentrations in the soil samples collected during the drilling investigation were recorded using an RKI Eagle 2 with a special photo-ionization detector (PID) sensor, where there was sufficient recovery. This instrument is designed to detect and measure concentrations of combustible gas in the atmosphere in 0.02 parts per million by volume (ppmv) increments from 0 ppmv to 50 ppmv and in 1 ppmv increments from 0 ppmv to 2,000 ppmv.

Instrument calibration is conducted using standard gases comprised of known concentrations of isobutylene in air. Instrument calibration is conducted prior to each use. If the instrument readings are within ±10% of the standard gas value, then the instrument is deemed to be calibrated, however if the readings are greater than ±10% of the standard gas value then the instrument is re-calibrated prior to use.

The field screening measurements, in parts per million by volume (ppmv), are presented in the borehole logs provided in Appendix D. A worst case soil sample and a blind duplicate soil sample were submitted for laboratory analysis of VOC, PHC, PAH, and metals. A trip blank was also submitted for analysis of BTEX.

4.5 Groundwater: Monitoring Well Installation

Groundwater monitoring wells were installed in the four boreholes. The monitoring wells were installed in general accordance with the Ontario Water Resources Act - R.R.O. 1990, Regulation 903 (as amended) and were installed by Downing, a licensed well contractor.

The monitoring wells consisted of a 31 mm diameter Schedule 40 PVC screen that was no more than 3.0 m long and a 31 mm diameter Schedule 40 PVC riser pipe. The annular space around the wells was backfilled with sand to an average height of 0.3 m above the top of the screen. A bentonite seal was added from the top of the sand pack to approximately 0.3 m below ground surface. The monitoring wells were completed with flushmount casings. Details of the monitoring well installations are shown on the borehole logs provided in Appendix D.

Following their installation, the monitoring wells were developed by purging water with an interstitial pump and foot valve until it became clear. The following table provides monitoring well construction details and observations made during monitor development.

Table 4-1: Monitoring Well Construction and Purging Details

Monitoring Well ID	Length of Screen (metres)	Depth of Borehole (metres)	Date of Development	Volume Purged (litres)	Description of Purged Water at Start of Development	Description of Purged Water at End of Development
MW21-1	3.0	5.18	March 30, 2021	3	Grey, no odour or sheen	Clear, no odour or sheen
MW21-2	3.0	5.18	March 30, 2021	4	Grey, no odour or sheen	Light grey, no odour or sheen
MW21-3	3.0	6.1	March 30, 2021	3	Grey, no odour or sheen	Clear, no odour or sheen
MW21-4	3.0	6.1	March 30, 2021	4.5	Grey, no odour or sheen	Clear, no odour or sheen

Measures taken to minimize the potential for cross contamination or the introduction of contaminants during well construction included:

- The use of well pipe components (e.g. riser pipe and well screens) with factory machined threaded flush coupling joints
- Construction of wells without the use of glues or adhesives
- Removing the protective plastic wraps from well components at the time of borehole insertion to prevent contact with the ground and other surfaces
- Cleaning or disposal of drilling equipment between sampling locations

4.6 Groundwater: Field Measurement and Water Quality Parameters

Groundwater water quality was measured in March 30, 2021. The monitoring wells were inspected for general physical condition, groundwater depth, the presence of non-aqueous phase liquid and organic vapour.

EXP used a Heron water level tape to measure the static water level in each monitoring well. The measuring tape was cleaned with phosphate-free soap and tap water, rinsed with distilled water after each measurement.

Groundwater monitoring and elevation data are provided below.

Table 4.1 – Monitoring and Elevation Data

Monitoring Well ID/ Installation ID	Grade Elevation (metres)	Top of Casing Elevation (mbTOC)	Screen Depth (mbgs)	Depth to LNAPL (mbgs)	Depth to Groundwater (mbTOC)	Groundwater Elevation(metres)
MW21-1	69.82	69.71	3.0 – 6.0	ND	3.52	66.19
MW21-2	68.52	68.43	2.2 – 5.2	ND	1.56	66.87
MW21-3	69.77	69.65	3.0 – 6.0	ND	4.30	65.35
MW21-4	69.91	69.78	3.0 – 6.0	ND	3.71	66.07

Notes: Elevations were measured to a geodetic datum.
LNAPL – light non-aqueous phase liquid
ppmv – parts per million by volume
mbgs – metres below ground surface
mbTOC – metres below top of monitor casing
ND – non-detectable

4.7 Groundwater: Sampling

Groundwater samples from monitoring wells were collected via a low flow sampling technique using a YSI 550 multi probe water quality meter on March 30, 2021. The YSI probe was calibrated using in-house reference standards. Prior to collecting the groundwater samples, water quality field parameters (turbidity, dissolved oxygen, conductivity, temperature, pH, and oxidation reduction potential) were monitored until stable readings were achieved. These parameters are considered to be stable when three consecutive readings meet the following conditions:

- Turbidity: within 10% for values greater than 5 nephelometric turbidity units (NTU), or three values less than 5 NTU;
- Dissolved oxygen: within 10% for values greater than 0.5 mg/L, or three values less than 0.5 mg/L;
- Conductivity: within 3%;
- Temperature: ± 1°C;
- pH: ± 0.1 unit; and,
- Oxidation reduction potential: ±10 millivolts.

When stabilization occurs, equilibrium between groundwater within a monitor and the surrounding formation water is attained. As such, samples collected when stabilization occurs are considered to be representative of formation water.

The groundwater sampling during the completion of this Phase Two ESA was undertaken in general accordance with the SAAP presented in Appendix C. One groundwater sample and one field duplicate were collected and submitted for laboratory analysis of VOC, PHC, PAH, and metals. A blind duplicate groundwater sample was collected. One trip blank was also submitted for laboratory analysis. All groundwater samples were collected into laboratory provided sample bottles and submitted to Bureau Veritas Laboratories (BV Labs).

The groundwater samples were placed in clean coolers containing ice packs prior to and during transportation to BV Labs. The samples were transported to BV Labs within 24 hours of collection with a chain of custody.

4.8 Sediment: Sampling

As no water body was present at the Phase Two property, sediment sampling was not part of the Phase Two ESA.

4.9 Analytical Testing

The contracted laboratory selected to perform chemical analysis on all groundwater samples was Bureau Veritas (BV) Laboratories. BV is an accredited laboratory under the Standards Council of Canada/Canadian Association for Laboratory Accreditation in accordance with ISO/IEC 17025:1999- General Requirements for the Competence of Testing and Calibration Laboratories.

4.10 Residue Management

The drill cuttings from drilling activities and purged water from groundwater development and sampling were disposed of on the site. Fluids from cleaning drilling equipment were disposed of by the driller at their facility.

4.11 Elevation Surveying

An elevation survey was conducted to obtain vertical control of the monitoring well locations. The top of casing and ground surface elevation of each monitoring well location was surveyed using a level and an assumed benchmark. The site benchmark was the top of the storm sewer grate in the northeast part of the property.

4.12 Quality Assurance and Quality Control Measures

All soil and groundwater samples were placed in coolers containing ice packs prior to and during transportation to the contract laboratory, Bureau Veritas Laboratories (BV Labs). Bureau Veritas Laboratories is accredited to the ISO/IEC 17025:2005 standard - *General Requirements for the Competence of Testing and Calibration Laboratories*.

A QA/QC program was also implemented to ensure that the analytical results received are accurate and dependable. A QA/QC program is a system of documented checks that validate the reliability of the data. Quality Assurance is a system that ensures that quality control procedures are correctly performed and documented. Quality Control refers to the established procedures observed both in the field and in the laboratory, designed to ensure that the resulting end data meet intended quality objectives. The QA/QC program implemented by EXP incorporated the following components:

- Collecting and analysing field duplicate soil and groundwater samples to ensure analytical precision;
- Using dedicated and/or disposable sampling equipment;
- Following proper decontamination protocols to minimize cross-contamination;
- Maintaining field notes and completing field forms to document field activities; and
- Using only laboratory-supplied sample containers and following prescribed sample protocols, including using proper preservation techniques, meeting sample hold times, and documenting sample transmission on chains of custody, to ensure the integrity of the samples is maintained.

Bureau Veritas Laboratories QA/QC program involved the systematic analysis of control standards for the purpose of optimizing the measuring system as well as establishing system precision and accuracy and included calibration standards, method blanks, reference standards, spiked samples, surrogates and duplicates.

5.0 Review and Evaluation

5.1 Geology

The detailed soil profiles encountered in the borehole are provided on the borehole logs in Appendix D. Boundaries of soils indicated on the logs are intended to reflect transition zones for the purpose of environmental assessment and should not be interpreted as exact planes of geological change.

The soil at the Phase Two property consisted of silty sand and gravel fill to a maximum depth of 1.8 m. The upper 0.7 m of fill at MW21-3 had some small pieces of brick and asphalt. Underlying the fill was brown to grey clay to a maximum depth of 11.3 m and then clayey sand with gravel was observed to the maximum depth drilled of 15.8 m.

Bedrock was not encountered during drilling, however cone refusal was at 22.7 m indicating bedrock may be at that depth.

5.2 Groundwater: Elevations and Flow Direction

The monitoring well network advanced as part of this Phase Two ESA consists of four monitoring wells (MW21-1 to MW21-4) that were installed within the overburden at the Phase Two property.

Groundwater elevations and water levels were measured at the Phase Two property on March 30, 2021. Groundwater was encountered at depths ranging from 66.87 metres above sea level (masl) in MW21-2 to 65.35 masl in MW21-3. No petroleum sheens were observed in the monitoring wells during the sampling event.

A summary of the elevation survey and groundwater levels for each well are shown on Table 5.1.

Table 5.1: Groundwater Elevations

Monitoring Well ID	Ground Surface Elevation (MASL)	Top of Casing Elevation (MASL)	March 30, 2021	
			Water Level (m bsg)	Water Level (MASL)
MW21-1	69.82	69.71	3.52	66.19
MW21-2 (interior)	68.52	68.43	1.56	66.87
MW21-3	69.77	69.65	4.30	65.35
MW21-4	69.91	69.78	3.71	66.07

Note: Elevations were referenced using a high precision GPS unit and a geodetic datum.

MASL – metres above sea level

Based on the groundwater elevations, a groundwater contour plan was prepared. The groundwater flow direction was calculated to be to the northwest. The groundwater flow direction was determined to be northwesterly. The groundwater contour plan is provided as Figure 5 in Appendix A. EXP notes that groundwater flow direction and level can be influenced by utility trenches and other subsurface structures and may migrate in the bedding stone of nearby subsurface utility trenches.

5.3 Groundwater: Hydraulic Gradients and Single Well Response Tests

The groundwater hydraulic gradient at the Phase Two property, , was calculated to be 0.125 m/m.

On March 30, 2021, rising head tests were conducted on MW21-1 and MW21-4. The rising head test requires that the static water level be measured in the monitoring well prior to the removal of groundwater. Groundwater is removed from the monitoring well using a peristaltic pump. After the water level has been sufficiently lowered, an interface probe is lowered into the monitor as quickly as possible to measure the new water level. The time at which the new water level is measured is noted as time equal zero. Water level readings are subsequently taken at frequent intervals. Both the water levels and the time they were taken are recorded.

The frequency of the time measurement is determined by the rate the water level recovers to the static water level. Measurements are taken until at least 70% recovery has been achieved or, in cases where recovery is extremely slow, until it is deemed that a sufficient amount of time has elapsed.

All water level measurements were made with a Heron oil/water interface probe. Both the probe and the measuring tape that come into contact with liquids within a monitor are cleaned with phosphate-free soap and tap water, rinsed with distilled water and then finally rinsed with methanol after each hydraulic conductivity test is concluded.

The initial static water level in MW21-1 was 3.52 mbgs. After the removal of approximately 4 litres of water, the water level was 5.52 mbgs. Measurements of water levels within the monitor were made at frequent intervals for 1370 minutes, at which time the water level had returned to 32% of its static level. Using the Hvorslev model, the hydraulic conductivity was calculated to be 1.7 x 10-7 cm/s. The initial static water level in MW21-4 was 3.71 mbgs. After the removal of approximately 4 litres of water, the water level was 5.50 mbgs. Measurements of water levels within the monitor were made at frequent intervals for 1366 minutes, at which time the water level had returned to 32% of its static level. Using the Hvorslev model, the hydraulic conductivity was calculated to be 1.5 x 10-7 cm/s.

The data and the calculations for the hydraulic conductivity testing are provided in Appendix G.

5.4 Soil: Field Screening

Fill samples were screened during the borehole advancement; however, no soil samples were submitted for analysis.

Field screening involved using the combustible vapour meter to organic vapour concentrations, in ppmv, in the collected soil samples in order to assess the presence of soil gases which would imply VOC impact. The vapour readings obtained during the drilling activities are presented on the borehole logs in Appendix D. The boreholes vapour readings ranged from non-detectable to <10 ppmv. No staining or odours were observed in any of the soil samples.

5.5 Soil: Quality

In accordance with the scope of work, chemical analyses were performed on selected soil samples recovered from the boreholes. The selection of representative “worst case” soil samples from each borehole was based on field visual or olfactory evidence of impacts and/or presence of potential water bearing zones. Summaries of the soil analytical results are found in Appendix D. Copies of the laboratory Certificates of Analysis for the tested soil samples are provided in Appendix E.

The MECP Table 3 SCS are applicable if soil pH is in the range of 5 to 11 for subsurface soil (less than 1.5 m below soil surface). The Certificates of Analysis include pH measurements taken from the subsurface soils. Two soil samples from less than 1.5 m were submitted for pH analysis with results of 7.32 and 7.84. One soil sample from greater than 1.5 m was submitted for pH analysis with a result of 7.94. All pH values were within the acceptable range for the application of MECP Table 3 SCS.

Petroleum Hydrocarbons and VOC

Four (4) soil samples and one (1) field duplicate were submitted for PHC and BTEX analyses. As shown in Table 1 in Appendix D, the concentrations of PHC and BTEX measured in the analysed soil samples were less than the MECP 2011 Table 3 SCS.

The PHC concentrations in soil are shown on Figures 6 and 12.

Metals

Four (4) soil samples and one (1) field duplicate were submitted for metals analyses. As shown in Table 2 in Appendix D, the concentrations of metals measured in the analysed soil samples were less than the MECP 2011 Table 3 SCS, with the exception of lead in the sample from MW21-1 at a depth of 0.0 m to 0.6, lead in the sample from MW21-3 at a depth of 0.05 m to 0.6. Assuming that the top 1.5 m of fill at the Phase Two property is impacted by metals, the resulting volume of metals impacted soil is estimated to be 650 m^3.

The metals concentrations in soil are shown on Figures 7 and 13.

Polycyclic Aromatic Hydrocarbons

Four (4) soil samples and one (1) field duplicate were submitted for PAH analyses. As shown in Table 3 in Appendix D, the concentrations of PAH measured in the analysed soil samples were less than the MECP 2011 Table 3 SCS, with the exception of benzo(a)anthracene, benzo(a)pyrene, benzo(b)fluoranthene, dibenz(a,h)anthracene, fluoranthene and indeno(1,2,3-cd)pyrene in the sample from MW21-1 at a depth of 0.0 m - 0.6 m and benzo(a)pyrene and fluoranthene in the sample from MW21-3 at a depth of 0.05 m to 0.6 m. Assuming that the top 1.5 m of fill at the Phase Two property is impacted by PAH, the resulting volume of metals impacted soil is estimated to be 650 m^3.

The PAH concentrations in soil are shown on Figures 8 and 14.

5.6 Groundwater Quality

Petroleum Hydrocarbons and Volatile Organic Compounds

Four (4) groundwater samples and a field duplicate were submitted for the chemical analysis of PHC and/or VOC. As shown in Table 4 in Appendix D, the concentrations of all analyzed parameters were less than the MECP Table 3 SCS. The locations of the groundwater PHC concentrations are presented on Figures 9 and 12.

Metals

Four (4) groundwater samples and a field duplicate were submitted for the chemical analysis of metals. As shown in Table 5 in Appendix D, the concentrations of metals parameters in the groundwater samples were less than the MECP Table 3 SCS. The locations of the groundwater metals concentrations are presented on Figures 10 and 13.

Polycyclic Aromatic Hydrocarbons

Four (4) groundwater samples and a blind duplicate were submitted for the chemical analysis of PAH. As shown in Table 6 in Appendix D, the concentrations of PAH parameters in the groundwater sample were less than the MECP Table 3 SCS. The locations of the groundwater PAH concentrations are presented on Figures 11 and 14.

5.7 Chemical Transformation and Contaminant Sources

Two of four soil samples had one or more metals and PAH parameters exceedances of the MECP Table 3 SCS. Chemical transformations are a potential concern at the Site. However, based on the obtained results soils are not expected to be acting as a contaminant mass that could impact the groundwater.

No contaminants of concern were detected in the groundwater samples.

5.6.3 Evidence of Non-Aqueous Phase Liquid

Inspection of the groundwater monitoring wells did not indicate the presence of non-aqueous phase liquid (NAPL).

5.6.4 Maximum Concentrations

The maximum soil concentrations area provided in Table 4 in Appendix D and maximum groundwater concentrations are provided in Table8.

5.7 Sediment: Quality

As there were no water bodies on the Phase Two property, surface water and sediment sampling were not required.

5.8 Quality Assurance and Quality Control Results

Bureau Veritas Laboratories' (BV Labs) QA/QC program consisted of the preparation and analysis of laboratory duplicate samples to assess precision and sample homogeneity, method blanks to assess analytical bias, spiked blanks and QC standards to evaluate analyte recovery, matrix spikes to evaluate matrix interferences and surrogate compound recoveries to evaluate extraction efficiency. The laboratory QA/QC results are presented in the Quality Assurance Report provided in the Certificates of Analysis prepared by BV Labs. The QA/QC results are reported as percent recoveries for matrix spikes, spiked blanks and QC standards, relative percent difference for laboratory duplicates and analyte concentrations for method blanks.

A review of field activity documentation indicated that recommended sample volumes were collected from groundwater for each analytical test group into appropriate containers and preserved with proper chemical reagents in accordance with the protocols set out in the Protocol for Analytical Methods used in the Assessment of Properties under Part XV.1 of the Environmental Protection Act (MOE, 2011). Samples were preserved at the required temperatures in insulated coolers and met applicable holding time requirements, when relinquished to the receiving laboratory.

For QA/QC purposes, the analytical sample results are quantitatively evaluated by calculating the relative percent difference (RPD) between the samples and their duplicates. To accurately calculate a statistically valid RPD, the concentration of the analytes found in both the original and duplicate sample must be greater than five times the reporting detection limit (RDL).

The results of the RPD calculations are provided in Tables 9 to 15 in Appendix D. All of the RPD were either not calculable or within the applicable alert limits, with the exception of lead and arsenic which slightly exceeded the alert limits and PAHs in soil that were significantly above the alert limits. The metals RPDs are not a concern, however the PAH RPDs indicate a heterogeneity in the two soil samples.

Certificates of Analysis (COA) were received from BV Labs reporting the results of all the chemical analyses performed on the submitted groundwater and soil vapour samples. Copies of the COA are provided in Appendix E. A review of the Certificates of Analysis prepared by BV labs indicates that they were in compliance with the requirements set out under subsection 47(3) of Ontario Regulation 153/04 (as amended).

Review of the laboratory QA/QC results reported indicated that they were all within acceptable control limits or below applicable alert criteria for the sampled media and analytical test groups. Based on the assessment of the QA/QC, the analytical results reported by BV labs are of acceptable quality and further data qualifications are not required.

5.9 Phase Two Conceptual Site Model

This section presents a Conceptual Site Model (CSM) providing a narrative, graphical and tabulated description integrating information related to the Phase Two property's geologic and hydrogeological conditions, areas of potential environmental concern/potential contaminating activities, the presence and distribution of contaminants of concern, contaminant fate and transport, and potential exposure pathways.

5.9.1 Introduction

EXP Services Inc. (EXP) was retained by Smart Living Properties to complete a Phase Two Environmental Site Assessment (ESA) of the property located at 233 Argyle Avenue in Ottawa, Ontario hereinafter referred to as the 'Phase Two property'. The objective of the Phase Two ESA investigation is to assess the quality of the soil and groundwater conditions within the areas of potential environmental concern (APEC) identified in a Phase One ESA prepared by EXP.

EXP understands that the most recent use of the Phase One property is commercial and that the proposed future use will be commercial and residential. Therefore, as per Ontario Regulation 153/04, a Record of Site Condition (RSC) is required.

5.9.2 Physical Site Description

The Phase Two property is located at 233 Argyle Avenue in Ottawa, Ontario. The subject property is located on the north side of Argyle Avenue, approximately 75 m west of O'Connor Street. The Phase One property is rectangular in shape and has an approximate area of 0.05 ha. The Phase Two property consists of a three-storey building with a full basement. The building was formerly a residence which has been converted to office space. At the time of this investigation only the first of the three floors were occupied. A parking lot is present on the north side of the property.

A Site Location Plan is provided as Figure 1 and a Site Plan is provided as Figure 2 in Appendix C.

The legal description of the Phase One property is East Part of Lot 13, Plan 30 Argyle North, City of Ottawa.

Refer to Table 5.1 for the Site identification information.

Table 5.1: Site Identification Details

Civic Address	233 Argyle Avenue, Ottawa, Ontario
Current Land Use	Commercial
Proposed Future Land Use	Residential
Property Identification Number	041230034
UTM Coordinates	NAD83 18T 446407 m E and 5029111 m N
Site Area	0.05 hectares
Property Owner	Smart Living Properties

The Phase One Conceptual Site Model is provided as Figures 3 and 4 in Appendix A.

Potable water is available from the City of Ottawa, however, there are no potable water wells within the Phase Two study area. There are no water bodies on the subject site. The closest body of water is the Rideau Canal approximately 600 m to the east. Topographically, the Phase Two property is relatively flat. Based on local topography, the groundwater flow at the Phase Two property is anticipated to be easterly towards the Rideau Canal.

In accordance with Section 41 of the Ontario Regulation 153/04 (as amended), the Phase Two property is not an environmentally sensitive area. In addition, the Phase Two property is not located within an area of natural significance and it does not include land that is within 30 metres of an area of natural significance.

The Phase Two property is not a shallow soil property as defined in Section 43.1 of the regulation. It does not include all or part of a water body or is adjacent to a water body or includes land that is within 30 metres of a water body.

5.9.3 Geological and Hydrogeological

The terrain at the Phase Two property consisted of silty sand and gravel fill to a maximum depth of 1.8 m. The upper 0.7 m of fill at MW21-3 had some small pieces of brick and asphalt. Underlying the fill was brown to grey clay to a maximum depth of 11.3 m and then clayey sand with gravel was observed to the maximum depth drilled of 15.8 m. Bedrock was not encountered during drilling, however cone refusal was at 22.7 m indicating bedrock may be at that depth.

Based on the geological profile, cross-sections of the site were prepared, as shown on Figures 12 to 14 Appendix A. The groundwater flow direction could not be calculated since the monitoring wells are oriented in a line similar to the shape of the Phase Two property as shown on Figure 5. The hydraulic conductivity of the soil in MW21-1 and MW21-4 was calculated to be 1.5 to 1.7 x 10^{-7} cm/s.

A summary of factors that apply to the Phase Two property is provided in Table 5.2

Table 5-2: Site Characteristics

Characteristic	Description
Minimum Depth to Bedrock	22.7 mbgs
Minimum Depth to Overburden Groundwater	2.95 mbgs (March 30, 2021)
Shallow Soil Property	No, bedrock is more than 2.0 mbgs
Proximity to water body or ANSI	600 m east
Soil pH	7.32 - 7.94
Soil Texture	Fine
Current Property Use	Commercial
Future Property Use	Residential
Proposed Future Building	Residential
Areas Containing Suspected Fill	Entire site

5.9.4 Utilities

The approximate location of underground utilities was based on locates obtained prior to drilling. The underground utility corridors for hydro, gas, phone, sanitary sewer, and municipal water are typically present within 3 metres of ground surface, while the water table is approximately 3.0 metres below ground surface; therefore, it is unlikely that the presence of subsurface utilities has affected the direction of groundwater flow.

5.9.5 Potentially Contaminating Activities

Ontario Regulation (O. Reg.) 153/04 defines a Potential Contaminating Activity (PCA) as one of fifty-nine (59) industrial operations set out in Table 2 of Schedule D that occurs or has occurred in the Phase One study area. The following PCA were identified for the Phase One property and the Phase One study area:

The following PCAs were identified:

- **PCA 1** – 255 Argyle Avenue – Former retail fuel outlet, four gasoline USTs on the property (PCA#28 – Gasoline and Associated Products Stored in Fixed Tanks), located 50 m west of the Site. This may affect the area designated APEC 1.
- **PCA 2** – Block between Catherine Street and Isabella Street – Former CN rail line (PCA #46 – Rail Yards, Tracks and Spurs), located 150 m south of the Site. Based on intervening distance, this does not result in an APEC being identified on the Phase Two property.
- **PCA 3** – 431 Bank Street – Former dry cleaner (PCA#37 – Operation of Dry-Cleaning Equipment), located 180 m northwest of the Phase One property. Based on intervening distance and being down-gradient in terms of the assumed direction of groundwater flow, this does not result in an APEC being identified on the Phase Two property.
- **PCA 4** – 249 Argyle Avenue – Former dry cleaner (PCA#37 – Operation of Dry-Cleaning Equipment), located 30 m west of the Phase One property. This may affect the area designated APEC 2.
- **PCA 5** – 455 Bank Street – Former retail fuel outlet (PCA#28 – Gasoline and Associated Products Stored in Fixed Tanks), located adjacent to 100 m to the northwest of the Phase One property. Based on intervening distance and being down-gradient in terms of the assumed direction of groundwater flow, this does not result in an APEC being identified on the Phase Two property.
- **PCA 6** – 210 Catherine Street – Former retail fuel outlet (PCA#28 – Gasoline and Associated Products Stored in Fixed Tanks), located adjacent to 130 m to the south of the Phase One property. Based on intervening distance this does not result in an APEC being identified on the Phase Two property.
- **PCA 7** – 233 Catherine Street – Two former fuel USTs on the east exterior side of the Department of National Defence garage (PCA#28 – Gasoline and Associated Products Stored in Fixed Tanks), located 130 m south of the Phase One property. Based on intervening distance does not result in an APEC being identified on the Phase Two property.
- **PCA 8** – 233 Catherine Street – Former Department of National Defence garage (PCA#10 – Commercial Autobody Shops), located 130 m south of the Phase One property. Based on intervening distance this does not result in an APEC being identified on the Phase Two property.
- **PCA 9** – 448 Bank Street – Former retail fuel outlet (PCA#28 – Gasoline and Associated Products Stored in Fixed Tanks), located adjacent to 140 m to the west of the Phase One property. Based on intervening distance and being cross-gradient in terms of the assumed direction of groundwater flow, this does not result in an APEC being identified on the Phase Two property.
- **PCA 10** – 41 Flora Street – Former automotive service garage (PCA#10 – Commercial Autobody Shop), located 150 m west of the Phase One property. Based on intervening distance and being cross-gradient in terms of the assumed direction of groundwater flow, this does not result in an APEC being identified on the Phase Two property.
- **PCA 11** – 510 Bank Street – Former 460 -gallon fuel UST (PCA#28 – Gasoline and Associated Products Stored in Fixed Tanks), located 160 m southwest of the Phase One property. Based on intervening distance this does not result in an APEC being identified on the Phase Two property.
- **PCA 12** – 380 McLeod Street – Former 920 -gallon fuel UST (PCA#28 – Gasoline and Associated Products Stored in Fixed Tanks), located 170 m west of the Phase One property. Based on intervening distance this does not result in an APEC being identified on the Phase Two property.
- **PCA 13** – 512 Bank Street – Former automotive service garage (PCA#10 – Commercial Autobody Shop), located 150 m southwest of the Phase One property. Based on intervening distance and being cross-gradient in terms of the assumed direction of groundwater flow, this does not result in an APEC being identified on the Phase Two property.

- **PCA 14** – 233 Catherine Street – Former automotive service garage (PCA#10 – Commercial Autobody Shop), located 230 m southwest of the Phase One property. Based on intervening distance and being cross-gradient in terms of the assumed direction of groundwater flow, this does not result in an APEC being identified on the Phase Two property.
- **PCA 15** – 340 Catherine Street – Former retail fuel outlet (PCA#28 – Gasoline and Associated Products Stored in Fixed Tanks), located 250 m southwest of the Phase One property. Based on intervening distance this does not result in an APEC being identified on the Phase Two property.
- **PCA 16** – 234 Catherine Street – Former automotive service garage (PCA#10 – Commercial Autobody Shop), located 250 m southwest of the Phase One property. Based on intervening distance and being cross-gradient in terms of the assumed direction of groundwater flow, this does not result in an APEC being identified on the Phase Two property.
- **PCA 17** – 512 Bank Street – Former retail fuel outlet (PCA#28 – Gasoline and Associated Products Stored in Fixed Tanks), located 150 m southwest of the Phase One property. Based on intervening distance and being cross-gradient in terms of the assumed direction of groundwater flow, this does not result in an APEC being identified on the Phase Two property.
- **PCA 18** – 203 Catherine Street – Former fuel UST (PCA#28 – Gasoline and Associated Products Stored in Fixed Tanks), located 80 m south of the Phase One property. Based on intervening distance this does not result in an APEC being identified on the Phase Two property.
- **PCA 19** – 180 Argyle Avenue – Two 4,000-gallon fuel oil ASTs in basement (PCA#28 – Gasoline and Associated Products Stored in Fixed Tanks), located 100 m southwest of the Phase One property. Based on intervening distance this does not result in an APEC being identified on the Phase Two property.
- **PCA 20** – 410 Gladstone Avenue – Automotive service garage (PCA#10 – Commercial Autobody Shop), located 230 m west of the Phase One property. Based on intervening distance and being cross-gradient in terms of the assumed direction of groundwater flow, this does not result in an APEC being identified on the Phase Two property.
- **PCA 21** – 233 Argyle Avenue (Subject Site) – Assumed fill beneath building and parking lot (PCA#30 – Imported Fill Material of Unknown Quality). This may affect the area designated APEC 3.
- **PCA 22** – 233 Argyle Avenue (Subject Site) – Assumed former furnace oil AST (PCA#28 – Gasoline and associated products storage in fixed tanks). This may affect the area designated APEC 4.

No other PCAs that took place within the Phase Two study area were identified.

5.9.6 Areas of Potential Environmental Concern/Potential Contaminants of Concern

Ontario Regulation 153/04 defines an APEC as an area on a property where one or more contaminants are potentially present. Based on this Phase One ESA, the following APEC was identified:

Area of Potential Environmental Concern (APEC)	Location of APEC on Phase One Property	Potentially Contaminating Activity (PCA)	Location of PCA (On-Site or Off-Site)	Contaminants of Potential Concern	Media Potentially Impacted (Groundwater, Soil and/or Sediment)
APEC #1	Area near west property line	PCA #28 – Gasoline and Associated Products Storage in Fixed Tanks	Off-Site	Benzene, Toluene, Ethylbenzene, Xylene (BTEX), petroleum hydrocarbons (PHC)	Groundwater

Area of Potential Environmental Concern (APEC)	Location of APEC on Phase One Property	Potentially Contaminating Activity (PCA)	Location of PCA (On-Site or Off-Site)	Contaminants of Potential Concern	Media Potentially Impacted (Groundwater, Soil and/or Sediment)
APEC #2	Area near west property line	PCA#37 – Operation of Dry-Cleaning Equipment)	Off-Site	Volatile Organic Compounds (VOC)	Groundwater
APEC #3	Entire Phase One property	PCA#30 – Imported Fill Material of Unknown Quality	On-Site	BTEX, PHC, VOC, metals	Soil
APEC #4	Southwest corner of building interior	PCA #28 – Gasoline and Associated Products Storage in Fixed Tanks	On-Site	BTEX and PHC	Soil and Groundwater

5.9.7 Investigation

The Phase Two ESA was conducted to assess the soil and groundwater quality at the Phase Two property. As indicated in the APEC and PCOC Table (above), the analytical program of the Phase Two ESA included testing of soil and groundwater for metals, VOC, PHC, and PAH. The borehole and monitoring well locations are shown on Figure 5 in Appendix A.

Based on the Phase Two ESA results, the following summary is provided:

- Between March 16 and 19, 2021, a total of 4 boreholes (MW21-1 to MW21-4) were advanced at the Phase Two property and each was completed with a monitoring well.

- Based on the drilling program, the soil consisted of crushed gravel fill under the driveway. Underlying the crushed stone fill was silty sand fill to a depth of 2.5 m. Underlying the fill was sandy clay to a depth of 8 m and then sandy silt was observed to the maximum depth drilled of 12.8 m. Bedrock was not encountered during drilling, however cone refusal was at 21.3 m indicating bedrock may be at that depth.

- Four (4) soil samples and one (1) field duplicate were submitted for VOC, PAH, PHC, and metals analyses. The concentrations of the tested parameters were less than the MECP 2011 Table 3 SCS, with the exception of metals and PAH in two of the four fill samples. Assuming that the top 1.5 m of fill at the Phase Two property is impacted by metals and PAH, the resulting volume of impacted soil is estimated to be 650 m^3.

- All groundwater samples had concentrations of the analyzed parameters that were less than the provincial MECP Table 3 standards;

- Based on the above, soil remediation is recommended for the Phase Two property.

Refer to Figures 6 to 14 for pre-remediation conditions.

5.9.8 Contaminants of Concern

Two of four soil samples had one or more metals and PAH parameters exceedances of the MECP Table 3 SCS. The source of the impact is poor quality fill material.

There are no COC in groundwater.

5.9.9 Contaminant Fate and Transport

Soil Media

The metals and PAH impacted soil was identified in two of four soil samples and is associated with APEC 3. This area is shown on Figures 8 and 9. The depth of soil impact was found from 0.0 m to 1.35 m. The source of the impact was poor quality fill.

A variety of physical, chemical and biochemical mechanisms affect the fate and transport of the potential COCs in soil, the contribution of which is dependent on the soil conditions and the chemical/physical properties of the COCs. Relevant fate and transport mechanisms are natural attenuation mechanisms, including advection mixing, mechanical dispersion/molecular diffusion, phase partitions (i.e. sorption and volatilization), and possibly abiotic or biotic chemical reactions, which effectively reduce COC concentrations.

Concentrations of the COCs in soil will be reduced by the effects of molecular diffusion and the creation of concentration gradients. Non-volatile chemical constituents lead and barium, PAHs may undergo abiotic or biotic chemical reactions associated with the soil mineral particles and the micro-organisms present in the overburden material. The impact soil identified at in the fill material appears to be over the exterior areas of the Phase Two property and does not appear to be migrating.

As a result of the various natural attenuation mechanisms in the soil environment, the concentrations of any COCs in soil will be reduced at the Site. It is recommended that the impacted soil be removed from the Phase Two property.

Human Health Receptors and Exposure Pathways

The Phase Two property is currently used for commercial purposes as offices. The Phase Two property will be redeveloped to residential in the future. The potential on-site human receptors currently comprise long-term workers, short-term workers, property visitors (adult, teen, child, toddler and infant), and construction workers. The future potential residential land use on-Site human receptors comprise residents (adult, teen, child, toddler and infant) and short term visitors (adult, teen, child, toddler and infant).

The potential on-site exposure pathways for the construction workers are inadvertent soil ingestion, soil particulate inhalation, soil dermal contact, and ambient vapour inhalation (sourced from soil due to potential work conducted in a trench scenario).

The potential on-site exposure pathways for the short-term (outdoor) workers are soil particulate inhalation, soil dermal contact, and inadvertent soil ingestion.

The potential on-site exposure pathways for the long-term (indoor) workers, residents and property visitors is indoor air inhalation (sourced from soil). The human health receptor/pathway flow chart is presented as Figure 15 in Appendix A.

Ecological Receptors and Exposure Pathways

The Phase Two property is comprised of developed commercial lands capable of supporting some terrestrial ecological receptors. Relevant terrestrial receptors are terrestrial vegetation, such as trees, grasses and weeds; soil invertebrates, such as earthworms, millipedes and beetles; terrestrial birds, such as pigeons, sparrows and robins; and small terrestrial mammals, such as moles, voles, and mice.

The potential on-site exposure pathways for terrestrial vegetation are root uptake (soil), and stem and foliar uptake of vapours (sourced from soil).

The potential on-site exposure pathways for soil invertebrates are soil particulate inhalation, soil dermal contact, soil ingestion, vapour inhalation (sourced from soil).

The potential on-site exposure pathways for mammals and birds are soil particulate inhalation, soil dermal contact, soil ingestion, vapour inhalation (sourced from soil), animal tissue ingestion (as a result of biotransformation of soil. The ecological receptor/pathway flow chart is presented as Figure 15 in Appendix A.

Cross-sections that depict the geological, hydrogeological, and groundwater chemical data for the Phase Two property are provided as Figures 12 to 14 in Appendix A.

6.0 Conclusion

Based on the Phase Two ESA results, the following summary is provided:

- Between March 16 and 19, 2021, a total of 4 boreholes (MW21-1 to MW21-4) were advanced at the Phase Two property and each was completed with a monitoring well.
- Based on the drilling program, the soil consisted of crushed gravel fill under the driveway. Underlying the crushed stone fill was silty sand fill to a depth of 2.5 m. Underlying the fill was sandy clay to a depth of 8 m and then sandy silt was observed to the maximum depth drilled of 12.8 m. Bedrock was not encountered during drilling, however cone refusal was at 21.3 m indicating bedrock may be at that depth.
- The hydraulic conductivity of the soil was calculated to be 1.5 to 1.7 x 10^{-7} cm/s;
- Four (4) soil samples and one (1) field duplicate were submitted for VOC, PAH, PHC, and metals analyses. The concentrations of the tested parameters were less than the MECP 2011 Table 3 SCS, with the exception of metals and PAH in two of the four samples. Assuming that the top 1.5 m of fill at the Phase Two property is impacted by metals and PAH, the resulting volume of impacted soil is estimated to be 650 m^3.
- All groundwater samples had concentrations of the analyzed parameters that were less than the provincial MECP Table 3 standards;
- Based on the above, soil remediation is recommended for the Phase Two property; and
- If the wells are no longer needed, they should be decommissioned in accordance with Ontario Regulation 903.

The Qualified Person can confirm that the Phase Two Environmental Site Assessment was conducted per the requirements of Ontario Regulation 153/04, as amended, and in accordance with generally accepted professional practices.

7.0 References

This study was conducted in accordance with the applicable Regulations, Guidelines, Policies, Standards, Protocols and Objectives. Specific reference is made to the following documents.

- ASTM International, D5299/D5299M-17, *Standard Guide for Decommissioning of Groundwater Wells, Vadose Zone Monitoring Devices, Boreholes, and Other Devices for Environmental Activities*, 2017.
- Canadian Council of Ministers of the Environment, *Guidance Manual on Sampling, Analysis, and Data Management for Contaminated Sites,* 1993.
- Canadian Council of Ministers of the Environment, *A Protocol for the Derivation of Environmental and Human Health Soil Quality Guidelines,* 2006.
- Canadian Council of Ministers of the Environment, *Canada Wide Standards for Petroleum Hydrocarbons in Soil*, 2008.
- Canadian Council of Ministers of the Environment, Canadian Environmental Quality Guidelines, http://www.ccme.ca/en/resources/canadian_environmental_quality_guidelines, Accessed November 2018.
- Canadian Standards Association, *CSA-Z769-00 (R2013), Phase II Environmental Assessment Standard*, 2013.
- EXP Services Inc., *Phase I Environmental Site Assessment, 233 Argyle Avenue, Ottawa, Ontario,* March 19, 2021.
- Federal Contaminated Sites Action Plan, Advisory Bulletin: *How, when and why do I decommission a groundwater monitoring well?*
- Federal Contaminated Sites Action Plan, *Guidance Document on Federal Interim Groundwater Quality Guidelines for Federal Contaminated Sites*, June 2016.
- Freeze and Cherry, *Groundwater*, Prentice Hall, 1979.
- LRL Associates Ltd., *Phase II Environmental Site Assessment, Confederation Heights Grounds – Ottawa Technology Center Building, 875 Heron Road, Ottawa, Ontario,* December 22, 2017.
- Ontario Ministry of the Environment, Conservation and Parks, *Guidance on Sampling and Analytical Methods for Use at Contaminated Sites in Ontario*, December 1996.
- Ontario Ministry of the Environment, Conservation and Parks, *Soil, Ground Water and Sediment Standards for Use Under Part XV.1 of the Environmental Protection Act*, April 15, 2011.
- Ontario Ministry of the Environment, Conservation and Parks, *Guide for Completing Phase Two Environmental Site Assessments under Ontario Regulation 153/04,* June 2011.
- Ontario Ministry of the Environment, Conservation and Parks, *Protocol for Analytical Methods Used in the Assessment of Properties under Part XV.1 of the Environmental Protection Act,* July 1, 2011.
- Ontario Ministry of the Environment, Conservation and Parks, *Management of Excess Soil – A Guide for Best Management Practices,* January 2014.
- Ontario Regulation 153/04, made under the *Environmental Protection Act*, as amended.
- Ontario R.R.O. 1990, Regulation 347, made under the *Environmental Protection Act*, as amended.
- Ontario R.R.O. 1990, Regulation 903, made under the *Water Resources Act*, as amended.

8.0 General Limitations

Basis of Report

This report ("Report") is based on site conditions known or inferred by the investigation undertaken as of the date of the Report. Should changes occur which potentially impact the condition of the site the recommendations of EXP may require re-evaluation. Where special concerns exist, or Smart Living Properties ("the Client") has special considerations or requirements, these should be disclosed to EXP to allow for additional or special investigations to be undertaken not otherwise within the scope of investigation conducted for the purpose of the Report.

Reliance on Information Provided

The evaluation and conclusions contained in the Report are based on conditions in evidence at the time of site inspections and information provided to EXP by the Client and others. The Report has been prepared for the specific site, development, building, design or building assessment objectives and purpose as communicated by the Client. EXP has relied in good faith upon such representations, information and instructions and accepts no responsibility for any deficiency, misstatement or inaccuracy contained in the Report as a result of any misstatements, omissions, misrepresentation or fraudulent acts of persons providing information. Unless specifically stated otherwise, the applicability and reliability of the findings, recommendations, suggestions or opinions expressed in the Report are only valid to the extent that there has been no material alteration to or variation from any of the information provided to exp. If new information about the environmental conditions at the Site is found, the information should be provided to EXP so that it can be reviewed and revisions to the conclusions and/or recommendations can be made, if warranted.

Standard of Care

The Report has been prepared in a manner consistent with the degree of care and skill exercised by engineering consultants currently practicing under similar circumstances and locale. No other warranty, expressed or implied, is made. Unless specifically stated otherwise, the Report does not contain environmental consulting advice.

Complete Report

All documents, records, data and files, whether electronic or otherwise, generated as part of this assignment form part of the Report. This material includes, but is not limited to, the terms of reference given to EXP by the Client, communications between EXP and the Client, other reports, proposals or documents prepared by EXP for the Client in connection with the site described in the Report. In order to properly understand the suggestions, recommendations and opinions expressed in the Report, reference must be made to the Report in its entirety. EXP is not responsible for use by any party of portions of the Report.

Use of Report

The information and opinions expressed in the Report, or any document forming part of the Report, are for the sole benefit of the Client. No other party may use or rely upon the Report in whole or in part without the written consent of EXP. Any use of the Report, or any portion of the Report, by a third party are the sole responsibility of such third party. EXP is not responsible for damages suffered by any third party resulting from unauthorised use of the Report.

Report Format

Where EXP has submitted both electronic file and a hard copy of the Report, or any document forming part of the Report, only the signed and sealed hard copy shall be the original documents for record and working purposes. In the event of a dispute or discrepancy, the hard copy shall govern. Electronic files transmitted by EXP utilize specific software and hardware systems. EXP makes no representation about the compatibility of these files with the Client's current or future software and

hardware systems. Regardless of format, the documents described herein are EXP's instruments of professional service and shall not be altered without the written consent of EXP.

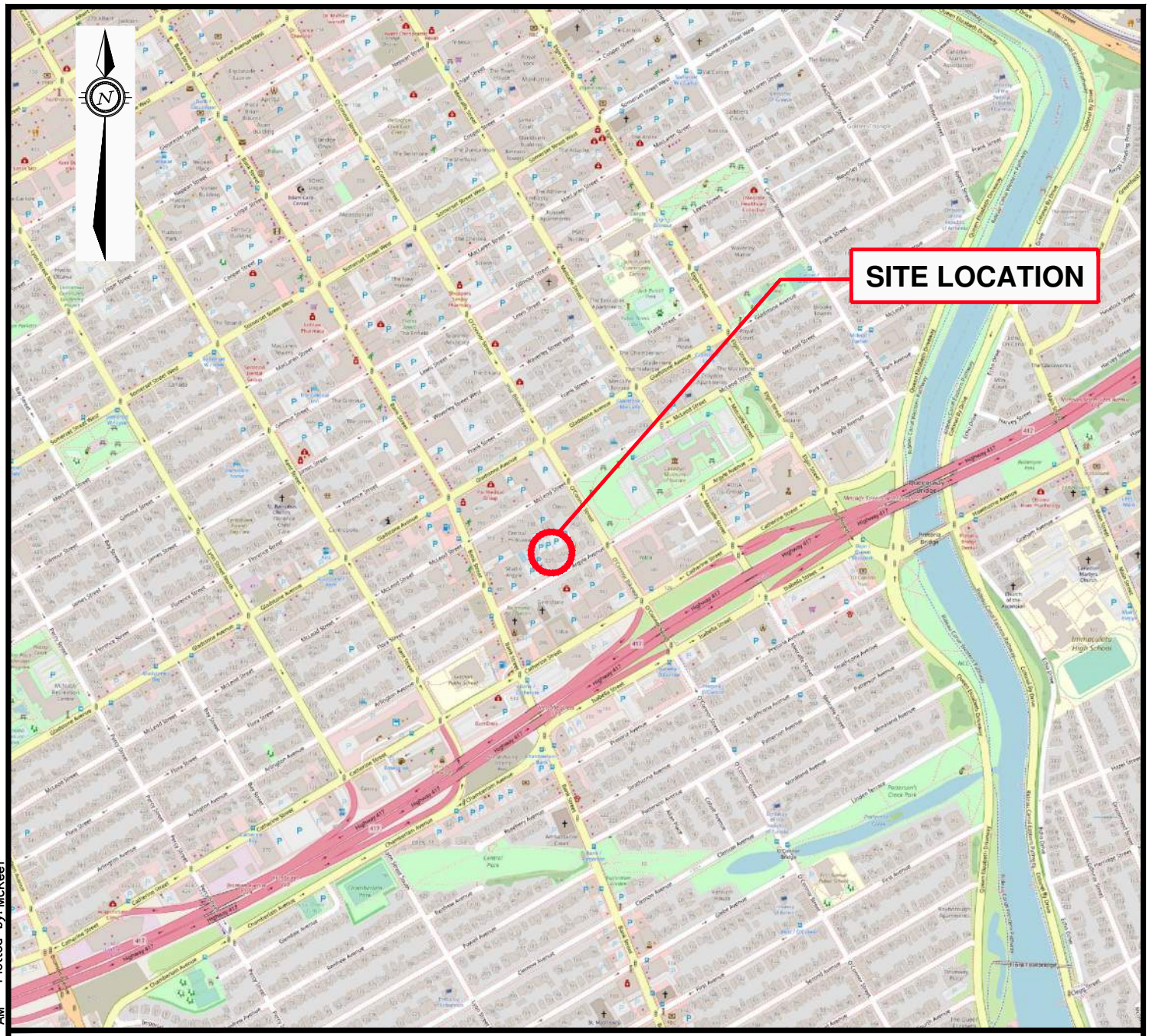
9.0 Signatures

We trust this report meets your current needs. If you have any questions pertaining to the investigation undertaken by EXP, please do not hesitate to contact the undersigned.

Mark McCalla, P. Geo.
Senior Geoscientist
Earth and Environment

Patricia Stelmack, M.Sc., P.Eng.
Team Lead/Senior Project Manager
Earth and Environment

Appendix A: Figures



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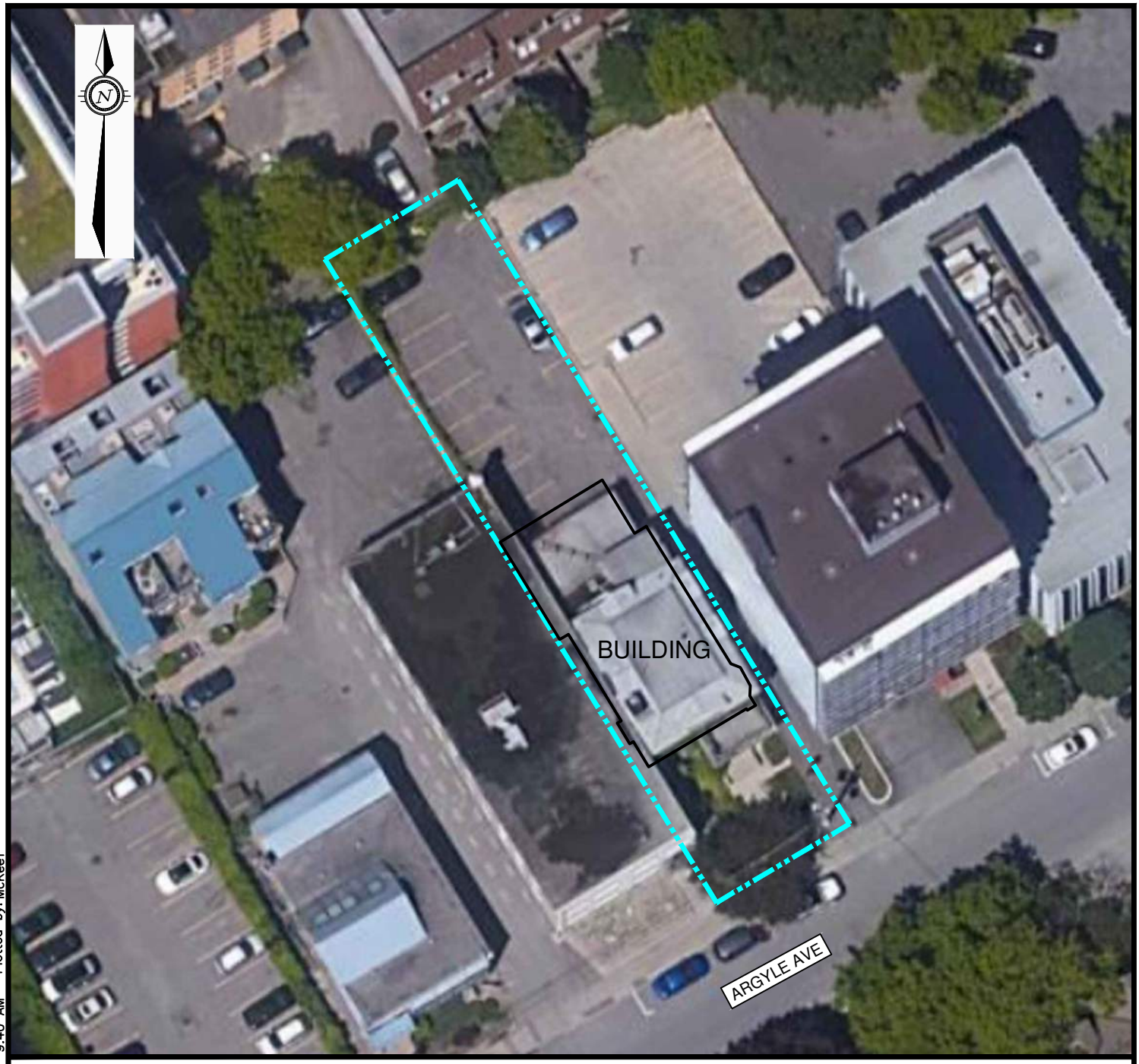
PHASE TWO ESA
SMART LIVING PROPERTIES

SITE LOCATION PLAN

233 ARGYLE AVENUE, OTTAWA, ONTARIO

SCALE 1:10,000

SKETCH NO **FIG 1**



LEGEND

PROPERTY BOUNDARY

0 4m 8m 16m

HORIZONTAL 1:400

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PHASE TWO ESA
SMART LIVING PROPERTIES

CONCEPTUAL SITE MODEL
PHASE TWO PROPERTY
233 ARGYLE AVENUE, OTTAWA, ONTARIO

SCALE 1:400

SKETCH NO **FIG 2**

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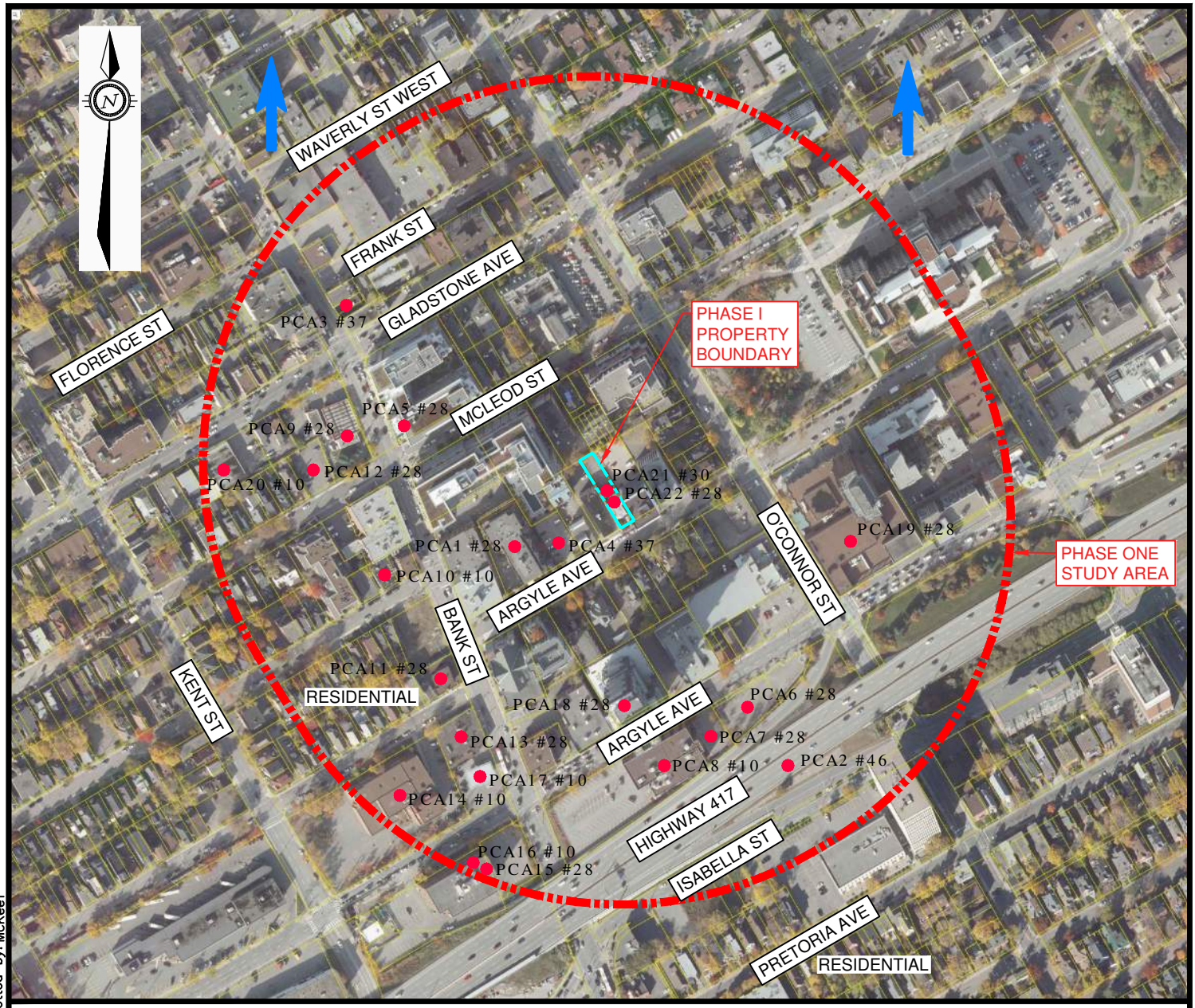

LEGEND

- PROPERTY BOUNDARY
- STUDY AREA (250m)
- INFERRED GROUNDWATER FLOW DIRECTION
- PCA16 — POTENTIALLY CONTAMINATING ACTIVITY (PCA)

POTENTIALLY CONTAMINATING ACTIVITIES

PCA #10	COMMERCIAL AUTOBODY SHOP
PCA #28	GASOLINE AND ASSOCIATED PRODUCTS STORED IN FIXED TANKS
PCA #30	IMPORTED FILL MATERIAL OF UNKNOWN QUALITY
PCA #46	RAIL YARDS, TRACKS AND SPURS

0 40m 80m 160m
HORIZONTAL 1:4,000

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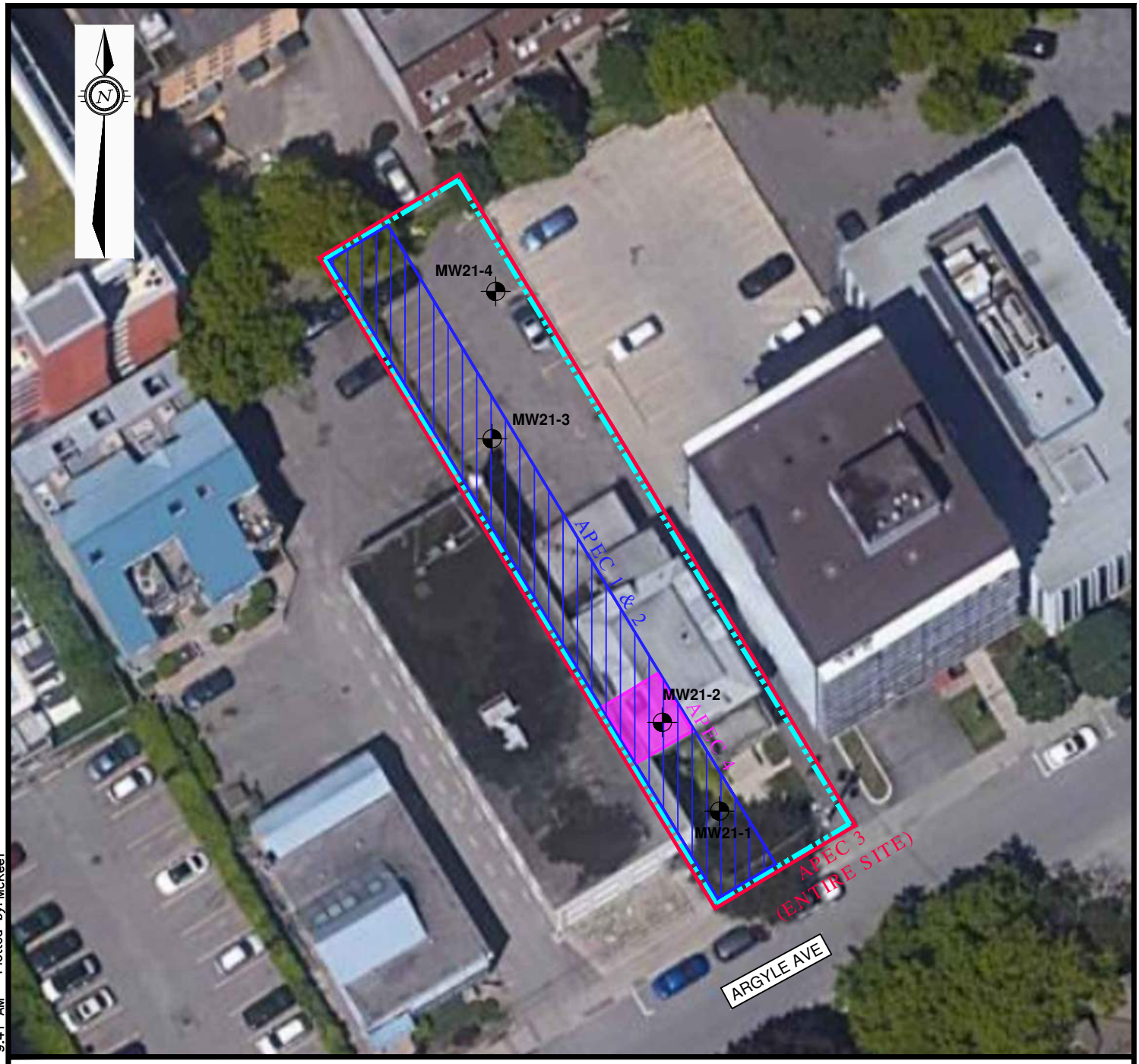
PHASE TWO ESA
SMART LIVING PROPERTIES
CONCEPTUAL SITE MODEL
PHASE ONE STUDY AREA
233 ARGYLE AVENUE, OTTAWA, ONTARIO

SCALE 1:4,000

SKETCH NO **FIG 3**



LEGEND

PROPERTY BOUNDARY

MW21-1 — MONITORING WELL NAME AND LOCATION

GASOLINE AND ASSOCIATED PRODUCTS STORAGE IN FIXED TANKS

DRY CLEANING

IMPORTED FILL MATERIAL OF UNKNOWN QUALITY

GASOLINE AND ASSOCIATED PRODUCTS STORAGE IN FIXED TANKS

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BOREHOLE LOCATION PLAN AND APECS
233 ARGYLE AVENUE, OTTAWA, ONTARIO

SCALE 1:400

SKETCH NO **FIG 4**

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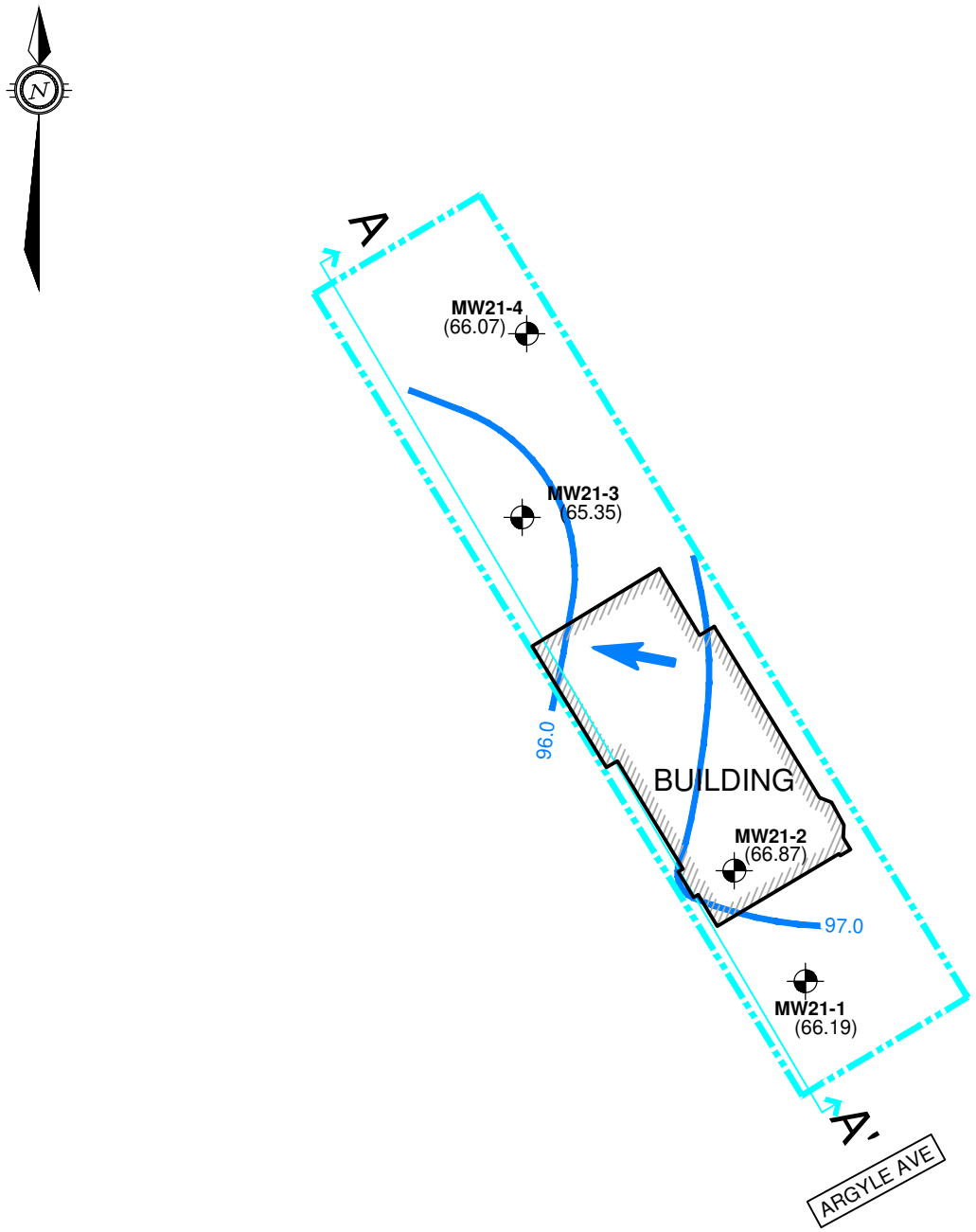

LEGEND

- PROPERTY BOUNDARY
- GROUND WATER CONTOUR
- MW21-1 — MONITORING WELL NAME AND LOCATION
- INFERRED GROUNDWATER FLOW DIRECTION
- (95.73) — GROUNDWATER ELEVATION MARCH 31, 2021

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PHASE TWO ESA
SMART LIVING PROPERTIES

GROUNDWATER CONTOUR PLAN

233 ARGYLE AVENUE, OTTAWA, ONTARIO

SCALE	1:400
SKETCH NO	**FIG 5**

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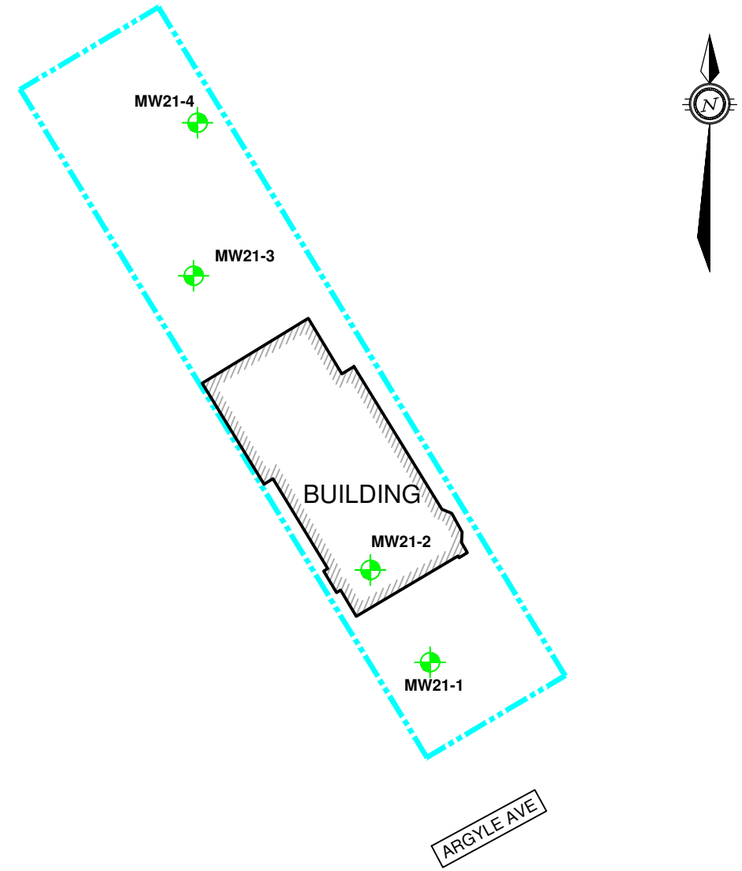
Sample ID	Date	Depth (m)	B	T	E	X	F1	F2	F3	F4	F4G	1,1-DCA	1,2-DCA	1,1-DCE	c-1,2-DCE	t-1,2-DCE	PCE	TCE	VC
MW21-1 S3	18-Mar-21	1.5 - 2.1	<0.020	<0.020	<0.020	<0.020	<10	<10	<50	<50	NA	<0.050	<0.050	<0.050	<0.050	<0.050	<0.050	<0.050	<0.020

Sample ID	Date	Depth (m)	B	T	E	X	F1	F2	F3	F4		1,1-DCA	1,2-DCA	1,1-DCE	c-1,2-DCE	t-1,2-DCE	PCE	TCE	VC
MW21-2 S1	16-Mar-21	0.1 - 0.6	<0.020	<0.020	<0.020	<0.020	<10	<10	<50	<50	NA	<0.050	<0.050	<0.050	<0.050	<0.050	<0.050	<0.050	<0.020

Sample ID	Date	Depth (m)	B	T	E	X	F1	F2	F3	F4		1,1-DCA	1,2-DCA	1,1-DCE	c-1,2-DCE	t-1,2-DCE	PCE	TCE	VC
MW21-3 S1	18-Mar-21	0.05 - 0.6	<0.020	<0.020	0.021	0.021	<10	<10	<50	<50	NA	<0.050	<0.050	<0.050	<0.050	<0.050	0.10	<0.050	<0.020
MW21-3 S1D	Duplicate of	MW21-3 S1	0.031	<0.020	0.036	0.022	<10	<10	68	<50	NA	<0.050	<0.050	<0.050	<0.050	<0.050	0.12	<0.050	<0.020

Sample ID	Date	Depth (m)	B	T	E	X	F1	F2	F3	F4		1,1-DCA	1,2-DCA	1,1-DCE	c-1,2-DCE	t-1,2-DCE	PCE	TCE	VC
MW21-4 S2	19-Mar-21	0.75 - 1.35	<0.020	<0.020	0.088	0.069	<10	<10	230	960	2900	<0.050	<0.050	<0.050	<0.050	<0.050	<0.050	<0.050	<0.020

PARAMETERS	ABBREVIATION	REG 153/04 TABLE 3 STANDARDS
Benzene	B	0.17
Toluene	T	6.0
Ethylbenzene	E	15
Total Xylenes	X	30
F1 (C6-C10)	F1	65
F2 (C10-C16)	F2	150
F3 (C16-C34)	F3	1300
F4 (C34-C50)	F4	5600
F4 (C34-C50) G	F4G	5600
1,1-Dichloroethane	1,1-DCA	3100
1,2-Dichlororethane	1,2-DCA	12
1,1-Dichloroethylene	1,1-DCE	17
Cis-1,2-Dichloroethylene	c-1,2-DCE	17
Trans-1,2,-Dichlordhylene	t-1,2-DCE	17
Tetrachloroethylene	PCE	2.3
Trichloroethylene	TCE	0.52
Vinyl Chloride	VC	0.022



LEGEND

PROPERTY BOUNDARY

MW21-1 MONITORING WELL NAME AND LOCATION

SOIL CONCENTRATION SATISFIES MECP TABLE 3 SCS

SOIL CONCENTRATION EXCEEDS MECP TABLE 3 SCS

MECP SOIL, GROUND WATER AND SEDIMENT STANDARDS FOR USE UNDER PART XV.1 OF THE EPA, APRIL 2011, TABLE 3 NON-POTABLE RESIDENTIAL SCS, FINE GRAINED SOIL.
* DENOTES SAMPLE NO LONGER PRESENT AFTER REMEDIATION
- DENOTES PARAMETER NOT ANALYSED

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PHASE TWO ESA
SMART LIVING PROPERTIES

PHC AND VOC IN SOIL

233 ARGYLE AVENUE, OTTAWA, ONTARIO

SCALE 1:400

SKETCH NO **FIG 6**

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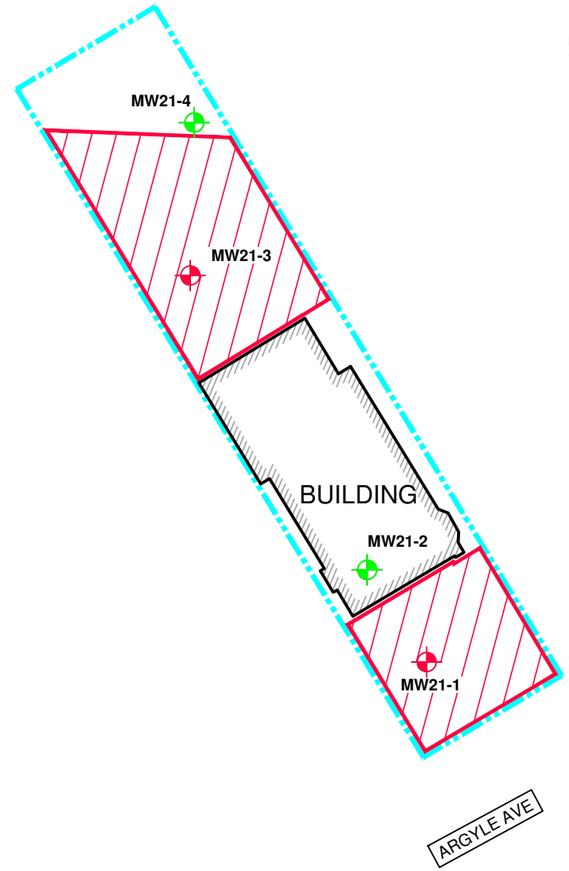
Sample ID	Date	Depth (m)	Sb	As	Ba	Be	B	Cd	Cr	Co	Cu	Pb	Mo	Ni	Se	Ag	Tl	U	V	Zn
MW21-1 S1	18-Mar-21	0.0 - 0.6	0.71	4.3	140	0.36	5.7	0.85	64	6.6	28	160	1.5	18	0.71	0.33	0.18	1.1	36	210

Sample ID	Date	Depth (m)	Sb	As	Ba	Be	B	Cd	Cr	Co	Cu	Pb	Mo	Ni	Se	Ag	Tl	U	V	Zn
MW21-2 S1	16-Mar-21	0.1 - 0.6	<0.20	1.5	110	0.55	5.9	0.21	42	10	25	11	0.78	29	<0.50	<0.20	0.21	0.72	91	67

Sample ID	Date	Depth (m)	Sb	As	Ba	Be	B	Cd	Cr	Co	Cu	Pb	Mo	Ni	Se	Ag	Tl	U	V	Zn
MW21-3 S1	18-Mar-21	0.05 - 0.6	1.6	18	220	0.76	5.3	0.42	34	11	41	170	3.3	26	1.6	0.32	0.23	1.3	51	150
MW21-3 S1D	Duplicate of	MW21-3 S1	0.98	9.5	190	0.73	5.6	0.27	37	10	33	90	3.1	25	1.0	<0.20	0.19	0.97	51	93

Sample ID	Date	Depth (m)	Sb	As	Ba	Be	B	Cd	Cr	Co	Cu	Pb	Mo	Ni	Se	Ag	Tl	U	V	Zn
MW21-4 S2	19-Mar-21	0.75 - 1.35	<0.20	1.1	57	0.27	5.7	<0.10	21	6.1	15	4.2	1.1	13	<0.50	<0.20	0.16	0.50	41	41

PARAMETERS	ABBREVIATION	REG 153/04 TABLE 3 STANDARDS
Antimony	Sb	7.5
Arsenic	As	18
Barium	Ba	390
Beryllium	Be	5
Boron	B	120
Cadmium	Cd	1.2
Chromium	Cr	160
Cobalt	Co	22
Copper	Cu	180
Lead	Pb	120
Molybdenum	Mo	6.9
Nickel	Ni	130
Selenium	Se	2.4
Silver	Ag	25
Thallium	Tl	1
Uranium	U	23
Vanadium	V	86
Zinc	Zn	340



LEGEND

- PROPERTY BOUNDARY
- MW21-1 — MONITORING WELL NAME AND LOCATION
- SOIL CONCENTRATION SATISFIES MECP TABLE 3 SCS
- SOIL CONCENTRATION EXCEEDS MECP TABLE 3 SCS
- ESTIMATED AREA OF IMPACTED SOIL

MECP SOIL, GROUND WATER AND SEDIMENT STANDARDS FOR USE UNDER PART XV.1 OF THE EPA, APRIL 2011, TABLE 3 NON-POTABLE RESIDENTIAL SCS, FINE GRAINED SOIL.
* DENOTES SAMPLE NO LONGER PRESENT AFTER REMEDIATION

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PHASE TWO ESA
SMART LIVING PROPERTIES

METALS IN SOIL

233 ARGYLE AVENUE, OTTAWA, ONTARIO

SCALE 1:400
SKETCH NO **FIG 7**

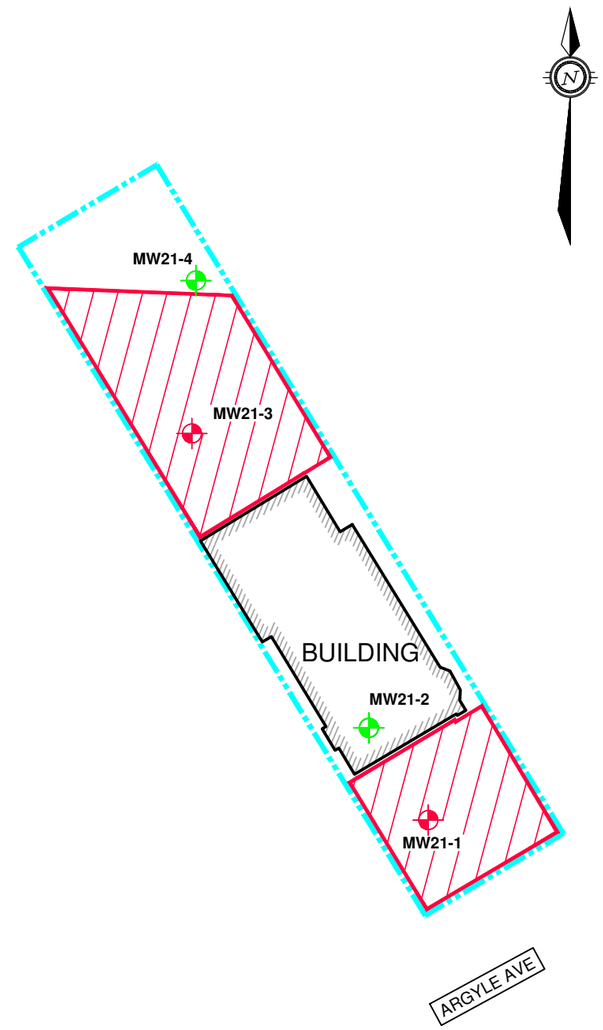
Sample ID	Date	Depth (m)	Ace	Acy	An	B(a)A	B(a)P	B(b/j)F	B(ghi)P	B(k)F	C	DA	Fl	F	I(123)P	T-MN	N	P	Py
MW21-1 S1	18-Mar-21	0.0 - 0.6	0.071	0.12	0.19	0.66	0.64	0.85	0.43	0.30	0.63	0.11	1.4	0.062	0.49	<0.071	<0.050	0.76	1.2

Sample ID	Date	Depth (m)	Ace	Acy	An	B(a)A	B(a)P	B(b/j)F	B(ghi)P	B(k)F	C	DA	Fl	F	I(123)P	T-MN	N	P	Py
MW21-2 S1	16-Mar-21	0.1 - 0.6	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0071	<0.0050	<0.0050	<0.0050

Sample ID	Date	Depth (m)	Ace	Acy	An	B(a)A	B(a)P	B(b/j)F	B(ghi)P	B(k)F	C	DA	Fl	F	I(123)P	T-MN	N	P	Py
MW21-3 S1	18-Mar-21	0.05 - 0.6	0.0065	0.022	0.026	0.099	0.10	0.15	0.072	0.052	0.099	0.018	0.20	0.0072	0.078	0.013	0.0062	0.091	0.17
MW21-3 S1D	Duplicate of	MW21-3 S1	0.051	0.065	0.14	0.60	0.53	0.70	0.29	0.26	0.54	0.089	1.1	0.045	0.34	0.041	0.021	0.56	0.97

Sample ID	Date	Depth (m)	Ace	Acy	An	B(a)A	B(a)P	B(b/j)F	B(ghi)P	B(k)F	C	DA	Fl	F	I(123)P	T-MN	N	P	Py
MW21-4 S2	19-Mar-21	0.75 - 1.35	<0.050	<0.050	<0.050	<0.050	<0.050	0.050	<0.050	<0.050	<0.050	<0.050	0.069	<0.050	<0.050	<0.071	<0.050	<0.050	0.065

PARAMETERS	ABBREVIATION	REG 153/04 TABLE 3 STANDARDS
Acenaphthene	Ace	58
Acenaphthalyene	Acy	0.17
Anthracene	An	0.74
Benzo(a)anthracene	B(a)A	0.5
Benzo(a)pyrene	B(a)P	0.3
Benzo(b/j)fluoranthene	B(b/j)F	0.78
Benzo(g,h,i)perylene	B(ghi)P	7.8
Benzo(k)fluoranthene	B(k)F	0.78
Chrysene	C	7.8
Dibenz(a,h)anthracene	DA	0.1
Fluoranthene	Fl	0.69
Fluorene	F	69
Indeno(1,2,3-cd)pyrene	I(123)P	0.48
Total Methylnaphthalene	T-MN	3.4
Naphthalene	N	0.75
Phenanthrene	P	7.8
Pyrene	Py	78



LEGEND

- PROPERTY BOUNDARY
- MW21-1 — MONITORING WELL NAME AND LOCATION
- SOIL CONCENTRATION SATISFIES MECP TABLE 3 SCS
- SOIL CONCENTRATION EXCEEDS MECP TABLE 3 SCS
- ESTIMATED AREA OF IMPACTED SOIL

MECP SOIL, GROUND WATER AND SEDIMENT STANDARDS FOR USE UNDER PART XV.1 OF THE EPA, APRIL 2011, TABLE 3 NON-POTABLE RESIDENTIAL SCS, FINE GRAINED SOIL.
* DENOTES SAMPLE NO LONGER PRESENT AFTER REMEDIATION

0 4m 8m 16m
HORIZONTAL 1:400

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DRAWN	TM
DATE	APRIL 2021
FILE NO	OTT-00262765-A0

PHASE TWO ESA
SMART LIVING PROPERTIES

PAH IN SOIL

233 ARGYLE AVENUE, OTTAWA, ONTARIO

SCALE 1:400
SKETCH NO **FIG 8**

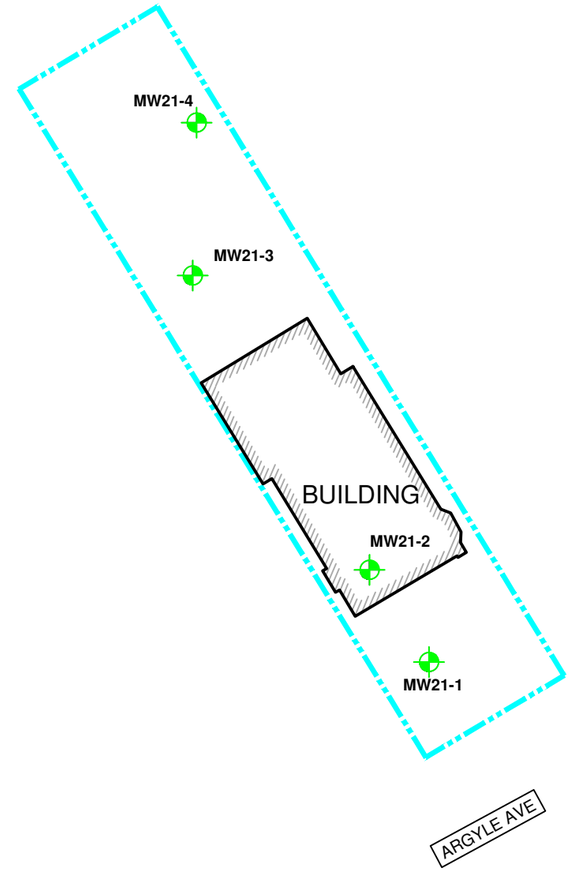
MW21-1																Screen Interval: 3.05 - 6.1 mbgs
Date	B	T	E	X	F1	F2	F3	F4	1,1-DCA	1,2-DCA	1,1-DCE	c-1,2-DCE	t-1,2-DCE	PCE	TCE	VC
30-Mar-21	<0.20	<0.20	<0.20	<0.20	<25	<100	<200	<200	<0.20	<0.50	<0.20	<0.50	<0.50	<0.20	<0.20	<0.20

MW21-2																Screen Interval: 2.2 - 5.25 mbgs
Date	B	T	E	X	F1	F2	F3	F4	1,1-DCA	1,2-DCA	1,1-DCE	c-1,2-DCE	t-1,2-DCE	PCE	TCE	VC
30-Mar-21	<0.20	<0.20	<0.20	<0.20	<25	<100	<200	<200	<0.20	<0.50	<0.20	<0.50	<0.50	<0.20	<0.20	<0.20

MW21-3																Screen Interval: 3.05 - 6.1 mbgs
Date	B	T	E	X	F1	F2	F3	F4	1,1-DCA	1,2-DCA	1,1-DCE	c-1,2-DCE	t-1,2-DCE	PCE	TCE	VC
30-Mar-21	<0.20	<0.20	<0.20	<0.20	<25	<100	<200	<200	<0.20	<0.50	<0.20	<0.50	<0.50	<0.20	<0.20	<0.20
Duplicate of	<0.20	<0.20	<0.20	<0.20	<25	<100	<200	<200	<0.20	<0.50	<0.20	<0.50	<0.50	<0.20	<0.20	<0.20

MW21-4																Screen Interval: 3.05 - 6.1 mbgs
Date	B	T	E	X	F1	F2	F3	F4	1,1-DCA	1,2-DCA	1,1-DCE	c-1,2-DCE	t-1,2-DCE	PCE	TCE	VC
30-Mar-21	<0.20	<0.20	<0.20	<0.20	<25	<100	<200	<200	<0.20	<0.50	<0.20	<0.50	<0.50	<0.20	<0.20	<0.20

PARAMETERS	ABBREVIATION	REG 153/04 TABLE 3 STANDARDS
Benzene	B	430
Toluene	T	18000
Ethylbenzene	E	2300
Total Xylenes	X	4200
F1 (C6-C10)	F1	750
F2 (C10-C16)	F2	150
F3 (C16-C34)	F3	500
F4 (C34-C50)	F4	500
1,1-Dichloroethane	1,1-DCA	3100
1,2-Dichlororethane	1,2-DCA	12
1,1-Dichloroethylene	1,1-DCE	17
Cis-1,2-Dichloroethylene	c-1,2-DCE	17
Trans-1,2,-Dichlorothylene	t-1,2-DCE	17
Tetrachloroethylene	PCE	17
Trichloroethylene	TCE	17
Vinyl Chloride	VC	1.7



LEGEND

- PROPERTY BOUNDARY
- MW21-1 MONITORING WELL NAME AND LOCATION
- GROUNDWATER CONCENTRATION SATISFIES MECP TABLE 3 SCS
- GROUNDWATER CONCENTRATION EXCEEDS MECP TABLE 3 SCS

MECP SOIL, GROUND WATER AND SEDIMENT STANDARDS FOR USE UNDER PART XV.1 OF THE EPA, APRIL 2011, TABLE 3 NON-POTABLE SCS FOR ALL TYPES OF PROPERTY USE, FINE GRAINED SOIL.
- DENOTES PARAMETER NOT ANALYSED

0 4m 8m 16m
HORIZONTAL 1:400

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DRAWN TM
DATE APRIL 2021
FILE NO OTT-00262765-A0

PHASE TWO ESA
SMART LIVING PROPERTIES

PHC AND VOC IN GROUNDWATER

233 ARGYLE AVENUE, OTTAWA, ONTARIO

SCALE 1:400
SKETCH NO **FIG 9**

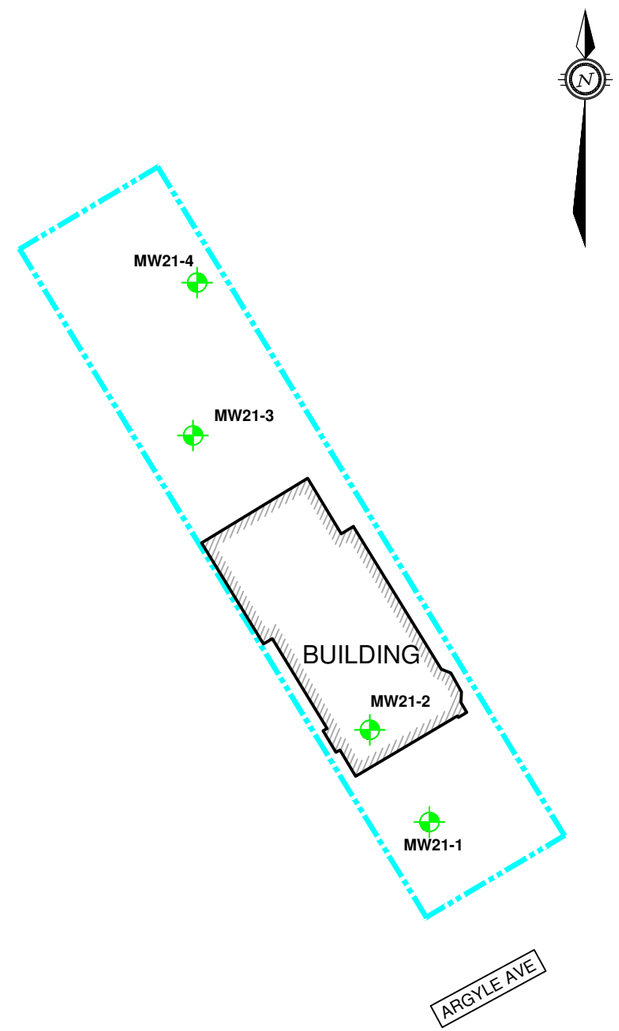
MW21-1																		Screen Interval: 3.05 - 6.1 mbgs	
Date	Sb	As	Ba	Be	B	Cd	Cr	Co	Cu	Pb	Mo	Ni	Se	Ag	Na	Tl	U	V	Zn
30-Mar-21	<0.50	2.3	51	<0.40	300	<0.090	<5.0	<0.50	2.1	<0.50	11	1.4	<2.0	<0.090	94000	<0.050	5.2	4.4	<5.0

MW21-2																		Screen Interval: 2.2 - 5.25 mbgs	
Date	Sb	As	Ba	Be	B	Cd	Cr	Co	Cu	Pb	Mo	Ni	Se	Ag	Na	Tl	U	V	Zn
30-Mar-21	<0.50	2.0	41	<0.40	310	<0.090	<5.0	<0.50	7.9	<0.50	7.1	2.1	5.0	<0.090	130000	<0.050	2.3	4.6	<5.0

MW21-3																		Screen Interval: 3.05 - 6.1 mbgs	
Date	Sb	As	Ba	Be	B	Cd	Cr	Co	Cu	Pb	Mo	Ni	Se	Ag	Na	Tl	U	V	Zn
30-Mar-21	0.52	2.1	54	<0.40	550	<0.090	<5.0	<0.50	2.8	<0.50	37	2.8	<2.0	<0.090	170000	<0.050	8.9	4.9	<5.0
Duplicate of	<0.50	2.1	54	<0.40	560	<0.090	<5.0	<0.50	2.6	<0.50	37	2.9	<2.0	<0.090	170000	<0.050	8.7	4.9	<5.0

MW21-4																		Screen Interval: 3.05 - 6.1 mbgs	
Date	Sb	As	Ba	Be	B	Cd	Cr	Co	Cu	Pb	Mo	Ni	Se	Ag	Na	Tl	U	V	Zn
30-Mar-21	0.51	2.6	85	<0.40	740	<0.090	<5.0	<0.50	2.7	<0.50	32	3.6	<2.0	<0.090	230000	<0.050	11	4.8	<5.0

PARAMETERS	ABBREVIATION	REG 153/04 TABLE 3 STANDARDS
Antimony	Sb	20000
Arsenic	As	1900
Barium	Ba	29000
Beryllium	Be	67
Boron	B	45000
Cadmium	Cd	2.7
Chromium	Cr	810
Cobalt	Co	66
Copper	Cu	87
Lead	Pb	25
Molybdenum	Mo	9200
Nickel	Ni	490
Selenium	Se	63
Silver	Ag	1.5
Thallium	Tl	510
Uranium	U	420
Vanadium	V	250
Zinc	Zn	1100



LEGEND

- PROPERTY BOUNDARY
- MW21-1 — MONITORING WELL NAME AND LOCATION
- GROUNDWATER CONCENTRATION SATISFIES MECP TABLE 3 SCS
- GROUNDWATER CONCENTRATION EXCEEDS MECP TABLE 3 SCS

MECP SOIL, GROUND WATER AND SEDIMENT STANDARDS FOR USE UNDER PART XV.1 OF THE EPA, APRIL 2011, TABLE 3 NON-POTABLE SCS FOR ALL TYPES OF PROPERTY USE, FINE GRAINED SOIL.

0 4m 8m 16m

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DATE APRIL 2021
FILE NO OTT-00262765-A0

PHASE TWO ESA
SMART LIVING PROPERTIES

METALS IN GROUNDWATER

233 ARGYLE AVENUE, OTTAWA, ONTARIO

SCALE 1:400
SKETCH NO **FIG 10**

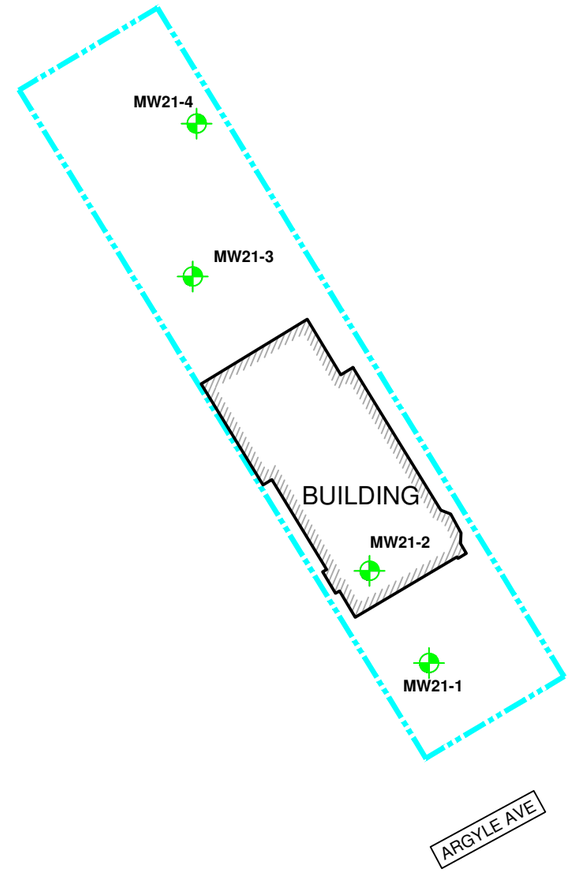
MW21-1															Screen Interval: 3.05 - 6.1 mbgs		
Date	Ace	Acy	An	B(a)A	B(a)P	B(b/j)F	B(ghi)P	B(k)F	C	DA	Fl	F	I(123)P	T-MN	N	P	Py
30-Mar-21	<0.050	<0.050	<0.050	<0.050	<0.0090	<0.050	<0.050	<0.050	<0.050	<0.050	0.060	<0.050	<0.050	<0.071	<0.050	0.13	0.050

MW21-2															Screen Interval: 2.2 - 5.25 mbgs		
Date	Ace	Acy	An	B(a)A	B(a)P	B(b/j)F	B(ghi)P	B(k)F	C	DA	Fl	F	I(123)P	T-MN	N	P	Py
30-Mar-21	<0.050	<0.050	<0.050	<0.050	<0.0090	<0.050	<0.050	<0.050	<0.050	<0.050	<0.050	<0.050	<0.050	<0.071	<0.050	<0.030	<0.050

MW21-3															Screen Interval: 3.05 - 6.1 mbgs		
Date	Ace	Acy	An	B(a)A	B(a)P	B(b/j)F	B(ghi)P	B(k)F	C	DA	Fl	F	I(123)P	T-MN	N	P	Py
30-Mar-21	<0.050	<0.050	<0.050	<0.050	<0.0090	<0.050	<0.050	<0.050	<0.050	<0.050	<0.050	<0.050	<0.050	<0.071	<0.050	<0.030	<0.050
Duplicate of	<0.050	<0.050	<0.050	<0.050	<0.0090	<0.050	<0.050	<0.050	<0.050	<0.050	<0.050	<0.050	<0.050	<0.071	<0.050	<0.030	<0.050

MW21-4															Screen Interval: 3.05 - 6.1 mbgs		
Date	Ace	Acy	An	B(a)A	B(a)P	B(b/j)F	B(ghi)P	B(k)F	C	DA	Fl	F	I(123)P	T-MN	N	P	Py
30-Mar-21	0.15	<0.050	<0.050	<0.050	<0.0090	<0.050	<0.050	<0.050	<0.050	<0.050	<0.050	0.11	<0.050	<0.071	<0.050	0.061	<0.050

PARAMETERS	ABBREVIATION	REG 153/04 TABLE 3 STANDARDS
Acenaphthene	Ace	1700
Acenaphthalyene	Acy	1.8
Anthracene	An	2.4
Benzo(a)anthracene	B(a)A	4.7
Benzo(a)pyrene	B(a)P	0.81
Benzo(b/j)fluoranthene	B(b/j)F	0.75
Benzo(g,h,i)perylene	B(ghi)P	0.2
Benzo(k)fluoranthene	B(k)F	0.4
Chrysene	C	1
Dibenz(a,h)anthracene	DA	0.52
Fluoranthene	Fl	130
Fluorene	F	400
Indeno(1,2,3-cd)pyrene	I(123)P	0.2
Total Methylnaphthalene	T-MN	1800
Naphthalene	N	6400
Phenanthrene	P	580
Pyrene	Py	68



LEGEND

- PROPERTY BOUNDARY
- MW21-1 — MONITORING WELL NAME AND LOCATION
- GROUNDWATER CONCENTRATION SATISFIES MECP TABLE 3 SCS
- GROUNDWATER CONCENTRATION EXCEEDS MECP TABLE 3 SCS

MECP SOIL, GROUND WATER AND SEDIMENT STANDARDS FOR USE UNDER PART XV.1 OF THE EPA, APRIL 2011, TABLE 3 NON-POTABLE SCS FOR ALL TYPES OF PROPERTY USE, FINE GRAINED SOIL.

0 4m 8m 16m

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PHASE TWO ESA
SMART LIVING PROPERTIES

PAH IN GROUNDWATER

233 ARGYLE AVENUE, OTTAWA, ONTARIO

SCALE 1:400

SKETCH NO **FIG 11**

Filename: E:\OTT\OTT-00262765-A0\60 Execution\65 Drawings\phase 2\262765-A0.dwg
Last Saved: Apr 8, 2021 9:42 AM Last Plotted: Apr 8, 2021 9:42 AM Plotted by: McKeeT

Sample ID	Date	Depth (m)	B	T	E	X	F1	F2	F3	F4	F4G	1,1-DCA	1,2-DCA	1,1-DCE	c-1,2-DCE	t-1,2-DCE	PCE	TCE	VC
MW21-1 S3	18-Mar-21	1.5 - 2.1	<0.020	<0.020	<0.020	<0.020	<10	<10	<50	<50	NA	<0.050	<0.050	<0.050	<0.050	<0.050	<0.050	<0.050	<0.020

Sample ID	Date	Depth (m)	B	T	E	X	F1	F2	F3	F4		1,1-DCA	1,2-DCA	1,1-DCE	c-1,2-DCE	t-1,2-DCE	PCE	TCE	VC
MW21-2 S1	16-Mar-21	0.1 - 0.6	<0.020	<0.020	<0.020	<0.020	<10	<10	<50	<50	NA	<0.050	<0.050	<0.050	<0.050	<0.050	<0.050	<0.050	<0.020

Sample ID	Date	Depth (m)	B	T	E	X	F1	F2	F3	F4		1,1-DCA	1,2-DCA	1,1-DCE	c-1,2-DCE	t-1,2-DCE	PCE	TCE	VC
MW21-3 S1	18-Mar-21	0.05 - 0.6	<0.020	<0.020	0.021	0.021	<10	<10	<50	<50	NA	<0.050	<0.050	<0.050	<0.050	<0.050	0.10	<0.050	<0.020
MW21-3 S1D	Duplicate of	MW21-3 S1	0.031	<0.020	0.036	0.022	<10	<10	68	<50	NA	<0.050	<0.050	<0.050	<0.050	<0.050	0.12	<0.050	<0.020

Sample ID	Date	Depth (m)	B	T	E	X	F1	F2	F3	F4		1,1-DCA	1,2-DCA	1,1-DCE	c-1,2-DCE	t-1,2-DCE	PCE	TCE	VC
MW21-4 S2	19-Mar-21	0.75 - 1.35	<0.020	<0.020	0.088	0.069	<10	<10	230	960	2900	<0.050	<0.050	<0.050	<0.050	<0.050	<0.050	<0.050	<0.020

PARAMETERS	ABBREVIATION	REG 153/04 TABLE 3 STANDARDS
Benzene	B	0.17
Toluene	T	6.0
Ethylbenzene	E	15
Total Xylenes	X	30
F1 (C6-C10)	F1	65
F2 (C10-C16)	F2	150
F3 (C16-C34)	F3	1300
F4 (C34-C50)	F4	5600
F4 (C34-C50) G	F4G	5600
1,1-Dichloroethane	1,1-DCA	3100
1,2-Dichlororethane	1,2-DCA	12
1,1-Dichloroethylene	1,1-DCE	17
Cis-1,2-Dichloroethylene	c-1,2-DCE	17
Trans-1,2,-Dichlorothylene	t-1,2-DCE	17
Tetrachloroethylene	PCE	2.3
Trichloroethylene	TCE	0.52
Vinyl Chloride	VC	0.022

SOIL

MECP SOIL, GROUND WATER AND SEDIMENT STANDARDS FOR USE UNDER PART XV.1 OF THE EPA, APRIL 2011, TABLE 3 NON-POTABLE RESIDENTIAL SCS, FINE GRAINED SOIL.
* DENOTES SAMPLE NO LONGER PRESENT AFTER REMEDIATION
- DENOTES PARAMETER NOT ANALYSED

MW21-1																			Screen Interval: 3.05 - 6.1 mbgs
Date	Ace	Acy	An	B(a)A	B(a)P	B(b/j)F	B(ghi)P	B(k)F	C	DA	Fl	F	I(123)P	T-MN	N	P	Py		
30-Mar-21	<0.050	<0.050	<0.050	<0.050	<0.0090	<0.050	<0.050	<0.050	<0.050	<0.050	0.060	<0.050	<0.050	<0.071	<0.050	0.13	0.050		

MW21-2																			Screen Interval: 2.2 - 5.25 mbgs
Date	Ace	Acy	An	B(a)A	B(a)P	B(b/j)F	B(ghi)P	B(k)F	C	DA	Fl	F	I(123)P	T-MN	N	P	Py		
30-Mar-21	<0.050	<0.050	<0.050	<0.050	<0.0090	<0.050	<0.050	<0.050	<0.050	<0.050	<0.050	<0.050	<0.050	<0.071	<0.050	<0.030	<0.050		

MW21-3																			Screen Interval: 3.05 - 6.1 mbgs
Date	Ace	Acy	An	B(a)A	B(a)P	B(b/j)F	B(ghi)P	B(k)F	C	DA	Fl	F	I(123)P	T-MN	N	P	Py		
30-Mar-21	<0.050	<0.050	<0.050	<0.050	<0.0090	<0.050	<0.050	<0.050	<0.050	<0.050	<0.050	<0.050	<0.050	<0.071	<0.050	<0.030	<0.050		
Duplicate of	<0.050	<0.050	<0.050	<0.050	<0.0090	<0.050	<0.050	<0.050	<0.050	<0.050	<0.050	<0.050	<0.050	<0.071	<0.050	<0.030	<0.050		

MW21-4																			Screen Interval: 3.05 - 6.1 mbgs
Date	Ace	Acy	An	B(a)A	B(a)P	B(b/j)F	B(ghi)P	B(k)F	C	DA	Fl	F	I(123)P	T-MN	N	P	Py		
30-Mar-21	0.15	<0.050	<0.050	<0.050	<0.0090	<0.050	<0.050	<0.050	<0.050	<0.050	<0.050	0.11	<0.050	<0.071	<0.050	0.061	<0.050		

GROUNDWATER

MECP SOIL, GROUND WATER AND SEDIMENT STANDARDS FOR USE UNDER PART XV.1 OF THE EPA, APRIL 2011, TABLE 3 NON-POTABLE SCS FOR ALL TYPES OF PROPERTY USE, FINE GRAINED SOIL.

PARAMETERS	ABBREVIATION	REG 153/04 TABLE 3 STANDARDS
Acenaphthene	Ace	1700
Acenaphthalyene	Acy	1.8
Anthracene	An	2.4
Benzo(a)anthracene	B(a)A	4.7
Benzo(a)pyrene	B(a)P	0.81
Benzo(b/j)fluoranthene	B(b/j)F	0.75
Benzo(g,h,i)perylene	B(ghi)P	0.2
Benzo(k)fluoranthene	B(k)F	0.4
Chrysene	C	1
Dibenz(a,h)anthracene	DA	0.52
Fluoranthene	Fl	130
Fluorene	F	400
Indeno(1,2,3-cd)pyrene	I(123)P	0.2
Total Methylnaphthalene	T-MN	1800
Naphthalene	N	6400
Phenanthrene	P	580
Pyrene	Py	68

LEGEND

- FILL
- CLAY
- CLAY WITH SAND & GRAVEL
- GROUNDWATER LEVEL FROM MARCH 30, 2021
- SOIL QUALITY SATISFIES MECP TABLE 3 SCS
- SOIL QUALITY EXCEEDS MECP TABLE 3 SCS
- GROUNDWATER QUALITY MEETS MECP TABLE 3 SCS
- GROUNDWATER QUALITY EXCEEDS MECP TABLE 3 SCS

VERTICAL SCALE: AS SHOWN
0 2m 4m 8m
HORIZONTAL 1:200

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DRAWN TM
DATE MARCH 2021
FILE NO OTT-00262765-A0

PHASE TWO ESA
SMART LIVING PROPERTIES
233 ARGYLE AVENUE, OTTAWA, ONTARIO

SCALE AS NOTED
SKETCH NO
FIG 12

Filename: E:\OTT\OTT-00262765-A0\60 Execution\65 Drawings\phase 2\262765-A0 Sections.dwg
Last Saved: Apr 8, 2021 8:16 AM Last Plotted: Apr 8, 2021 9:38 AM Plotted by: McKeeT

Sample ID	Date	Depth (m)	Sb	As	Ba	Be	B	Cd	Cr	Co	Cu	Pb	Mo	Ni	Se	Ag	Tl	U	V	Zn
MW21-1 S1	18-Mar-21	0.0 - 0.6	0.71	4.3	140	0.36	5.7	0.85	64	6.6	28	160	1.5	18	0.71	0.33	0.18	1.1	36	210

Sample ID	Date	Depth (m)	Sb	As	Ba	Be	B	Cd	Cr	Co	Cu	Pb	Mo	Ni	Se	Ag	Tl	U	V	Zn
MW21-2 S1	16-Mar-21	0.1 - 0.6	<0.20	1.5	110	0.55	5.9	0.21	42	10	25	11	0.78	29	<0.50	<0.20	0.21	0.72	91	67

Sample ID	Date	Depth (m)	Sb	As	Ba	Be	B	Cd	Cr	Co	Cu	Pb	Mo	Ni	Se	Ag	Tl	U	V	Zn
MW21-3 S1	18-Mar-21	0.05 - 0.6	1.6	18	220	0.76	5.3	0.42	34	11	41	170	3.3	26	1.6	0.32	0.23	1.3	51	150
MW21-3 S1D	Duplicate of	MW21-3 S1	0.98	9.5	190	0.73	5.6	0.27	37	10	33	90	3.1	25	1.0	<0.20	0.19	0.97	51	93

Sample ID	Date	Depth (m)	Sb	As	Ba	Be	B	Cd	Cr	Co	Cu	Pb	Mo	Ni	Se	Ag	Tl	U	V	Zn
MW21-4 S2	19-Mar-21	0.75 - 1.35	<0.20	1.1	57	0.27	5.7	<0.10	21	6.1	15	4.2	1.1	13	<0.50	<0.20	0.16	0.50	41	41

PARAMETERS	ABBREVIATION	REG 153/04 TABLE 3 STANDARDS
Antimony	Sb	7.5
Arsenic	As	18
Barium	Ba	390
Beryllium	Be	5
Boron	B	120
Cadmium	Cd	1.2
Chromium	Cr	160
Cobalt	Co	22
Copper	Cu	180
Lead	Pb	120
Molybdenum	Mo	6.9
Nickel	Ni	130
Selenium	Se	2.4
Silver	Ag	25
Thallium	Tl	1
Uranium	U	23
Vanadium	V	86
Zinc	Zn	340

SOIL

MECP SOIL, GROUND WATER AND SEDIMENT STANDARDS FOR USE UNDER PART XV.1 OF THE EPA, APRIL 2011, TABLE 3 NON-POTABLE RESIDENTIAL SCS, FINE GRAINED SOIL.
* DENOTES SAMPLE NO LONGER PRESENT AFTER REMEDIATION

MW21-1																				Screen Interval: 3.05 - 6.1 mbgs
Date	Sb	As	Ba	Be	B	Cd	Cr	Co	Cu	Pb	Mo	Ni	Se	Ag	Na	Tl	U	V	Zn	
30-Mar-21	<0.50	2.3	51	<0.40	300	<0.090	<5.0	<0.50	2.1	<0.50	11	1.4	<2.0	<0.090	94000	<0.050	5.2	4.4	<5.0	

MW21-2																				Screen Interval: 2.2 - 5.25 mbgs
Date	Sb	As	Ba	Be	B	Cd	Cr	Co	Cu	Pb	Mo	Ni	Se	Ag	Na	Tl	U	V	Zn	
30-Mar-21	<0.50	2.0	41	<0.40	310	<0.090	<5.0	<0.50	7.9	<0.50	7.1	2.1	5.0	<0.090	130000	<0.050	2.3	4.6	<5.0	

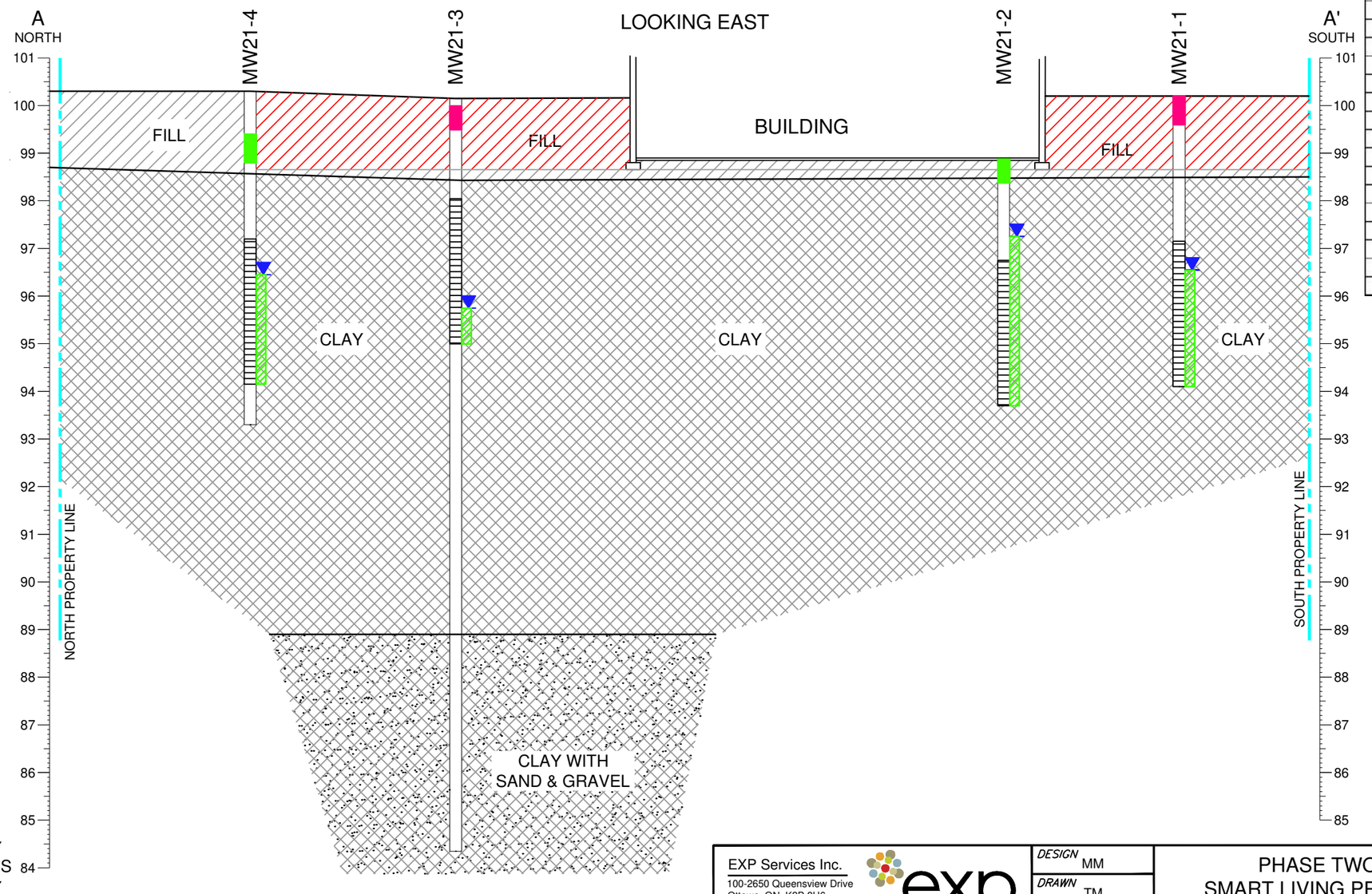
MW21-3																				Screen Interval: 3.05 - 6.1 mbgs
Date	Sb	As	Ba	Be	B	Cd	Cr	Co	Cu	Pb	Mo	Ni	Se	Ag	Na	Tl	U	V	Zn	
30-Mar-21	0.52	2.1	54	<0.40	550	<0.090	<5.0	<0.50	2.8	<0.50	37	2.8	<2.0	<0.090	170000	<0.050	8.9	4.9	<5.0	
Duplicate of	<0.50	2.1	54	<0.40	560	<0.090	<5.0	<0.50	2.6	<0.50	37	2.9	<2.0	<0.090	170000	<0.050	8.7	4.9	<5.0	

MW21-4																				Screen Interval: 3.05 - 6.1 mbgs
Date	Sb	As	Ba	Be	B	Cd	Cr	Co	Cu	Pb	Mo	Ni	Se	Ag	Na	Tl	U	V	Zn	
30-Mar-21	0.51	2.6	85	<0.40	740	<0.090	<5.0	<0.50	2.7	<0.50	32	3.6	<2.0	<0.090	230000	<0.050	11	4.8	<5.0	

GROUNDWATER

MECP SOIL, GROUND WATER AND SEDIMENT STANDARDS FOR USE UNDER PART XV.1 OF THE EPA, APRIL 2011, TABLE 3 NON-POTABLE SCS FOR ALL TYPES OF PROPERTY USE, FINE GRAINED SOIL.

PARAMETERS	ABBREVIATION	REG 153/04 TABLE 3 STANDARDS
Antimony	Sb	20000
Arsenic	As	1900
Barium	Ba	29000
Beryllium	Be	67
Boron	B	45000
Cadmium	Cd	2.7
Chromium	Cr	810
Cobalt	Co	66
Copper	Cu	87
Lead	Pb	25
Molybdenum	Mo	9200
Nickel	Ni	490
Selenium	Se	63
Silver	Ag	1.5
Thallium	Tl	510
Uranium	U	420
Vanadium	V	250
Zinc	Zn	1100



LEGEND

- FILL
- CLAY
- CLAY WITH SAND & GRAVEL
- GROUNDWATER LEVEL FROM MARCH 30, 2021
- SOIL QUALITY SATISFIES MECP TABLE 3 SCS
- SOIL QUALITY EXCEEDS MECP TABLE 3 SCS
- GROUNDWATER QUALITY MEETS MECP TABLE 3 SCS
- GROUNDWATER QUALITY EXCEEDS MECP TABLE 3 SCS
- ESTIMATED AREA OF IMPACTED SOIL

VERTICAL SCALE: AS SHOWN
0 2m 4m 8m
HORIZONTAL 1:200

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DESIGN	MM
DRAWN	TM
DATE	MARCH 2021
FILE NO	OTT-00262765-A0
SCALE	AS NOTED
SKETCH NO	FIG 13

PHASE TWO ESA
SMART LIVING PROPERTIES
233 ARGYLE AVENUE, OTTAWA, ONTARIO

Sample ID	Date	Depth (m)	Ace	Acy	An	B(a)A	B(a)P	B(b/j)F	B(ghi)P	B(k)F	C	DA	FI	F	I(123)P	T-MN	N	P	Py
MW21-1 S1	18-Mar-21	0.0 - 0.6	0.071	0.12	0.19	0.66	0.64	0.85	0.43	0.30	0.63	0.11	1.4	0.062	0.49	<0.071	<0.050	0.76	1.2

Sample ID	Date	Depth (m)	Ace	Acy	An	B(a)A	B(a)P	B(b/j)F	B(ghi)P	B(k)F	C	DA	FI	F	I(123)P	T-MN	N	P	Py
MW21-2 S1	16-Mar-21	0.1 - 0.6	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0071	<0.0050	<0.0050	<0.0050

Sample ID	Date	Depth (m)	Ace	Acy	An	B(a)A	B(a)P	B(b/j)F	B(ghi)P	B(k)F	C	DA	FI	F	I(123)P	T-MN	N	P	Py
MW21-3 S1	18-Mar-21	0.05 - 0.6	0.0065	0.022	0.026	0.099	0.10	0.15	0.072	0.052	0.099	0.018	0.20	0.0072	0.078	0.013	0.0062	0.091	0.17
MW21-3 S1D	Duplicate of	MW21-3 S1	0.051	0.065	0.14	0.60	0.53	0.70	0.29	0.26	0.54	0.089	1.1	0.045	0.34	0.041	0.021	0.56	0.97

Sample ID	Date	Depth (m)	Ace	Acy	An	B(a)A	B(a)P	B(b/j)F	B(ghi)P	B(k)F	C	DA	FI	F	I(123)P	T-MN	N	P	Py
MW21-4 S2	19-Mar-21	0.75 - 1.35	<0.050	<0.050	<0.050	<0.050	<0.050	0.050	<0.050	<0.050	<0.050	<0.050	0.069	<0.050	<0.050	<0.071	<0.050	<0.050	0.065

PARAMETERS	ABBREVIATION	REG 153/04 TABLE 3 STANDARDS
Acenaphthene	Ace	58
Acenaphthalyene	Acy	0.17
Anthracene	An	0.74
Benzo(a)anthracene	B(a)A	0.5
Benzo(a)pyrene	B(a)P	0.3
Benzo(b/j)fluoranthene	B(b/j)F	0.78
Benzo(g,h,i)perylene	B(ghi)P	7.8
Benzo(k)fluoranthene	B(k)F	0.78
Chrysene	C	7.8
Dibenz(a,h)anthracene	DA	0.1
Fluoranthene	FI	0.69
Fluorene	F	69
Indeno(1,2,3-cd)pyrene	I(123)P	0.48
Total Methylnaphthalene	T-MN	3.4
Naphthalene	N	0.75
Phenanthrene	P	7.8
Pyrene	Py	78

SOIL

MECP SOIL, GROUND WATER AND SEDIMENT STANDARDS FOR USE UNDER PART XV.1 OF THE EPA, APRIL 2011, TABLE 3 NON-POTABLE RESIDENTIAL SCS, FINE GRAINED SOIL.
* DENOTES SAMPLE NO LONGER PRESENT AFTER REMEDIATION

MW21-1																			Screen Interval: 3.05 - 6.1 mbgs		
Date	Sb	As	Ba	Be	B	Cd	Cr	Co	Cu	Pb	Mo	Ni	Se	Ag	Na	Tl	U	V	Zn
30-Mar-21	<0.50	2.3	51	<0.40	300	<0.090	<5.0	<0.50	2.1	<0.50	11	1.4	<2.0	<0.090	94000	<0.050	5.2	4.4	<5.0

MW21-2																			Screen Interval: 2.2 - 5.25 mbgs		
Date	Sb	As	Ba	Be	B	Cd	Cr	Co	Cu	Pb	Mo	Ni	Se	Ag	Na	Tl	U	V	Zn
30-Mar-21	<0.50	2.0	41	<0.40	310	<0.090	<5.0	<0.50	7.9	<0.50	7.1	2.1	5.0	<0.090	130000	<0.050	2.3	4.6	<5.0

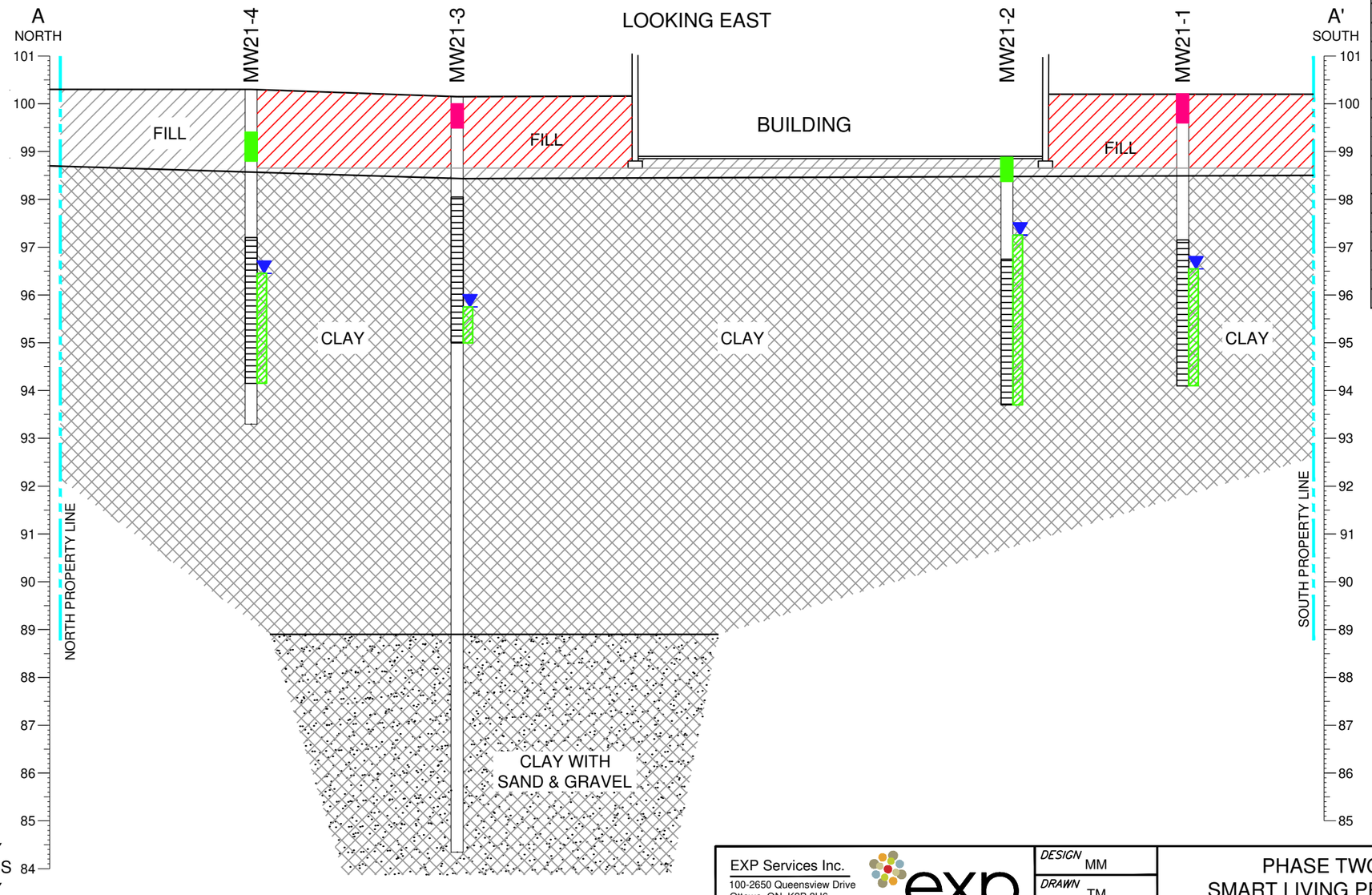
MW21-3																			Screen Interval: 3.05 - 6.1 mbgs		
Date	Sb	As	Ba	Be	B	Cd	Cr	Co	Cu	Pb	Mo	Ni	Se	Ag	Na	Tl	U	V	Zn
30-Mar-21	0.52	2.1	54	<0.40	550	<0.090	<5.0	<0.50	2.8	<0.50	37	2.8	<2.0	<0.090	170000	<0.050	8.9	4.9	<5.0
Duplicate of	<0.50	2.1	54	<0.40	560	<0.090	<5.0	<0.50	2.6	<0.50	37	2.9	<2.0	<0.090	170000	<0.050	8.7	4.9	<5.0

MW21-4																			Screen Interval: 3.05 - 6.1 mbgs		
Date	Sb	As	Ba	Be	B	Cd	Cr	Co	Cu	Pb	Mo	Ni	Se	Ag	Na	Tl	U	V	Zn
30-Mar-21	0.51	2.6	85	<0.40	740	<0.090	<5.0	<0.50	2.7	<0.50	32	3.6	<2.0	<0.090	230000	<0.050	11	4.8	<5.0

MECP SOIL, GROUND WATER AND SEDIMENT STANDARDS FOR USE UNDER PART XV.1 OF THE EPA, APRIL 2011, TABLE 3 NON-POTABLE SCS FOR ALL TYPES OF PROPERTY USE, FINE GRAINED SOIL.

GROUNDWATER

PARAMETERS	ABBREVIATION	REG 153/04 TABLE 3 STANDARDS
Antimony	Sb	20000
Arsenic	As	1900
Barium	Ba	29000
Beryllium	Be	67
Boron	B	45000
Cadmium	Cd	2.7
Chromium	Cr	810
Cobalt	Co	66
Copper	Cu	87
Lead	Pb	25
Molybdenum	Mo	9200
Nickel	Ni	490
Selenium	Se	63
Silver	Ag	1.5
Thallium	Tl	510
Uranium	U	420
Vanadium	V	250
Zinc	Zn	1100



LEGEND

- FILL
- CLAY
- CLAY WITH SAND & GRAVEL
- GROUNDWATER LEVEL FROM MARCH 30, 2021
- SOIL QUALITY SATISFIES MECP TABLE 3 SCS
- SOIL QUALITY EXCEEDS MECP TABLE 3 SCS
- GROUNDWATER QUALITY MEETS MECP TABLE 3 SCS
- GROUNDWATER QUALITY EXCEEDS MECP TABLE 3 SCS
- ESTIMATED AREA OF IMPACTED SOIL

VERTICAL SCALE: AS SHOWN
0 2m 4m 8m
HORIZONTAL 1:200

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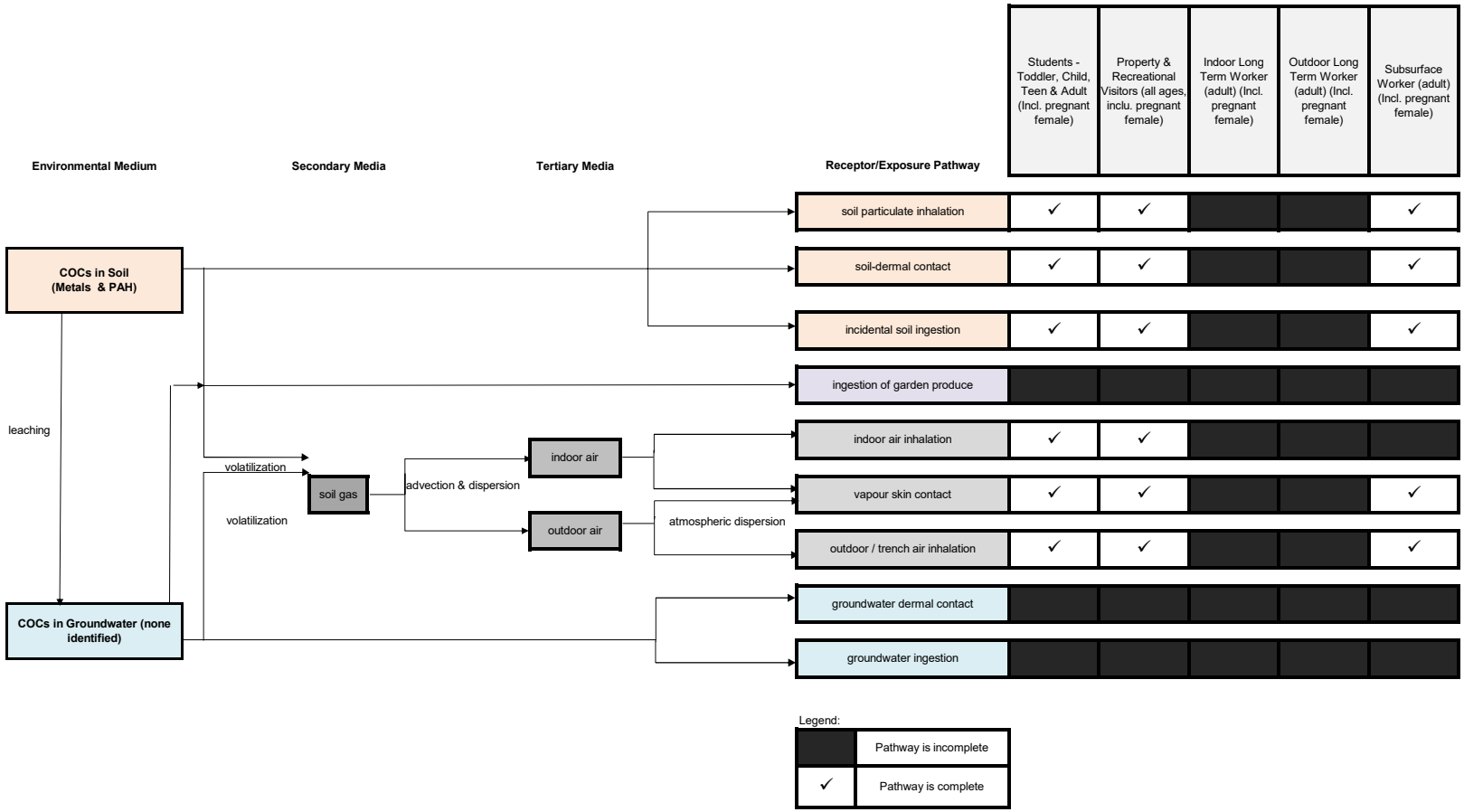
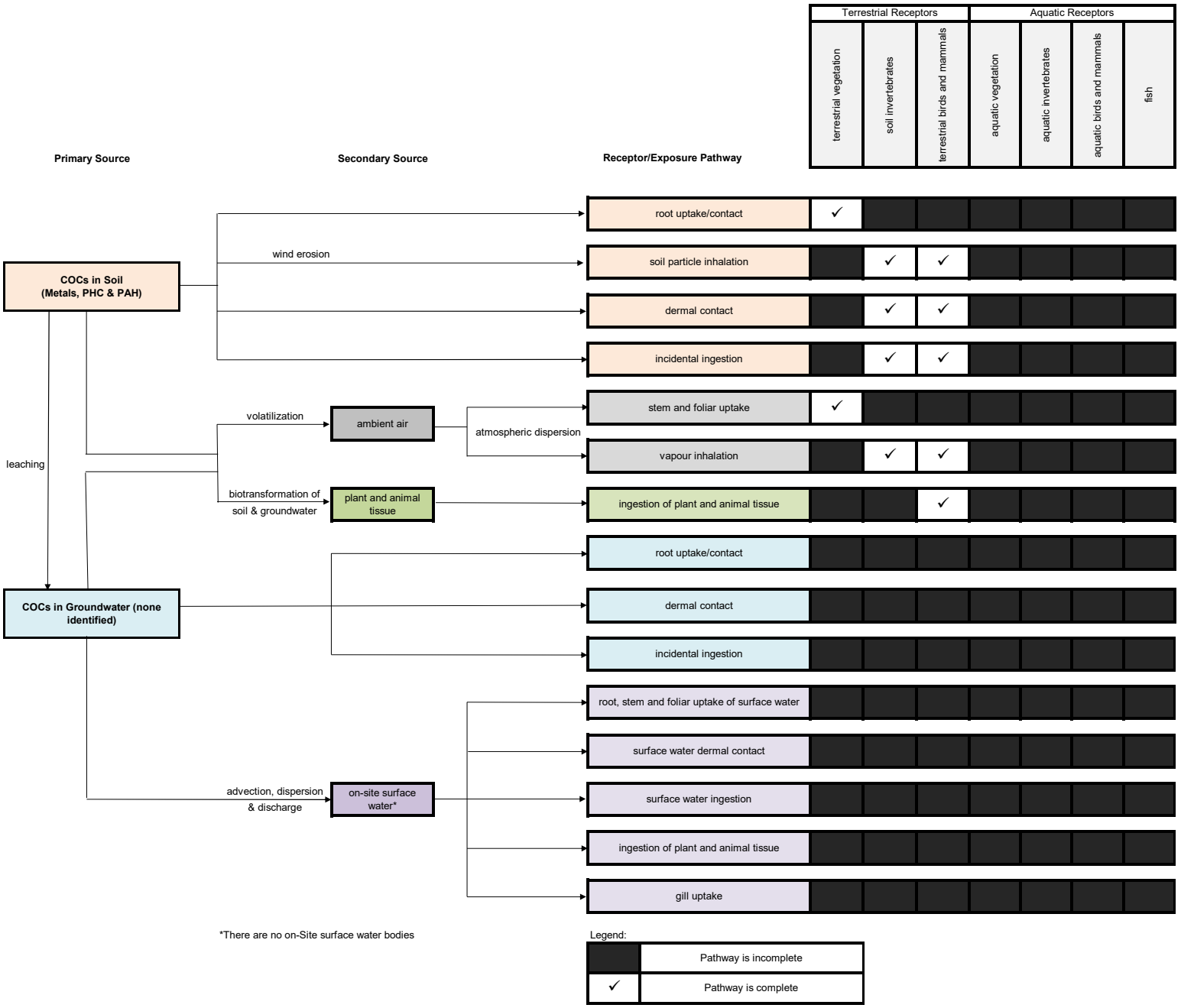
DESIGN	MM
DRAWN	TM
DATE	MARCH 2021
FILE NO	OTT-00262765-A0
SCALE	AS NOTED
SKETCH NO	FIG 14

PHASE TWO ESA
SMART LIVING PROPERTIES
233 ARGYLE AVENUE, OTTAWA, ONTARIO


Environmental Medium
Secondary Media
Tertiary Media
Receptor/Exposure Pathway
Students - Toddler, Child, Teen & Adult (Incl. pregnant female)
Property & Recreational Visitors (all ages, inclu. pregnant female)
Indoor Long Term Worker (adult) (Incl. pregnant female)
Outdoor Long Term Worker (adult) (Incl. pregnant female)
Subsurface Worker (adult) (Incl. pregnant female)
COCs in Soil (Metals & PAH)
leaching
COCs in Groundwater (none identified)
volatilization
volatilization
soil gas
advection & dispersion
indoor air
outdoor air
atmospheric dispersion
soil particulate inhalation
soil-dermal contact
incidental soil ingestion
ingestion of garden produce
indoor air inhalation
vapour skin contact
outdoor / trench air inhalation
groundwater dermal contact
groundwater ingestion
Legend:
Pathway is incomplete
Pathway is complete


Terrestrial Receptors
Aquatic Receptors
terrestrial vegetation
soil invertebrates
terrestrial birds and mammals
aquatic vegetation
aquatic invertebrates
aquatic birds and mammals
fish
Primary Source
Secondary Source
Receptor/Exposure Pathway
COCs in Soil (Metals, PHC & PAH)
COCs in Groundwater (none identified)
wind erosion
volatilization
ambient air
atmospheric dispersion
leaching
biotransformation of soil & groundwater
plant and animal tissue
advection, dispersion & discharge
on-site surface water*
root uptake/contact
soil particle inhalation
dermal contact
incidental ingestion
stem and foliar uptake
vapour inhalation
ingestion of plant and animal tissue
root uptake/contact
dermal contact
incidental ingestion
root, stem and foliar uptake of surface water
surface water dermal contact
surface water ingestion
ingestion of plant and animal tissue
gill uptake
*There are no on-Site surface water bodies
Legend:
Pathway is incomplete
Pathway is complete

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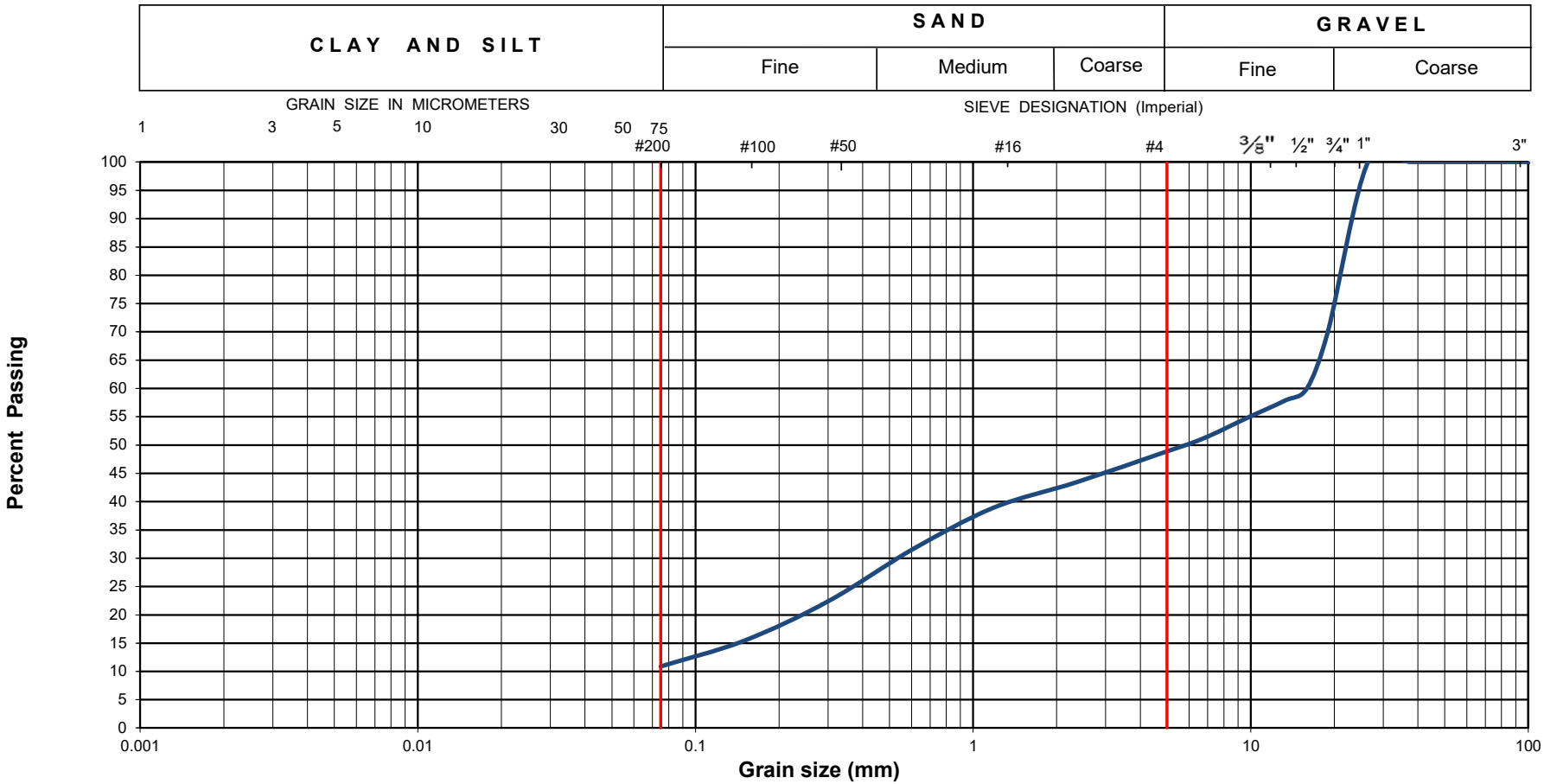
Grain-Size Distribution Curve
Method of Test For Sieve Analysis of Aggregate
ASTM C-136

Unified Soil Classification System



EXP Project No.:	**OTT-00262765-A0**	**Project Name :**	**Proposed Residential Additions to Office Building**						
Client :	**Smart Living Properties**	**Project Location :**	**233 Argyle Avenue, Ottawa, Ontario**						
Date Sampled :	**March 18, 2021**	**Borehole No:**	**MW21-3**	**Sample:**	**SS2**	**Depth (m) :**	**0.8-1.4**		
Sample Composition :		**Gravel (%)**	**52**	**Sand (%)**	**37**	**Silt & Clay (%)**	**11**	**Figure :**	**7**
Sample Description :	**FILL: Poorly Graded Gravel with Silt and Sand (GP-GM)**								

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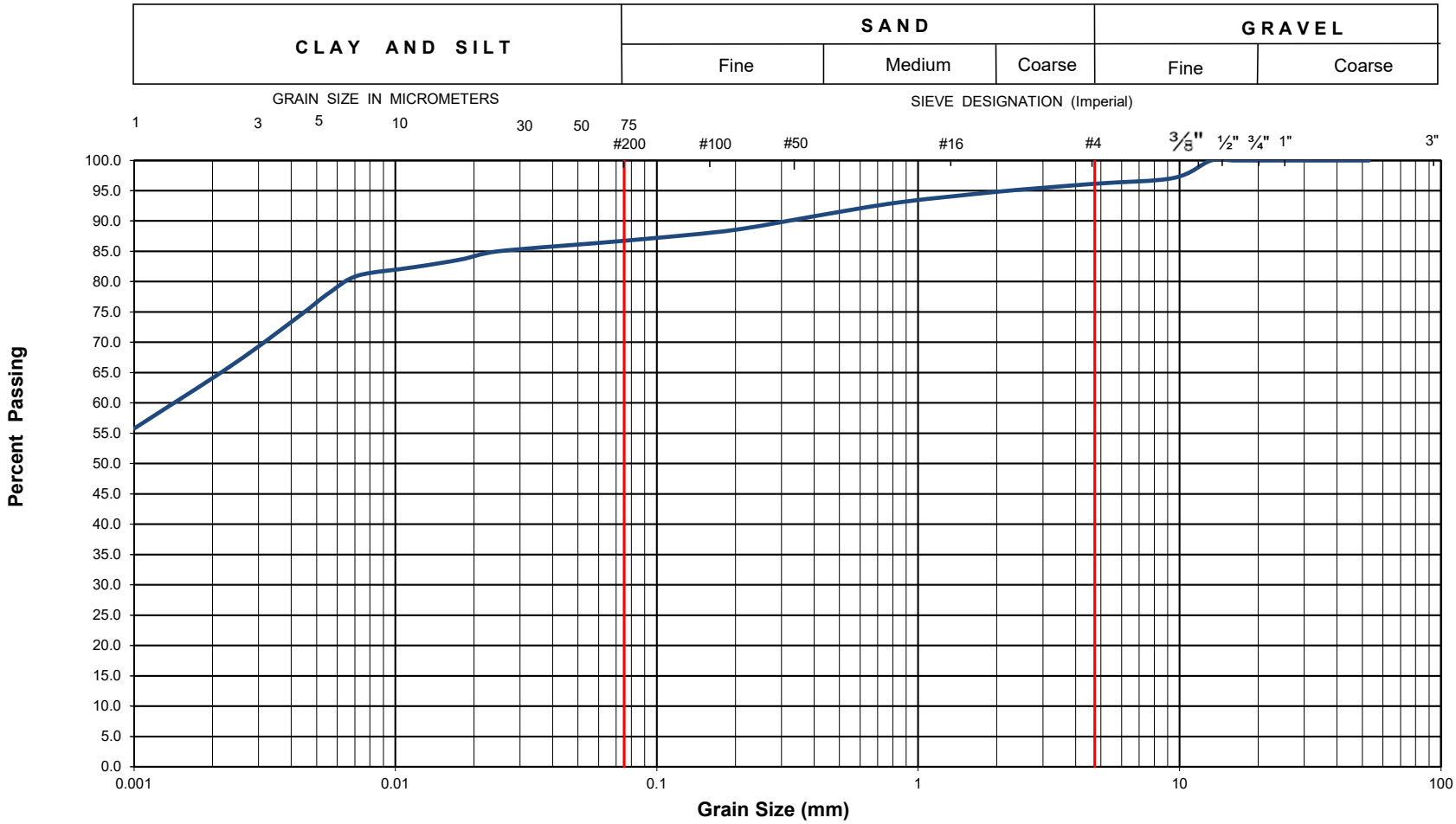
Grain-Size Distribution Curve
Method of Test For Particle Size Analysis of Soil
ASTM C-136/ASTM D422

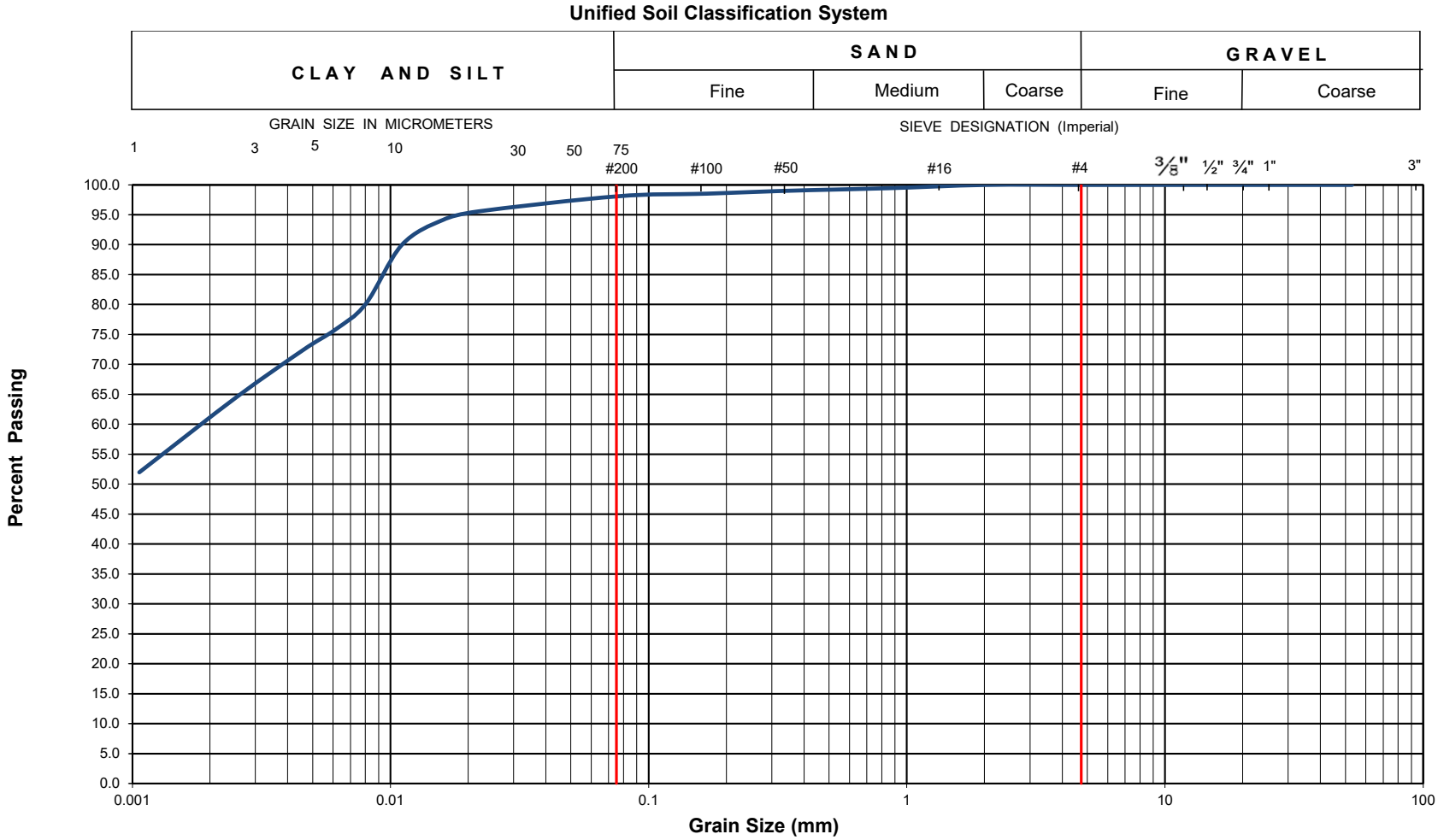
Unified Soil Classification System



EXP Project No.:	**OTT-00262765-A0**	**Project Name :**	**Proposed Residential Additions to Office Building**						
Client :	**Smart Living Properties**	**Project Location :**	**233 Argyle Avenue, Ottawa, Ontario**						
Date Sampled :	**March 18, 2021**	**Borehole No:**	**MW21-3**	**Sample No.:**	**SS4**	**Depth (m) :**	**2.3-2.9**		
Sample Description :		**% Silt and Clay**	**87**	**% Sand**	**9**	**% Gravel**	**4**	**Figure :**	**8**
Sample Description :	**CLAY (CH)**								

EXP Services Inc.
100-2650 Queensview Drive
Ottawa, ON K2B 8H6

Grain-Size Distribution Curve
Method of Test For Particle Size Analysis of Soil
ASTM C-136/ASTM D422



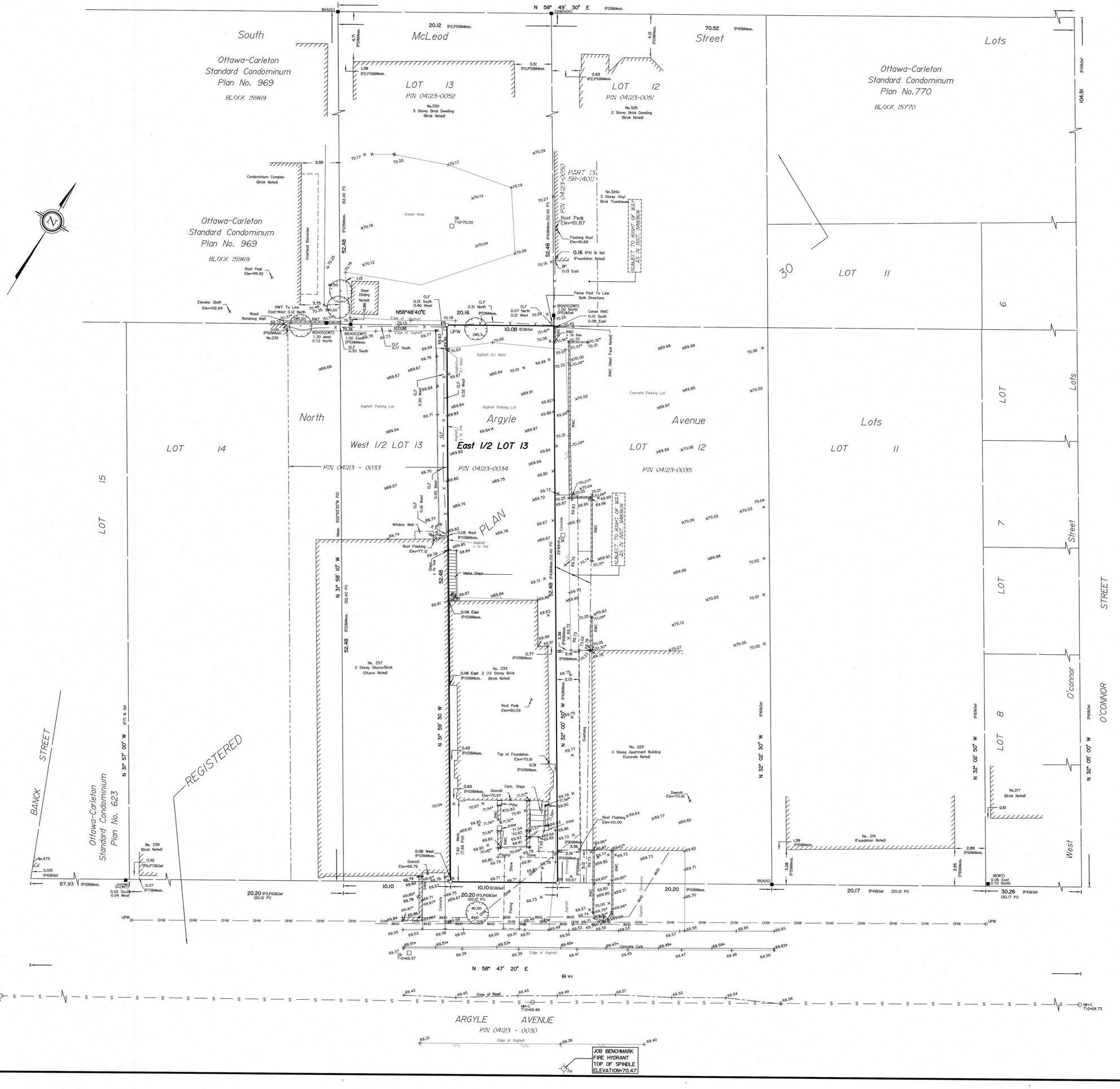
EXP Project No.:	**OTT-00262765-A0**	**Project Name :**	**Proposed Residential Additions to Office Building**						
Client :	**Smart Living Properties**	**Project Location :**	**233 Argyle Avenue, Ottawa, Ontario**						
Date Sampled :	**March 18, 2021**	**Borehole No:**	**MW21-3**		**Sample No.:**	**SS10**		**Depth (m) :**	**10.7-11.3**
Sample Description :		**% Silt and Clay**	**98**	**% Sand**	**2**	**% Gravel**	**0**	**Figure :**	**9**
Sample Description :		**CLAY (CL)**							

Appendix B: Survey Plan

TOPOGRAPHICAL PLAN OF SURVEY OF

PART OF LOT 13
(North Argyle Avenue)
REGISTERED PLAN 30
CITY OF OTTAWA

Prepared by Annis, O'Sullivan, Vollebekk Ltd.



Scale 1 : 150

6 4.5 3.0 1.5 0 3 6 Metres

Metric

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

Surveyor's Certificate

I CERTIFY THAT :

1. This survey and plan are correct and in accordance with the Surveys Act and the Surveyors Act and the regulations made under them.
2. The survey was completed on the 21st day of July, 2020.

July 28, 2020
Date

Richard R. Gauthier
Ontario Land Surveyor

Notes & Legend

Denotes		
—□—	=	Survey Monument Planted
—■—	=	Survey Monument Found
SIB	=	Standard Iron Bar
SSIB	=	Short Standard Iron Bar
IB	=	Iron Bar
CC	=	Cut Cross
CP	=	Concrete Pin
(WIT)	=	Witness
Meas.	=	Measured
(AOG)	=	Annis, O'Sullivan, Vollebekk Ltd.
(P1)	=	Registered Plan 30
(P2)	=	(AOG) Plan March 25, 2004
(P3)	=	(AOG) Plan February 27, 2004
(P4)	=	(AOG) Plan December 7, 1989
(P5)	=	(AOG) Plan October 23, 2019
(P6)	=	Plan 5R-14011
(P7)	=	(AOG) Plan September 10, 1971
(P8)	=	(AOG) Plan June 3, 2010
(P9)	=	(647) Plan May 27, 1983
(P10)	=	(647) Plan April 27, 1978
(D1)	=	Inst. N483616
—— OHW ——	=	Overhead Wires
O UP	=	Utility Pole
□ CB	=	Catch Basin
○ FH	=	Fire Hydrant
⊖ WV	=	Water Valve
▭ GM	=	Gas Meter
	=	Deciduous Tree
	=	Coniferous Tree
○ MH-C	=	Combined Sewer Manholes
CLF	=	Chain Link Fence
RWS	=	Retaining Wall Stone
RWT	=	Retaining Wall Timber
RWC	=	Retaining Wall Concrete
Ø	=	Diameter
+ 65.00	=	Location of Elevations
+ 65.00*	=	Top of Concrete Curb Elevation
+ 65.00**	=	Top of Concrete Curb Elevation

ELEVATION NOTES

1. Elevations shown are geodetic and are referred to the CGVD28 geodetic datum.
2. It is the responsibility of the user of this information to verify that the job benchmark has not been altered or disturbed and that it's relative elevation and description agrees with the information shown on this drawing.

UTILITY NOTES

1. This drawing cannot be accepted as acknowledging all of the utilities and it will be the responsibility of the user to contact the respective utility authorities for confirmation.
2. Only visible surface utilities were located.
3. A field location of underground plant by the pertinent utility authority is mandatory before any work involving breaking ground, probing, excavating etc.

Bearings are grid, derived from Can-Net 2016 Real Time Network GPS observations and are referred to MTM Zone 9 (76°30' West Longitude) NAD-83 (original).

For bearing comparison, a rotation of 1°19'40"W Counter-Clockwise was applied to bearings from Plan (P4) & (P8)

ASSOCIATION OF ONTARIO LAND SURVEYORS
PLAN SUBMISSION FORM
2127787

THIS PLAN IS NOT VALID UNLESS IT IS AN EMBOSSED ORIGINAL COPY ISSUED BY THE SURVEYOR In accordance with Regulation 1026, Section 29 (3).

ANNIS, O'SULLIVAN, VOLLEBEKK LTD.
14 Concourse Gate, Suite 500
Nepean, Ont. K2E 7S6
Phone: (613) 727-0850 / Fax: (613) 727-1079
Email: Nepean@aovltd.com
Ontario Land Surveyors

Job No. 20643-20 Smart Living PILI I3 RP 30 T F ST

Appendix C: Sampling and Analysis Plan

1 Introduction

This appendix presents the Sampling and Analysis Plan (SAAP) that was developed in support of the Phase Two Environmental Site Assessment (ESA) for the property located at 233 Argyle Avenue in Ottawa, Ontario (hereinafter referred to as the 'site'). The SAAP presents the procedures and measures that will be undertaken during field investigative activities to characterize the site conditions and meet the data quality objectives of the Phase Two ESA.

The SAAP presents the sampling program proposed for the site, the recommended procedures and protocols for sampling and related field activities, the data quality objectives, and the quality assurance/ quality control measures that will be undertaken to provide for the collection of accurate, reproducible and representative data. These components are described in further detail below.

2 Field Sampling Program

The field sampling program was developed to provide for the collection of samples of the soil and groundwater for chemical analysis of volatile organic compounds (VOC), petroleum hydrocarbons (PHC), benzene, toluene, ethylbenzene and xylenes (collectively known as 'BTEX'), polycyclic aromatic hydrocarbons (PAH) and metals. The soil sampling media is to consist of the overburden materials (depths up to 6 m of overburden beneath site). The soil sampling will be location-specific to assess for the presence areas of potential environmental concern identified in a Phase One ESA completed by EXP in 2021. Vapour readings will also be taken in the field to determine samples to be submitted for laboratory analysis.

Each of the groundwater samples will be submitted for analysis of VOC, PHC, PAH, and metals. The monitoring well network is to comprise of four monitoring wells.

Vertical control of the boreholes and monitoring wells will be obtained through the completion of an elevation survey with reference to a geodetic benchmark. Groundwater flow and direction in the overburden aquifer will also be determined through groundwater level measurements and the elevations established in the site elevation survey.

3 Field Methods

To meet the requirements of the field sampling program, the following field investigative methods will be undertaken:

- Borehole Drilling;
- Soil Sampling;
- Monitoring Well Installation;
- Groundwater Level Measurements;
- Elevation Survey; and,
- Groundwater Sampling.

The field investigative methods will be performed following the procedures and protocols set out in EXP's standard operating procedures and are outlined below:

3.1 Borehole Drilling

Boreholes will be advanced at the site to facilitate the collection of soil samples for chemical analysis and geologic characterization; and, for the installation of groundwater monitoring wells. A total of 3 boreholes (MW21-1 to MW21-4) are proposed to be advanced at the site, to a maximum overburden depth of approximately 6.5 m below grade, to provide for the collection of samples of the surficial and overburden materials beneath the site. The borehole locations will be selected to delineate the extent and magnitude of PCOC related impacts to the soils and the groundwater.

Prior to borehole drilling, utility clearances will be obtained from public and private locators, as required. The borehole drilling program will be conducted by a licensed driller under the oversight of EXP field staff. All drilling equipment will be cleaned prior to the commencement of drilling at each borehole location.

3.2 Soil Sampling

Soil samples will be collected for chemical analysis and geologic property characterization. The soil samples will be collected using 5 cm diameter, 60 cm long, stainless steel split-spoon sampling devices advanced ahead of the direct push drilling equipment at continuous intervals. The split spoon sampling devices will be attached to drill rods and advanced into the soil by means of a standard penetrating hammer. Upon retrieval from the boreholes, the split-spoon samplers will be placed on a flat surface and disassembled by drilling personnel to provide access of the recovered cores. Geologic and sampling details of the recovered cores will be logged and the samples will be assessed for the potential presence of non-aqueous phase liquids. Samples for chemical analysis will be selected on the basis of visual and olfactory evidence of impacts and at specific intervals to define the lateral and vertical extent of known impacts.

Recommended volumes of soil samples selected for chemical analysis will be collected into pre-cleaned, laboratory supplied, analytical test group specific containers. The samples will be placed into clean insulated coolers chilled with ice for storage and transport. Samples intended for analysis of BTEX and PHC F1-F2 will be collected into 40 ml vials. The samples will be assigned unique identification numbers, and the date, time, location, and requested analyses for each sample will be documented in a bound field note book. The samples will be submitted to the contract laboratory within analytical test group holding times under Chain of Custody (COC) protocols. New disposable chemical resistant gloves will be used for each soil core to prevent sample cross-contamination.

3.3 Monitoring Well Installation

It is proposed that three boreholes will be instrumented as a groundwater monitoring well installed with slotted screens intercepting either the native overburden material or the shallow bedrock, where the water table aquifer is expected, extending to depths of approximately 6 m below grade. The monitoring wells will be constructed using 37 mm diameter, Schedule 40, PVC riser pipe and number 10 slot size (0.25 mm) well screens. The base of the well screens will be sealed with threaded flush PVC end caps. All well pipe connections will be factory machined threaded flush couplings. The annular space around the well screens will be backfilled with silica sand, to an average height of 0.3 m above the top of the screen. Granular bentonite will be placed in the borehole annulus from the top of the sand pack to approximately 0.3 m below grade. The monitoring wells will be completed with either a flush-mounted protective steel casing or above ground protective casings cemented into place.

3.4 Monitoring Well Development

The newly installed monitoring wells will be developed to remove fine sediment particles potentially lodged in the sand pack and well screen to enhance hydraulic communication with the surrounding formation waters.

Standing water volumes will be determined by means of an electronic water level meter. Prior to collecting groundwater samples, the monitoring wells will be developed using low flow sampling techniques to reduce the amount of sediment in the samples. Well development details will be documented on a well development log sheet or in a bound hard cover notebook. All development waters will be collected and stored in labeled, sealed containers.

3.5 Groundwater Level Measurements

Groundwater level measurements will be recorded for the monitoring wells to determine groundwater flow and direction in the water table aquifer beneath the site. Water levels will be measured with respect to the top of the casing by means of an electronic water level meter. The water levels will be recorded on water level log sheets. The water level meter probe will be decontaminated between monitoring well locations.

3.6 Elevation Survey

An elevation survey will be conducted to obtain vertical control of all monitoring well locations. The top of casing and ground surface elevation of each monitoring well location will be surveyed against a known geodetic benchmark, or if unavailable, against a suitable arbitrary benchmark. Elevations measured against using a high precision GPS unit and a benchmark with an assigned elevation will be recorded as meters above mean sea level (m AMSL). The elevation survey will be accurate to within ± 0.5 cm.

3.7 Groundwater Sampling

Groundwater samples will be collected from the monitoring wells for chemical analysis. The wells will be sampled using a “low flow” technique whereby the wells are continuously purged using an electric pump (equipped with dedicated tubing) and parameters within the purged water are monitored using a groundwater chemistry multi-meter at 3 minute intervals. These parameters include: pH, conductivity, temperature, and salinity. Once these parameters are found to deviate less than 10% over three testing events, equilibrium is deemed to have occurred and a sample of the groundwater will be collected. The purge water will also be continuously monitored for visual and olfactory evidence of petroleum and solvent impact (sheen and odour).

Recommended groundwater sample volumes will be collected into pre-clean laboratory-supplied vials or bottles provided with analytical test group specific preservatives, as required. The samples will be placed in an insulated cooler chilled with ice for storage and transport. Each VOC vial will be inverted and inspected for gas bubbles prior to being placed in the cooler to ensure that no head-space is present. All groundwater samples will be assigned unique identification numbers, and the date, time, project number, company name, location and requested analyses for each sample will be documented in a bound hard cover notebook. The samples will be submitted to the contractual laboratory within analytical test group holding times under COC protocols. New disposable chemical resistant gloves will be used for each sampling location to prevent sample cross-contamination.

4 Field Quality Assurance/Quality Control Program

The objective of the field quality assurance/quality control (QA/QC) program is to obtain soil and groundwater samples and other field measurements that provide data of acceptable quality that meets the objectives of the Phase Two ESA. The objectives of the QA/QC program will be achieved through the implementation of procedures for the collection of unbiased (i.e. non-contaminated) samples, sample documentation and the collection of appropriate QC samples to provide a measure of sample reproducibility and accuracy. The field QA/QC measures will comprise:

- Decontamination Protocols;
- Equipment Calibration;
- Sample Preservation;
- Sample Documentation; and,
- Field Quality Control Samples.

Details on the field QA/QC measures are provided below.

4.1 Decontamination Protocols

Decontamination protocols will be followed during field sampling where non-dedicated sampling equipment is used to prevent sample cross contamination. The split spoon soil sampling device will be cleaned/decontaminated between sampling intervals in according with SOP requirements. For the monitoring well installation, well components are not to come into contact with the ground surface prior to insertion into boreholes. Electronic water level meters will be decontaminated between monitoring well locations during well development, and purging activities. For hydraulic conductivity tests, the electronic water level meters will be decontaminated between sampling locations. All decontamination fluids will be collected and stored in sealed, labeled containers.

4.2 Equipment Calibration

All equipment requiring calibration will be calibrated in the field according to manufacturer's requirements using analytical grade reagents, or by the supplier prior to conducting field activities, and subsequently checked in the field. The calibration of all pre-calibrated instruments will be checked in the field using analytical grade reagents and re-calibrated as required. For multiple day sampling events, equipment calibration will be checked prior to the beginning of sampling activities. All calibration data will be documented in a bound hard cover notebook.

4.3 Sample Preservation

All samples will be preserved using appropriate analytical test group specific reagents, as required, and upon collection placed in pre-chilled insulated coolers packed with ice for storage and transport.

4.4 Sample Documentation

All samples will be assigned a unique identification number, which is to be recorded along with the date, time, project number, company name, location and requested analysis in a bound field notebook. All samples will be handled and transported following COC protocols.

4.5 Field Quality Control

Field quality controls samples will be collected to evaluate the accuracy and reproducibility of the field sampling procedures. For soil and groundwater sampling, one (1) field duplicate is to be collected for every ten (10) samples submitted for chemical analysis. The field duplicate samples will be assessed by calculating the relative percent difference and comparing to the analytical test group specific acceptance criteria.

Appendix D: Borehole Logs

Explanation of Terms Used on Borehole Records

SOIL DESCRIPTION

Terminology describing common soil genesis:

Topsoil: mixture of soil and humus capable of supporting good vegetative growth.

Peat: fibrous fragments of visible and invisible decayed organic matter.

Fill: where fill is designated on the borehole log it is defined as indicated by the sample recovered during the boring process. The reader is cautioned that fills are heterogeneous in nature and variable in density or degree of compaction. The borehole description may therefore not be applicable as a general description of site fill materials. All fills should be expected to contain obstruction such as wood, large concrete pieces or subsurface basements, floors, tanks, etc.; none of these may have been encountered in the boreholes. Since boreholes cannot accurately define the contents of the fill, test pits are recommended to provide supplementary information. Despite the use of test pits, the heterogeneous nature of fill will leave some ambiguity as to the exact composition of the fill. Most fills contain pockets, seams, or layers of organically contaminated soil. This organic material can result in the generation of methane gas and/or significant ongoing and future settlements. Fill at this site may have been monitored for the presence of methane gas and, if so, the results are given on the borehole logs. The monitoring process does not indicate the volume of gas that can be potentially generated nor does it pinpoint the source of the gas. These readings are to advise of the presence of gas only, and a detailed study is recommended for sites where any explosive gas/methane is detected. Some fill material may be contaminated by toxic/hazardous waste that renders it unacceptable for deposition in any but designated land fill sites; unless specifically stated the fill on this site has not been tested for contaminants that may be considered toxic or hazardous. This testing and a potential hazard study can be undertaken if requested. In most residential/commercial areas undergoing reconstruction, buried oil tanks are common and are generally not detected in a conventional geotechnical site investigation.

Till: the term till on the borehole logs indicates that the material originates from a geological process associated with glaciation. Because of this geological process the till must be considered heterogeneous in composition and as such may contain pockets and/or seams of material such as sand, gravel, silt or clay. Till often contains cobbles (60 to 200 mm) or boulders (over 200 mm). Contractors may therefore encounter cobbles and boulders during excavation, even if they are not indicated by the borings. It should be appreciated that normal sampling equipment cannot differentiate the size or type of any obstruction. Because of the horizontal and vertical variability of till, the sample description may be applicable to a very limited zone; caution is therefore essential when dealing with sensitive excavations or dewatering programs in till materials.

Terminology describing soil structure:

Desiccated: having visible signs of weathering by oxidization of clay minerals, shrinkage cracks, etc.

Stratified: alternating layers of varying material or color with the layers greater than 6 mm thick.

Laminated: alternating layers of varying material or color with the layers less than 6 mm thick.

Fissured: material breaks along plane of fracture.

Varved: composed of regular alternating layers of silt and clay.

Slickensided: fracture planes appear polished or glossy, sometimes striated.

Blocky: cohesive soil that can be broken down into small angular lumps which resist further breakdown.

Lensed: inclusion of small pockets of different soil, such as small lenses of sand scattered through a mass of clay; not thickness.

Seam: a thin, confined layer of soil having different particle size, texture, or color from materials above and below.

Homogeneous: same color and appearance throughout.

Well Graded: having wide range in grain sized and substantial amounts of all predominantly on grain size.

Uniformly Graded: predominantly on grain size.

All soil sample descriptions included in this report follow the ASTM D2487-11 Standard Practice for Classification of Soils for Engineering Purposes (Unified Soil Classification System). The system divides soils into three major categories: (1) coarse grained, (2) fine-grained, and (3) highly organic. The soil is then subdivided based on either gradation or plasticity characteristics. The system provides a group symbol (e.g. SM) and group name (e.g. silty sand) for identification. The classification excludes particles larger than 76 mm. Please note that, with the exception of those samples where a grain size analysis has been made, all samples are classified visually in accordance with ASTM D2488-09a Standard Practice for Description and Identification of Soils (Visual-Manual Procedure). Visual classification is not sufficiently accurate to provide exact grain sizing or precise differentiation between size classification systems. Others may use different classification systems; one such system is the ISSMFE Soil Classification.

ISSMFE SOIL CLASSIFICATION

CLAY	SILT			SAND			GRAVEL			COBBLES	BOULDERS
	FINE	MEDIUM	COARSE	FINE	MEDIUM	COARSE	FINE	MEDIUM	COARSE		

0.002	0.006	0.02	0.06	0.2	0.6	2.0	6.0	20	60	200

EQUIVALENT GRAIN DIAMETER IN MILLIMETRES

CLAY (PLASTIC) TO	FINE	MEDIUM	CRS.	FINE	COARSE
SILT (NONPLASTIC)	SAND			GRAVEL	

UNIFIED SOIL CLASSIFICATION

Terminology describing materials outside the USCS, (e.g. particles larger than 76 mm, visible organic matter, construction debris) is based upon the proportion of these materials present and as described below in accordance with Note 16 in ASTM D2488-09a:

Table a: Percent or Proportion of Soil, Pp

	Criteria
Trace	Particles are present but estimated to be less than 5%
Few	5≤Pp≤10%
Little	15≤Pp≤25%
Some	30≤Pp≤45%
Mostly	50≤Pp≤100%

The standard terminology to describe cohesionless soils includes the compactness as determined by the Standard Penetration Test 'N' value:

Table b: Apparent Density of Cohesionless Soil

	'N' Value (blows/0.3 m)
Very Loose	N<5
Loose	5≤N<10
Compact	10≤N<30
Dense	30≤N<50
Very Dense	50≤N

The standard terminology to describe cohesive soils includes consistency, which is based on undrained shear strength as measured by insitu vane tests, penetrometer tests, unconfined compression tests or similar field and laboratory analysis, Standard Penetration Test 'N' values can also be used to provide an approximate indication of the consistency and shear strength of fine grained, cohesive soils:

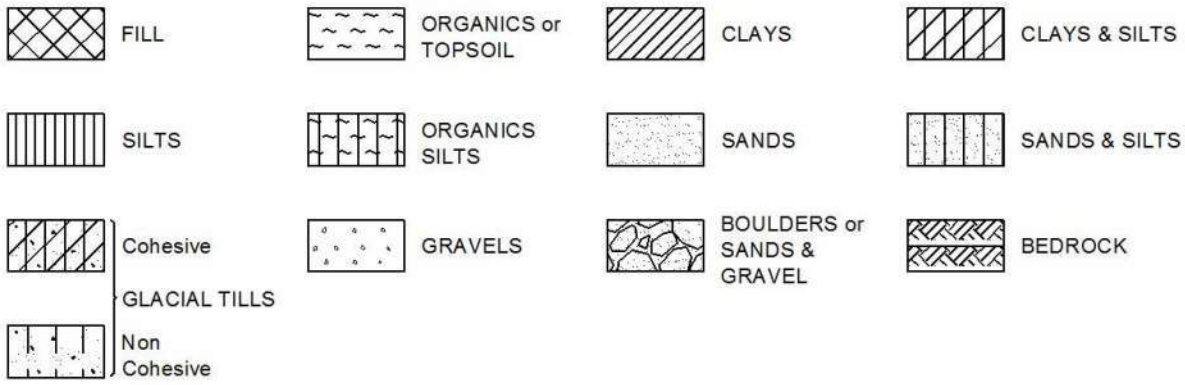
Table c: Consistency of Cohesive Soil

Consistency	Vane Shear Measurement (kPa)	'N' Value
Very Soft	<12.5	<2
Soft	12.5-25	2-4
Firm	25-50	4-8
Stiff	50-100	8-15
Very Stiff	100-200	15-30
Hard	>200	>30

Note: 'N' Value - The Standard Penetration Test records the number of blows of a 140 pound (64kg) hammer falling 30 inches (760mm), required to drive a 2 inch (50.8mm) O.D. split spoon sampler 1 foot (305mm). For split spoon samples where full penetration is not achieved, the number of blows is reported over the sampler penetration in meters (e.g. 50/0.15).

STRATA PLOT

Strata plots symbolize the soil or bedrock description. They are combinations of the following basic symbols:



WATER LEVEL MEASUREMENT

Log of Borehole MW21-1

Project No: OTT-21002604-A0

Project: Proposed Residential Development

Location: 233 Argyle Avenue, Ottawa, Ontario

Figure No. 3

Page. 1 of 1

Date Drilled: 'March 18, 2021

Drill Type: Track Mounted Drill Rig

Datum: Geodetic Elevation

Logged by: A. Neguss Checked by: A. Nader

Split Spoon Sample ⊠ | Auger Sample ◧ | SPT (N) Value ○ | Dynamic Cone Test ——— | Shelby Tube ■ | Shear Strength by Vane Test +S

Combustible Vapour Reading □ | Natural Moisture Content × | Atterberg Limits ⊢○ | Undrained Triaxial at % Strain at Failure ⊕ | Shear Strength by Penetrometer Test ▲

GWL	SYMBOL	SOIL DESCRIPTION	Geodetic Elevation m	Depth	Standard Penetration Test N Value / Shear Strength kPa	Combustible Vapour Reading (ppm) / Natural Moisture Content % / Atterberg Limits (% Dry Weight)	SAMPLES	Natural Unit Wt. kN/m³
		TOPSOIL AND FILL Topsoil and silty sand with gravel fill, organic, black, moist, (very loose)	69.82	0	3	0	SS1	
		FILL Silty sand, trace gravel, roots and organics, brown, moist, (very loose)	69.0	1	3	0	SS2	
		CLAY (CL to CH) Brownish grey to grey, (firm to very stiff)	68.3	2	6, 168	0	SS3	17.6
					7, 144	0	SS4	18.1
				3	1, 48	0	SS5	
			66.17	4				
					Hammer Weight	0	SS6	
		Drilled from 5.2 m to 6.1 m depths for monitoring well installation	64.6	5				
			63.7	6				
		Borehole Terminated at 6.1 m Depth						

NOTES:

1. Borehole data requires interpretation by EXP before use by others
2. A 32 mm monitoring well installed upon completion of drilling.
3. Field work supervised by an EXP representative.
4. See Notes on Sample Descriptions
5. Log to be read with EXP Report OTT-21002604-A0

WATER LEVEL RECORDS

Date	Water Level (m)	Hole Open To (m)
On Completion	4.6	
12 days	3.7	

CORE DRILLING RECORD

Run No.	Depth (m)	% Rec.	RQD %

LOG OF BOREHOLE LOGS OF BOREHOLES_262765_233 ARGYLE AVE.GPJ TROW OTTAWA.GDT 4/5/21

Log of Borehole MW21-2

Project No: OTT-21002604-A0

Project: Proposed Residential Development

Location: 233 Argyle Avenue, Ottawa, Ontario

Figure No. 4

Page. 1 of 1

Date Drilled: 'March 16, 2021

Drill Type: Track Mounted Drill Rig

Datum: Geodetic Elevation

Logged by: A. Neguss Checked by: A. Nader

Split Spoon Sample
Auger Sample
SPT (N) Value
Dynamic Cone Test
Shelby Tube
Shear Strength by Vane Test (S)
Combustible Vapour Reading
Natural Moisture Content
Atterberg Limits
Undrained Triaxial at % Strain at Failure
Shear Strength by Penetrometer Test

GWL	SYMBOL	SOIL DESCRIPTION	Geodetic Elevation m	Depth	Standard Penetration Test N Value / Shear Strength kPa	Combustible Vapour Reading (ppm) / Natural Moisture Content % / Atterberg Limits (% Dry Weight)	SAMPLES	Natural Unit Wt. kN/m³
		CONCRETE SLAB ~12 mm thick Peices of concrete	68.52 68.5	0			BS1	17.7
		FILL Poorly graded gravel with silt and sand (GP-GM), brown, moist	68.0	1			BS2	
		CLAY (CL to CH) Brownish grey to grey	66.87	2			BS3	17.6
				3			BS4	
				4			BS5	
				5			BS6	
		Borehole Terminated at 5.2 m Depth	63.3					

Standard Penetration Test N Value: 20 40 60 80
Shear Strength: 50 100 150 200 kPa
Combustible Vapour Reading (ppm): 250 500 750
Natural Moisture Content % / Atterberg Limits (% Dry Weight): 20 40 60

NOTES:

1. Borehole data requires interpretation by EXP before use by others
2. A 32 mm monitoring well installed upon completion of drilling.
3. Field work supervised by an EXP representative.
4. See Notes on Sample Descriptions
5. Log to be read with EXP Report OTT-21002604-A0

WATER LEVEL RECORDS

Date	Water Level (m)	Hole Open To (m)
On Completion	3.0	
14 days	1.7	

CORE DRILLING RECORD

Run No.	Depth (m)	% Rec.	RQD %

LOG OF BOREHOLE LOGS OF BOREHOLES_262765_233 ARGYLE AVE.GPJ TROW OTTAWA.GDT 4/5/21

Log of Borehole MW21-3

Project No: OTT-21002604-A0

Project: Proposed Residential Development

Location: 233 Argyle Avenue, Ottawa, Ontario

Figure No. 5

Page. 1 of 2

Date Drilled: 'March 18, 2021

Drill Type: Track Mounted Drill Rig

Datum: Geodetic Elevation

Logged by: A. Neguss Checked by: A. Nader

Split Spoon Sample
Auger Sample
SPT (N) Value
Dynamic Cone Test
Shelby Tube
Shear Strength by Vane Test (S)
Combustible Vapour Reading
Natural Moisture Content
Atterberg Limits
Undrained Triaxial at % Strain at Failure
Shear Strength by Penetrometer Test

GWL	SYMBOL	SOIL DESCRIPTION	Geodetic Elevation m	Depth	Standard Penetration Test N Value / Shear Strength kPa	Combustible Vapour Reading (ppm) / Natural Moisture Content % / Atterberg Limits (% Dry Weight)	SAMPLES	Natural Unit Wt. kN/m³
		ASPHALT ~12 mm thick	69.77	0			SS1	
		FILL Poorly graded gravel with silt and sand (GP-GM), organic, peices of bricks and asphalt, black, frozen	69.8					
		FILL Poorly graded gravel with silt and sand (GP-GM), occassional boulders, brown, moist (compact)	69.0	1	29	0	SS2	
		CLAY (CL to CH) Grey (firm to very stiff)	68.1	2	15	0	SS3	
				3	2	0	SS4	16.0
					29 s=4.1 Hammer Weight	0	SS5	
				4	38 s=5.4			
			65.35		58 s=2.4			
				5	Hammer Weight	0	SS6	
				6	62 s=4.4			
					Hammer Weight		SS7	
				7	43 s=4.3			
				8	Hammer Weight		SS8	
					115 s=4.4			
				9	Hammer Weight		SS9	
				10	67 s=4.8			

Continued Next Page

NOTES:

1. Borehole data requires interpretation by EXP before use by others
2. A 32 mm monitoring well installed upon completion of drilling.
3. Field work supervised by an EXP representative.
4. See Notes on Sample Descriptions
5. Log to be read with EXP Report OTT-21002604-A0

WATER LEVEL RECORDS

Date	Water Level (m)	Hole Open To (m)
On Completion	2.7	
12 days	4.4	

CORE DRILLING RECORD

Run No.	Depth (m)	% Rec.	RQD %

LOG OF BOREHOLE LOGS OF BOREHOLES_262765_233 ARGYLE AVE.GPJ TROW OTTAWA.GDT 4/5/21

Log of Borehole MW21-3

Project No: OTT-21002604-A0

Project: Proposed Residential Development

Figure No. 5

GWL	SYMBOL	SOIL DESCRIPTION	Geodetic Elevation m	Depth	Standard Penetration Test N Value / Shear Strength kPa	Combustible Vapour Reading (ppm) / Natural Moisture Content % / Atterberg Limits (% Dry Weight)	SAMPLES	Natural Unit Wt. kN/m³
		CLAY (CL to CH) Grey (firm to very stiff) *(continued)*	59.77	10	20 40 60 80 Shear Strength 50 100 150 200 kPa	250 500 750 Natural Moisture Content % Atterberg Limits (% Dry Weight) 20 40 60		
					Hammer Weight		SS10	
		CLAYEY SAND WITH GRAVEL Grey, wet, (very loose)	58.5	11				
				12	Hammer Weight		SS11	
				13				
				14				
				15			SS12	
		Borehole Terminated at 15.8 m Depth	54.0					

NOTES:

1. Borehole data requires interpretation by EXP before use by others
2. A 32 mm monitoring well installed upon completion of drilling.
3. Field work supervised by an EXP representative.
4. See Notes on Sample Descriptions
5. Log to be read with EXP Report OTT-21002604-A0

WATER LEVEL RECORDS

Date	Water Level (m)	Hole Open To (m)
On Completion	2.7	
12 days	4.4	

CORE DRILLING RECORD

Run No.	Depth (m)	% Rec.	RQD %

LOG OF BOREHOLE LOGS OF BOREHOLES_262765_233 ARGYLE AVE.GPJ TROW OTTAWA.GDT 4/5/21

Log of Borehole MW21-4

Project No: OTT-21002604-A0

Project: Proposed Residential Development

Location: 233 Argyle Avenue, Ottawa, Ontario

Figure No. 6

Page. 1 of 3

Date Drilled: 'March 19, 2021

Drill Type: Track Mounted Drill Rig

Datum: Geodetic Elevation

Logged by: A. Neguss Checked by: A. Nader

Split Spoon Sample ⊠
Auger Sample ◧
SPT (N) Value ○
Dynamic Cone Test ——
Shelby Tube ■
Shear Strength by Vane Test +S

Combustible Vapour Reading □
Natural Moisture Content ×
Atterberg Limits ⊢○
Undrained Triaxial at % Strain at Failure ⊕
Shear Strength by Penetrometer Test ▲

GWL	SYMBOL	SOIL DESCRIPTION	Geodetic Elevation m	Depth	Standard Penetration Test N Value / Shear Strength kPa	Combustible Vapour Reading (ppm) / Natural Moisture Content % / Atterberg Limits (% Dry Weight)	SAMPLES	Natural Unit Wt. kN/m³
		ASPHALT ~38 mm thick	69.91	0				
		FILL Poorly graded gravel with silt and sand (GP-GM), brown, moist (loose)	69.9		5		SS1	
				1	7		SS2	
			68.1		8 96		SS3	
		CLAY (CL to CH) Grey, (firm to stiff)		2	2		SS4	
				3	62 s=4.4		SS5	
					Hammer Weight			
			66.07	4	38 s=748 s=4.0			
					Hammer Weight		SS6	
				5	58 s=3.4			
				6	Hammer Weight		SS7	
					53 s=4.4			
			62.9	7				
		Dynamic Cone Penetration Test (DCPT) carried from 7.0 m depth to cone refusal at 22.7 m depth		8				
				9				
				10				

Continued Next Page

NOTES:

1. Borehole data requires interpretation by EXP before use by others
2. A 32 mm monitoring well installed upon completion of drilling.
3. Field work supervised by an EXP representative.
4. See Notes on Sample Descriptions
5. Log to be read with EXP Report OTT-21002604-A0

WATER LEVEL RECORDS

Date	Water Level (m)	Hole Open To (m)
On Completion	3.0	
11 days	3.8	

CORE DRILLING RECORD

Run No.	Depth (m)	% Rec.	RQD %

LOG OF BOREHOLE LOGS OF BOREHOLES_262765_233 ARGYLE AVE.GPJ TROW OTTAWA.GDT 4/5/21

Log of Borehole MW21-4

Project No: OTT-21002604-A0

Project: Proposed Residential Development

Figure No. 6

GWL	SYMBOL	SOIL DESCRIPTION	Geodetic Elevation m	Depth	Standard Penetration Test N Value / Shear Strength kPa	Combustible Vapour Reading (ppm) / Natural Moisture Content % / Atterberg Limits (% Dry Weight)	SAMPLES	Natural Unit Wt. kN/m³
		Dynamic Cone Penetration Test (DCPT) carried from 7.0 m depth to cone refusal at 22.7 m depth *(continued)*	59.91	10	20 40 60 80 / 50 100 150 200	250 500 750 / 20 40 60		
				11				
				12				
				13				
				14				
				15				
				16				
				17				
				18				
				19				
				20				
				21				
				22				

Continued Next Page

NOTES:

1. Borehole data requires interpretation by EXP before use by others
2. A 32 mm monitoring well installed upon completion of drilling.
3. Field work supervised by an EXP representative.
4. See Notes on Sample Descriptions
5. Log to be read with EXP Report OTT-21002604-A0

WATER LEVEL RECORDS		
Date	Water Level (m)	Hole Open To (m)
On Completion	3.0	
11 days	3.8	

CORE DRILLING RECORD			
Run No.	Depth (m)	% Rec.	RQD %

Log of Borehole MW21-4

Project No: OTT-21002604-A0

Project: Proposed Residential Development

Figure No. 6

GWL	SYMBOL	SOIL DESCRIPTION	Geodetic Elevation m	Depth	Standard Penetration Test N Value / Shear Strength kPa	Combustible Vapour Reading (ppm) / Natural Moisture Content % / Atterberg Limits (% Dry Weight)	SAMPLES	Natural Unit Wt. kN/m³
		Dynamic Cone Penetration Test (DCPT) carried from 7.0 m depth to cone refusal at 22.7 m depth *(continued)*	47.91	22	20 40 60 80 / 50 100 150 200	250 500 750 / 20 40 60		
		Cone Refusal at 22.7 m Depth	47.2					

LOG OF BOREHOLE LOGS OF BOREHOLES_262765_233 ARGYLE AVE.GPJ TROW OTTAWA.GDT 4/5/21

NOTES:

1. Borehole data requires interpretation by EXP before use by others
2. A 32 mm monitoring well installed upon completion of drilling.
3. Field work supervised by an EXP representative.
4. See Notes on Sample Descriptions
5. Log to be read with EXP Report OTT-21002604-A0

WATER LEVEL RECORDS

Date	Water Level (m)	Hole Open To (m)
On Completion	3.0	
11 days	3.8	

CORE DRILLING RECORD

Run No.	Depth (m)	% Rec.	RQD %

Appendix E: Analytical Summary Tables

TABLE 1 **SOIL ANALYTICAL RESULTS *(µg/g)***
VOLATILE ORGANIC COMPOUNDS
233 Argyle Avenue, Ottawa

Parameter	MECP Table 3[1]	MW21-1 S3	MW21-2 S1	MW21-3 S1	MW21-3 S1D	MW21-4 S2
Sample Date (d/m/y)	Residential	18-Mar-21	16-Mar-21	18-Mar-21	Duplicate of	19-Mar-21
Sample Depth (mbsg)		1.5 - 2.1	0.1 - 0.6	0.05 - 0.6	MW21-3 S1	0.75 - 1.35
Laboratory ID		PDF259	PCB064	PDF256	PDF257	PDF258
Date of Analysis		25-Mar-21	19-Mar-21	25-Mar-21	25-Mar-21	25-Mar-21
Certificate of Analysis		C175643	C170219	C175643	C175643	C175643
Acetone	28	<0.50	<0.50	<0.50	<0.50	<0.50
Benzene	0.17	<0.020	<0.020	<0.020	0.031	<0.020
Bromodichloromethane	13	<0.050	<0.050	<0.050	<0.050	<0.050
Bromoform	0.26	<0.050	<0.050	<0.050	<0.050	<0.050
Bromomethane	0.05	<0.050	<0.050	<0.050	<0.050	<0.050
Carbon Tetrachloride	0.12	<0.050	<0.050	<0.050	<0.050	<0.050
Chlorobenzene	2.7	<0.050	<0.050	<0.050	<0.050	<0.050
Chloroform	0.18	<0.050	<0.050	<0.050	<0.050	<0.050
Dibromochloromethane	9.4	<0.050	<0.050	<0.050	<0.050	<0.050
1,2-Dichlorobenzene	4.3	<0.050	<0.050	<0.050	<0.050	<0.050
1,3-Dichlorobenzene	6	<0.050	<0.050	<0.050	<0.050	<0.050
1,4-Dichlorobenzene	0.097	<0.050	<0.050	<0.050	<0.050	<0.050
Dichlorodifluoromethane	25	<0.050	<0.050	<0.050	<0.050	<0.050
1,1-Dichloroethane	11	<0.050	<0.050	<0.050	<0.050	<0.050
1,2-Dichloroethane	0.05	<0.050	<0.050	<0.050	<0.050	<0.050
1,1-Dichloroethylene	0.05	<0.050	<0.050	<0.050	<0.050	<0.050
Cis-1,2-Dichloroethylene	30	<0.050	<0.050	<0.050	<0.050	<0.050
Trans-1,2-Dichloroethylene	0.75	<0.050	<0.050	<0.050	<0.050	<0.050
1,2-Dichloropropane	0.085	<0.050	<0.050	<0.050	<0.050	<0.050
Cis-1,3-Dichloropropylene	0.083	<0.030	<0.050	<0.030	<0.030	<0.030
Trans-1,3-Dichloropropylene		<0.040		<0.040	<0.040	<0.040
Ethylbenzene	15	<0.020	<0.020	<0.020	<0.020	<0.020
Ethylene Dibromide	0.05	<0.050	<0.050	<0.050	<0.050	<0.050
Hexane	34	<0.050	<0.050	<0.050	<0.050	<0.050
Methylene Chloride	0.96	<0.050	<0.050	<0.050	<0.050	<0.050
Methyl Ethyl Ketone	44	<0.50	<0.50	<0.50	<0.50	<0.50
Methyl Isobutyl Ketone	4.3	<0.50	<0.50	<0.50	<0.50	<0.50
Methyl-t-Butyl Ether	1.4	<0.050	<0.050	<0.050	<0.050	<0.050
Styrene	2.2	<0.050	<0.050	<0.050	<0.050	<0.050
1,1,1,2-Tetrachloroethane	0.05	<0.050	<0.050	<0.050	<0.050	<0.050
1,1,2,2-Tetrachloroethane	0.05	<0.050	<0.050	<0.050	<0.050	<0.050
Tetrachloroethylene	2.3	<0.050	<0.050	0.10	0.12	<0.050
Toluene	6	<0.020	<0.020	0.021	0.036	0.088
1,1,1-Trichloroethane	3.4	<0.050	<0.050	<0.050	<0.050	<0.050
1,1,2-Trichloroethane	0.05	<0.050	<0.050	<0.050	<0.050	<0.050
Trichloroethylene	0.52	<0.050	<0.050	<0.050	<0.050	<0.050
Trichlorofluoromethane	6	<0.050	<0.050	<0.050	<0.050	<0.050
Vinyl Chloride	0.022	<0.020	<0.020	<0.020	<0.020	<0.020
Total Xylenes	30	<0.020	<0.020	0.021	0.022	0.069
PHC F1	65	<10	<10	<10	<10	<10
PHC F2	150	<10	<10	<10	<10	<10
PHC F3	1300	<50	<50	<50	68	230
PHC F4	5600	<50	<50	<50	<50	960
PHC F4 (gravimetric)	5600	NA	NA	NA	NA	2900

NOTES:

1 MECP *Soil, Ground Water and Sediment Standards for Use Under Part XV.1 of the EPA, April 2011, Table 3 Non-Potable Residential SCS, fine grained soil.*

Shaded Concentration exceeds MECP Table 3 Residential SCS.

TABLE 2 SOIL ANALYTICAL RESULTS *(µg/g)*
METALS
233 Argyle Avenue, Ottawa

Parameter	MECP Table 3[1]	MW21-1 S1	MW21-2 S1	MW21-3 S1	MW21-3 S1D	MW21-4 S2
Sample Date (d/m/y)	Residential	18-Mar-21	16-Mar-21	18-Mar-21	Duplicate of	19-Mar-21
Sample Depth (mbsg)		0.0 - 0.6	0.1 - 0.6	0.05 - 0.6	MW21-3 S1	0.75 - 1.35
Laboratory ID		PDF255	PCB064	PDF256	PDF257	PDF258
Date of Analysis		24-Mar-21	18-Mar-21	24-Mar-21	24-Mar-21	24-Mar-21
Certificate of Analysis		C175643	C170219	C175643	C175643	C175643
Antimony	7.5	0.71	<0.20	1.6	0.98	<0.20
Arsenic	18	4.3	1.5	18	9.5	1.1
Barium	390	140	110	220	190	57
Beryllium	5	0.36	0.55	0.76	0.73	0.27
Boron (total)	120	5.7	5.9	5.3	5.6	5.7
Cadmium	1.2	0.85	0.21	0.42	0.27	<0.10
Chromium (total)	160	64	42	34	37	21
Cobalt	22	6.6	10	11	10	6.1
Copper	180	28	25	41	33	15
Lead	120	**160**	11	**170**	90	4.2
Molybdenum	6.9	1.5	0.78	3.3	3.1	1.1
Nickel	130	18	29	26	25	13
Selenium	2.4	0.71	<0.50	1.6	1.0	<0.50
Silver	25	0.33	<0.20	0.32	<0.20	<0.20
Thallium	1	0.18	0.21	0.23	0.19	0.16
Uranium	23	1.1	0.72	1.3	0.97	0.50
Vanadium	86	36	91	51	51	41
Zinc	340	210	67	150	93	41
pH	5 - 9			-	-	-

NOTES:

1 MECP *Soil, Ground Water and Sediment Standards for Use Under Part XV.1 of the EPA, April 2011, Table 3 Non-Potable Residential SCS, fine grained soil.*

Shaded Concentration exceeds MECP Table 3 Residential SCS.

\- Not analyzed

TABLE 3 SOIL ANALYTICAL RESULTS *(µg/g)*
POLYCYCLIC AROMATIC HYDROCARBONS
233 Argyle Avenue, Ottawa

Parameter	MECP Table 3[1]	MW21-1 S1	MW21-2 S1	MW21-3 S1	MW21-3 S1D	MW21-4 S2
Sample Date (d/m/y)	Residential	18-Mar-21	16-Mar-21	18-Mar-21	Duplicate of	19-Mar-21
Sample Depth (mbsg)		0.0 - 0.6	0.1 - 0.6	0.05 - 0.6	MW21-3 S1	0.75 - 1.35
Laboratory ID		PDF255	PCB064	PDF256	PDF257	PDF258
Date of Analysis		25-Mar-21	22-Mar-21	25-Mar-21	25-Mar-21	25-Mar-21
Certificate of Analysis		C175643	C170219	C175643	C175643	C175643
Acenaphthene	58	0.071	<0.0050	0.0065	0.051	<0.050
Acenaphthylene	0.17	0.12	<0.0050	0.022	0.065	<0.050
Anthracene	0.74	0.19	<0.0050	0.026	0.14	<0.050
Benzo[a]anthracene	0.63	**0.66**	<0.0050	0.099	0.60	<0.050
Benzo[a]pyrene	0.3	**0.64**	<0.0050	0.10	**0.53**	<0.050
Benzo[b]fluoranthene	0.78	**0.85**	<0.0050	0.15	0.70	0.050
Benzo[g,h,i]perylene	7.8	0.43	<0.0050	0.072	0.29	<0.050
Benzo[k]fluoranthene	0.78	0.30	<0.0050	0.052	0.26	<0.050
Chrysene	7.8	0.63	<0.0050	0.099	0.54	<0.050
Dibenz[a,h]anthracene	0.1	**0.11**	<0.0050	0.018	0.089	<0.050
Fluoranthene	0.69	**1.4**	<0.0050	0.20	**1.1**	0.069
Fluorene	69	0.062	<0.0050	0.0072	0.045	<0.050
Indeno[1,2,3-cd]pyrene	0.48	**0.49**	<0.0050	0.078	0.34	<0.050
Methylnaphthalene, 2-(1-)	3.4	<0.071	<0.0071	0.013	0.041	<0.071
Naphthalene	0.75	<0.050	<0.0050	0.0062	0.021	<0.050
Phenanthrene	7.8	0.76	<0.0050	0.091	0.56	<0.050
Pyrene	78	1.2	<0.0050	0.17	0.97	0.065

NOTES:

1 MECP *Soil, Ground Water and Sediment Standards for Use Under Part XV.1 of the EPA, April 2011, Table 3 non-potable residential standards, fine grained soil.*

Shaded/ Bold Concentration exceeds MECP Table 3 Residential SCS.

Table 4 - Maximum Concentrations in Soil
233 Argyle Avenue, Ottawa
OTT-00262775-A0

Parameter	Sample Location	Sample Depth (mbgs)	Sampling Date	Maximum Concentration	MECP Table 3
Petroleum Hydrocarbons					
F1 PHC (C6 - C10) - BTEX	All Locations	NA	18-Mar-21	<10	65
F2 PHC (C10-C16)	All Locations	NA	18-Mar-21	<10	150
F3 PHC (C16-C34)	MW21-4 S2	0.75 - 1.35	19-Mar-21	230	1300
F4 PHC (C34-C50)	MW21-4 S2	0.75 - 1.35	19-Mar-21	2900	5600
Benzene	MW21-3 S1D	0.05 - 0.6	18-Mar-21	0.031	0.17
Ethylbenzene	All Locations	NA	18-Mar-21	<0.020	15.0
Toluene	MW21-4 S2	0.75 - 1.35	19-Mar-21	0.09	6
Xylenes, total	MW21-4 S2	0.75 - 1.35	19-Mar-21	0.07	30
Polycylic Aromatic Hydrocarbons					
Acenaphthene	MW21-1 S1	0.0 - 0.6	19-Mar-21	0.071	58
Acenaphthylene	MW21-1 S1	0.0 - 0.6	19-Mar-21	0.12	0.17
Anthracene	MW21-1 S1	0.0 - 0.6	19-Mar-21	0.19	0.74
Benzo(a)anthracene	MW21-1 S1	0.0 - 0.6	19-Mar-21	0.66	0.63
Benzo(a)pyrene	MW21-1 S1	0.0 - 0.6	19-Mar-21	0.64	0.3
Benzo(b/j)fluoranthene	MW21-1 S1	0.0 - 0.6	19-Mar-21	0.85	0.78
Benzo(g,h,i)perylene	MW21-1 S1	0.0 - 0.6	19-Mar-21	0.43	7.8
Benzo(k)fluoranthene	MW21-1 S1	0.0 - 0.6	19-Mar-21	0.30	0.78
Chrysene	MW21-1 S1	0.0 - 0.6	19-Mar-21	0.63	7.8
Dibenz(a,h)anthracene	MW21-1 S1	0.0 - 0.6	19-Mar-21	0.11	0.1
Fluoranthene	MW21-1 S1	0.0 - 0.6	19-Mar-21	1.4	0.69
Fluorene	MW21-1 S1	0.0 - 0.6	19-Mar-21	0.062	69
Indeno(1,2,3-cd)pyrene	MW21-1 S1	0.0 - 0.6	19-Mar-21	0.49	0.48
Methylnaphthalene, 2-(1-)	MW21-3 S1D	0.05 - 0.6	18-Mar-21	0.041	3.4
Naphthalene	MW21-3 S1D	0.05 - 0.6	18-Mar-21	0.021	0.75
Phenanthrene	MW21-1 S1	0.0 - 0.6	19-Mar-21	0.76	7.8
Pyrene	MW21-1 S1	0.0 - 0.6	19-Mar-21	1.2	78
Inorganic Parameters					
Antimony	MW21-3 S1	0.05 - 0.6	18-Mar-21	1.6	7.5
Arsenic	MW21-3 S1	0.05 - 0.6	18-Mar-21	18	18
Barium	MW21-3 S1	0.05 - 0.6	18-Mar-21	220	390
Beryllium	MW21-3 S1	0.05 - 0.6	18-Mar-21	0.76	5
Boron	MW21-2 S1	0.1 - 0.6	16-Mar-21	5.9	120
Cadmium	MW21-1 S1	0.0 - 0.6	18-Mar-21	0.85	1.2
Chromium	MW21-1 S1	0.0 - 0.6	18-Mar-21	64	160
Cobalt	MW21-3 S1	0.05 - 0.6	18-Mar-21	11	22
Copper	MW21-3 S1	0.05 - 0.6	18-Mar-21	41	180
Lead	MW21-3 S1	0.05 - 0.6	18-Mar-21	170	120
Molybdenum	MW21-3 S1	0.05 - 0.6	18-Mar-21	3.3	6.9
Nickel	MW21-2 S1	0.1 - 0.6	16-Mar-21	29	130
Selenium	MW21-3 S1	0.05 - 0.6	18-Mar-21	1.6	2.4
Silver	MW21-1 S1	0.0 - 0.6	18-Mar-21	0.33	25
Thallium	MW21-3 S1	0.05 - 0.6	18-Mar-21	0.23	1
Uranium	MW21-3 S1	0.05 - 0.6	18-Mar-21	1.3	23
Vanadium	MW21-2 S1	0.1 - 0.6	16-Mar-21	91	86
Zinc	MW21-1 S1	0.0 - 0.6	18-Mar-21	210	340

NOTES:

All results are in ppm on dry weight basis
Non-detectable results are shown as "< (RDL)" where RDL represents the reporting detection limit.

Results were compared to Ontario Ministry of Environment, Conservation and Parks (MECP), Soil, Groundwater and Sediment Standards for use under Part XV.1 of the Environmental Protection Act, April 2011, Table 3 Full Depth Generic Site Condition Standards (SCS) in a Non- Potable Ground Water Condition for Residential/Parkland/Institutional property use and coarse textured soils.

Table 4 - Maximum Concentrations in Soil
233 Argyle Avenue, Ottawa
OTT-00262775-A0

Parameter	Sample Location	Sample Depth (mbgs)	Sampling Date	Maximum Concentration	MECP Table 3
Volatile Organic Compounds					
Acetone	All Locations	NA	18-Mar-21	<0.50	28
Benzene	MW21-3 S1D	0.05 - 0.6	18-Mar-21	0.031	0.17
Bromodichloromethane	All Locations	NA	18-Mar-21	<0.050	13
Bromoform	All Locations	NA	18-Mar-21	<0.050	0.26
Bromomethane	All Locations	NA	18-Mar-21	<0.050	0.05
Carbon Tetrachloride	All Locations	NA	18-Mar-21	<0.050	0.12
Chlorobenzene	All Locations	NA	18-Mar-21	<0.050	2.7
Chloroform	All Locations	NA	18-Mar-21	<0.050	0.18
Dibromochloromethane	All Locations	NA	18-Mar-21	<0.050	9.4
1,2-Dichlorobenzene	All Locations	NA	18-Mar-21	<0.050	4.3
1,3-Dichlorobenzene	All Locations	NA	18-Mar-21	<0.050	6
1,4-Dichlorobenzene	All Locations	NA	18-Mar-21	0.054	0.097
Dichlorodifluoromethane	All Locations	NA	18-Mar-21	<0.050	25
1,1-Dichloroethane	All Locations	NA	18-Mar-21	<0.050	11
1,2-Dichloroethane	All Locations	NA	18-Mar-21	<0.050	0.05
1,1-Dichloroethylene	All Locations	NA	18-Mar-21	<0.050	0.05
Cis-1,2-Dichloroethylene	All Locations	NA	18-Mar-21	<0.050	30
Trans-1,2-Dichloroethylene	All Locations	NA	18-Mar-21	<0.050	0.75
1,2-Dichloropropane	All Locations	NA	18-Mar-21	<0.050	0.085
Cis-1,3-Dichloropropylene	All Locations	NA	18-Mar-21	<0.030	0.083
Trans-1,3-Dichloropropylene	All Locations	NA	18-Mar-21		
Ethylbenzene	All Locations	NA	18-Mar-21	0.06	15
Ethylene Dibromide	All Locations	NA	18-Mar-21	<0.050	0.05
Hexane	All Locations	NA	18-Mar-21	<0.050	34
Methylene Chloride	All Locations	NA	18-Mar-21	<0.050	0.96
Methyl Ethyl Ketone	All Locations	NA	18-Mar-21	<0.50	44
Methyl Isobutyl Ketone	All Locations	NA	18-Mar-21	<0.50	4.3
Methyl-t-Butyl Ether	All Locations	NA	18-Mar-21	<0.050	1.4
Styrene	All Locations	NA	18-Mar-21	<0.050	2.2
1,1,1,2-Tetrachloroethane	All Locations	NA	18-Mar-21	<0.050	0.05
1,1,2,2-Tetrachloroethane	All Locations	NA	18-Mar-21	<0.050	0.05
Tetrachloroethylene	MW21-3 S1D	0.05 - 0.6	18-Mar-21	0.12	2.3
Toluene	MW21-4 S2	0.75 - 1.35	19-Mar-21	0.088	6
1,1,1-Trichloroethane	All Locations	NA	18-Mar-21	<0.050	3.4
1,1,2-Trichloroethane	All Locations	NA	18-Mar-21	<0.050	0.05
Trichloroethylene	All Locations	NA	18-Mar-21	<0.050	0.52
Trichlorofluoromethane	All Locations	NA	18-Mar-21	<0.050	6
Vinyl Chloride	All Locations	NA	18-Mar-21	<0.020	0.022
Total Xylenes	MW21-4 S2	0.75 - 1.35	19-Mar-21	0.069	30

NOTES:

All results are in ppm on dry weight basis
Non-detectable results are shown as "< (RDL)" where RDL represents the reporting detection limit.

Results were compared to Ontario Ministry of Environment, Conservation and Parks (MECP), Soil, Groundwater and Sediment Standards for use under Part XV.1 of the Environmental Protection Act, April 2011, Table 3 Full Depth Generic Site Condition Standards (SCS) in a Non- Potable Ground Water Condition for Residential/Parkland/Institutional property use and coarse textured soils.

TABLE 5 GROUNDWATER ANALYTICAL RESULTS *(µg/L)*
VOLATILE ORGANIC COMPOUNDS and PETROLEUM HYDROCARBONS
233 Argyle Avenue, Ottawa

Parameter	MECP Table 3[1]	MW21-1	MW21-2	MW21-3	MW21-5	MW21-4	Trip Blank
Sample Date (d/m/y)		30-Mar-21	30-Mar-21	30-Mar-21	Duplicate of	30-Mar-21	30-Mar-21
Screened Interval		3.05 - 6.1	2.2 - 5.25	3.05 - 6.1	MW 21-3	3.05 - 6.1	NA
Laboratory ID		PFA657	PFA658	PFA659	PFA661	PFA660	PFA662
Date of Analysis		5-Apr-21	5-Apr-21	5-Apr-21	5-Apr-21	5-Apr-21	5-Apr-21
Certificate of Analysis		C184485	C184485	C184485	C184485	C184485	C184485
Acetone	130000	<10	<10	<10	<10	<10	<10
Benzene	430	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20
Bromodichloromethane	85000	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50
Bromoform	770	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0
Bromomethane	56	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50
Carbon Tetrachloride	8.4	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20
Chlorobenzene	630	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20
Chloroform	22	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20
Dibromochloromethane	82000	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50
1,2-Dichlorobenzene	9600	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50
1,3-Dichlorobenzene	9600	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50
1,4-Dichlorobenzene	67	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50
Dichlorodifluoromethane	4400	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0
1,1-Dichloroethane	3100	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20
1,2-Dichloroethane	12	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50
1,1-Dichloroethylene	17	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20
Cis-1,2-Dichloroethylene	17	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50
Trans-1,2-Dichloroethylene	17	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50
1,2-Dichloropropane	140	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20
Cis-1,3-Dichloropropylene Trans-1,3-Dichloropropylene	45	<0.30	<0.30	<0.30	<0.30	<0.30	<0.30
Ethylbenzene	2300	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20
Ethylene Dibromide	0.83	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20
Hexane	520	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0
Methylene Chloride	5500	<2.0	<2.0	<2.0	<2.0	<2.0	<2.0
Methyl Ethyl Ketone	1500000	<10	<10	<10	<10	<10	<10
Methyl Isobutyl Ketone	580000	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0
Methyl-t-Butyl Ether	1400	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50
Styrene	9100	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50
1,1,1,2-Tetrachloroethane	28	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50
1,1,2,2-Tetrachloroethane	15	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50
Tetrachloroethylene	17	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20
Toluene	18000	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20
1,1,1-Trichloroethane	6700	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20
1,1,2-Trichloroethane	30	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50
Trichloroethylene	17	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20
Trichlorofluoromethane	2500	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50
Vinyl Chloride	1.7	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20
Total Xylenes	4200	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20
PHC F1	750	<25	<25	<25	<25	<25	NA
PHC F2	150	<100	<100	<100	<100	<100	NA
PHC F3	500	<200	<200	<200	<200	<200	NA
PHC F4	500	<200	<200	<200	<200	<200	NA

NOTES:

1	MECP Soil, Ground Water and Sediment Standards for Use Under Part XV.1 of the EPA, April 2011, Table 3, for a non-potable groundwater, fine grained soil.
Shaded	Concentration exceeds MECP Table 3 groundwater quality criterion.
NA	Not applicable

TABLE 6 GROUNDWATER ANALYTICAL RESULTS *(µg/L)*
METALS
233 Argyle Avenue, Ottawa

Parameter	MECP Table 3[1]	MW21-1	MW21-2	MW21-3	MW21-5	MW21-4
Sample Date (d/m/y)		30-Mar-21	30-Mar-21	30-Mar-21	Duplicate of	30-Mar-21
Screened Interval		3.05 - 6.1	2.2 - 5.25	3.05 - 6.1	MW 21-3	3.05 - 6.1
Laboratory ID		PFA657	PFA658	PFA659	PFA661	PFA660
Date of Analysis		5-Apr-21	5-Apr-21	5-Apr-21	5-Apr-21	5-Apr-21
Certificate of Analysis		C184485	C184485	C184485	C184485	C184485
Antimony	20000	<0.50	<0.50	0.52	<0.50	0.51
Arsenic	1900	2.3	2.0	2.1	2.1	2.6
Barium	29000	51	41	54	54	85
Beryllium	67	<0.40	<0.40	<0.40	<0.40	<0.40
Boron (total)	45000	300	310	550	560	740
Cadmium	2.7	<0.090	<0.090	<0.090	<0.090	<0.090
Chromium (total)	810	<5.0	<5.0	<5.0	<5.0	<5.0
Cobalt	66	<0.50	<0.50	<0.50	<0.50	<0.50
Copper	87	2.1	7.9	2.8	2.6	2.7
Lead	25	<0.50	<0.50	<0.50	<0.50	<0.50
Molybdenum	9200	11	7.1	37	37	32
Nickel	490	1.4	2.1	2.8	2.9	3.6
Selenium	63	<2.0	5.0	<2.0	<2.0	<2.0
Silver	1.5	<0.090	<0.090	<0.090	<0.090	<0.090
Sodium	2300000	94000	130000	170000	170000	230000
Thallium	510	<0.050	<0.050	<0.050	<0.050	<0.050
Uranium	420	5.2	2.3	8.9	8.7	11
Vanadium	250	4.4	4.6	4.9	4.9	4.8
Zinc	1100	<5.0	<5.0	<5.0	<5.0	<5.0

NOTES:

1 MECP Soil, Ground Water and Sediment Standards for Use Under Part XV.1 of the EPA, April 2011, Table 3, for a non-potable groundwater, fine grained soil.

Shaded Concentration exceeds MECP Table 3 groundwater quality standard.

NA Not Analyzed

NV No Value

TABLE 7 GROUNDWATER ANALYTICAL RESULTS *(µg/L)*
POLYCYCLIC AROMATIC HYDROCARBONS
233 Argyle Avenue, Ottawa

Parameter	MECP Table 3[1]	MW21-1	MW21-2	MW21-3	MW21-5	MW21-4
Sample Date (d/m/y)		30-Mar-21	30-Mar-21	30-Mar-21	Duplicate of	30-Mar-21
Screened Interval		3.05 - 6.1	2.2 - 5.25	3.05 - 6.1	MW 21-3	3.05 - 6.1
Laboratory ID		PFA657	PFA658	PFA659	PFA661	PFA660
Date of Analysis		6-Apr-21	6-Apr-21	6-Apr-21	6-Apr-21	6-Apr-21
Certificate of Analysis		C184485	C184485	C184485	C184485	C184485
Acenaphthene	1700	<0.050	<0.050	<0.050	<0.050	0.15
Acenaphthylene	1.8	<0.050	<0.050	<0.050	<0.050	<0.050
Anthracene	2.4	<0.050	<0.050	<0.050	<0.050	<0.050
Benzo[a]anthracene	4.7	<0.050	<0.050	<0.050	<0.050	<0.050
Benzo[a]pyrene	0.81	<0.0090	<0.0090	<0.0090	<0.0090	<0.0090
Benzo[b]fluoranthene	0.75	<0.050	<0.050	<0.050	<0.050	<0.050
Benzo[g,h,i]perylene	0.2	<0.050	<0.050	<0.050	<0.050	<0.050
Benzo[k]fluoranthene	0.4	<0.050	<0.050	<0.050	<0.050	<0.050
Chrysene	1	<0.050	<0.050	<0.050	<0.050	<0.050
Dibenzo[a,h]anthracene	0.52	<0.050	<0.050	<0.050	<0.050	<0.050
Fluoranthene	130	0.060	<0.050	<0.050	<0.050	<0.050
Fluorene	400	<0.050	<0.050	<0.050	<0.050	0.11
Indeno[1,2,3-cd]pyrene	0.2	<0.050	<0.050	<0.050	<0.050	<0.050
Methylnaphthalene -1	1800	<0.071	<0.071	<0.071	<0.071	<0.071
Methylnaphthalene -2						
Naphthalene	6400	<0.050	<0.050	<0.050	<0.050	<0.050
Phenanthrene	580	0.13	<0.030	<0.030	<0.030	0.061
Pyrene	68	0.050	<0.050	<0.050	<0.050	<0.050

NOTES:

1 MECP Soil, Ground Water and Sediment Standards for Use Under Part XV.1 of the EPA, April 2011, Table 3, for a non-potable groundwater, fine grained soil.

NV no value in standards

Shaded Concentration exceeds MECP Table 3 groundwater quality standard.

Table 8- Maximum Concentrations in Groundwater
233 Argyle Avenue, Ottawa
OTT-00262765-A0

Parameter	Sample Location	Screen Interval (mbgs)	Sampling Date	Maximum Concentration	MECP Table 3
Petroleum Hydrocarbons					
F1 PHC (C6 - C10) - BTEX	All Locations	3.05 - 6.1	30-Mar-21	<25	750
F2 PHC (C10-C16)	All Locations	3.05 - 6.1	30-Mar-21	<100	150
F3 PHC (C16-C34)	All Locations	3.05 - 6.1	30-Mar-21	200	500
F4 PHC (C34-C50)	All Locations	3.05 - 6.1	30-Mar-21	<200	500
Benzene	All Locations	3.05 - 6.1	30-Mar-21	<0.20	430
Ethylbenzene	All Locations	3.05 - 6.1	30-Mar-21	<0.20	2300
Toluene	All Locations	3.05 - 6.1	30-Mar-21	<0.20	18000
Xylenes, total	All Locations	3.05 - 6.1	30-Mar-21	<0.20	4200
Polycylic Aromatic Hydrocarbons					
Acenaphthene	MW21-4	3.05 - 6.1	30-Mar-21	0.15	1700
Acenaphthylene	All Locations	3.05 - 6.1	30-Mar-21	<0.050	1.8
Anthracene	All Locations	3.05 - 6.1	30-Mar-21	<0.050	2.4
Benzo(a)anthracene	All Locations	3.05 - 6.1	30-Mar-21	<0.050	4.7
Benzo(a)pyrene	All Locations	3.05 - 6.1	30-Mar-21	<0.0090	0.81
Benzo(b/j)fluoranthene	All Locations	3.05 - 6.1	30-Mar-21	<0.050	0.75
Benzo(g,h,i)perylene	All Locations	3.05 - 6.1	30-Mar-21	<0.050	0.2
Benzo(k)fluoranthene	All Locations	3.05 - 6.1	30-Mar-21	<0.050	0.4
Chrysene	All Locations	3.05 - 6.1	30-Mar-21	<0.050	1
Dibenz(a,h)anthracene	All Locations	3.05 - 6.1	30-Mar-21	<0.050	0.52
Fluoranthene	MW21-1	3.05 - 6.1	30-Mar-21	0.06	130
Fluorene	MW21-4	3.05 - 6.1	30-Mar-21	0.11	400
Indeno(1,2,3-cd)pyrene	All Locations	3.05 - 6.1	30-Mar-21	<0.050	0.2
Methylnaphthalene, 2-(1-)	All Locations	3.05 - 6.1	30-Mar-21	<0.050	1800
Naphthalene	All Locations	3.05 - 6.1	30-Mar-21	<0.050	6400
Phenanthrene	MW21-1	3.05 - 6.1	30-Mar-21	0.13	580
Pyrene	MW21-1	3.05 - 6.1	30-Mar-21	0.05	68
Inorganic Parameters					
Antimony	MW21-3	3.05 - 6.1	30-Mar-21	0.52	20000
Arsenic	MW21-4	3.05 - 6.1	30-Mar-21	2.60	1900
Barium	MW21-4	3.05 - 6.1	30-Mar-21	85	29000
Beryllium	All Locations	3.05 - 6.1	30-Mar-21	<0.40	67
Boron	MW21-4	3.05 - 6.1	30-Mar-21	740	45000
Cadmium	All Locations	3.05 - 6.1	30-Mar-21	<0.090	2.7
Chromium	All Locations	3.05 - 6.1	30-Mar-21	<5.0	810
Cobalt	All Locations	3.05 - 6.1	30-Mar-21	<0.50	66
Copper	MW21-3	3.05 - 6.1	30-Mar-21	2.8	87
Lead	All Locations	3.05 - 6.1	30-Mar-21	<0.50	25
Molybdenum	MW21-1	3.05 - 6.1	30-Mar-21	11	9200
Nickel	MW21-4	3.05 - 6.1	30-Mar-21	4	490
Selenium	MW21-2	3.05 - 6.1	30-Mar-21	5.0	63
Silver	All Locations	3.05 - 6.1	30-Mar-21	<0.090	1.5
Sodium	MW21-4	3.05 - 6.1	30-Mar-21	230,000	2300000
Thallium	All Locations	3.05 - 6.1	30-Mar-21	<0.050	510
Uranium	MW21-4	3.05 - 6.1	30-Mar-21	11.0	420
Vanadium	All Locations	3.05 - 6.1	30-Mar-21	4.9	250
Zinc	MW3	3.05 - 6.1	30-Mar-21	<5.0	1100

NOTES:

All results are in ppb
Non-detectable results are shown as "< (RDL)" where RDL represents the reporting detection limit.
Results were compared to Ontario Ministry of Environment, Conservation and Parks (MECP), Soil, Groundwater and Sediment Standards for use under Part XV.1 of the Environmental Protection Act, April 2011, Table 3 Full Depth Generic Site Condition Standards (SCS) in a Non- Potable Ground Water Condition for all types of property use and coarse textured soils.

Table 8 - Maximum Concentrations in Groundwater
233 Argyle Avenue, Ottawa
OTT-00262765-A0

Parameter	Sample Location	Screen Interval (mbgs)	Sampling Date	Maximum Concentration	MECP Table 3
Volatile Organic Compounds					
Acetone	All Locations	3.05 - 6.1	30-Mar-21	<10	130000
Benzene	All Locations	3.05 - 6.1	30-Mar-21	<0.20	430
Bromodichloromethane	All Locations	3.05 - 6.1	30-Mar-21	<0.50	85000
Bromoform	All Locations	3.05 - 6.1	30-Mar-21	<1.0	770
Bromomethane	All Locations	3.05 - 6.1	30-Mar-21	<0.50	56
Carbon Tetrachloride	All Locations	3.05 - 6.1	30-Mar-21	<0.20	8.4
Chlorobenzene	All Locations	3.05 - 6.1	30-Mar-21	<0.20	630
Chloroform	All Locations	3.05 - 6.1	30-Mar-21	<0.20	22
Dibromochloromethane	All Locations	3.05 - 6.1	30-Mar-21	<0.50	82000
1,2-Dichlorobenzene	All Locations	3.05 - 6.1	30-Mar-21	<0.50	9600
1,3-Dichlorobenzene	All Locations	3.05 - 6.1	30-Mar-21	<0.50	9600
1,4-Dichlorobenzene	All Locations	3.05 - 6.1	30-Mar-21	<0.50	67
Dichlorodifluoromethane	All Locations	3.05 - 6.1	30-Mar-21	<1.0	4400
1,1-Dichloroethane	All Locations	3.05 - 6.1	30-Mar-21	<0.20	3100
1,2-Dichloroethane	All Locations	3.05 - 6.1	30-Mar-21	<0.50	12
1,1-Dichloroethylene	All Locations	3.05 - 6.1	30-Mar-21	<0.20	17
Cis-1,2-Dichloroethylene	All Locations	3.05 - 6.1	30-Mar-21	<0.50	17
Trans-1,2-Dichloroethylene	All Locations	3.05 - 6.1	30-Mar-21	<0.50	17
1,2-Dichloropropane	All Locations	3.05 - 6.1	30-Mar-21	<0.20	140
Cis-1,3-Dichloropropylene	All Locations	3.05 - 6.1	30-Mar-21	<0.30	45
Trans-1,3-Dichloropropylene	All Locations	3.05 - 6.1	30-Mar-21		
Ethylbenzene	All Locations	3.05 - 6.1	30-Mar-21	<0.20	2300
Ethylene Dibromide	All Locations	3.05 - 6.1	30-Mar-21	<0.20	0.83
Hexane	All Locations	3.05 - 6.1	30-Mar-21	<1.0	520
Methylene Chloride	All Locations	3.05 - 6.1	30-Mar-21	<2.0	5500
Methyl Ethyl Ketone	All Locations	3.05 - 6.1	30-Mar-21	<10	1500000
Methyl Isobutyl Ketone	All Locations	3.05 - 6.1	30-Mar-21	<5.0	580000
Methyl-t-Butyl Ether	All Locations	3.05 - 6.1	30-Mar-21	<0.50	1400
Styrene	All Locations	3.05 - 6.1	30-Mar-21	<0.50	9100
1,1,1,2-Tetrachloroethane	All Locations	3.05 - 6.1	30-Mar-21	<0.50	28
1,1,2,2-Tetrachloroethane	All Locations	3.05 - 6.1	30-Mar-21	<0.50	15
Tetrachloroethylene	All Locations	3.05 - 6.1	30-Mar-21	<0.20	17
Toluene	All Locations	3.05 - 6.1	30-Mar-21	<0.20	18000
1,1,1-Trichloroethane	All Locations	3.05 - 6.1	30-Mar-21	<0.20	6700
1,1,2-Trichloroethane	All Locations	3.05 - 6.1	30-Mar-21	<0.50	30
Trichloroethylene	All Locations	3.05 - 6.1	30-Mar-21	<0.20	17
Trichlorofluoromethane	All Locations	3.05 - 6.1	30-Mar-21	<0.50	2500
Vinyl Chloride	All Locations	3.05 - 6.1	30-Mar-21	<0.20	1.7
Total Xylenes	All Locations	3.05 - 6.1	30-Mar-21	<0.20	4200

NOTES:

All results are in ppb
Non-detectable results are shown as "< (RDL)" where RDL represents the reporting detection limit.
Results were compared to Ontario Ministry of Environment, Conservation and Parks (MECP), Soil, Groundwater and Sediment Standards for use under Part XV.1 of the Environmental Protection Act, April 2011, Table 3 Full Depth Generic Site Condition Standards (SCS) in a Non- Potable Ground Water Condition for all types of property use and coarse textured soils.

TABLE 9 RELATIVE PERCENT DIFFERENCES
PETROLEUM HYDROCARBONS - SOIL
233 Argyle Avenue, Ottawa

Parameter	Units	RDL	MW21-3 S1	MW21-3 S1D	RPD (%)	Alert Limit (%)
			18-Mar-21			
Petroleum Hydrocarbons						
PHC F_1 (>C_6-C10)	ug/g	10	<10	<10	nc	60
PHC F_2 (>C_{10}-C_{16})	ug/g	10	<10	<10	nc	60
PHC F_3 (>C_{16}-C_{34})	ug/g	50	<50	68	nc	60
PHC F_4 (>C_{34}-C_{50})	ug/g	50	<50	<50	nc	60
Volatiles						
Benzene	ug/g	0.020	<0.02	0.031	nc	100
Ethylbenzene	ug/g	0.020	<0.02	<0.02	nc	100
Toluene	ug/g	0.020	0.021	0.036	53	100
Total Xylenes	ug/g	0.020	0.021	0.022	5	100

NOTES:

All results on dry weight basis; <RDL means not detected at reporting detection limit (RDL)
- means "not analysed"
nc means "not calculable" - one (or both) of the results are <5x RDL
Exceedances of alert limits are shown in **bold**
Alert Limit- since laboratory duplicate measures laboratory precision while field duplicates measures laboratory and field precision, the alert limits for field duplicates are two times the laboratory RPD .

TABLE 10 RELATIVE PERCENT DIFFERENCES
VOLATILE ORGANIC COMPOUNDS - SOIL
233 Argyle Avenue, Ottawa

Parameter	Units	RDL	MW21-3 S1	MW21-3 S1D	RPD (%)	Alert Limit (%)
			18-Mar-21			
Volatiles						
Acetone	ug/g	0.50	<0.50	<0.50	nc	100
Benzene	ug/g	0.020	<0.020	0.031	nc	100
Bromodichloromethane	ug/g	0.050	<0.050	<0.050	nc	100
Bromoform	ug/g	0.050	<0.050	<0.050	nc	100
Bromomethane	ug/g	0.050	<0.050	<0.050	nc	100
Carbon Tetrachloride	ug/g	0.050	<0.050	<0.050	nc	100
Chlorobenzene	ug/g	0.050	<0.050	<0.050	nc	100
Chloroform	ug/g	0.050	<0.050	<0.050	nc	100
Dibromochloromethane	ug/g	0.050	<0.050	<0.050	nc	100
1,2-Dichlorobenzene	ug/g	0.050	<0.050	<0.050	nc	100
1,3-Dichlorobenzene	ug/g	0.050	<0.050	<0.050	nc	100
1,4-Dichlorobenzene	ug/g	0.050	<0.050	<0.050	nc	100
Difluorodifluoromethane	ug/g	0.050	<0.050	<0.050	nc	100
1,1-Dichloroethane	ug/g	0.050	<0.050	<0.050	nc	100
1,2-Dichloroethane	ug/g	0.050	<0.050	<0.050	nc	100
1,1-Dichloroethylene	ug/g	0.050	<0.050	<0.050	nc	100
Cis-1,2-Dichloroethylene	ug/g	0.050	<0.050	<0.050	nc	100
Trans-1,2-Dichloroethylene	ug/g	0.050	<0.050	<0.050	nc	100
1,2-Dichloropropane	ug/g	0.050	<0.050	<0.050	nc	100
1,3-Dichloropropene (cis+trans)	ug/g	0.05	<0.040	<0.040	nc	100
Ethylbenzene	ug/g	0.020	<0.020	<0.020	nc	100
Ethylene Dibromide	ug/g	0.050	<0.050	<0.050	nc	100
Hexane	ug/g	0.050	<0.050	<0.050	nc	100
Methylene Chloride	ug/g	0.050	<0.050	<0.050	nc	100
Methyl Ethyl Ketone	ug/g	0.50	<0.50	<0.50	nc	100
Methyl Isobutyl Ketone	ug/g	0.50	<0.50	<0.50	nc	100
Methyl-t-Butyl Ether	ug/g	0.050	<0.050	<0.050	nc	100
Styrene	ug/g	0.050	<0.050	<0.050	nc	100
1,1,1,2-Tetrachloroethane	ug/g	0.050	<0.050	<0.050	nc	100
1,1,2,2-Tetrachloroethane	ug/g	0.050	<0.050	<0.050	nc	100
Tetrachloroethylene	ug/g	0.050	0.10	0.12	18	100
Toluene	ug/g	0.020	0.021	0.036	53	100
1,1,1-Trichloroethane	ug/g	0.050	<0.050	<0.050	nc	100
1,1,2-Trichloroethane	ug/g	0.050	<0.050	<0.050	nc	100
Trichloroethylene	ug/g	0.050	<0.050	<0.050	nc	100
Trichlorofluoromethane	ug/g	0.050	<0.050	<0.050	nc	100
Vinyl Chloride	ug/g	0.020	<0.020	<0.020	nc	100
Total Xylenes	ug/g	0.020	0.021	0.022	5	100

NOTES:

Analysis by Maxxam Analytics/BVL

<RDL means not detected at reporting detection limit (RDL)

- means "not analysed"

nc means "not calculable" - one (or both) of the results are <5x RDL

Exceedances of alert limits are shown in **bold**

Alert Limit- since laboratory duplicate measures laboratory precision while field duplicates measures laboratory and field precision, the alert limits for field duplicates are two times the laboratory RPD .

TABLE 11 RELATIVE PERCENT DIFFERENCES
METALS - SOIL
233 Argyle Avenue, Ottawa

Parameter	Units	RDL	MW21-3 S1	MW21-3 S1D	RPD (%)	Alert Limit (%)
			18-Mar-21			
Inorganic Parameters						
Antimony	ug/g	0.20	1.6	0.98	48	60
Arsenic	ug/g	1.0	18	9.5	**62**	60
Barium	ug/g	0.50	220	190	15	60
Beryllium	ug/g	0.20	0.76	0.73	4	60
Boron	ug/g	5.0	5.3	5.6	6	60
Cadmium	ug/g	0.10	0.42	0.27	43	60
Chromium	ug/g	1.0	34	37	8	60
Cobalt	ug/g	0.10	11	10	10	60
Copper	ug/g	0.50	41	33	22	60
Lead	ug/g	1.0	170	90	**62**	60
Molybdenum	ug/g	0.50	3.3	3.1	6	60
Nickel	ug/g	0.50	26	25	4	60
Selenium	ug/g	0.50	1.6	1.0	46	60
Silver	ug/g	0.20	0.32	<0.20	nc	60
Thallium	ug/g	0.050	0.23	0.19	19	60
Uranium	ug/g	5.0	1.3	0.97	29	60
Vanadium	ug/g	0.050	51	51	0	60
Zinc	ug/g	5.0	150	93	47	60

NOTES:

Analysis by Maxxam Analytics/BVL

All results on dry weight basis; <RDL means not detected at reporting detection limit (RDL)

- means "not analysed"

nc means "not calculable" - one (or both) of the results are <5x RDL

Exceedances of alert limits are shown in **bold**

Alert Limit- since laboratory duplicate measures laboratory precision while field duplicates measures laboratory and field precision, the alert limits for field duplicates are two times the laboratory RPD .

TABLE 12 RELATIVE PERCENT DIFFERENCES
POLYCYCLIC AROMATIC HYDROCARBONS - SOIL
233 Argyle Avenue, Ottawa

Parameter	Units	RDL	MW21-3 S1	MW21-3 S1D	RPD (%)	Alert Limit (%)
			18-Mar-21			
Polycyclic Aromatic Hydrocarbons						
Acenaphthene	ug/g	0.0050	0.0065	0.051	**155**	80
Acenaphthylene	ug/g	0.0050	0.022	0.065	**99**	80
Anthracene	ug/g	0.0050	0.026	0.14	**137**	80
Benzo(a)anthracene	ug/g	0.0050	0.099	0.60	**143**	80
Benzo(a)pyrene	ug/g	0.0050	0.10	0.53	**137**	80
Benzo(b/j)fluoranthene	ug/g	0.0050	0.15	0.70	**129**	80
Benzo(ghi)perylene	ug/g	0.0050	0.072	0.29	**120**	80
Benzo(k)fluoranthene	ug/g	0.0050	0.052	0.26	**133**	80
Chrysene	ug/g	0.0050	0.099	0.54	**138**	80
Dibenz(a,h)anthracene	ug/g	0.0050	0.018	0.089	**133**	80
Fluoranthene	ug/g	0.0050	0.20	1.1	**138**	80
Fluorene	ug/g	0.0050	0.0072	0.045	**145**	80
Indeno(1,2,3-cd)pyrene	ug/g	0.0050	0.078	0.34	**125**	80
Methylnaphthalene, 2-(1-)	ug/g	0.0071	0.013	0.041	**104**	80
Naphthalene	ug/g	0.0050	0.0062	0.021	**109**	80
Phenanthrene	ug/g	0.0050	0.091	0.56	**144**	80
Pyrene	ug/g	0.0050	0.17	0.97	**140**	80

NOTES:

Analysis by Maxxam Analytics/BVL

All results on dry weight basis; <RDL means not detected at reporting detection limit (RDL)

- means "not analysed"

nc means "not calculable" - one (or both) of the results are <5x RDL

Exceedances of alert limits are shown in **bold**

Alert Limit- since laboratory duplicate measures laboratory precision while field duplicates measures laboratory and field precision, the alert limits for field duplicates are two times the laboratory RPD .

TABLE 13 RELATIVE PERCENT DIFFERENCES
VOC and PHC in Groundwater
233 Argyle Avenue, Ottawa

Parameter	Units	RDL	MW21-3	MW21-5	RPD (%)	Alert Limit (%)
			30-Mar-21			
Acetone	ug/L	10	<10	<10	nc	60
Benzene	ug/L	0.20	<0.20	<0.20	nc	60
Bromodichloromethane	ug/L	0.50	<0.50	<0.50	nc	60
Bromoform	ug/L	1.0	<1.0	<1.0	nc	60
Bromomethane	ug/L	0.50	<0.50	<0.50	nc	60
Carbon Tetrachloride	ug/L	0.20	<0.20	<0.20	nc	60
Chlorobenzene	ug/L	0.20	<0.20	<0.20	nc	60
Chloroform	ug/L	0.20	<0.20	<0.20	nc	60
Dibromochloromethane	ug/L	0.50	<0.50	<0.50	nc	60
1,2-Dichlorobenzene	ug/L	0.50	<0.50	<0.50	nc	60
1,3-Dichlorobenzene	ug/L	0.50	<0.50	<0.50	nc	60
1,4-Dichlorobenzene	ug/L	0.50	<0.50	<0.50	nc	60
Dichlorodifluoromethane	ug/L	1.0	<1.0	<1.0	nc	60
1,1-Dichloroethane	ug/L	0.20	<0.20	<0.20	nc	60
1,2-Dichloroethane	ug/L	0.50	<0.50	<0.50	nc	60
1,1-Dichloroethylene	ug/L	0.20	<0.20	<0.20	nc	60
Cis-1,2-Dichloroethylene	ug/L	0.50	<0.50	<0.50	nc	60
Trans-1,2-Dichloroethylene	ug/L	0.50	<0.50	<0.50	nc	60
1,2-Dichloropropane	ug/L	0.20	<0.20	<0.20	nc	60
Cis-1,3-Dichloropropylene	ug/L	0.30	<0.30	<0.30	nc	60
Trans-1,3-Dichloropropylene	ug/L	0.40	<0.40	<0.40	nc	60
Ethylbenzene	ug/L	0.20	<0.20	<0.20	nc	60
Ethylene Dibromide	ug/L	0.20	<0.20	<0.20	nc	60
Hexane	ug/L	1.0	<1.0	<1.0	nc	60
Methylene Chloride	ug/L	2.0	<2.0	<2.0	nc	60
Methyl Ethyl Ketone	ug/L	10	<10	<10	nc	60
Methyl Isobutyl Ketone	ug/L	5.0	<5.0	<5.0	nc	60
Methyl-t-Butyl Ether	ug/L	0.50	<0.50	<0.50	nc	60
Styrene	ug/L	0.50	<0.50	<0.50	nc	60
1,1,1,2-Tetrachloroethane	ug/L	0.50	<0.50	<0.50	nc	60
1,1,2,2-Tetrachloroethane	ug/L	0.50	<0.50	<0.50	nc	60
Tetrachloroethylene	ug/L	0.20	<0.20	<0.20	nc	60
Toluene	ug/L	0.20	<0.20	<0.20	nc	60
1,1,1-Trichloroethane	ug/L	0.20	<0.20	<0.20	nc	60
1,1,2-Trichloroethane	ug/L	0.50	<0.50	<0.50	nc	60
Trichloroethylene	ug/L	0.20	<0.20	<0.20	nc	60
Trichlorofluoromethane	ug/L	0.50	<0.50	<0.50	nc	60
Vinyl Chloride	ug/L	0.20	<0.20	<0.20	nc	60
Total Xylenes	ug/L	0.20	<0.20	<0.20	nc	60
PHC F_1 (>C_6-C10)	ug/L	25	<25	<25	nc	60
PHC F_2 (>C_{10}-C_{16})	ug/L	100	<100	<100	nc	60
PHC F_3 (>C_{16}-C_{34})	ug/L	200	<200	<200	nc	60
PHC F_4 (>C_{34}-C_{50})	ug/L	200	<200	<200	nc	60

NOTES:

Analysis by Maxxam Analytics/BVL

<RDL means not detected at reporting detection limit (RDL)

- means "not analysed"

nc means "not calculable" - one (or both) of the results are <5x RDL

Exceedances of alert limits are shown in **bold**

Alert Limit- since laboratory duplicate measures laboratory precision while field duplicates measures laboratory and field precision, the alert limits for field duplicates are two times the laboratory RPD .

TABLE 14 RELATIVE PERCENT DIFFERENCES
Metals in Groundwater
233 Argyle Avenue, Ottawa

Parameter	Units	RDL	MW21-3	MW21-5	RPD (%)	Alert Limit (%)
			30-Mar-21			
Metals						
Antimony	ug/L	0.50	0.52	<0.50	nc	60
Arsenic	ug/L	1.0	2.1	2.1	nc	60
Barium	ug/L	2.0	54	54	0	60
Beryllium	ug/L	0.40	<0.40	<0.40	nc	60
Boron	ug/L	10	550	560	1.8	60
Cadmium	ug/L	0.090	<0.090	<0.090	nc	60
Chromium	ug/L	5.0	<5.0	<5.0	nc	60
Cobalt	ug/L	0.50	<0.50	<0.50	nc	60
Copper	ug/L	0.90	2.8	2.6	nc	60
Lead	ug/L	0.50	<0.50	<0.50	nc	60
Molybdenum	ug/L	0.50	37	37	0	60
Nickel	ug/L	1.0	2.8	2.9	nc	60
Selenium	ug/L	2.0	<2.0	<2.0	nc	60
Silver	ug/L	0.090	<0.090	<0.090	nc	60
Sodium	ug/L	500	170000	170000	0	60
Thallium	ug/L	0.050	<0.050	<0.050	nc	60
Uranium	ug/L	0.10	8.9	8.7	2.3	60
Vanadium	ug/L	0.50	4.9	4.9	0	60
Zinc	ug/L	5	<5.0	<5.0	nc	60

NOTES:

Analysis by BVL

Non-detectable results are shown as "< (RDL)" where RDL represents the reporting detection limit.

- means "not analysed"

nc means "not calculable" - one (or both) of the results are <5x RDL

Exceedances of alert limits are shown in **bold**

Alert Limit- since laboratory duplicate measures laboratory precision while field duplicates measures laboratory and field precision, the alert limits for field duplicates are two times the laboratory RPD .

TABLE 15 RELATIVE PERCENT DIFFERENCES
POLYCYCLIC AROMATIC HYDROCARBONS - GROUNDWATER
233 Argyle Avenue, Ottawa

Parameter	Units	RDL	MW21-3	MW21-5	RPD (%)	Alert Limit (%)
			30-Mar-21			
Polycyclic Aromatic Hydrocarbons						
Acenaphthene	ug/L	0.05	<0.050	<0.050	nc	60
Acenaphthylene	ug/L	0.05	<0.050	<0.050	nc	60
Anthracene	ug/L	0.05	<0.050	<0.050	nc	60
Benzo[a]anthracene	ug/L	0.05	<0.050	<0.050	nc	60
Benzo[a]pyrene	ug/L	0.009	<0.0090	<0.0090	nc	60
Benzo[b]fluoranthene	ug/L	0.05	<0.050	<0.050	nc	60
Benzo[g,h,i]perylene	ug/L	0.05	<0.050	<0.050	nc	60
Benzo[k]fluoranthene	ug/L	0.05	<0.050	<0.050	nc	60
Chrysene	ug/L	0.05	<0.050	<0.050	nc	60
Dibenzo[a,h]anthracene	ug/L	0.05	<0.050	<0.050	nc	60
Fluoranthene	ug/L	0.05	<0.050	<0.050	nc	60
Fluorene	ug/L	0.05	<0.050	<0.050	nc	60
Indeno[1,2,3-cd]pyrene	ug/L	0.05	<0.050	<0.050	nc	60
Methylnaphthalene (1&2)	ug/L	0.05	<0.071	<0.071	nc	60
Naphthalene	ug/L	0.05	<0.050	<0.050	nc	60
Phenanthrene	ug/L	0.03	<0.030	<0.030	nc	60
Pyrene	ug/L	0.05	<0.050	<0.050	nc	60

NOTES:

Analysis by BVL

Non-detectable results are shown as "< (RDL)" where RDL represents the reporting detection limit.

- means "not analysed"

nc means "not calculable" - one (or both) of the results are <5x RDL

Exceedances of alert limits are shown in **bold**

Alert Limit- since laboratory duplicate measures laboratory precision while field duplicates measures laboratory and field precision, the alert limits for field duplicates are two times the laboratory RPD .

Appendix F: Laboratory Certificates of Analysis

Your Project #: OTT-00262765-A0
Your C.O.C. #: 817845-01-01

Attention: Mark McCalla

exp Services Inc
Ottawa Branch
100-2650 Queensview Drive
Ottawa, ON
CANADA K2B 8H6

Report Date: 2021/04/13
Report #: R6592540
Version: 2 - Revision

CERTIFICATE OF ANALYSIS – REVISED REPORT

BV LABS JOB #: C175643
Received: 2021/03/22, 12:00

Sample Matrix: Soil
Samples Received: 5

Analyses	Quantity	Date Extracted	Date Analyzed	Laboratory Method	Analytical Method
Methylnaphthalene Sum (1)	4	N/A	2021/03/25	CAM SOP-00301	EPA 8270D m
1,3-Dichloropropene Sum (1)	4	N/A	2021/03/26		EPA 8260C m
Petroleum Hydrocarbons F2-F4 in Soil (1, 2)	4	2021/03/24	2021/03/25	CAM SOP-00316	CCME CWS m
F4G (CCME Hydrocarbons Gravimetric) (1)	1	2021/03/26	2021/03/26	CAM SOP-00316	CCME PHC-CWS m
Strong Acid Leachable Metals by ICPMS (1)	4	2021/03/24	2021/03/24	CAM SOP-00447	EPA 6020B m
Moisture (1)	5	N/A	2021/03/24	CAM SOP-00445	Carter 2nd ed 51.2 m
PAH Compounds in Soil by GC/MS (SIM) (1)	4	2021/03/24	2021/03/25	CAM SOP-00318	EPA 8270D m
pH CaCl2 EXTRACT (1)	2	2021/04/12	2021/04/12	CAM SOP-00413	EPA 9045 D m
Volatile Organic Compounds and F1 PHCs (1)	4	N/A	2021/03/25	CAM SOP-00230	EPA 8260C m

Remarks:

Bureau Veritas is accredited to ISO/IEC 17025 for specific parameters on scopes of accreditation. Unless otherwise noted, procedures used by Bureau Veritas are based upon recognized Provincial, Federal or US method compendia such as CCME, MELCC, EPA, APHA.

All work recorded herein has been done in accordance with procedures and practices ordinarily exercised by professionals in Bureau Veritas' profession using accepted testing methodologies, quality assurance and quality control procedures (except where otherwise agreed by the client and Bureau Veritas in writing). All data is in statistical control and has met quality control and method performance criteria unless otherwise noted. All method blanks are reported; unless indicated otherwise, associated sample data are not blank corrected. Where applicable, unless otherwise noted, Measurement Uncertainty has not been accounted for when stating conformity to the referenced standard.

Bureau Veritas liability is limited to the actual cost of the requested analyses, unless otherwise agreed in writing. There is no other warranty expressed or implied. Bureau Veritas has been retained to provide analysis of samples provided by the Client using the testing methodology referenced in this report. Interpretation and use of test results are the sole responsibility of the Client and are not within the scope of services provided by Bureau Veritas, unless otherwise agreed in writing. Bureau Veritas is not responsible for the accuracy or any data impacts, that result from the information provided by the customer or their agent.

Solid sample results, except biota, are based on dry weight unless otherwise indicated. Organic analyses are not recovery corrected except for isotope dilution methods.
Results relate to samples tested. When sampling is not conducted by Bureau Veritas, results relate to the supplied samples tested.

Reference Method suffix “m” indicates test methods incorporate validated modifications from specific reference methods to improve performance.
* RPDs calculated using raw data. The rounding of final results may result in the apparent difference.
(1) This test was performed by Bureau Veritas Laboratories Mississauga
(2) All CCME PHC results met required criteria unless otherwise stated in the report. The CWS PHC methods employed by Bureau Veritas Laboratories conform to all prescribed

Your Project #: OTT-00262765-A0
Your C.O.C. #: 817845-01-01

Attention: Mark McCalla

exp Services Inc
Ottawa Branch
100-2650 Queensview Drive
Ottawa, ON
CANADA K2B 8H6

Report Date: 2021/04/13
Report #: R6592540
Version: 2 - Revision

CERTIFICATE OF ANALYSIS – REVISED REPORT

BV LABS JOB #: C175643

Received: 2021/03/22, 12:00

elements of the reference method and performance based elements have been validated. All modifications have been validated and proven equivalent following “Alberta Environment’s Interpretation of the Reference Method for the Canada-Wide Standard for Petroleum Hydrocarbons in Soil Validation of Performance-Based Alternative Methods September 2003”. Documentation is available upon request. Modifications from Reference Method for the Canada-wide Standard for Petroleum Hydrocarbons in Soil-Tier 1 Method: F2/F3/F4 data reported using validated cold solvent extraction instead of Soxhlet extraction.

Encryption Key

Please direct all questions regarding this Certificate of Analysis to your Project Manager.
Katherine Szozda, Project Manager
Email: Katherine.Szozda@bureauveritas.com
Phone# (613)274-0573 Ext:7063633
==========
BV Labs has procedures in place to guard against improper use of the electronic signature and have the required "signatories", as per ISO/IEC 17025, signing the reports. For Service Group specific validation please refer to the Validation Signature Page.

BV Labs Job #: C175643
Report Date: 2021/04/13

exp Services Inc
Client Project #: OTT-00262765-A0
Sampler Initials: MM

O.REG 153 ICPMS METALS (SOIL)

BV Labs ID		PDF255	PDF256	PDF257	PDF258		
Sampling Date		2021/03/18	2021/03/18	2021/03/18	2021/03/19		
COC Number		817845-01-01	817845-01-01	817845-01-01	817845-01-01		
	UNITS	**MW21-1 SS1**	**MW21-3 S1**	**MW21-3 S1D**	**MW21-4 S2**	**RDL**	**QC Batch**
Metals							
Acid Extractable Antimony (Sb)	ug/g	0.71	1.6	0.98	<0.20	0.20	7264450
Acid Extractable Arsenic (As)	ug/g	4.3	18	9.5	1.1	1.0	7264450
Acid Extractable Barium (Ba)	ug/g	140	220	190	57	0.50	7264450
Acid Extractable Beryllium (Be)	ug/g	0.36	0.76	0.73	0.27	0.20	7264450
Acid Extractable Boron (B)	ug/g	5.7	5.3	5.6	5.7	5.0	7264450
Acid Extractable Cadmium (Cd)	ug/g	0.85	0.42	0.27	<0.10	0.10	7264450
Acid Extractable Chromium (Cr)	ug/g	64	34	37	21	1.0	7264450
Acid Extractable Cobalt (Co)	ug/g	6.6	11	10	6.1	0.10	7264450
Acid Extractable Copper (Cu)	ug/g	28	41	33	15	0.50	7264450
Acid Extractable Lead (Pb)	ug/g	160	170	90	4.2	1.0	7264450
Acid Extractable Molybdenum (Mo)	ug/g	1.5	3.3	3.1	1.1	0.50	7264450
Acid Extractable Nickel (Ni)	ug/g	18	26	25	13	0.50	7264450
Acid Extractable Selenium (Se)	ug/g	0.71	1.6	1.0	<0.50	0.50	7264450
Acid Extractable Silver (Ag)	ug/g	0.33	0.32	<0.20	<0.20	0.20	7264450
Acid Extractable Thallium (Tl)	ug/g	0.18	0.23	0.19	0.16	0.050	7264450
Acid Extractable Uranium (U)	ug/g	1.1	1.3	0.97	0.50	0.050	7264450
Acid Extractable Vanadium (V)	ug/g	36	51	51	41	5.0	7264450
Acid Extractable Zinc (Zn)	ug/g	210	150	93	41	5.0	7264450

RDL = Reportable Detection Limit
QC Batch = Quality Control Batch

BV Labs Job #: C175643
Report Date: 2021/04/13

exp Services Inc
Client Project #: OTT-00262765-A0
Sampler Initials: MM

O.REG 153 PAHS (SOIL)

BV Labs ID		PDF255			PDF256	PDF257		PDF258		
Sampling Date		2021/03/18			2021/03/18	2021/03/18		2021/03/19		
COC Number		817845-01-01			817845-01-01	817845-01-01		817845-01-01		
	UNITS	**MW21-1 SS1**	**RDL**	**QC Batch**	**MW21-3 S1**	**MW21-3 S1D**	**RDL**	**MW21-4 S2**	**RDL**	**QC Batch**
Inorganics										
Moisture	%	31	1.0	7263912						
Calculated Parameters										
Methylnaphthalene, 2-(1-)	ug/g	<0.071	0.071	7261814	0.013	0.041	0.0071	<0.071	0.071	7261814
Polyaromatic Hydrocarbons										
Acenaphthene	ug/g	0.071	0.050	7265649	0.0065	0.051	0.0050	<0.050	0.050	7265649
Acenaphthylene	ug/g	0.12	0.050	7265649	0.022	0.065	0.0050	<0.050	0.050	7265649
Anthracene	ug/g	0.19	0.050	7265649	0.026	0.14	0.0050	<0.050	0.050	7265649
Benzo(a)anthracene	ug/g	0.66	0.050	7265649	0.099	0.60	0.0050	<0.050	0.050	7265649
Benzo(a)pyrene	ug/g	0.64	0.050	7265649	0.10	0.53	0.0050	<0.050	0.050	7265649
Benzo(b/j)fluoranthene	ug/g	0.85	0.050	7265649	0.15	0.70	0.0050	0.050	0.050	7265649
Benzo(g,h,i)perylene	ug/g	0.43	0.050	7265649	0.072	0.29	0.0050	<0.050	0.050	7265649
Benzo(k)fluoranthene	ug/g	0.30	0.050	7265649	0.052	0.26	0.0050	<0.050	0.050	7265649
Chrysene	ug/g	0.63	0.050	7265649	0.099	0.54	0.0050	<0.050	0.050	7265649
Dibenzo(a,h)anthracene	ug/g	0.11	0.050	7265649	0.018	0.089	0.0050	<0.050	0.050	7265649
Fluoranthene	ug/g	1.4	0.050	7265649	0.20	1.1	0.0050	0.069	0.050	7265649
Fluorene	ug/g	0.062	0.050	7265649	0.0072	0.045	0.0050	<0.050	0.050	7265649
Indeno(1,2,3-cd)pyrene	ug/g	0.49	0.050	7265649	0.078	0.34	0.0050	<0.050	0.050	7265649
1-Methylnaphthalene	ug/g	<0.050	0.050	7265649	0.0059	0.020	0.0050	<0.050	0.050	7265649
2-Methylnaphthalene	ug/g	<0.050	0.050	7265649	0.0074	0.021	0.0050	<0.050	0.050	7265649
Naphthalene	ug/g	<0.050	0.050	7265649	0.0062	0.021	0.0050	<0.050	0.050	7265649
Phenanthrene	ug/g	0.76	0.050	7265649	0.091	0.56	0.0050	<0.050	0.050	7265649
Pyrene	ug/g	1.2	0.050	7265649	0.17	0.97	0.0050	0.065	0.050	7265649
Surrogate Recovery (%)										
D10-Anthracene	%	99		7265649	82	85		107		7265649
D14-Terphenyl (FS)	%	86		7265649	77	86		86		7265649
D8-Acenaphthylene	%	84		7265649	81	85		92		7265649

RDL = Reportable Detection Limit
QC Batch = Quality Control Batch

O.REG 153 VOCS BY HS & F1-F4 (SOIL)

BV Labs ID		PDF256	PDF257	PDF258		PDF259		
Sampling Date		2021/03/18	2021/03/18	2021/03/19		2021/03/18		
COC Number		817845-01-01	817845-01-01	817845-01-01		817845-01-01		
	UNITS	**MW21-3 S1**	**MW21-3 S1D**	**MW21-4 S2**	**QC Batch**	**MW21-1 S3**	**RDL**	**QC Batch**
Inorganics								
Moisture	%	16	21	6.5	7263696	30	1.0	7263696
Calculated Parameters								
1,3-Dichloropropene (cis+trans)	ug/g	<0.050	<0.050	<0.050	7261816	<0.050	0.050	7261816
Volatile Organics								
Acetone (2-Propanone)	ug/g	<0.50	<0.50	<0.50	7263658	<0.50	0.50	7263658
Benzene	ug/g	<0.020	0.031	<0.020	7263658	<0.020	0.020	7263658
Bromodichloromethane	ug/g	<0.050	<0.050	<0.050	7263658	<0.050	0.050	7263658
Bromoform	ug/g	<0.050	<0.050	<0.050	7263658	<0.050	0.050	7263658
Bromomethane	ug/g	<0.050	<0.050	<0.050	7263658	<0.050	0.050	7263658
Carbon Tetrachloride	ug/g	<0.050	<0.050	<0.050	7263658	<0.050	0.050	7263658
Chlorobenzene	ug/g	<0.050	<0.050	<0.050	7263658	<0.050	0.050	7263658
Chloroform	ug/g	<0.050	<0.050	<0.050	7263658	<0.050	0.050	7263658
Dibromochloromethane	ug/g	<0.050	<0.050	<0.050	7263658	<0.050	0.050	7263658
1,2-Dichlorobenzene	ug/g	<0.050	<0.050	<0.050	7263658	<0.050	0.050	7263658
1,3-Dichlorobenzene	ug/g	<0.050	<0.050	<0.050	7263658	<0.050	0.050	7263658
1,4-Dichlorobenzene	ug/g	<0.050	<0.050	<0.050	7263658	<0.050	0.050	7263658
Dichlorodifluoromethane (FREON 12)	ug/g	<0.050	<0.050	<0.050	7263658	<0.050	0.050	7263658
1,1-Dichloroethane	ug/g	<0.050	<0.050	<0.050	7263658	<0.050	0.050	7263658
1,2-Dichloroethane	ug/g	<0.050	<0.050	<0.050	7263658	<0.050	0.050	7263658
1,1-Dichloroethylene	ug/g	<0.050	<0.050	<0.050	7263658	<0.050	0.050	7263658
cis-1,2-Dichloroethylene	ug/g	<0.050	<0.050	<0.050	7263658	<0.050	0.050	7263658
trans-1,2-Dichloroethylene	ug/g	<0.050	<0.050	<0.050	7263658	<0.050	0.050	7263658
1,2-Dichloropropane	ug/g	<0.050	<0.050	<0.050	7263658	<0.050	0.050	7263658
cis-1,3-Dichloropropene	ug/g	<0.030	<0.030	<0.030	7263658	<0.030	0.030	7263658
trans-1,3-Dichloropropene	ug/g	<0.040	<0.040	<0.040	7263658	<0.040	0.040	7263658
Ethylbenzene	ug/g	<0.020	<0.020	<0.020	7263658	<0.020	0.020	7263658
Ethylene Dibromide	ug/g	<0.050	<0.050	<0.050	7263658	<0.050	0.050	7263658
Hexane	ug/g	<0.050	<0.050	<0.050	7263658	<0.050	0.050	7263658
Methylene Chloride(Dichloromethane)	ug/g	<0.050	<0.050	<0.050	7263658	<0.050	0.050	7263658
Methyl Ethyl Ketone (2-Butanone)	ug/g	<0.50	<0.50	<0.50	7263658	<0.50	0.50	7263658
Methyl Isobutyl Ketone	ug/g	<0.50	<0.50	<0.50	7263658	<0.50	0.50	7263658
Methyl t-butyl ether (MTBE)	ug/g	<0.050	<0.050	<0.050	7263658	<0.050	0.050	7263658
Styrene	ug/g	<0.050	<0.050	<0.050	7263658	<0.050	0.050	7263658
1,1,1,2-Tetrachloroethane	ug/g	<0.050	<0.050	<0.050	7263658	<0.050	0.050	7263658
1,1,2,2-Tetrachloroethane	ug/g	<0.050	<0.050	<0.050	7263658	<0.050	0.050	7263658
Tetrachloroethylene	ug/g	0.10	0.12	<0.050	7263658	<0.050	0.050	7263658

RDL = Reportable Detection Limit
QC Batch = Quality Control Batch

O.REG 153 VOCS BY HS & F1-F4 (SOIL)

BV Labs ID		PDF256	PDF257	PDF258		PDF259		
Sampling Date		2021/03/18	2021/03/18	2021/03/19		2021/03/18		
COC Number		817845-01-01	817845-01-01	817845-01-01		817845-01-01		
	UNITS	**MW21-3 S1**	**MW21-3 S1D**	**MW21-4 S2**	**QC Batch**	**MW21-1 S3**	**RDL**	**QC Batch**
Toluene	ug/g	0.021	0.036	0.088	7263658	<0.020	0.020	7263658
1,1,1-Trichloroethane	ug/g	<0.050	<0.050	<0.050	7263658	<0.050	0.050	7263658
1,1,2-Trichloroethane	ug/g	<0.050	<0.050	<0.050	7263658	<0.050	0.050	7263658
Trichloroethylene	ug/g	<0.050	<0.050	<0.050	7263658	<0.050	0.050	7263658
Trichlorofluoromethane (FREON 11)	ug/g	<0.050	<0.050	<0.050	7263658	<0.050	0.050	7263658
Vinyl Chloride	ug/g	<0.020	<0.020	<0.020	7263658	<0.020	0.020	7263658
p+m-Xylene	ug/g	0.021	0.022	0.069	7263658	<0.020	0.020	7263658
o-Xylene	ug/g	<0.020	<0.020	0.040	7263658	<0.020	0.020	7263658
Total Xylenes	ug/g	0.021	0.022	0.11	7263658	<0.020	0.020	7263658
F1 (C6-C10)	ug/g	<10	<10	<10	7263658	<10	10	7263658
F1 (C6-C10) - BTEX	ug/g	<10	<10	<10	7263658	<10	10	7263658
F2-F4 Hydrocarbons								
F2 (C10-C16 Hydrocarbons)	ug/g	<10	<10	<10	7265098	<10	10	7264164
F3 (C16-C34 Hydrocarbons)	ug/g	<50	68	230	7265098	<50	50	7264164
F4 (C34-C50 Hydrocarbons)	ug/g	<50	<50	960	7265098	<50	50	7264164
Reached Baseline at C50	ug/g	Yes	Yes	No	7265098	Yes		7264164
Surrogate Recovery (%)								
o-Terphenyl	%	98	96	81	7265098	93		7264164
4-Bromofluorobenzene	%	84	83	83	7263658	82		7263658
D10-o-Xylene	%	82	78	98	7263658	75		7263658
D4-1,2-Dichloroethane	%	120	120	120	7263658	120		7263658
D8-Toluene	%	96	95	96	7263658	95		7263658

RDL = Reportable Detection Limit
QC Batch = Quality Control Batch

RESULTS OF ANALYSES OF SOIL

BV Labs ID		PDF255	PDF258	
Sampling Date		2021/03/18	2021/03/19	
COC Number		817845-01-01	817845-01-01	
	UNITS	**MW21-1 SS1**	**MW21-4 S2**	**QC Batch**
Inorganics				
Available (CaCl2) pH	pH	7.32	7.84	7293384
QC Batch = Quality Control Batch				

PETROLEUM HYDROCARBONS (CCME)

BV Labs ID		PDF258		
Sampling Date		2021/03/19		
COC Number		817845-01-01		
	UNITS	**MW21-4 S2**	**RDL**	**QC Batch**
F2-F4 Hydrocarbons				
F4G-sg (Grav. Heavy Hydrocarbons)	ug/g	2900	100	7267963

RDL = Reportable Detection Limit
QC Batch = Quality Control Batch

TEST SUMMARY

BV Labs ID: PDF255 **Collected:** 2021/03/18
Sample ID: MW21-1 SS1 **Shipped:**
Matrix: Soil **Received:** 2021/03/22

Test Description	Instrumentation	Batch	Extracted	Date Analyzed	Analyst
Methylnaphthalene Sum	CALC	7261814	N/A	2021/03/25	Automated Statchk
Strong Acid Leachable Metals by ICPMS	ICP/MS	7264450	2021/03/24	2021/03/24	Daniel Teclu
Moisture	BAL	7263912	N/A	2021/03/24	Manpreet Kaur
PAH Compounds in Soil by GC/MS (SIM)	GC/MS	7265649	2021/03/24	2021/03/25	Joan Jin
pH CaCl2 EXTRACT	AT	7293384	2021/04/12	2021/04/12	Neil Dassanayake

BV Labs ID: PDF256 **Collected:** 2021/03/18
Sample ID: MW21-3 S1 **Shipped:**
Matrix: Soil **Received:** 2021/03/22

Test Description	Instrumentation	Batch	Extracted	Date Analyzed	Analyst
Methylnaphthalene Sum	CALC	7261814	N/A	2021/03/25	Automated Statchk
1,3-Dichloropropene Sum	CALC	7261816	N/A	2021/03/26	Automated Statchk
Petroleum Hydrocarbons F2-F4 in Soil	GC/FID	7265098	2021/03/24	2021/03/25	Prabhjot Gulati
Strong Acid Leachable Metals by ICPMS	ICP/MS	7264450	2021/03/24	2021/03/24	Daniel Teclu
Moisture	BAL	7263696	N/A	2021/03/24	Manpreet Kaur
PAH Compounds in Soil by GC/MS (SIM)	GC/MS	7265649	2021/03/24	2021/03/25	Joan Jin
Volatile Organic Compounds and F1 PHCs	GC/MSFD	7263658	N/A	2021/03/25	Yang (Philip) Yu

BV Labs ID: PDF257 **Collected:** 2021/03/18
Sample ID: MW21-3 S1D **Shipped:**
Matrix: Soil **Received:** 2021/03/22

Test Description	Instrumentation	Batch	Extracted	Date Analyzed	Analyst
Methylnaphthalene Sum	CALC	7261814	N/A	2021/03/25	Automated Statchk
1,3-Dichloropropene Sum	CALC	7261816	N/A	2021/03/26	Automated Statchk
Petroleum Hydrocarbons F2-F4 in Soil	GC/FID	7265098	2021/03/24	2021/03/25	Prabhjot Gulati
Strong Acid Leachable Metals by ICPMS	ICP/MS	7264450	2021/03/24	2021/03/24	Daniel Teclu
Moisture	BAL	7263696	N/A	2021/03/24	Manpreet Kaur
PAH Compounds in Soil by GC/MS (SIM)	GC/MS	7265649	2021/03/24	2021/03/25	Joan Jin
Volatile Organic Compounds and F1 PHCs	GC/MSFD	7263658	N/A	2021/03/25	Yang (Philip) Yu

BV Labs ID: PDF258 **Collected:** 2021/03/19
Sample ID: MW21-4 S2 **Shipped:**
Matrix: Soil **Received:** 2021/03/22

Test Description	Instrumentation	Batch	Extracted	Date Analyzed	Analyst
Methylnaphthalene Sum	CALC	7261814	N/A	2021/03/25	Automated Statchk
1,3-Dichloropropene Sum	CALC	7261816	N/A	2021/03/26	Automated Statchk
Petroleum Hydrocarbons F2-F4 in Soil	GC/FID	7265098	2021/03/24	2021/03/25	Prabhjot Gulati
F4G (CCME Hydrocarbons Gravimetric)	BAL	7267963	2021/03/26	2021/03/26	Narinderjeet Kaur
Strong Acid Leachable Metals by ICPMS	ICP/MS	7264450	2021/03/24	2021/03/24	Daniel Teclu
Moisture	BAL	7263696	N/A	2021/03/24	Manpreet Kaur
PAH Compounds in Soil by GC/MS (SIM)	GC/MS	7265649	2021/03/24	2021/03/25	Joan Jin
pH CaCl2 EXTRACT	AT	7293384	2021/04/12	2021/04/12	Neil Dassanayake
Volatile Organic Compounds and F1 PHCs	GC/MSFD	7263658	N/A	2021/03/25	Yang (Philip) Yu

BV Labs Job #: C175643
Report Date: 2021/04/13

exp Services Inc
Client Project #: OTT-00262765-A0
Sampler Initials: MM

TEST SUMMARY

BV Labs ID: PDF259
Sample ID: MW21-1 S3
Matrix: Soil

Collected: 2021/03/18
Shipped:
Received: 2021/03/22

Test Description	Instrumentation	Batch	Extracted	Date Analyzed	Analyst
1,3-Dichloropropene Sum	CALC	7261816	N/A	2021/03/26	Automated Statchk
Petroleum Hydrocarbons F2-F4 in Soil	GC/FID	7264164	2021/03/24	2021/03/25	Prabhjot Gulati
Moisture	BAL	7263696	N/A	2021/03/24	Manpreet Kaur
Volatile Organic Compounds and F1 PHCs	GC/MSFD	7263658	N/A	2021/03/25	Yang (Philip) Yu

GENERAL COMMENTS

Each temperature is the average of up to three cooler temperatures taken at receipt

Package 1	9.3°C

Revised Report (2021/04/13): pH added to MW21- 1 and MW21-4 per client request

Sample PDF255 [MW21-1 SS1] : PAH Analysis: Due to the sample matrix, sample required dilution. Detection limits were adjusted accordingly.

Sample PDF258 [MW21-4 S2] : PAH Analysis: Due to the sample matrix, sample required dilution. Detection limits were adjusted accordingly.

Results relate only to the items tested.

QUALITY ASSURANCE REPORT

			Matrix Spike		SPIKED BLANK		Method Blank		RPD	
QC Batch	Parameter	Date	% Recovery	QC Limits	% Recovery	QC Limits	Value	UNITS	Value (%)	QC Limits
7263658	4-Bromofluorobenzene	2021/03/25	94	60 - 140	96	60 - 140	86	%		
7263658	D10-o-Xylene	2021/03/25	86	60 - 130	75	60 - 130	81	%		
7263658	D4-1,2-Dichloroethane	2021/03/25	115	60 - 140	117	60 - 140	108	%		
7263658	D8-Toluene	2021/03/25	109	60 - 140	106	60 - 140	98	%		
7264164	o-Terphenyl	2021/03/25	104	60 - 130	98	60 - 130	101	%		
7265098	o-Terphenyl	2021/03/25	81	60 - 130	85	60 - 130	93	%		
7265649	D10-Anthracene	2021/03/25	91	50 - 130	92	50 - 130	91	%		
7265649	D14-Terphenyl (FS)	2021/03/25	83	50 - 130	85	50 - 130	80	%		
7265649	D8-Acenaphthylene	2021/03/25	88	50 - 130	87	50 - 130	84	%		
7263658	1,1,1,2-Tetrachloroethane	2021/03/25	103	60 - 140	112	60 - 130	<0.050	ug/g	NC	50
7263658	1,1,1-Trichloroethane	2021/03/25	100	60 - 140	112	60 - 130	<0.050	ug/g	NC	50
7263658	1,1,2,2-Tetrachloroethane	2021/03/25	110	60 - 140	121	60 - 130	<0.050	ug/g	NC	50
7263658	1,1,2-Trichloroethane	2021/03/25	117	60 - 140	125	60 - 130	<0.050	ug/g	NC	50
7263658	1,1-Dichloroethane	2021/03/25	97	60 - 140	107	60 - 130	<0.050	ug/g	NC	50
7263658	1,1-Dichloroethylene	2021/03/25	95	60 - 140	104	60 - 130	<0.050	ug/g	NC	50
7263658	1,2-Dichlorobenzene	2021/03/25	94	60 - 140	100	60 - 130	<0.050	ug/g	NC	50
7263658	1,2-Dichloroethane	2021/03/25	104	60 - 140	115	60 - 130	<0.050	ug/g	NC	50
7263658	1,2-Dichloropropane	2021/03/25	102	60 - 140	111	60 - 130	<0.050	ug/g	NC	50
7263658	1,3-Dichlorobenzene	2021/03/25	92	60 - 140	98	60 - 130	<0.050	ug/g	NC	50
7263658	1,4-Dichlorobenzene	2021/03/25	106	60 - 140	114	60 - 130	<0.050	ug/g	NC	50
7263658	Acetone (2-Propanone)	2021/03/25	127	60 - 140	139	60 - 140	<0.50	ug/g	NC	50
7263658	Benzene	2021/03/25	93	60 - 140	103	60 - 130	<0.020	ug/g	14	50
7263658	Bromodichloromethane	2021/03/25	105	60 - 140	116	60 - 130	<0.050	ug/g	NC	50
7263658	Bromoform	2021/03/25	107	60 - 140	119	60 - 130	<0.050	ug/g	NC	50
7263658	Bromomethane	2021/03/25	99	60 - 140	109	60 - 140	<0.050	ug/g	NC	50
7263658	Carbon Tetrachloride	2021/03/25	98	60 - 140	109	60 - 130	<0.050	ug/g	NC	50
7263658	Chlorobenzene	2021/03/25	96	60 - 140	102	60 - 130	<0.050	ug/g	NC	50
7263658	Chloroform	2021/03/25	103	60 - 140	113	60 - 130	<0.050	ug/g	NC	50
7263658	cis-1,2-Dichloroethylene	2021/03/25	98	60 - 140	109	60 - 130	<0.050	ug/g	NC	50
7263658	cis-1,3-Dichloropropene	2021/03/25	95	60 - 140	105	60 - 130	<0.030	ug/g	NC	50
7263658	Dibromochloromethane	2021/03/25	106	60 - 140	114	60 - 130	<0.050	ug/g	NC	50
7263658	Dichlorodifluoromethane (FREON 12)	2021/03/25	94	60 - 140	106	60 - 140	<0.050	ug/g	NC	50

QUALITY ASSURANCE REPORT(CONT'D)

			Matrix Spike		SPIKED BLANK		Method Blank		RPD	
QC Batch	Parameter	Date	% Recovery	QC Limits	% Recovery	QC Limits	Value	UNITS	Value (%)	QC Limits
7263658	Ethylbenzene	2021/03/25	84	60 - 140	90	60 - 130	<0.020	ug/g	4.2	50
7263658	Ethylene Dibromide	2021/03/25	107	60 - 140	115	60 - 130	<0.050	ug/g	NC	50
7263658	F1 (C6-C10) - BTEX	2021/03/25					<10	ug/g	NC	30
7263658	F1 (C6-C10)	2021/03/25	118	60 - 140	96	80 - 120	<10	ug/g	NC	30
7263658	Hexane	2021/03/25	94	60 - 140	101	60 - 130	<0.050	ug/g	NC	50
7263658	Methyl Ethyl Ketone (2-Butanone)	2021/03/25	94	60 - 140	104	60 - 140	<0.50	ug/g	NC	50
7263658	Methyl Isobutyl Ketone	2021/03/25	92	60 - 140	104	60 - 130	<0.50	ug/g	NC	50
7263658	Methyl t-butyl ether (MTBE)	2021/03/25	92	60 - 140	100	60 - 130	<0.050	ug/g	NC	50
7263658	Methylene Chloride(Dichloromethane)	2021/03/25	105	60 - 140	116	60 - 130	<0.050	ug/g	NC	50
7263658	o-Xylene	2021/03/25	82	60 - 140	88	60 - 130	<0.020	ug/g	NC	50
7263658	p+m-Xylene	2021/03/25	86	60 - 140	92	60 - 130	<0.020	ug/g	11	50
7263658	Styrene	2021/03/25	90	60 - 140	98	60 - 130	<0.050	ug/g	NC	50
7263658	Tetrachloroethylene	2021/03/25	88	60 - 140	94	60 - 130	<0.050	ug/g	NC	50
7263658	Toluene	2021/03/25	92	60 - 140	97	60 - 130	<0.020	ug/g	NC	50
7263658	Total Xylenes	2021/03/25					<0.020	ug/g	11	50
7263658	trans-1,2-Dichloroethylene	2021/03/25	97	60 - 140	108	60 - 130	<0.050	ug/g	NC	50
7263658	trans-1,3-Dichloropropene	2021/03/25	106	60 - 140	115	60 - 130	<0.040	ug/g	NC	50
7263658	Trichloroethylene	2021/03/25	98	60 - 140	108	60 - 130	<0.050	ug/g	NC	50
7263658	Trichlorofluoromethane (FREON 11)	2021/03/25	101	60 - 140	111	60 - 130	<0.050	ug/g	NC	50
7263658	Vinyl Chloride	2021/03/25	94	60 - 140	105	60 - 130	<0.020	ug/g	NC	50
7263696	Moisture	2021/03/24							6.4	20
7263912	Moisture	2021/03/24							1.5	20
7264164	F2 (C10-C16 Hydrocarbons)	2021/03/25	119	50 - 130	112	80 - 120	<10	ug/g	NC	30
7264164	F3 (C16-C34 Hydrocarbons)	2021/03/25	117	50 - 130	111	80 - 120	<50	ug/g	NC	30
7264164	F4 (C34-C50 Hydrocarbons)	2021/03/25	117	50 - 130	112	80 - 120	<50	ug/g	NC	30
7264450	Acid Extractable Antimony (Sb)	2021/03/24	89	75 - 125	101	80 - 120	<0.20	ug/g	NC	30
7264450	Acid Extractable Arsenic (As)	2021/03/24	98	75 - 125	101	80 - 120	<1.0	ug/g	1.5	30
7264450	Acid Extractable Barium (Ba)	2021/03/24	NC	75 - 125	104	80 - 120	<0.50	ug/g	1.2	30
7264450	Acid Extractable Beryllium (Be)	2021/03/24	101	75 - 125	102	80 - 120	<0.20	ug/g	3.1	30
7264450	Acid Extractable Boron (B)	2021/03/24	100	75 - 125	101	80 - 120	<5.0	ug/g	4.1	30
7264450	Acid Extractable Cadmium (Cd)	2021/03/24	98	75 - 125	98	80 - 120	<0.10	ug/g	24	30
7264450	Acid Extractable Chromium (Cr)	2021/03/24	NC	75 - 125	100	80 - 120	<1.0	ug/g	1.0	30

			Matrix Spike		SPIKED BLANK		Method Blank		RPD	
QC Batch	Parameter	Date	% Recovery	QC Limits	% Recovery	QC Limits	Value	UNITS	Value (%)	QC Limits
7264450	Acid Extractable Cobalt (Co)	2021/03/24	97	75 - 125	101	80 - 120	<0.10	ug/g	0.18	30
7264450	Acid Extractable Copper (Cu)	2021/03/24	92	75 - 125	97	80 - 120	<0.50	ug/g	0.42	30
7264450	Acid Extractable Lead (Pb)	2021/03/24	98	75 - 125	95	80 - 120	<1.0	ug/g	28	30
7264450	Acid Extractable Molybdenum (Mo)	2021/03/24	96	75 - 125	98	80 - 120	<0.50	ug/g	NC	30
7264450	Acid Extractable Nickel (Ni)	2021/03/24	NC	75 - 125	101	80 - 120	<0.50	ug/g	1.6	30
7264450	Acid Extractable Selenium (Se)	2021/03/24	97	75 - 125	99	80 - 120	<0.50	ug/g	NC	30
7264450	Acid Extractable Silver (Ag)	2021/03/24	97	75 - 125	97	80 - 120	<0.20	ug/g	NC	30
7264450	Acid Extractable Thallium (Tl)	2021/03/24	97	75 - 125	97	80 - 120	<0.050	ug/g	7.3	30
7264450	Acid Extractable Uranium (U)	2021/03/24	99	75 - 125	98	80 - 120	<0.050	ug/g	2.0	30
7264450	Acid Extractable Vanadium (V)	2021/03/24	NC	75 - 125	99	80 - 120	<5.0	ug/g	1.3	30
7264450	Acid Extractable Zinc (Zn)	2021/03/24	NC	75 - 125	99	80 - 120	<5.0	ug/g	1.1	30
7265098	F2 (C10-C16 Hydrocarbons)	2021/03/25	89	50 - 130	95	80 - 120	<10	ug/g		
7265098	F3 (C16-C34 Hydrocarbons)	2021/03/25	84	50 - 130	91	80 - 120	<50	ug/g		
7265098	F4 (C34-C50 Hydrocarbons)	2021/03/25	83	50 - 130	89	80 - 120	<50	ug/g		
7265649	1-Methylnaphthalene	2021/03/25	93	50 - 130	94	50 - 130	<0.0050	ug/g	NC	40
7265649	2-Methylnaphthalene	2021/03/25	90	50 - 130	96	50 - 130	<0.0050	ug/g	NC	40
7265649	Acenaphthene	2021/03/25	84	50 - 130	93	50 - 130	<0.0050	ug/g	NC	40
7265649	Acenaphthylene	2021/03/25	81	50 - 130	91	50 - 130	<0.0050	ug/g	NC	40
7265649	Anthracene	2021/03/25	85	50 - 130	92	50 - 130	<0.0050	ug/g	NC	40
7265649	Benzo(a)anthracene	2021/03/25	89	50 - 130	93	50 - 130	<0.0050	ug/g	NC	40
7265649	Benzo(a)pyrene	2021/03/25	72	50 - 130	92	50 - 130	<0.0050	ug/g	NC	40
7265649	Benzo(b/j)fluoranthene	2021/03/25	78	50 - 130	92	50 - 130	<0.0050	ug/g	NC	40
7265649	Benzo(g,h,i)perylene	2021/03/25	83	50 - 130	91	50 - 130	<0.0050	ug/g	NC	40
7265649	Benzo(k)fluoranthene	2021/03/25	78	50 - 130	93	50 - 130	<0.0050	ug/g	NC	40
7265649	Chrysene	2021/03/25	88	50 - 130	93	50 - 130	<0.0050	ug/g	NC	40
7265649	Dibenzo(a,h)anthracene	2021/03/25	81	50 - 130	94	50 - 130	<0.0050	ug/g	NC	40
7265649	Fluoranthene	2021/03/25	84	50 - 130	97	50 - 130	<0.0050	ug/g	NC	40
7265649	Fluorene	2021/03/25	83	50 - 130	93	50 - 130	<0.0050	ug/g	NC	40
7265649	Indeno(1,2,3-cd)pyrene	2021/03/25	88	50 - 130	92	50 - 130	<0.0050	ug/g	NC	40
7265649	Naphthalene	2021/03/25	75	50 - 130	94	50 - 130	<0.0050	ug/g	NC	40
7265649	Phenanthrene	2021/03/25	85	50 - 130	93	50 - 130	<0.0050	ug/g	NC	40
7265649	Pyrene	2021/03/25	86	50 - 130	98	50 - 130	<0.0050	ug/g	NC	40

QUALITY ASSURANCE REPORT(CONT'D)

			Matrix Spike		SPIKED BLANK		Method Blank		RPD	
QC Batch	Parameter	Date	% Recovery	QC Limits	% Recovery	QC Limits	Value	UNITS	Value (%)	QC Limits
7267963	F4G-sg (Grav. Heavy Hydrocarbons)	2021/03/26	83	65 - 135	100	65 - 135	<100	ug/g	0	50
7293384	Available (CaCl2) pH	2021/04/12			100	97 - 103			0.24	N/A

N/A = Not Applicable

Duplicate: Paired analysis of a separate portion of the same sample. Used to evaluate the variance in the measurement.

Matrix Spike: A sample to which a known amount of the analyte of interest has been added. Used to evaluate sample matrix interference.

Spiked Blank: A blank matrix sample to which a known amount of the analyte, usually from a second source, has been added. Used to evaluate method accuracy.

Method Blank: A blank matrix containing all reagents used in the analytical procedure. Used to identify laboratory contamination.

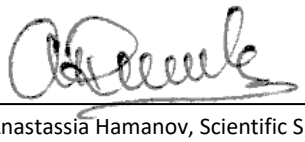
Surrogate: A pure or isotopically labeled compound whose behavior mirrors the analytes of interest. Used to evaluate extraction efficiency.

NC (Matrix Spike): The recovery in the matrix spike was not calculated. The relative difference between the concentration in the parent sample and the spike amount was too small to permit a reliable recovery calculation (matrix spike concentration was less than the native sample concentration)

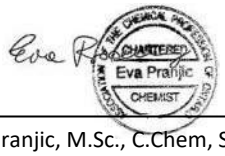
NC (Duplicate RPD): The duplicate RPD was not calculated. The concentration in the sample and/or duplicate was too low to permit a reliable RPD calculation (absolute difference <= 2x RDL).

VALIDATION SIGNATURE PAGE

The analytical data and all QC contained in this report were reviewed and validated by the following individual(s).



Anastassia Hamanov, Scientific Specialist



Ewa Pranjic, M.Sc., C.Chem, Scientific Specialist

BV Labs has procedures in place to guard against improper use of the electronic signature and have the required "signatories", as per ISO/IEC 17025, signing the reports.
For Service Group specific validation please refer to the Validation Signature Page.

Bureau Veritas Laboratories 100 – 36 Antares Dr. Nepean, ON, K2E 7W5 Phone: 613-274-0573 Website: www.bvlabs.com

Bureau Veritas Laboratories
6740 Campobello Road, Mississauga, Ontario Canada L5N 2L8 Tel:(905) 817-5700 Toll-free:800-563-6266 Fax:(905) 817-5777 www.bvlabs.com

22-Mar-21 12:00
Katherine Szozda
C175643
J L ENV-413

Page of

INVOICE TO:		REPORT TO:		PROJECT INFORMATION:	
Company Name	#17498 exp Services Inc	Company Name		Quotation #	B91718
Attention	Accounts Payable	Attention	Mark McCalla	P.O. #	
Address	100-2650 Queensview Drive	Address		Project	OTT-00262765-A0
	Ottawa ON K2B 8H6			Project Name	
Tel	(613) 688-1899 Fax (613) 225-7337	Tel	Fax	Site #	
Email	AP@exp.com; Karen.Burke@exp.com	Email	mark.mccalla@exp.com	Sampled By	

Bottle Order #: 817845
COC #: C#817845-01-01
Project Manager: Katherine Szozda

MOE REGULATED DRINKING WATER OR WATER INTENDED FOR HUMAN CONSUMPTION MUST BE SUBMITTED ON THE BV LABS DRINKING WATER CHAIN OF CUSTODY

Regulation 153 (2011): Table 1, [X] Res/Park, [X] Medium/Fine, Table 2, Ind/Comm, Coarse, [X] Table 3, Agri/Other, For RSC, Table ___

Other Regulations: CCME, Sanitary Sewer Bylaw, Reg 558, Storm Sewer Bylaw, MISA, Municipality, PWQO, Reg 406 Table, Other

Special Instructions

Include Criteria on Certificate of Analysis (Y/N)? ______

ANALYSIS REQUESTED (PLEASE BE SPECIFIC)

	Sample Barcode Label	Sample (Location) Identification	Date Sampled	Time Sampled	Matrix	Field Filtered (please circle): Metals / Hg / Cr VI	O Reg 153 ICPMS Metals (Soil)	O Reg 153 VOCs by HS & F1-F4 (Soil)	O Reg 153 PAHs (Soil)	O Reg 153 VOCs by HS & F1-F4	O Reg 153 PAHs	O Reg 153 Dissolved ICPMS Metals (Water)				# of Bottles	Comments
1		MW21-1 SS1	03/18		S		X		X							1	
2		MW21-3 S1	"		S		X	X	X							4	
3		MW21-3 S1D	"		S		X	X	X							4	
4		MW21-4 S2	03/19		S		X	X	X							4	
5		MW21-1 S3	03/18		S			X								3	
6																	
7																	
8																	
9																	ON Ice Packs
10																	

RECEIVED IN OTTAWA

Turnaround Time (TAT) Required:
Please provide advance notice for rush projects

Regular (Standard) TAT: [X]
(will be applied if Rush TAT is not specified):
Standard TAT = 5-7 Working days for most tests.
Please note: Standard TAT for certain tests such as BOD and Dioxins/Furans are > 5 days - contact your Project Manager for details.

Job Specific Rush TAT (if applies to entire submission)
Date Required: ______ Time Required: ______
Rush Confirmation Number: ______ (call lab for #)

* RELINQUISHED BY: (Signature/Print)	Date: (YY/MM/DD)	Time	RECEIVED BY: (Signature/Print)	Date: (YY/MM/DD)	Time	# jars used and not submitted
[signature] Mark McCalla	21/03/22	12:20	Kevin Jury	2021/03/22	12:00	
			[signature] Gnushon	2021/03/23	09:00	

Laboratory Use Only

Time Sensitive	Temperature (°C) on Recei	Custody Seal	Yes	No
	9, 9, 10	Present		X
		Intact		X

4, 3, 4

* UNLESS OTHERWISE AGREED TO IN WRITING, WORK SUBMITTED ON THIS CHAIN OF CUSTODY IS SUBJECT TO BV LABS' STANDARD TERMS AND CONDITIONS. SIGNING OF THIS CHAIN OF CUSTODY DOCUMENT IS ACKNOWLEDGMENT AND ACCEPTANCE OF OUR TERMS WHICH ARE AVAILABLE FOR VIEWING AT WWW.BVLABS.COM/TERMS-AND-CONDITIONS.

* IT IS THE RESPONSIBILITY OF THE RELINQUISHER TO ENSURE THE ACCURACY OF THE CHAIN OF CUSTODY RECORD. AN INCOMPLETE CHAIN OF CUSTODY MAY RESULT IN ANALYTICAL TAT DELAYS.

** SAMPLE CONTAINER, PRESERVATION, HOLD TIME AND PACKAGE INFORMATION CAN BE VIEWED AT WWW.BVLABS.COM/RESOURCES/CHAIN-OF-CUSTODY-FORMS.

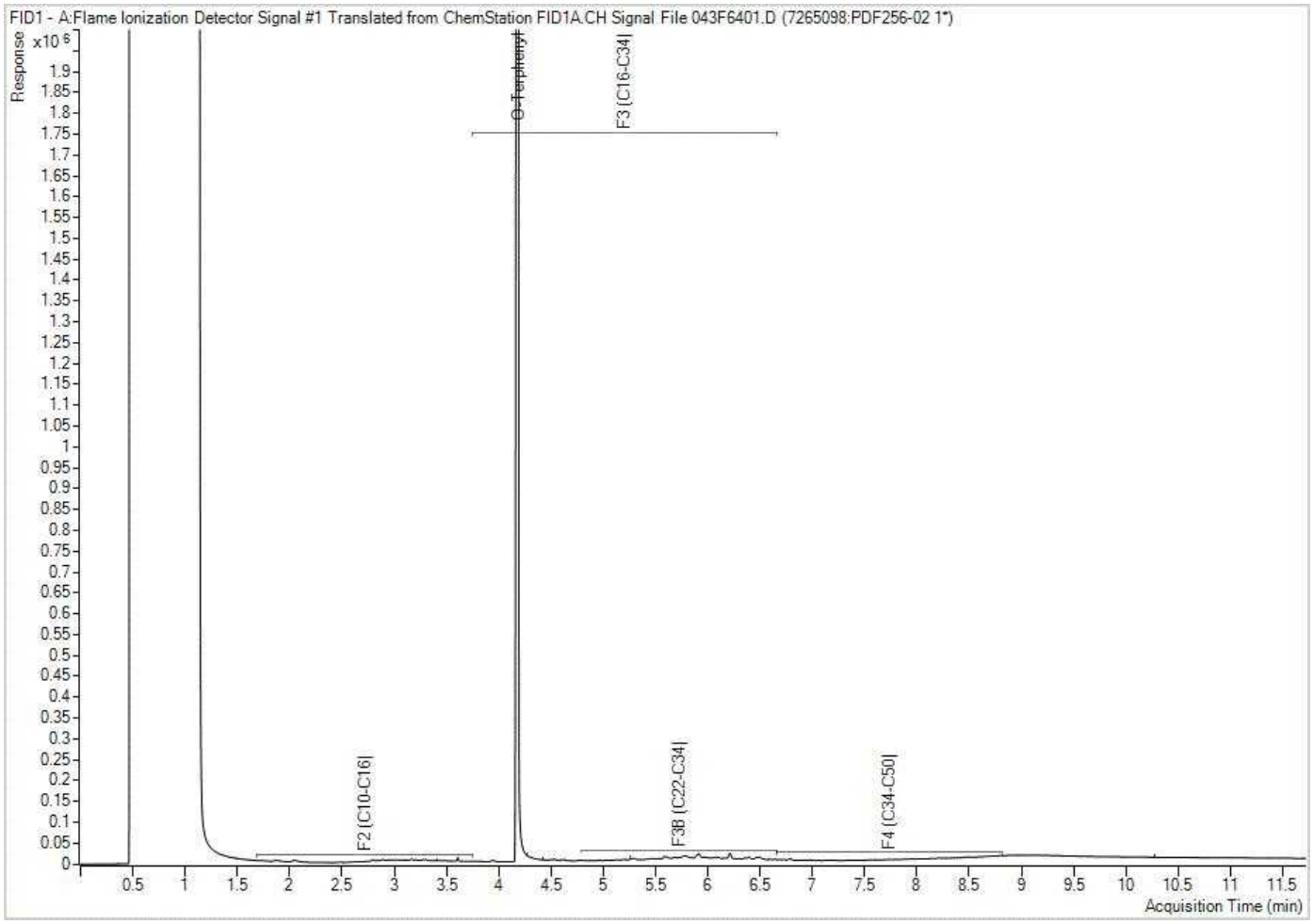
SAMPLES MUST BE KEPT COOL (< 10° C) FROM TIME OF SAMPLING UNTIL DELIVERY TO BV LABS

White: BV Labs Yellow: Client

BV Labs Job #: C175643
Report Date: 2021/04/13
BV Labs Sample: PDF256

exp Services Inc
Client Project #: OTT-00262765-A0
Client ID: MW21-3 S1

Petroleum Hydrocarbons F2-F4 in Soil Chromatogram

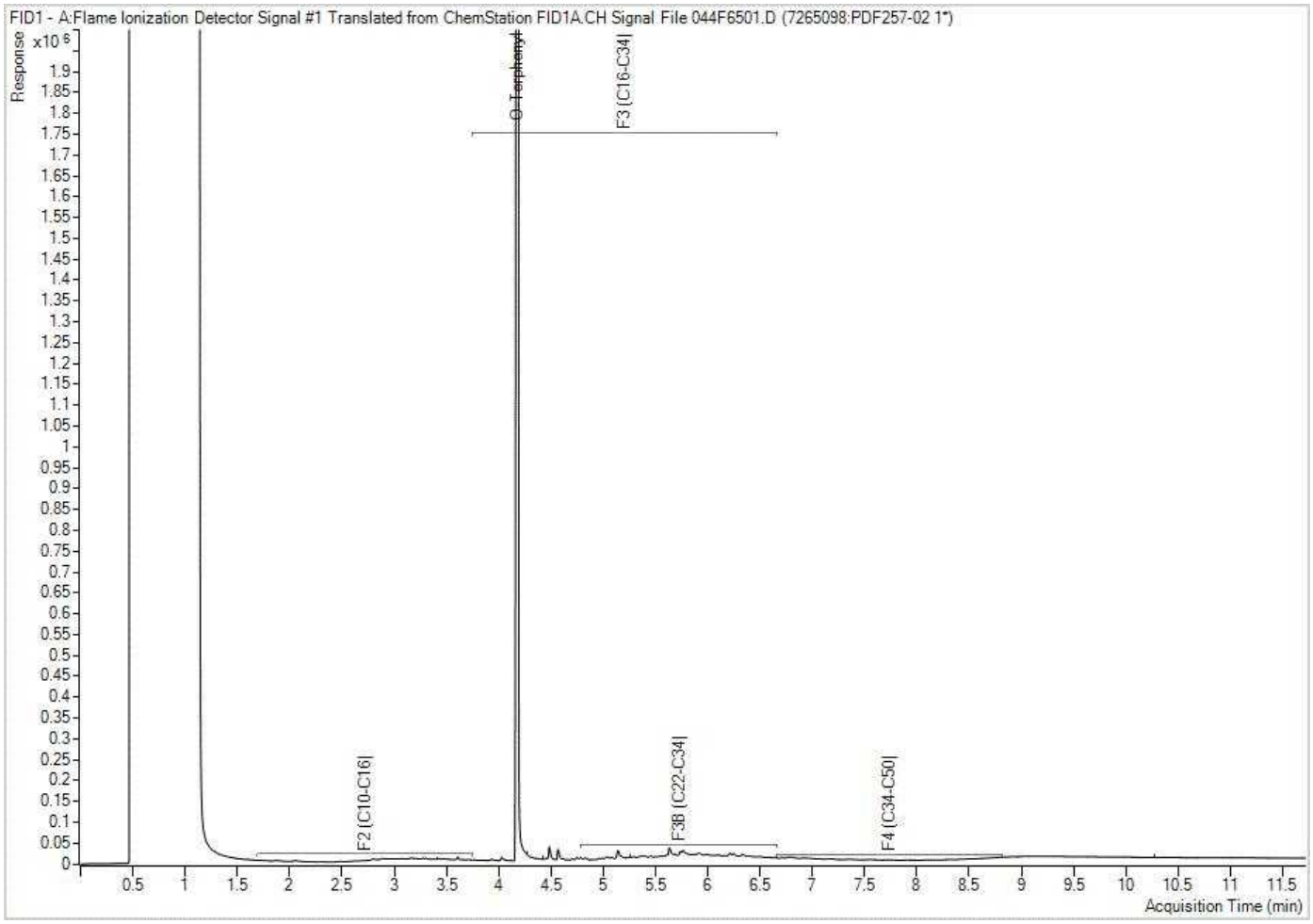


Note: This information is provided for reference purposes only. Should detailed chemist interpretation or fingerprinting be required, please contact the laboratory.

BV Labs Job #: C175643
Report Date: 2021/04/13
BV Labs Sample: PDF257

exp Services Inc
Client Project #: OTT-00262765-A0
Client ID: MW21-3 S1D

Petroleum Hydrocarbons F2-F4 in Soil Chromatogram

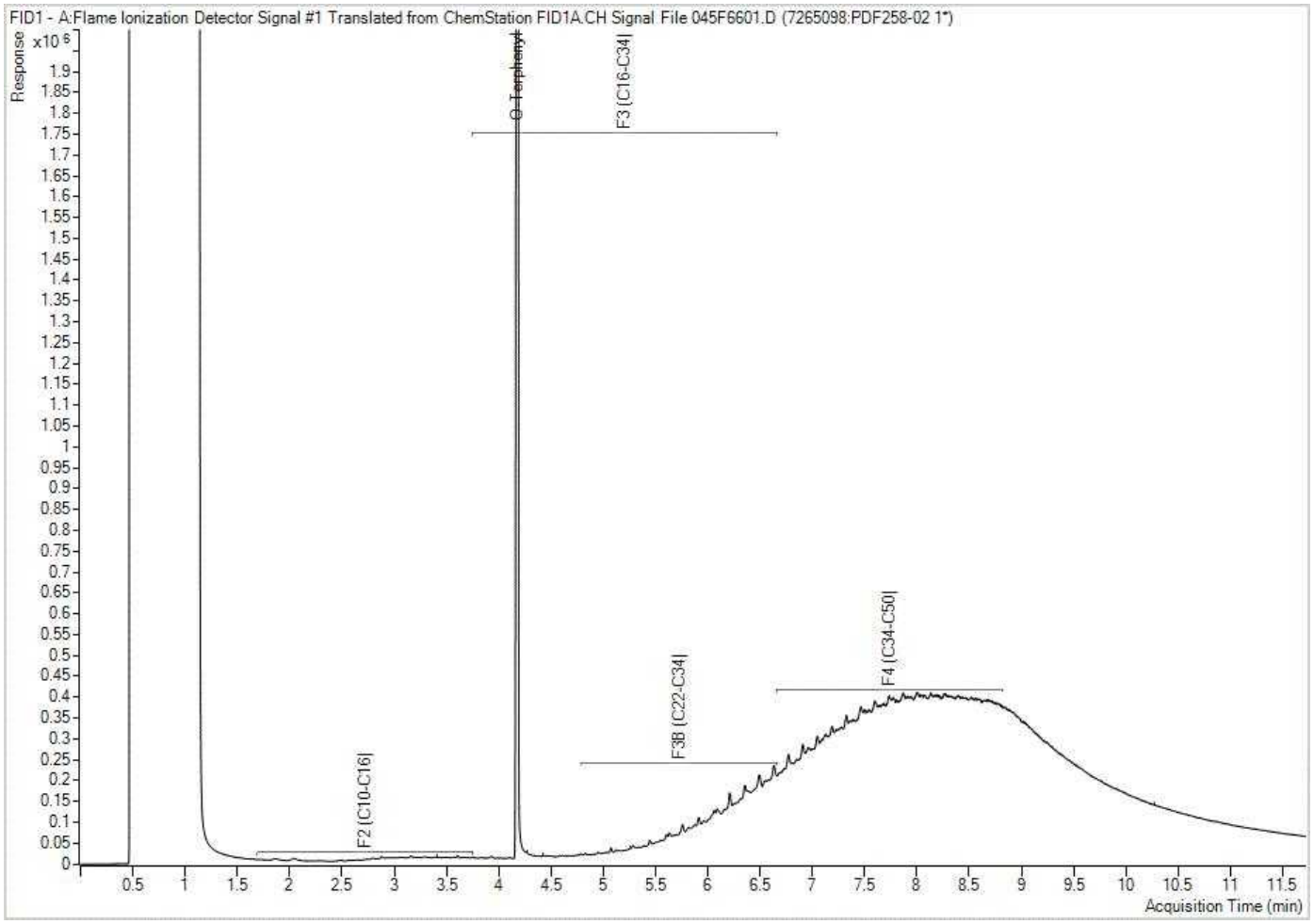


Note: This information is provided for reference purposes only. Should detailed chemist interpretation or fingerprinting be required, please contact the laboratory.

BV Labs Job #: C175643
Report Date: 2021/04/13
BV Labs Sample: PDF258

exp Services Inc
Client Project #: OTT-00262765-A0
Client ID: MW21-4 S2

Petroleum Hydrocarbons F2-F4 in Soil Chromatogram

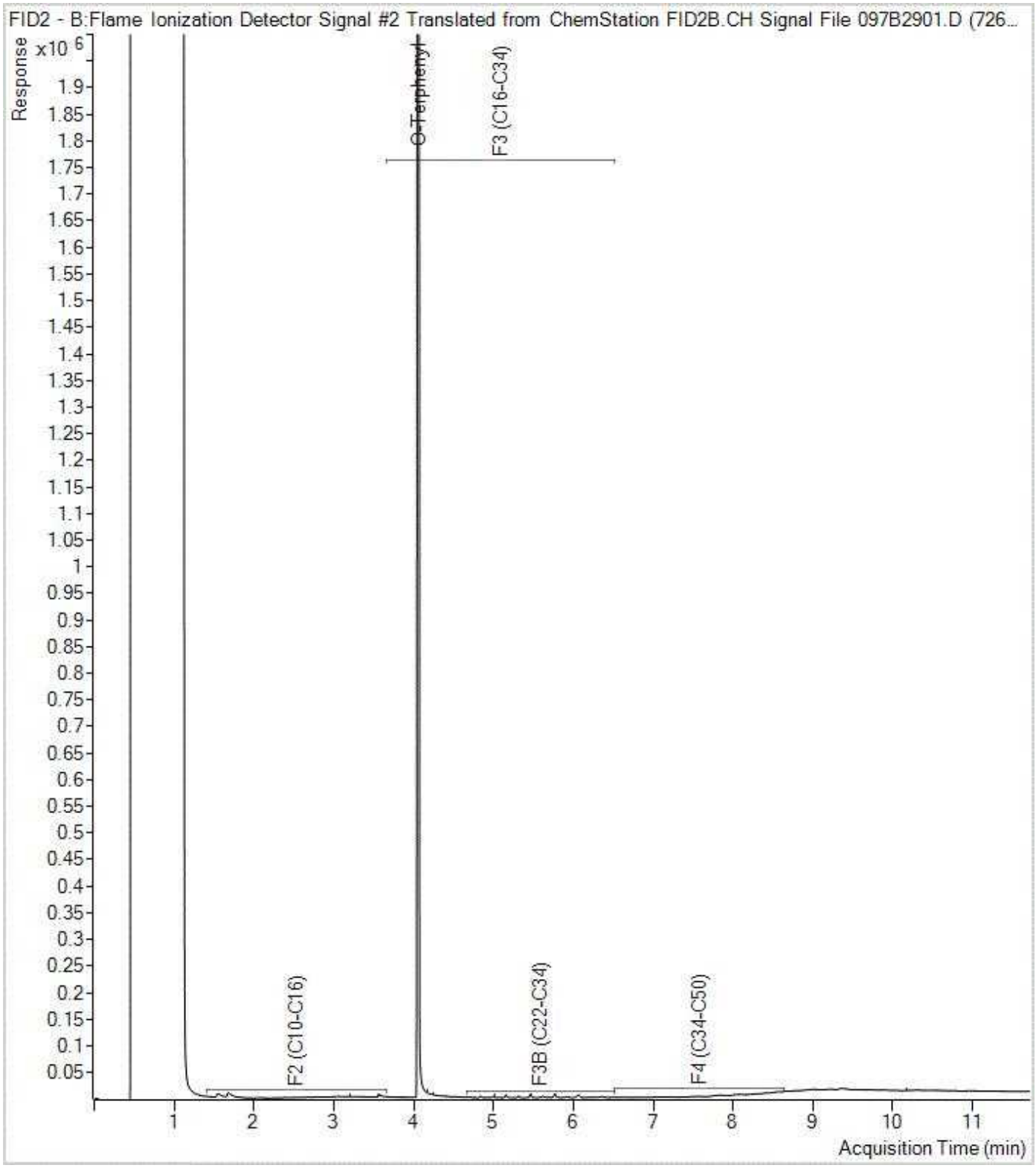


Note: This information is provided for reference purposes only. Should detailed chemist interpretation or fingerprinting be required, please contact the laboratory.

BV Labs Job #: C175643
Report Date: 2021/04/13
BV Labs Sample: PDF259

exp Services Inc
Client Project #: OTT-00262765-A0
Client ID: MW21-1 S3

Petroleum Hydrocarbons F2-F4 in Soil Chromatogram



Note: This information is provided for reference purposes only. Should detailed chemist interpretation or fingerprinting be required, please contact the laboratory.

Your Project #: OTT-00262765-A0
Your C.O.C. #: 817845-03-01

Attention: Mark McCalla

exp Services Inc
Ottawa Branch
100-2650 Queensview Drive
Ottawa, ON
CANADA K2B 8H6

Report Date: 2021/03/22
Report #: R6564995
Version: 1 - Final

CERTIFICATE OF ANALYSIS

BV LABS JOB #: C170219
Received: 2021/03/16, 15:32

Sample Matrix: Soil
Samples Received: 1

Analyses	Quantity	Date Extracted	Date Analyzed	Laboratory Method	Analytical Method
Methylnaphthalene Sum (1)	1	N/A	2021/03/22	CAM SOP-00301	EPA 8270D m
1,3-Dichloropropene Sum (1)	1	N/A	2021/03/19		EPA 8260C m
Petroleum Hydrocarbons F2-F4 in Soil (1, 2)	1	2021/03/18	2021/03/19	CAM SOP-00316	CCME CWS m
Strong Acid Leachable Metals by ICPMS (1)	1	2021/03/18	2021/03/18	CAM SOP-00447	EPA 6020B m
Moisture (1)	1	N/A	2021/03/17	CAM SOP-00445	Carter 2nd ed 51.2 m
PAH Compounds in Soil by GC/MS (SIM) (1)	1	2021/03/18	2021/03/19	CAM SOP-00318	EPA 8270D m
Volatile Organic Compounds and F1 PHCs (1)	1	N/A	2021/03/18	CAM SOP-00230	EPA 8260C m

Remarks:

Bureau Veritas is accredited to ISO/IEC 17025 for specific parameters on scopes of accreditation. Unless otherwise noted, procedures used by Bureau Veritas are based upon recognized Provincial, Federal or US method compendia such as CCME, MELCC, EPA, APHA.

All work recorded herein has been done in accordance with procedures and practices ordinarily exercised by professionals in Bureau Veritas' profession using accepted testing methodologies, quality assurance and quality control procedures (except where otherwise agreed by the client and Bureau Veritas in writing). All data is in statistical control and has met quality control and method performance criteria unless otherwise noted. All method blanks are reported; unless indicated otherwise, associated sample data are not blank corrected. Where applicable, unless otherwise noted, Measurement Uncertainty has not been accounted for when stating conformity to the referenced standard.

Bureau Veritas liability is limited to the actual cost of the requested analyses, unless otherwise agreed in writing. There is no other warranty expressed or implied. Bureau Veritas has been retained to provide analysis of samples provided by the Client using the testing methodology referenced in this report. Interpretation and use of test results are the sole responsibility of the Client and are not within the scope of services provided by Bureau Veritas, unless otherwise agreed in writing. Bureau Veritas is not responsible for the accuracy or any data impacts, that result from the information provided by the customer or their agent.

Solid sample results, except biota, are based on dry weight unless otherwise indicated. Organic analyses are not recovery corrected except for isotope dilution methods.
Results relate to samples tested. When sampling is not conducted by Bureau Veritas, results relate to the supplied samples tested.

Reference Method suffix “m” indicates test methods incorporate validated modifications from specific reference methods to improve performance.
* RPDs calculated using raw data. The rounding of final results may result in the apparent difference.
(1) This test was performed by Bureau Veritas Laboratories Mississauga
(2) All CCME PHC results met required criteria unless otherwise stated in the report. The CWS PHC methods employed by Bureau Veritas Laboratories conform to all prescribed elements of the reference method and performance based elements have been validated. All modifications have been validated and proven equivalent following “Alberta Environment’s Interpretation of the Reference Method for the Canada-Wide Standard for Petroleum Hydrocarbons in Soil Validation of Performance-Based Alternative Methods September 2003”. Documentation is available upon request. Modifications from Reference Method for the Canada-wide Standard for Petroleum Hydrocarbons in Soil-Tier 1

Your Project #: OTT-00262765-A0
Your C.O.C. #: 817845-03-01

Attention: Mark McCalla

exp Services Inc
Ottawa Branch
100-2650 Queensview Drive
Ottawa, ON
CANADA K2B 8H6

Report Date: 2021/03/22
Report #: R6564995
Version: 1 - Final

CERTIFICATE OF ANALYSIS

BV LABS JOB #: C170219
Received: 2021/03/16, 15:32
Method: F2/F3/F4 data reported using validated cold solvent extraction instead of Soxhlet extraction.

Encryption Key

Please direct all questions regarding this Certificate of Analysis to your Project Manager.
Katherine Szozda, Project Manager
Email: Katherine.Szozda@bureauveritas.com
Phone# (613)274-0573 Ext:7063633
==========
This report has been generated and distributed using a secure automated process.
BV Labs has procedures in place to guard against improper use of the electronic signature and have the required "signatories", as per ISO/IEC 17025, signing the reports. For Service Group specific validation please refer to the Validation Signature Page.

O.REG 153 ICPMS METALS (SOIL)

BV Labs ID		PCB064		
Sampling Date		2021/03/16 09:30		
COC Number		817845-03-01		
	UNITS	**MW21-2 S1**	**RDL**	**QC Batch**
Metals				
Acid Extractable Antimony (Sb)	ug/g	<0.20	0.20	7254366
Acid Extractable Arsenic (As)	ug/g	1.5	1.0	7254366
Acid Extractable Barium (Ba)	ug/g	110	0.50	7254366
Acid Extractable Beryllium (Be)	ug/g	0.55	0.20	7254366
Acid Extractable Boron (B)	ug/g	5.9	5.0	7254366
Acid Extractable Cadmium (Cd)	ug/g	0.21	0.10	7254366
Acid Extractable Chromium (Cr)	ug/g	42	1.0	7254366
Acid Extractable Cobalt (Co)	ug/g	10	0.10	7254366
Acid Extractable Copper (Cu)	ug/g	25	0.50	7254366
Acid Extractable Lead (Pb)	ug/g	11	1.0	7254366
Acid Extractable Molybdenum (Mo)	ug/g	0.78	0.50	7254366
Acid Extractable Nickel (Ni)	ug/g	29	0.50	7254366
Acid Extractable Selenium (Se)	ug/g	<0.50	0.50	7254366
Acid Extractable Silver (Ag)	ug/g	<0.20	0.20	7254366
Acid Extractable Thallium (Tl)	ug/g	0.21	0.050	7254366
Acid Extractable Uranium (U)	ug/g	0.72	0.050	7254366
Acid Extractable Vanadium (V)	ug/g	91	5.0	7254366
Acid Extractable Zinc (Zn)	ug/g	67	5.0	7254366

RDL = Reportable Detection Limit
QC Batch = Quality Control Batch

O.REG 153 PAHS (SOIL)

BV Labs ID		PCB064		
Sampling Date		2021/03/16 09:30		
COC Number		817845-03-01		
	UNITS	**MW21-2 S1**	**RDL**	**QC Batch**
Calculated Parameters				
Methylnaphthalene, 2-(1-)	ug/g	<0.0071	0.0071	7251180
Polyaromatic Hydrocarbons				
Acenaphthene	ug/g	<0.0050	0.0050	7254998
Acenaphthylene	ug/g	<0.0050	0.0050	7254998
Anthracene	ug/g	<0.0050	0.0050	7254998
Benzo(a)anthracene	ug/g	<0.0050	0.0050	7254998
Benzo(a)pyrene	ug/g	<0.0050	0.0050	7254998
Benzo(b/j)fluoranthene	ug/g	<0.0050	0.0050	7254998
Benzo(g,h,i)perylene	ug/g	<0.0050	0.0050	7254998
Benzo(k)fluoranthene	ug/g	<0.0050	0.0050	7254998
Chrysene	ug/g	<0.0050	0.0050	7254998
Dibenzo(a,h)anthracene	ug/g	<0.0050	0.0050	7254998
Fluoranthene	ug/g	<0.0050	0.0050	7254998
Fluorene	ug/g	<0.0050	0.0050	7254998
Indeno(1,2,3-cd)pyrene	ug/g	<0.0050	0.0050	7254998
1-Methylnaphthalene	ug/g	<0.0050	0.0050	7254998
2-Methylnaphthalene	ug/g	<0.0050	0.0050	7254998
Naphthalene	ug/g	<0.0050	0.0050	7254998
Phenanthrene	ug/g	<0.0050	0.0050	7254998
Pyrene	ug/g	<0.0050	0.0050	7254998
Surrogate Recovery (%)				
D10-Anthracene	%	90		7254998
D14-Terphenyl (FS)	%	76		7254998
D8-Acenaphthylene	%	86		7254998

RDL = Reportable Detection Limit
QC Batch = Quality Control Batch

O.REG 153 VOCS BY HS & F1-F4 (SOIL)

BV Labs ID		PCB064		
Sampling Date		2021/03/16 09:30		
COC Number		817845-03-01		
	UNITS	**MW21-2 S1**	**RDL**	**QC Batch**
Inorganics				
Moisture	%	10	1.0	7252680
Calculated Parameters				
1,3-Dichloropropene (cis+trans)	ug/g	<0.050	0.050	7251181
Volatile Organics				
Acetone (2-Propanone)	ug/g	<0.50	0.50	7253544
Benzene	ug/g	<0.020	0.020	7253544
Bromodichloromethane	ug/g	<0.050	0.050	7253544
Bromoform	ug/g	<0.050	0.050	7253544
Bromomethane	ug/g	<0.050	0.050	7253544
Carbon Tetrachloride	ug/g	<0.050	0.050	7253544
Chlorobenzene	ug/g	<0.050	0.050	7253544
Chloroform	ug/g	<0.050	0.050	7253544
Dibromochloromethane	ug/g	<0.050	0.050	7253544
1,2-Dichlorobenzene	ug/g	<0.050	0.050	7253544
1,3-Dichlorobenzene	ug/g	<0.050	0.050	7253544
1,4-Dichlorobenzene	ug/g	<0.050	0.050	7253544
Dichlorodifluoromethane (FREON 12)	ug/g	<0.050	0.050	7253544
1,1-Dichloroethane	ug/g	<0.050	0.050	7253544
1,2-Dichloroethane	ug/g	<0.050	0.050	7253544
1,1-Dichloroethylene	ug/g	<0.050	0.050	7253544
cis-1,2-Dichloroethylene	ug/g	<0.050	0.050	7253544
trans-1,2-Dichloroethylene	ug/g	<0.050	0.050	7253544
1,2-Dichloropropane	ug/g	<0.050	0.050	7253544
cis-1,3-Dichloropropene	ug/g	<0.030	0.030	7253544
trans-1,3-Dichloropropene	ug/g	<0.040	0.040	7253544
Ethylbenzene	ug/g	<0.020	0.020	7253544
Ethylene Dibromide	ug/g	<0.050	0.050	7253544
Hexane	ug/g	<0.050	0.050	7253544
Methylene Chloride(Dichloromethane)	ug/g	<0.050	0.050	7253544
Methyl Ethyl Ketone (2-Butanone)	ug/g	<0.50	0.50	7253544
Methyl Isobutyl Ketone	ug/g	<0.50	0.50	7253544
Methyl t-butyl ether (MTBE)	ug/g	<0.050	0.050	7253544
Styrene	ug/g	<0.050	0.050	7253544
1,1,1,2-Tetrachloroethane	ug/g	<0.050	0.050	7253544
1,1,2,2-Tetrachloroethane	ug/g	<0.050	0.050	7253544

RDL = Reportable Detection Limit
QC Batch = Quality Control Batch

O.REG 153 VOCS BY HS & F1-F4 (SOIL)

BV Labs ID		PCB064		
Sampling Date		2021/03/16 09:30		
COC Number		817845-03-01		
	UNITS	**MW21-2 S1**	**RDL**	**QC Batch**
Tetrachloroethylene	ug/g	<0.050	0.050	7253544
Toluene	ug/g	<0.020	0.020	7253544
1,1,1-Trichloroethane	ug/g	<0.050	0.050	7253544
1,1,2-Trichloroethane	ug/g	<0.050	0.050	7253544
Trichloroethylene	ug/g	<0.050	0.050	7253544
Trichlorofluoromethane (FREON 11)	ug/g	<0.050	0.050	7253544
Vinyl Chloride	ug/g	<0.020	0.020	7253544
p+m-Xylene	ug/g	<0.020	0.020	7253544
o-Xylene	ug/g	<0.020	0.020	7253544
Total Xylenes	ug/g	<0.020	0.020	7253544
F1 (C6-C10)	ug/g	<10	10	7253544
F1 (C6-C10) - BTEX	ug/g	<10	10	7253544
F2-F4 Hydrocarbons				
F2 (C10-C16 Hydrocarbons)	ug/g	<10	10	7254177
F3 (C16-C34 Hydrocarbons)	ug/g	<50	50	7254177
F4 (C34-C50 Hydrocarbons)	ug/g	<50	50	7254177
Reached Baseline at C50	ug/g	Yes		7254177
Surrogate Recovery (%)				
o-Terphenyl	%	82		7254177
4-Bromofluorobenzene	%	92		7253544
D10-o-Xylene	%	98		7253544
D4-1,2-Dichloroethane	%	106		7253544
D8-Toluene	%	101		7253544

RDL = Reportable Detection Limit
QC Batch = Quality Control Batch

BV Labs Job #: C170219
Report Date: 2021/03/22

exp Services Inc
Client Project #: OTT-00262765-A0
Sampler Initials: AM

TEST SUMMARY

BV Labs ID: PCB064
Sample ID: MW21-2 S1
Matrix: Soil

Collected: 2021/03/16
Shipped:
Received: 2021/03/16

Test Description	Instrumentation	Batch	Extracted	Date Analyzed	Analyst
Methylnaphthalene Sum	CALC	7251180	N/A	2021/03/22	Automated Statchk
1,3-Dichloropropene Sum	CALC	7251181	N/A	2021/03/19	Automated Statchk
Petroleum Hydrocarbons F2-F4 in Soil	GC/FID	7254177	2021/03/18	2021/03/19	Anna Stuglik Rolland
Strong Acid Leachable Metals by ICPMS	ICP/MS	7254366	2021/03/18	2021/03/18	Daniel Teclu
Moisture	BAL	7252680	N/A	2021/03/17	Manpreet Kaur
PAH Compounds in Soil by GC/MS (SIM)	GC/MS	7254998	2021/03/18	2021/03/19	Mitesh Raj
Volatile Organic Compounds and F1 PHCs	GC/MSFD	7253544	N/A	2021/03/18	Manpreet Sarao

GENERAL COMMENTS

Each temperature is the average of up to three cooler temperatures taken at receipt

Package 1	13.3°C

Results relate only to the items tested.

Bureau Veritas Laboratories 100 – 36 Antares Dr. Nepean, ON, K2E 7W5 Phone: 613-274-0573 Website: www.bvlabs.com

			Matrix Spike		SPIKED BLANK		Method Blank		RPD	
QC Batch	Parameter	Date	% Recovery	QC Limits	% Recovery	QC Limits	Value	UNITS	Value (%)	QC Limits
7253544	4-Bromofluorobenzene	2021/03/18	97	60 - 140	99	60 - 140	94	%		
7253544	D10-o-Xylene	2021/03/18	98	60 - 130	104	60 - 130	95	%		
7253544	D4-1,2-Dichloroethane	2021/03/18	105	60 - 140	106	60 - 140	104	%		
7253544	D8-Toluene	2021/03/18	102	60 - 140	102	60 - 140	100	%		
7254177	o-Terphenyl	2021/03/18	87	60 - 130	90	60 - 130	90	%		
7254998	D10-Anthracene	2021/03/19	97	50 - 130	97	50 - 130	93	%		
7254998	D14-Terphenyl (FS)	2021/03/19	77	50 - 130	74	50 - 130	82	%		
7254998	D8-Acenaphthylene	2021/03/19	90	50 - 130	93	50 - 130	87	%		
7252680	Moisture	2021/03/17							0.88	20
7253544	1,1,1,2-Tetrachloroethane	2021/03/18	106	60 - 140	110	60 - 130	<0.050	ug/g	NC	50
7253544	1,1,1-Trichloroethane	2021/03/18	112	60 - 140	113	60 - 130	<0.050	ug/g	NC	50
7253544	1,1,2,2-Tetrachloroethane	2021/03/18	101	60 - 140	105	60 - 130	<0.050	ug/g	NC	50
7253544	1,1,2-Trichloroethane	2021/03/18	114	60 - 140	115	60 - 130	<0.050	ug/g	NC	50
7253544	1,1-Dichloroethane	2021/03/18	105	60 - 140	107	60 - 130	<0.050	ug/g	NC	50
7253544	1,1-Dichloroethylene	2021/03/18	111	60 - 140	113	60 - 130	<0.050	ug/g	NC	50
7253544	1,2-Dichlorobenzene	2021/03/18	101	60 - 140	104	60 - 130	<0.050	ug/g	NC	50
7253544	1,2-Dichloroethane	2021/03/18	107	60 - 140	110	60 - 130	<0.050	ug/g	NC	50
7253544	1,2-Dichloropropane	2021/03/18	104	60 - 140	108	60 - 130	<0.050	ug/g	NC	50
7253544	1,3-Dichlorobenzene	2021/03/18	105	60 - 140	108	60 - 130	<0.050	ug/g	NC	50
7253544	1,4-Dichlorobenzene	2021/03/18	121	60 - 140	126	60 - 130	<0.050	ug/g	NC	50
7253544	Acetone (2-Propanone)	2021/03/18	109	60 - 140	114	60 - 140	<0.50	ug/g	NC	50
7253544	Benzene	2021/03/18	100	60 - 140	101	60 - 130	<0.020	ug/g	NC	50
7253544	Bromodichloromethane	2021/03/18	109	60 - 140	112	60 - 130	<0.050	ug/g	NC	50
7253544	Bromoform	2021/03/18	103	60 - 140	106	60 - 130	<0.050	ug/g	NC	50
7253544	Bromomethane	2021/03/18	109	60 - 140	111	60 - 140	<0.050	ug/g	NC	50
7253544	Carbon Tetrachloride	2021/03/18	107	60 - 140	107	60 - 130	<0.050	ug/g	NC	50
7253544	Chlorobenzene	2021/03/18	103	60 - 140	106	60 - 130	<0.050	ug/g	NC	50
7253544	Chloroform	2021/03/18	109	60 - 140	110	60 - 130	<0.050	ug/g	NC	50
7253544	cis-1,2-Dichloroethylene	2021/03/18	108	60 - 140	110	60 - 130	<0.050	ug/g	NC	50
7253544	cis-1,3-Dichloropropene	2021/03/18	105	60 - 140	106	60 - 130	<0.030	ug/g	NC	50
7253544	Dibromochloromethane	2021/03/18	103	60 - 140	106	60 - 130	<0.050	ug/g	NC	50
7253544	Dichlorodifluoromethane (FREON 12)	2021/03/18	107	60 - 140	109	60 - 140	<0.050	ug/g	NC	50

			Matrix Spike		SPIKED BLANK		Method Blank		RPD	
QC Batch	Parameter	Date	% Recovery	QC Limits	% Recovery	QC Limits	Value	UNITS	Value (%)	QC Limits
7253544	Ethylbenzene	2021/03/18	98	60 - 140	100	60 - 130	<0.020	ug/g	NC	50
7253544	Ethylene Dibromide	2021/03/18	100	60 - 140	103	60 - 130	<0.050	ug/g	NC	50
7253544	F1 (C6-C10) - BTEX	2021/03/18					<10	ug/g	NC	30
7253544	F1 (C6-C10)	2021/03/18	101	60 - 140	99	80 - 120	<10	ug/g	NC	30
7253544	Hexane	2021/03/18	110	60 - 140	110	60 - 130	<0.050	ug/g	NC	50
7253544	Methyl Ethyl Ketone (2-Butanone)	2021/03/18	108	60 - 140	113	60 - 140	<0.50	ug/g	NC	50
7253544	Methyl Isobutyl Ketone	2021/03/18	108	60 - 140	113	60 - 130	<0.50	ug/g	NC	50
7253544	Methyl t-butyl ether (MTBE)	2021/03/18	100	60 - 140	104	60 - 130	<0.050	ug/g	NC	50
7253544	Methylene Chloride(Dichloromethane)	2021/03/18	110	60 - 140	113	60 - 130	<0.050	ug/g	NC	50
7253544	o-Xylene	2021/03/18	98	60 - 140	102	60 - 130	<0.020	ug/g	1.3	50
7253544	p+m-Xylene	2021/03/18	101	60 - 140	105	60 - 130	<0.020	ug/g	2.4	50
7253544	Styrene	2021/03/18	109	60 - 140	113	60 - 130	<0.050	ug/g	NC	50
7253544	Tetrachloroethylene	2021/03/18	97	60 - 140	100	60 - 130	<0.050	ug/g	NC	50
7253544	Toluene	2021/03/18	98	60 - 140	100	60 - 130	<0.020	ug/g	2.7	50
7253544	Total Xylenes	2021/03/18					<0.020	ug/g	0.57	50
7253544	trans-1,2-Dichloroethylene	2021/03/18	107	60 - 140	109	60 - 130	<0.050	ug/g	NC	50
7253544	trans-1,3-Dichloropropene	2021/03/18	108	60 - 140	108	60 - 130	<0.040	ug/g	NC	50
7253544	Trichloroethylene	2021/03/18	110	60 - 140	113	60 - 130	<0.050	ug/g	NC	50
7253544	Trichlorofluoromethane (FREON 11)	2021/03/18	111	60 - 140	112	60 - 130	<0.050	ug/g	NC	50
7253544	Vinyl Chloride	2021/03/18	109	60 - 140	112	60 - 130	<0.020	ug/g	NC	50
7254177	F2 (C10-C16 Hydrocarbons)	2021/03/18	91	50 - 130	95	80 - 120	<10	ug/g	NC	30
7254177	F3 (C16-C34 Hydrocarbons)	2021/03/18	88	50 - 130	91	80 - 120	<50	ug/g	NC	30
7254177	F4 (C34-C50 Hydrocarbons)	2021/03/18	86	50 - 130	89	80 - 120	<50	ug/g	NC	30
7254366	Acid Extractable Antimony (Sb)	2021/03/18	103	75 - 125	102	80 - 120	<0.20	ug/g	NC	30
7254366	Acid Extractable Arsenic (As)	2021/03/18	106	75 - 125	103	80 - 120	<1.0	ug/g	6.2	30
7254366	Acid Extractable Barium (Ba)	2021/03/18	NC	75 - 125	100	80 - 120	<0.50	ug/g	1.8	30
7254366	Acid Extractable Beryllium (Be)	2021/03/18	106	75 - 125	101	80 - 120	<0.20	ug/g	2.3	30
7254366	Acid Extractable Boron (B)	2021/03/18	98	75 - 125	96	80 - 120	<5.0	ug/g	NC	30
7254366	Acid Extractable Cadmium (Cd)	2021/03/18	105	75 - 125	99	80 - 120	<0.10	ug/g	4.7	30
7254366	Acid Extractable Chromium (Cr)	2021/03/18	109	75 - 125	101	80 - 120	<1.0	ug/g	2.0	30
7254366	Acid Extractable Cobalt (Co)	2021/03/18	105	75 - 125	101	80 - 120	<0.10	ug/g	1.7	30
7254366	Acid Extractable Copper (Cu)	2021/03/18	105	75 - 125	101	80 - 120	<0.50	ug/g	1.1	30

QUALITY ASSURANCE REPORT(CONT'D)

			Matrix Spike		SPIKED BLANK		Method Blank		RPD	
QC Batch	Parameter	Date	% Recovery	QC Limits	% Recovery	QC Limits	Value	UNITS	Value (%)	QC Limits
7254366	Acid Extractable Lead (Pb)	2021/03/18	98	75 - 125	96	80 - 120	<1.0	ug/g	3.7	30
7254366	Acid Extractable Molybdenum (Mo)	2021/03/18	104	75 - 125	97	80 - 120	<0.50	ug/g	NC	30
7254366	Acid Extractable Nickel (Ni)	2021/03/18	111	75 - 125	101	80 - 120	<0.50	ug/g	2.3	30
7254366	Acid Extractable Selenium (Se)	2021/03/18	105	75 - 125	103	80 - 120	<0.50	ug/g	NC	30
7254366	Acid Extractable Silver (Ag)	2021/03/18	102	75 - 125	98	80 - 120	<0.20	ug/g	NC	30
7254366	Acid Extractable Thallium (Tl)	2021/03/18	100	75 - 125	97	80 - 120	<0.050	ug/g	7.4	30
7254366	Acid Extractable Uranium (U)	2021/03/18	102	75 - 125	97	80 - 120	<0.050	ug/g	0.52	30
7254366	Acid Extractable Vanadium (V)	2021/03/18	112	75 - 125	100	80 - 120	<5.0	ug/g	0.37	30
7254366	Acid Extractable Zinc (Zn)	2021/03/18	NC	75 - 125	102	80 - 120	<5.0	ug/g	0.16	30
7254998	1-Methylnaphthalene	2021/03/19	110	50 - 130	106	50 - 130	<0.0050	ug/g	NC	40
7254998	2-Methylnaphthalene	2021/03/19	106	50 - 130	102	50 - 130	<0.0050	ug/g	NC	40
7254998	Acenaphthene	2021/03/19	99	50 - 130	93	50 - 130	<0.0050	ug/g	NC	40
7254998	Acenaphthylene	2021/03/19	92	50 - 130	89	50 - 130	<0.0050	ug/g	NC	40
7254998	Anthracene	2021/03/19	99	50 - 130	94	50 - 130	<0.0050	ug/g	NC	40
7254998	Benzo(a)anthracene	2021/03/19	103	50 - 130	93	50 - 130	<0.0050	ug/g	NC	40
7254998	Benzo(a)pyrene	2021/03/19	88	50 - 130	82	50 - 130	<0.0050	ug/g	NC	40
7254998	Benzo(b/j)fluoranthene	2021/03/19	102	50 - 130	98	50 - 130	<0.0050	ug/g	NC	40
7254998	Benzo(g,h,i)perylene	2021/03/19	85	50 - 130	82	50 - 130	<0.0050	ug/g	NC	40
7254998	Benzo(k)fluoranthene	2021/03/19	99	50 - 130	98	50 - 130	<0.0050	ug/g	NC	40
7254998	Chrysene	2021/03/19	93	50 - 130	91	50 - 130	<0.0050	ug/g	NC	40
7254998	Dibenzo(a,h)anthracene	2021/03/19	90	50 - 130	84	50 - 130	<0.0050	ug/g	NC	40
7254998	Fluoranthene	2021/03/19	88	50 - 130	82	50 - 130	<0.0050	ug/g	NC	40
7254998	Fluorene	2021/03/19	108	50 - 130	99	50 - 130	<0.0050	ug/g	NC	40
7254998	Indeno(1,2,3-cd)pyrene	2021/03/19	92	50 - 130	88	50 - 130	<0.0050	ug/g	NC	40
7254998	Naphthalene	2021/03/19	93	50 - 130	90	50 - 130	<0.0050	ug/g	NC	40
7254998	Phenanthrene	2021/03/19	102	50 - 130	96	50 - 130	<0.0050	ug/g	NC	40

QUALITY ASSURANCE REPORT(CONT'D)

			Matrix Spike		SPIKED BLANK		Method Blank		RPD	
QC Batch	Parameter	Date	% Recovery	QC Limits	% Recovery	QC Limits	Value	UNITS	Value (%)	QC Limits
7254998	Pyrene	2021/03/19	87	50 - 130	84	50 - 130	<0.0050	ug/g	NC	40

Duplicate: Paired analysis of a separate portion of the same sample. Used to evaluate the variance in the measurement.

Matrix Spike: A sample to which a known amount of the analyte of interest has been added. Used to evaluate sample matrix interference.

Spiked Blank: A blank matrix sample to which a known amount of the analyte, usually from a second source, has been added. Used to evaluate method accuracy.

Method Blank: A blank matrix containing all reagents used in the analytical procedure. Used to identify laboratory contamination.

Surrogate: A pure or isotopically labeled compound whose behavior mirrors the analytes of interest. Used to evaluate extraction efficiency.

NC (Matrix Spike): The recovery in the matrix spike was not calculated. The relative difference between the concentration in the parent sample and the spike amount was too small to permit a reliable recovery calculation (matrix spike concentration was less than the native sample concentration)

NC (Duplicate RPD): The duplicate RPD was not calculated. The concentration in the sample and/or duplicate was too low to permit a reliable RPD calculation (absolute difference <= 2x RDL).

VALIDATION SIGNATURE PAGE

The analytical data and all QC contained in this report were reviewed and validated by the following individual(s).

Anastassia Hamanov, Scientific Specialist

Ewa Pranjic, M.Sc., C.Chem, Scientific Specialist

BV Labs has procedures in place to guard against improper use of the electronic signature and have the required "signatories", as per ISO/IEC 17025, signing the reports.
For Service Group specific validation please refer to the Validation Signature Page.

Bureau Veritas Laboratories 100 – 36 Antares Dr. Nepean, ON, K2E 7W5 Phone: 613-274-0573 Website: www.bvlabs.com

Bureau Veritas Laboratories
6740 Campobello Road, Mississauga, Ontario Canada L5N 2L8 Tel:(905) 817-5700 Toll-free:800-563-6266 Fax:(905) 817-5777 www.bvlabs.com

Page of

CHAIN OF CUSTODY RECORD

INVOICE TO:		REPORT TO:		PROJECT INFORMATION:		Laboratory Use Only:	
Company Name:	#17498 exp Services Inc	Company Name:		Quotation #:	B91718	BV Labs Job #:	Bottle Order #: 817845
Attention:	Accounts Payable	Attention:	Mark McCalla	P.O. #:			
Address:	100-2650 Queensview Drive Ottawa ON K2B 8H6	Address:		Project:	OTT-00262765-A0	COC #: C#817845-03-01	Project Manager: Katherine Szozda
Tel:	(613) 688-1899 Fax: (613) 225-7337	Tel:	Fax:	Project Name:			
Email:	AP@exp.com; Karen.Burke@exp.com	Email:	mark.mccalla@exp.com	Site #:			
				Sampled By:			

MOE REGULATED DRINKING WATER OR WATER INTENDED FOR HUMAN CONSUMPTION MUST BE SUBMITTED ON THE BV LABS DRINKING WATER CHAIN OF CUSTODY

Regulation 153 (2011)
- ☐ Table 1 ☒ Res/Park ☒ Medium/Fine
- ☐ Table 2 ☐ Ind/Comm ☐ Coarse
- ☒ Table 3 ☐ Agri/Other ☐ For RSC
- ☐ Table ___

Other Regulations
- ☐ CCME ☐ Sanitary Sewer Bylaw
- ☐ Reg 558 ☐ Storm Sewer Bylaw
- ☐ MISA Municipality ___
- ☐ PWQO ☐ Reg 406 Table ___
- ☐ Other ___

Special Instructions

Include Criteria on Certificate of Analysis (Y/N)? ___

Turnaround Time (TAT) Required:
Please provide advance notice for rush projects

Regular (Standard) TAT: ☒
(will be applied if Rush TAT is not specified):
Standard TAT = 5-7 Working days for most tests..
Please note: Standard TAT for certain tests such as BOD and Dioxins/Furans are > 5 days - contact your Project Manager for details.

Job Specific Rush TAT (if applies to entire submission)
Date Required: ___ Time Required: ___ ☐
Rush Confirmation Number: ___ *(call lab for #)*

	Sample Barcode Label	Sample (Location) Identification	Date Sampled	Time Sampled	Matrix	Field Filtered (please circle): Metals / Hg / Cr VI	O.Reg 153 ICPMS Metals (Soil)	O.Reg 153 VOCs by HS & F1-F4 (Soil)	O.Reg 153 PAHs (Soil)	O.Reg 153 VOCs by HS & F1-F4	O.Reg 153 PAHs	O.Reg 153 Dissolved ICPMS Metals (Water)	# of Bottles	Comments
1		MW21-2 S1	Mar 16/21	9:30	Soil		X	X	X				4	
2														
3														
4														
5														
6														
7														
8														
9														
10														

RECEIVED IN OTTAWA

16-Mar-21 15:32
Katherine Szozda
C170219
THD ENV 767

NO Ice.

* RELINQUISHED BY: (Signature/Print)	Date: (YY/MM/DD)	Time	RECEIVED BY: (Signature/Print)	Date: (YY/MM/DD)	Time	# jars used and not submitted
AMAN MOGLISS	MARCH16/21	3:30PM		2021/03/16	15:32	
				2021/03/17	08:00	

Laboratory Use Only
Time Sensitive
Temperature (°C) on Recei: 15, 12, 13
Custody Seal: Present ☐ Intact ☐ Yes ☐ No ☒

5,5,5

* UNLESS OTHERWISE AGREED TO IN WRITING, WORK SUBMITTED ON THIS CHAIN OF CUSTODY IS SUBJECT TO BV LABS' STANDARD TERMS AND CONDITIONS. SIGNING OF THIS CHAIN OF CUSTODY DOCUMENT IS ACKNOWLEDGMENT AND ACCEPTANCE OF OUR TERMS WHICH ARE AVAILABLE FOR VIEWING AT WWW.BVLABS.COM/TERMS-AND-CONDITIONS.
* IT IS THE RESPONSIBILITY OF THE RELINQUISHER TO ENSURE THE ACCURACY OF THE CHAIN OF CUSTODY RECORD. AN INCOMPLETE CHAIN OF CUSTODY MAY RESULT IN ANALYTICAL TAT DELAYS.
** SAMPLE CONTAINER, PRESERVATION, HOLD TIME AND PACKAGE INFORMATION CAN BE VIEWED AT WWW.BVLABS.COM/RESOURCES/CHAIN-OF-CUSTODY-FORMS.

SAMPLES MUST BE KEPT COOL (< 10° C) FROM TIME OF SAMPLING UNTIL DELIVERY TO BV LABS

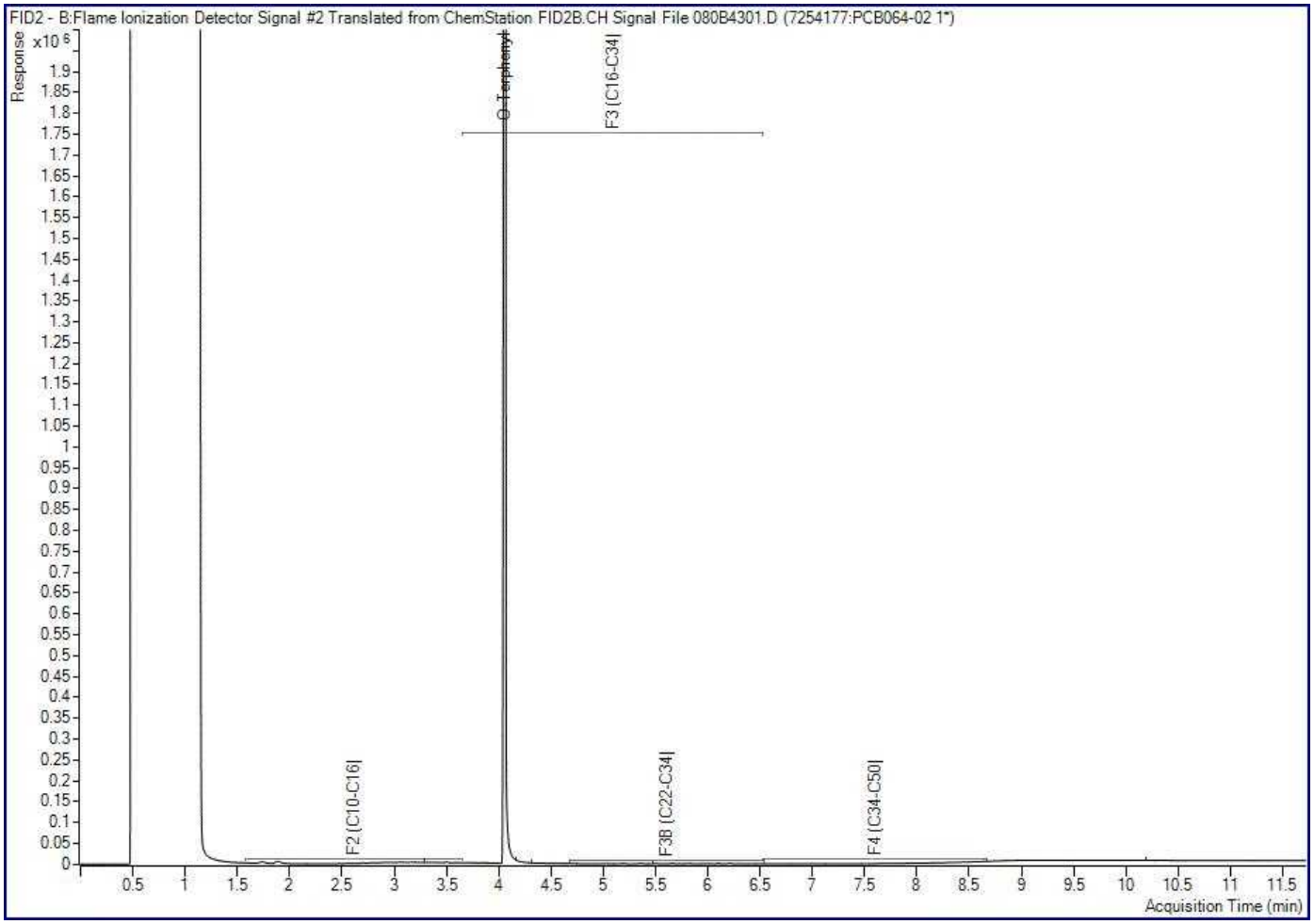
White: BV Labs Yellow: Client

Bureau Veritas Canada (2019) Inc.

BV Labs Job #: C170219
Report Date: 2021/03/22
BV Labs Sample: PCB064

exp Services Inc
Client Project #: OTT-00262765-A0
Client ID: MW21-2 S1

Petroleum Hydrocarbons F2-F4 in Soil Chromatogram



Note: This information is provided for reference purposes only. Should detailed chemist interpretation or fingerprinting be required, please contact the laboratory.

AGAT Laboratories

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

CLIENT NAME: **EXP SERVICES INC**
2650 QUEENSVIEW DRIVE, UNIT 100
OTTAWA, ON K2B8H6
(613) 688-1899
ATTENTION TO: **Athir Nader**
PROJECT: **OTT-00262765-A0**
AGAT WORK ORDER: **21T725846**
SOIL ANALYSIS REVIEWED BY: **Nivine Basily, Inorganics Report Writer**
DATE REPORTED: **Apr 01, 2021**
PAGES (INCLUDING COVER): **6**
VERSION*: **1**

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

Notes

Disclaimer:

- *All work conducted herein has been done using accepted standard protocols, and generally accepted practices and methods. AGAT test methods may incorporate modifications from the specified reference methods to improve performance.*
- *All samples will be disposed of within 30 days following analysis, unless expressly agreed otherwise in writing. Please contact your Client Project Manager if you require additional sample storage time.*
- *AGAT's liability in connection with any delay, performance or non-performance of these services is only to the Client and does not extend to any other third party. Unless expressly agreed otherwise in writing, AGAT's liability is limited to the actual cost of the specific analysis or analyses included in the services.*
- *This Certificate shall not be reproduced except in full, without the written approval of the laboratory.*
- *The test results reported herewith relate only to the samples as received by the laboratory.*
- *Application of guidelines is provided "as is" without warranty of any kind, either expressed or implied, including, but not limited to, warranties of merchantability, fitness for a particular purpose, or non-infringement. AGAT assumes no responsibility for any errors or omissions in the guidelines contained in this document.*
- *All reportable information as specified by ISO/IEC 17025:2017 is available from AGAT Laboratories upon request.*

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

Certificate of Analysis

AGAT WORK ORDER: 21T725846

PROJECT: OTT-00262765-A0

CLIENT NAME: EXP SERVICES INC

ATTENTION TO: Athir Nader

SAMPLING SITE:233 Argyle St./330 Meleat St.

SAMPLED BY:EXP

Inorganic Chemistry (Soil)

DATE RECEIVED: 2021-03-25 **DATE REPORTED: 2021-04-01**

				MW21-1 SS4
		SAMPLE DESCRIPTION:		7.5'-9.5'
		SAMPLE TYPE:		Soil
		DATE SAMPLED:		2021-03-18
Parameter	Unit	G / S	RDL	2262833
Chloride (2:1)	µg/g		4	551
Sulphate (2:1)	µg/g		4	86
pH (2:1)	pH Units		NA	7.94
Resistivity (2:1) (Calculated)	ohm.cm		1	826

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

2262833 EC, pH, Chloride and Sulphate were determined on the extract obtained from the 2:1 leaching procedure (2 parts DI water: 1 part soil). Resistivity is a calculated parameter.

Dilution required, RDL has been increased accordingly.

Analysis performed at AGAT Toronto (unless marked by *)

Certified By:

AGAT Laboratories

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

Certificate of Analysis

AGAT WORK ORDER: 21T725846

PROJECT: OTT-00262765-A0

CLIENT NAME: EXP SERVICES INC

ATTENTION TO: Athir Nader

SAMPLING SITE:233 Argyle St./330 Meleat St.

SAMPLED BY:EXP

Inorganic Chemistry (Soil) %

DATE RECEIVED: 2021-03-25 **DATE REPORTED: 2021-04-01**

			SAMPLE DESCRIPTION:	MW21-1 SS4 7.5'-9.5'
			SAMPLE TYPE:	Soil
			DATE SAMPLED:	2021-03-18
Parameter	Unit	G / S	RDL	2262833
Chloride (2:1)	%		0.0004	0.0551
Sulphate (2:1)	%		0.0004	0.0086

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

2262833 Chloride and Sulphate were determined on the extract obtained from the 2:1 leaching procedure (2 parts DI water: 1 part soil).

Dilution required, RDL has been increased accordingly.

Analysis performed at AGAT Toronto (unless marked by *)

Certified By:

AGAT Laboratories

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

Quality Assurance

CLIENT NAME: EXP SERVICES INC

AGAT WORK ORDER: 21T725846

PROJECT: OTT-00262765-A0

ATTENTION TO: Athir Nader

SAMPLING SITE:233 Argyle St./330 Meleat St.

SAMPLED BY:EXP

Soil Analysis

RPT Date: Apr 01, 2021			DUPLICATE				REFERENCE MATERIAL			METHOD BLANK SPIKE			MATRIX SPIKE		
PARAMETER	Batch	Sample Id	Dup #1	Dup #2	RPD	Method Blank	Measured Value	Acceptable Limits		Recovery	Acceptable Limits		Recovery	Acceptable Limits	
								Lower	Upper		Lower	Upper		Lower	Upper
Inorganic Chemistry (Soil)															
Chloride (2:1)	2262607		3	2	NA	< 2	94%	70%	130%	105%	80%	120%	107%	70%	130%
Sulphate (2:1)	2262607		140	141	0.3%	< 2	91%	70%	130%	97%	80%	120%	105%	70%	130%
pH (2:1)	2279153		7.00	6.86	2.0%	NA	99%	90%	110%						

Comments: NA signifies Not Applicable.
pH duplicates QA acceptance criteria was met relative as stated in Table 5-15 of Analytical Protocol document.

Duplicate NA: results are under 5X the RDL and will not be calculated.

Inorganic Chemistry (Soil) %															
Chloride (2:1)	2262607	0.0003	0.0002	NA	< 0.0002	94%	70%	130%	105%	80%	120%	107%	70%	130%
Sulphate (2:1)	2262607	0.0140	0.0141	0.7%	< 0.0002	91%	70%	130%	97%	80%	120%	105%	70%	130%

Comments: NA signifies Not Applicable.
Duplicate NA: results are under 5X the RDL and will not be calculated.

Certified By:

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

Method Summary

CLIENT NAME: EXP SERVICES INC

AGAT WORK ORDER: 21T725846

PROJECT: OTT-00262765-A0

ATTENTION TO: Athir Nader

SAMPLING SITE:233 Argyle St./330 Meleat St.

SAMPLED BY:EXP

PARAMETER	AGAT S.O.P	LITERATURE REFERENCE	ANALYTICAL TECHNIQUE
Soil Analysis			
Chloride (2:1)	INOR-93-6004	modified from SM 4110 B	ION CHROMATOGRAPH
Sulphate (2:1)	INOR-93-6004	modified from SM 4110 B	ION CHROMATOGRAPH
pH (2:1)	INOR 93-6031	MSA part 3 & SM 4500-H+ B	PH METER
Resistivity (2:1) (Calculated)	INOR-93-6036	McKeague 4.12, SM 2510 B,SSA #5 Part 3	CALCULATION

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)

Laboratory Use Only
Work Order #: 21T725846.
Cooler Quantity: one - no ice.
Arrival Temperatures: 16 | 16.5 | 16.4 / 1.8 | 1.9 | 2.1
Custody Seal Intact: ☐ Yes ☑ No ☐ N/A
Notes: on ice.

Report Information:
Company: EXP Services Inc. Ottawa
Contact: Athir Nader
Address: 2650 Queensview dr. Unit 100, Ottawa, ON, K2B 8H6
Phone: 613-688-1899 Fax:
Reports to be sent to:
1. Email: athir.nader@exp.com
2. Email:

Regulatory Requirements:
(Please check all applicable boxes)
☐ Regulation 153/04 — Table ___ (Indicate One) ☐ Ind/Com ☐ Res/Park ☐ Agriculture; Soil Texture (Check One) ☐ Coarse ☐ Fine
☐ Excess Soils R406 — Table ___ (Indicate One)
☐ Regulation 558
☐ CCME
☐ Sewer Use ☐ Sanitary ☐ Storm — Region
☐ Prov. Water Quality Objectives (PWQO)
☐ Other — Indicate One

Turnaround Time (TAT) Required:
Regular TAT ☑ 5 to 7 Business Days
Rush TAT (Rush Surchargs 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

Project Information:
Project: OTT-00262765-A0
Site Location: 233 Argyle st / 330 Meleat st.
Sampled By: EXP
AGAT Quote #: PO:
Please note: If quotation number is not provided, client will be billed full price for analysis.

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

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

Invoice Information: Bill To Same: Yes ☑ No ☐
Company:
Contact:
Address:
Email:

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

Sample Identification	Date Sampled	Time Sampled	# of Containers	Sample Matrix	Comments/ Special Instructions	Field Filtered - Metals, Hg, CrVI, DOC Y/N	O. Reg 153: Metals & Inorganics	Metals - ☐ CrVI, ☐ Hg, ☐ HWSB	BTEX, F1-F4 PHCs	Analyze F4G if required ☐ Yes ☐ No	PAHs	PCBs	VOC	O. Reg 558: Landfill Disposal Characterization TCLP: ☐ M&I ☐ VOCs ☐ ABNs ☐ B(a)P ☐ PCBs	O. Reg 406: Excess Soils SPLP Rainwater Leach ☐ Metals ☐ VOCs ☐ SVOCs	Excess Soils Characterization Package pH, ICPMS Metals, BTEX, F1-F4	Salt - EC/SAR	pH	Resistivity	Sulphate	Chloride	Potentially Hazardous or High Concentration (Y/N)
MW21-1 SS4 7.5'-9.5'	Mar. 18	— AM PM	1	S														✓	✓	✓	✓	
BH#2 SS5 10'-12'	Mar. 19	— AM PM	1	S														✓	✓	✓	✓	
		AM PM																				
		AM PM																				
		AM PM																				
		AM PM																				
		AM PM																				
		AM PM																				
		AM PM																				
		AM PM																				
		AM PM																				

Samples Relinquished By (Print Name and Sign)	Date	Time	Samples Received By (Print Name and Sign)	Date	Time
Jeff MacMillan	Mar. 23/21	3:52		2021/03/23	16h30
	21/3/24	16h00	Lakshanya March 25		8h40

Page 1 of 1
N°: T111716

Document ID: DIV-78-1511-018
Pink Copy - Client | Yellow Copy - AGAT | White Copy- AGAT
Date Issued: April 26, 2020

Your Project #: OTT-00262765-A0
Your C.O.C. #: 817845-03-01

Attention: Mark McCalla

exp Services Inc
Ottawa Branch
100-2650 Queensview Drive
Ottawa, ON
CANADA K2B 8H6

Report Date: 2021/04/06
Report #: R6583898
Version: 1 - Final

CERTIFICATE OF ANALYSIS

BV LABS JOB #: C184485
Received: 2021/03/30, 16:33

Sample Matrix: Water
Samples Received: 6

Analyses	Quantity	Date Extracted	Date Analyzed	Laboratory Method	Analytical Method
Methylnaphthalene Sum (1)	5	N/A	2021/04/06	CAM SOP-00301	EPA 8270D m
1,3-Dichloropropene Sum (1)	6	N/A	2021/04/06		EPA 8260C m
Petroleum Hydrocarbons F2-F4 in Water (1, 2)	5	2021/04/05	2021/04/06	CAM SOP-00316	CCME PHC-CWS m
Dissolved Metals by ICPMS (1)	5	N/A	2021/04/05	CAM SOP-00447	EPA 6020B m
PAH Compounds in Water by GC/MS (SIM) (1)	5	2021/04/05	2021/04/06	CAM SOP-00318	EPA 8270D m
Volatile Organic Compounds and F1 PHCs (1)	5	N/A	2021/04/05	CAM SOP-00230	EPA 8260C m
Volatile Organic Compounds in Water (1)	1	N/A	2021/04/05	CAM SOP-00228	EPA 8260C m

Remarks:

Bureau Veritas is accredited to ISO/IEC 17025 for specific parameters on scopes of accreditation. Unless otherwise noted, procedures used by Bureau Veritas are based upon recognized Provincial, Federal or US method compendia such as CCME, MELCC, EPA, APHA.

All work recorded herein has been done in accordance with procedures and practices ordinarily exercised by professionals in Bureau Veritas' profession using accepted testing methodologies, quality assurance and quality control procedures (except where otherwise agreed by the client and Bureau Veritas in writing). All data is in statistical control and has met quality control and method performance criteria unless otherwise noted. All method blanks are reported; unless indicated otherwise, associated sample data are not blank corrected. Where applicable, unless otherwise noted, Measurement Uncertainty has not been accounted for when stating conformity to the referenced standard.

Bureau Veritas liability is limited to the actual cost of the requested analyses, unless otherwise agreed in writing. There is no other warranty expressed or implied. Bureau Veritas has been retained to provide analysis of samples provided by the Client using the testing methodology referenced in this report. Interpretation and use of test results are the sole responsibility of the Client and are not within the scope of services provided by Bureau Veritas, unless otherwise agreed in writing. Bureau Veritas is not responsible for the accuracy or any data impacts, that result from the information provided by the customer or their agent.

Solid sample results, except biota, are based on dry weight unless otherwise indicated. Organic analyses are not recovery corrected except for isotope dilution methods.
Results relate to samples tested. When sampling is not conducted by Bureau Veritas, results relate to the supplied samples tested.

Reference Method suffix “m” indicates test methods incorporate validated modifications from specific reference methods to improve performance.
* RPDs calculated using raw data. The rounding of final results may result in the apparent difference.
(1) This test was performed by Bureau Veritas Laboratories Mississauga
(2) All CCME PHC results met required criteria unless otherwise stated in the report. The CWS PHC methods employed by Bureau Veritas Laboratories conform to all prescribed elements of the reference method and performance based elements have been validated. All modifications have been validated and proven equivalent following “Alberta Environment’s Interpretation of the Reference Method for the Canada-Wide Standard for Petroleum Hydrocarbons in Soil Validation of Performance-Based Alternative Methods September 2003”. Documentation is available upon request. Modifications from Reference Method for the Canada-wide Standard for Petroleum Hydrocarbons in Soil-Tier 1

Your Project #: OTT-00262765-A0
Your C.O.C. #: 817845-03-01

Attention: Mark McCalla

exp Services Inc
Ottawa Branch
100-2650 Queensview Drive
Ottawa, ON
CANADA K2B 8H6

Report Date: 2021/04/06
Report #: R6583898
Version: 1 - Final

CERTIFICATE OF ANALYSIS

BV LABS JOB #: C184485
Received: 2021/03/30, 16:33
Method: F2/F3/F4 data reported using validated cold solvent extraction instead of Soxhlet extraction.

Encryption Key

Please direct all questions regarding this Certificate of Analysis to your Project Manager.
Katherine Szozda, Project Manager
Email: Katherine.Szozda@bureauveritas.com
Phone# (613)274-0573 Ext:7063633
==========
This report has been generated and distributed using a secure automated process.
BV Labs has procedures in place to guard against improper use of the electronic signature and have the required "signatories", as per ISO/IEC 17025, signing the reports. For Service Group specific validation please refer to the Validation Signature Page.

BV Labs Job #: C184485
Report Date: 2021/04/06

exp Services Inc
Client Project #: OTT-00262765-A0
Sampler Initials: MAD

O.REG 153 DISSOLVED ICPMS METALS (WATER)

BV Labs ID		PFA657	PFA658	PFA659	PFA659	PFA660	PFA661		
Sampling Date		2021/03/30 13:00	2021/03/30 09:30	2021/03/30 12:00	2021/03/30 12:00	2021/03/30 10:30	2021/03/30 14:00		
COC Number		817845-03-01	817845-03-01	817845-03-01	817845-03-01	817845-03-01	817845-03-01		
	UNITS	**MW21-1**	**MW21-2**	**MW21-3**	**MW21-3 Lab-Dup**	**MW21-4**	**MW21-5**	**RDL**	**QC Batch**
Metals									
Dissolved Antimony (Sb)	ug/L	<0.50	<0.50	0.52	<0.50	0.51	<0.50	0.50	7279108
Dissolved Arsenic (As)	ug/L	2.3	2.0	2.1	2.1	2.6	2.1	1.0	7279108
Dissolved Barium (Ba)	ug/L	51	41	54	54	85	54	2.0	7279108
Dissolved Beryllium (Be)	ug/L	<0.40	<0.40	<0.40	<0.40	<0.40	<0.40	0.40	7279108
Dissolved Boron (B)	ug/L	300	310	550	550	740	560	10	7279108
Dissolved Cadmium (Cd)	ug/L	<0.090	<0.090	<0.090	<0.090	<0.090	<0.090	0.090	7279108
Dissolved Chromium (Cr)	ug/L	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	5.0	7279108
Dissolved Cobalt (Co)	ug/L	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	0.50	7279108
Dissolved Copper (Cu)	ug/L	2.1	7.9	2.8	2.8	2.7	2.6	0.90	7279108
Dissolved Lead (Pb)	ug/L	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	0.50	7279108
Dissolved Molybdenum (Mo)	ug/L	11	7.1	37	38	32	37	0.50	7279108
Dissolved Nickel (Ni)	ug/L	1.4	2.1	2.8	2.9	3.6	2.9	1.0	7279108
Dissolved Selenium (Se)	ug/L	<2.0	5.0	<2.0	<2.0	<2.0	<2.0	2.0	7279108
Dissolved Silver (Ag)	ug/L	<0.090	<0.090	<0.090	<0.090	<0.090	<0.090	0.090	7279108
Dissolved Sodium (Na)	ug/L	94000	130000	170000	170000	230000	170000	100	7279108
Dissolved Thallium (Tl)	ug/L	<0.050	<0.050	<0.050	<0.050	<0.050	<0.050	0.050	7279108
Dissolved Uranium (U)	ug/L	5.2	2.3	8.9	8.8	11	8.7	0.10	7279108
Dissolved Vanadium (V)	ug/L	4.4	4.6	4.9	4.7	4.8	4.9	0.50	7279108
Dissolved Zinc (Zn)	ug/L	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	5.0	7279108

RDL = Reportable Detection Limit
QC Batch = Quality Control Batch
Lab-Dup = Laboratory Initiated Duplicate

O.REG 153 PAHS (WATER)

BV Labs ID		PFA657	PFA658			PFA658		
Sampling Date		2021/03/30 13:00	2021/03/30 09:30			2021/03/30 09:30		
COC Number		817845-03-01	817845-03-01			817845-03-01		
	UNITS	**MW21-1**	**MW21-2**	**RDL**	**QC Batch**	**MW21-2 Lab-Dup**	**RDL**	**QC Batch**
Calculated Parameters								
Methylnaphthalene, 2-(1-)	ug/L	<0.071	<0.071	0.071	7275377			
Polyaromatic Hydrocarbons								
Acenaphthene	ug/L	<0.050	<0.050	0.050	7282283	<0.050	0.050	7282283
Acenaphthylene	ug/L	<0.050	<0.050	0.050	7282283	<0.050	0.050	7282283
Anthracene	ug/L	<0.050	<0.050	0.050	7282283	<0.050	0.050	7282283
Benzo(a)anthracene	ug/L	<0.050	<0.050	0.050	7282283	<0.050	0.050	7282283
Benzo(a)pyrene	ug/L	<0.0090	<0.0090	0.0090	7282283	<0.0090	0.0090	7282283
Benzo(b/j)fluoranthene	ug/L	<0.050	<0.050	0.050	7282283	<0.050	0.050	7282283
Benzo(g,h,i)perylene	ug/L	<0.050	<0.050	0.050	7282283	<0.050	0.050	7282283
Benzo(k)fluoranthene	ug/L	<0.050	<0.050	0.050	7282283	<0.050	0.050	7282283
Chrysene	ug/L	<0.050	<0.050	0.050	7282283	<0.050	0.050	7282283
Dibenzo(a,h)anthracene	ug/L	<0.050	<0.050	0.050	7282283	<0.050	0.050	7282283
Fluoranthene	ug/L	0.060	<0.050	0.050	7282283	<0.050	0.050	7282283
Fluorene	ug/L	<0.050	<0.050	0.050	7282283	<0.050	0.050	7282283
Indeno(1,2,3-cd)pyrene	ug/L	<0.050	<0.050	0.050	7282283	<0.050	0.050	7282283
1-Methylnaphthalene	ug/L	<0.050	<0.050	0.050	7282283	<0.050	0.050	7282283
2-Methylnaphthalene	ug/L	<0.050	<0.050	0.050	7282283	<0.050	0.050	7282283
Naphthalene	ug/L	<0.050	<0.050	0.050	7282283	<0.050	0.050	7282283
Phenanthrene	ug/L	0.13	<0.030	0.030	7282283	<0.030	0.030	7282283
Pyrene	ug/L	0.050	<0.050	0.050	7282283	<0.050	0.050	7282283
Surrogate Recovery (%)								
D10-Anthracene	%	121	119		7282283	121		7282283
D14-Terphenyl (FS)	%	119	113		7282283	120		7282283
D8-Acenaphthylene	%	114	105		7282283	113		7282283

RDL = Reportable Detection Limit
QC Batch = Quality Control Batch
Lab-Dup = Laboratory Initiated Duplicate

O.REG 153 PAHS (WATER)

BV Labs ID		PFA659	PFA660	PFA661		
Sampling Date		2021/03/30 12:00	2021/03/30 10:30	2021/03/30 14:00		
COC Number		817845-03-01	817845-03-01	817845-03-01		
	UNITS	**MW21-3**	**MW21-4**	**MW21-5**	**RDL**	**QC Batch**
Calculated Parameters						
Methylnaphthalene, 2-(1-)	ug/L	<0.071	<0.071	<0.071	0.071	7275377
Polyaromatic Hydrocarbons						
Acenaphthene	ug/L	<0.050	0.15	<0.050	0.050	7282283
Acenaphthylene	ug/L	<0.050	<0.050	<0.050	0.050	7282283
Anthracene	ug/L	<0.050	<0.050	<0.050	0.050	7282283
Benzo(a)anthracene	ug/L	<0.050	<0.050	<0.050	0.050	7282283
Benzo(a)pyrene	ug/L	<0.0090	<0.0090	<0.0090	0.0090	7282283
Benzo(b/j)fluoranthene	ug/L	<0.050	<0.050	<0.050	0.050	7282283
Benzo(g,h,i)perylene	ug/L	<0.050	<0.050	<0.050	0.050	7282283
Benzo(k)fluoranthene	ug/L	<0.050	<0.050	<0.050	0.050	7282283
Chrysene	ug/L	<0.050	<0.050	<0.050	0.050	7282283
Dibenzo(a,h)anthracene	ug/L	<0.050	<0.050	<0.050	0.050	7282283
Fluoranthene	ug/L	<0.050	<0.050	<0.050	0.050	7282283
Fluorene	ug/L	<0.050	0.11	<0.050	0.050	7282283
Indeno(1,2,3-cd)pyrene	ug/L	<0.050	<0.050	<0.050	0.050	7282283
1-Methylnaphthalene	ug/L	<0.050	<0.050	<0.050	0.050	7282283
2-Methylnaphthalene	ug/L	<0.050	<0.050	<0.050	0.050	7282283
Naphthalene	ug/L	<0.050	<0.050	<0.050	0.050	7282283
Phenanthrene	ug/L	<0.030	0.061	<0.030	0.030	7282283
Pyrene	ug/L	<0.050	<0.050	<0.050	0.050	7282283
Surrogate Recovery (%)						
D10-Anthracene	%	121	123	117		7282283
D14-Terphenyl (FS)	%	118	116	113		7282283
D8-Acenaphthylene	%	114	115	107		7282283

RDL = Reportable Detection Limit
QC Batch = Quality Control Batch

O.REG 153 VOCS BY HS & F1-F4 (WATER)

BV Labs ID		PFA657	PFA658			PFA658		
Sampling Date		2021/03/30 13:00	2021/03/30 09:30			2021/03/30 09:30		
COC Number		817845-03-01	817845-03-01			817845-03-01		
	UNITS	**MW21-1**	**MW21-2**	**RDL**	**QC Batch**	**MW21-2 Lab-Dup**	**RDL**	**QC Batch**
Calculated Parameters								
1,3-Dichloropropene (cis+trans)	ug/L	<0.50	<0.50	0.50	7276240			
Volatile Organics								
Acetone (2-Propanone)	ug/L	<10	<10	10	7278016			
Benzene	ug/L	<0.20	<0.20	0.20	7278016			
Bromodichloromethane	ug/L	<0.50	<0.50	0.50	7278016			
Bromoform	ug/L	<1.0	<1.0	1.0	7278016			
Bromomethane	ug/L	<0.50	<0.50	0.50	7278016			
Carbon Tetrachloride	ug/L	<0.20	<0.20	0.20	7278016			
Chlorobenzene	ug/L	<0.20	<0.20	0.20	7278016			
Chloroform	ug/L	<0.20	<0.20	0.20	7278016			
Dibromochloromethane	ug/L	<0.50	<0.50	0.50	7278016			
1,2-Dichlorobenzene	ug/L	<0.50	<0.50	0.50	7278016			
1,3-Dichlorobenzene	ug/L	<0.50	<0.50	0.50	7278016			
1,4-Dichlorobenzene	ug/L	<0.50	<0.50	0.50	7278016			
Dichlorodifluoromethane (FREON 12)	ug/L	<1.0	<1.0	1.0	7278016			
1,1-Dichloroethane	ug/L	<0.20	<0.20	0.20	7278016			
1,2-Dichloroethane	ug/L	<0.50	<0.50	0.50	7278016			
1,1-Dichloroethylene	ug/L	<0.20	<0.20	0.20	7278016			
cis-1,2-Dichloroethylene	ug/L	<0.50	<0.50	0.50	7278016			
trans-1,2-Dichloroethylene	ug/L	<0.50	<0.50	0.50	7278016			
1,2-Dichloropropane	ug/L	<0.20	<0.20	0.20	7278016			
cis-1,3-Dichloropropene	ug/L	<0.30	<0.30	0.30	7278016			
trans-1,3-Dichloropropene	ug/L	<0.40	<0.40	0.40	7278016			
Ethylbenzene	ug/L	<0.20	<0.20	0.20	7278016			
Ethylene Dibromide	ug/L	<0.20	<0.20	0.20	7278016			
Hexane	ug/L	<1.0	<1.0	1.0	7278016			
Methylene Chloride(Dichloromethane)	ug/L	<2.0	<2.0	2.0	7278016			
Methyl Ethyl Ketone (2-Butanone)	ug/L	<10	<10	10	7278016			
Methyl Isobutyl Ketone	ug/L	<5.0	<5.0	5.0	7278016			
Methyl t-butyl ether (MTBE)	ug/L	<0.50	<0.50	0.50	7278016			
Styrene	ug/L	<0.50	<0.50	0.50	7278016			
1,1,1,2-Tetrachloroethane	ug/L	<0.50	<0.50	0.50	7278016			
1,1,2,2-Tetrachloroethane	ug/L	<0.50	<0.50	0.50	7278016			
Tetrachloroethylene	ug/L	<0.20	<0.20	0.20	7278016			

RDL = Reportable Detection Limit
QC Batch = Quality Control Batch
Lab-Dup = Laboratory Initiated Duplicate

O.REG 153 VOCS BY HS & F1-F4 (WATER)

BV Labs ID		PFA657	PFA658			PFA658		
Sampling Date		2021/03/30 13:00	2021/03/30 09:30			2021/03/30 09:30		
COC Number		817845-03-01	817845-03-01			817845-03-01		
	UNITS	**MW21-1**	**MW21-2**	**RDL**	**QC Batch**	**MW21-2 Lab-Dup**	**RDL**	**QC Batch**
Toluene	ug/L	<0.20	<0.20	0.20	7278016			
1,1,1-Trichloroethane	ug/L	<0.20	<0.20	0.20	7278016			
1,1,2-Trichloroethane	ug/L	<0.50	<0.50	0.50	7278016			
Trichloroethylene	ug/L	<0.20	<0.20	0.20	7278016			
Trichlorofluoromethane (FREON 11)	ug/L	<0.50	<0.50	0.50	7278016			
Vinyl Chloride	ug/L	<0.20	<0.20	0.20	7278016			
p+m-Xylene	ug/L	<0.20	<0.20	0.20	7278016			
o-Xylene	ug/L	<0.20	<0.20	0.20	7278016			
Total Xylenes	ug/L	<0.20	<0.20	0.20	7278016			
F1 (C6-C10)	ug/L	<25	<25	25	7278016			
F1 (C6-C10) - BTEX	ug/L	<25	<25	25	7278016			
F2-F4 Hydrocarbons								
F2 (C10-C16 Hydrocarbons)	ug/L	<100	<100	100	7282282	<100	100	7282282
F3 (C16-C34 Hydrocarbons)	ug/L	<200	<200	200	7282282	<200	200	7282282
F4 (C34-C50 Hydrocarbons)	ug/L	<200	<200	200	7282282	<200	200	7282282
Reached Baseline at C50	ug/L	Yes	Yes		7282282	Yes		7282282
Surrogate Recovery (%)								
o-Terphenyl	%	96	97		7282282	96		7282282
4-Bromofluorobenzene	%	99	99		7278016			
D4-1,2-Dichloroethane	%	104	103		7278016			
D8-Toluene	%	101	101		7278016			

RDL = Reportable Detection Limit
QC Batch = Quality Control Batch
Lab-Dup = Laboratory Initiated Duplicate

O.REG 153 VOCS BY HS & F1-F4 (WATER)

BV Labs ID		PFA659	PFA660	PFA661		
Sampling Date		2021/03/30 12:00	2021/03/30 10:30	2021/03/30 14:00		
COC Number		817845-03-01	817845-03-01	817845-03-01		
	UNITS	**MW21-3**	**MW21-4**	**MW21-5**	**RDL**	**QC Batch**
Calculated Parameters						
1,3-Dichloropropene (cis+trans)	ug/L	<0.50	<0.50	<0.50	0.50	7276240
Volatile Organics						
Acetone (2-Propanone)	ug/L	<10	<10	<10	10	7278016
Benzene	ug/L	<0.20	<0.20	<0.20	0.20	7278016
Bromodichloromethane	ug/L	<0.50	<0.50	<0.50	0.50	7278016
Bromoform	ug/L	<1.0	<1.0	<1.0	1.0	7278016
Bromomethane	ug/L	<0.50	<0.50	<0.50	0.50	7278016
Carbon Tetrachloride	ug/L	<0.20	<0.20	<0.20	0.20	7278016
Chlorobenzene	ug/L	<0.20	<0.20	<0.20	0.20	7278016
Chloroform	ug/L	<0.20	<0.20	<0.20	0.20	7278016
Dibromochloromethane	ug/L	<0.50	<0.50	<0.50	0.50	7278016
1,2-Dichlorobenzene	ug/L	<0.50	<0.50	<0.50	0.50	7278016
1,3-Dichlorobenzene	ug/L	<0.50	<0.50	<0.50	0.50	7278016
1,4-Dichlorobenzene	ug/L	<0.50	<0.50	<0.50	0.50	7278016
Dichlorodifluoromethane (FREON 12)	ug/L	<1.0	<1.0	<1.0	1.0	7278016
1,1-Dichloroethane	ug/L	<0.20	<0.20	<0.20	0.20	7278016
1,2-Dichloroethane	ug/L	<0.50	<0.50	<0.50	0.50	7278016
1,1-Dichloroethylene	ug/L	<0.20	<0.20	<0.20	0.20	7278016
cis-1,2-Dichloroethylene	ug/L	<0.50	<0.50	<0.50	0.50	7278016
trans-1,2-Dichloroethylene	ug/L	<0.50	<0.50	<0.50	0.50	7278016
1,2-Dichloropropane	ug/L	<0.20	<0.20	<0.20	0.20	7278016
cis-1,3-Dichloropropene	ug/L	<0.30	<0.30	<0.30	0.30	7278016
trans-1,3-Dichloropropene	ug/L	<0.40	<0.40	<0.40	0.40	7278016
Ethylbenzene	ug/L	<0.20	<0.20	<0.20	0.20	7278016
Ethylene Dibromide	ug/L	<0.20	<0.20	<0.20	0.20	7278016
Hexane	ug/L	<1.0	<1.0	<1.0	1.0	7278016
Methylene Chloride(Dichloromethane)	ug/L	<2.0	<2.0	<2.0	2.0	7278016
Methyl Ethyl Ketone (2-Butanone)	ug/L	<10	<10	<10	10	7278016
Methyl Isobutyl Ketone	ug/L	<5.0	<5.0	<5.0	5.0	7278016
Methyl t-butyl ether (MTBE)	ug/L	<0.50	<0.50	<0.50	0.50	7278016
Styrene	ug/L	<0.50	<0.50	<0.50	0.50	7278016
1,1,1,2-Tetrachloroethane	ug/L	<0.50	<0.50	<0.50	0.50	7278016
1,1,2,2-Tetrachloroethane	ug/L	<0.50	<0.50	<0.50	0.50	7278016
Tetrachloroethylene	ug/L	<0.20	<0.20	<0.20	0.20	7278016
Toluene	ug/L	<0.20	<0.20	<0.20	0.20	7278016

RDL = Reportable Detection Limit
QC Batch = Quality Control Batch

O.REG 153 VOCS BY HS & F1-F4 (WATER)

BV Labs ID		PFA659	PFA660	PFA661		
Sampling Date		2021/03/30 12:00	2021/03/30 10:30	2021/03/30 14:00		
COC Number		817845-03-01	817845-03-01	817845-03-01		
	UNITS	**MW21-3**	**MW21-4**	**MW21-5**	**RDL**	**QC Batch**
1,1,1-Trichloroethane	ug/L	<0.20	<0.20	<0.20	0.20	7278016
1,1,2-Trichloroethane	ug/L	<0.50	<0.50	<0.50	0.50	7278016
Trichloroethylene	ug/L	<0.20	<0.20	<0.20	0.20	7278016
Trichlorofluoromethane (FREON 11)	ug/L	<0.50	<0.50	<0.50	0.50	7278016
Vinyl Chloride	ug/L	<0.20	<0.20	<0.20	0.20	7278016
p+m-Xylene	ug/L	<0.20	<0.20	<0.20	0.20	7278016
o-Xylene	ug/L	<0.20	<0.20	<0.20	0.20	7278016
Total Xylenes	ug/L	<0.20	<0.20	<0.20	0.20	7278016
F1 (C6-C10)	ug/L	<25	<25	<25	25	7278016
F1 (C6-C10) - BTEX	ug/L	<25	<25	<25	25	7278016
F2-F4 Hydrocarbons						
F2 (C10-C16 Hydrocarbons)	ug/L	<100	<100	<100	100	7282282
F3 (C16-C34 Hydrocarbons)	ug/L	<200	<200	<200	200	7282282
F4 (C34-C50 Hydrocarbons)	ug/L	<200	<200	<200	200	7282282
Reached Baseline at C50	ug/L	Yes	Yes	Yes		7282282
Surrogate Recovery (%)						
o-Terphenyl	%	95	96	94		7282282
4-Bromofluorobenzene	%	99	99	99		7278016
D4-1,2-Dichloroethane	%	105	105	106		7278016
D8-Toluene	%	100	100	100		7278016

RDL = Reportable Detection Limit
QC Batch = Quality Control Batch

O.REG 153 VOCS BY HS (WATER)

BV Labs ID		PFA662		
Sampling Date		2021/03/30 14:00		
COC Number		817845-03-01		
	UNITS	**TRIP BLANK**	**RDL**	**QC Batch**
Calculated Parameters				
1,3-Dichloropropene (cis+trans)	ug/L	<0.50	0.50	7276240
Volatile Organics				
Acetone (2-Propanone)	ug/L	<10	10	7275761
Benzene	ug/L	<0.20	0.20	7275761
Bromodichloromethane	ug/L	<0.50	0.50	7275761
Bromoform	ug/L	<1.0	1.0	7275761
Bromomethane	ug/L	<0.50	0.50	7275761
Carbon Tetrachloride	ug/L	<0.19	0.19	7275761
Chlorobenzene	ug/L	<0.20	0.20	7275761
Chloroform	ug/L	<0.20	0.20	7275761
Dibromochloromethane	ug/L	<0.50	0.50	7275761
1,2-Dichlorobenzene	ug/L	<0.40	0.40	7275761
1,3-Dichlorobenzene	ug/L	<0.40	0.40	7275761
1,4-Dichlorobenzene	ug/L	<0.40	0.40	7275761
Dichlorodifluoromethane (FREON 12)	ug/L	<1.0	1.0	7275761
1,1-Dichloroethane	ug/L	<0.20	0.20	7275761
1,2-Dichloroethane	ug/L	<0.49	0.49	7275761
1,1-Dichloroethylene	ug/L	<0.20	0.20	7275761
cis-1,2-Dichloroethylene	ug/L	<0.50	0.50	7275761
trans-1,2-Dichloroethylene	ug/L	<0.50	0.50	7275761
1,2-Dichloropropane	ug/L	<0.20	0.20	7275761
cis-1,3-Dichloropropene	ug/L	<0.30	0.30	7275761
trans-1,3-Dichloropropene	ug/L	<0.40	0.40	7275761
Ethylbenzene	ug/L	<0.20	0.20	7275761
Ethylene Dibromide	ug/L	<0.19	0.19	7275761
Hexane	ug/L	<1.0	1.0	7275761
Methylene Chloride(Dichloromethane)	ug/L	<2.0	2.0	7275761
Methyl Ethyl Ketone (2-Butanone)	ug/L	<10	10	7275761
Methyl Isobutyl Ketone	ug/L	<5.0	5.0	7275761
Methyl t-butyl ether (MTBE)	ug/L	<0.50	0.50	7275761
Styrene	ug/L	<0.40	0.40	7275761
1,1,1,2-Tetrachloroethane	ug/L	<0.50	0.50	7275761
1,1,2,2-Tetrachloroethane	ug/L	<0.40	0.40	7275761
Tetrachloroethylene	ug/L	<0.20	0.20	7275761
Toluene	ug/L	<0.20	0.20	7275761

RDL = Reportable Detection Limit
QC Batch = Quality Control Batch

O.REG 153 VOCS BY HS (WATER)

BV Labs ID		PFA662		
Sampling Date		2021/03/30 14:00		
COC Number		817845-03-01		
	UNITS	**TRIP BLANK**	**RDL**	**QC Batch**
1,1,1-Trichloroethane	ug/L	<0.20	0.20	7275761
1,1,2-Trichloroethane	ug/L	<0.40	0.40	7275761
Trichloroethylene	ug/L	<0.20	0.20	7275761
Trichlorofluoromethane (FREON 11)	ug/L	<0.50	0.50	7275761
Vinyl Chloride	ug/L	<0.20	0.20	7275761
p+m-Xylene	ug/L	<0.20	0.20	7275761
o-Xylene	ug/L	<0.20	0.20	7275761
Total Xylenes	ug/L	<0.20	0.20	7275761
Surrogate Recovery (%)				
4-Bromofluorobenzene	%	91		7275761
D4-1,2-Dichloroethane	%	111		7275761
D8-Toluene	%	102		7275761

RDL = Reportable Detection Limit
QC Batch = Quality Control Batch

TEST SUMMARY

BV Labs ID: PFA657
Sample ID: MW21-1
Matrix: Water

Collected: 2021/03/30
Shipped:
Received: 2021/03/30

Test Description	Instrumentation	Batch	Extracted	Date Analyzed	Analyst
Methylnaphthalene Sum	CALC	7275377	N/A	2021/04/06	Automated Statchk
1,3-Dichloropropene Sum	CALC	7276240	N/A	2021/04/06	Automated Statchk
Petroleum Hydrocarbons F2-F4 in Water	GC/FID	7282282	2021/04/05	2021/04/06	Prabhjot Gulati
Dissolved Metals by ICPMS	ICP/MS	7279108	N/A	2021/04/05	Nan Raykha
PAH Compounds in Water by GC/MS (SIM)	GC/MS	7282283	2021/04/05	2021/04/06	Mitesh Raj
Volatile Organic Compounds and F1 PHCs	GC/MSFD	7278016	N/A	2021/04/05	Yang (Philip) Yu

BV Labs ID: PFA658
Sample ID: MW21-2
Matrix: Water

Collected: 2021/03/30
Shipped:
Received: 2021/03/30

Test Description	Instrumentation	Batch	Extracted	Date Analyzed	Analyst
Methylnaphthalene Sum	CALC	7275377	N/A	2021/04/06	Automated Statchk
1,3-Dichloropropene Sum	CALC	7276240	N/A	2021/04/06	Automated Statchk
Petroleum Hydrocarbons F2-F4 in Water	GC/FID	7282282	2021/04/05	2021/04/06	Prabhjot Gulati
Dissolved Metals by ICPMS	ICP/MS	7279108	N/A	2021/04/05	Nan Raykha
PAH Compounds in Water by GC/MS (SIM)	GC/MS	7282283	2021/04/05	2021/04/06	Mitesh Raj
Volatile Organic Compounds and F1 PHCs	GC/MSFD	7278016	N/A	2021/04/05	Yang (Philip) Yu

BV Labs ID: PFA658 Dup
Sample ID: MW21-2
Matrix: Water

Collected: 2021/03/30
Shipped:
Received: 2021/03/30

Test Description	Instrumentation	Batch	Extracted	Date Analyzed	Analyst
Petroleum Hydrocarbons F2-F4 in Water	GC/FID	7282282	2021/04/05	2021/04/06	Prabhjot Gulati
PAH Compounds in Water by GC/MS (SIM)	GC/MS	7282283	2021/04/05	2021/04/06	Mitesh Raj

BV Labs ID: PFA659
Sample ID: MW21-3
Matrix: Water

Collected: 2021/03/30
Shipped:
Received: 2021/03/30

Test Description	Instrumentation	Batch	Extracted	Date Analyzed	Analyst
Methylnaphthalene Sum	CALC	7275377	N/A	2021/04/06	Automated Statchk
1,3-Dichloropropene Sum	CALC	7276240	N/A	2021/04/06	Automated Statchk
Petroleum Hydrocarbons F2-F4 in Water	GC/FID	7282282	2021/04/05	2021/04/06	Prabhjot Gulati
Dissolved Metals by ICPMS	ICP/MS	7279108	N/A	2021/04/05	Nan Raykha
PAH Compounds in Water by GC/MS (SIM)	GC/MS	7282283	2021/04/05	2021/04/06	Mitesh Raj
Volatile Organic Compounds and F1 PHCs	GC/MSFD	7278016	N/A	2021/04/05	Yang (Philip) Yu

BV Labs ID: PFA659 Dup
Sample ID: MW21-3
Matrix: Water

Collected: 2021/03/30
Shipped:
Received: 2021/03/30

Test Description	Instrumentation	Batch	Extracted	Date Analyzed	Analyst
Dissolved Metals by ICPMS	ICP/MS	7279108	N/A	2021/04/05	Nan Raykha

TEST SUMMARY

BV Labs ID: PFA660
Sample ID: MW21-4
Matrix: Water

Collected: 2021/03/30
Shipped:
Received: 2021/03/30

Test Description	Instrumentation	Batch	Extracted	Date Analyzed	Analyst
Methylnaphthalene Sum	CALC	7275377	N/A	2021/04/06	Automated Statchk
1,3-Dichloropropene Sum	CALC	7276240	N/A	2021/04/06	Automated Statchk
Petroleum Hydrocarbons F2-F4 in Water	GC/FID	7282282	2021/04/05	2021/04/06	Prabhjot Gulati
Dissolved Metals by ICPMS	ICP/MS	7279108	N/A	2021/04/05	Nan Raykha
PAH Compounds in Water by GC/MS (SIM)	GC/MS	7282283	2021/04/05	2021/04/06	Mitesh Raj
Volatile Organic Compounds and F1 PHCs	GC/MSFD	7278016	N/A	2021/04/05	Yang (Philip) Yu

BV Labs ID: PFA661
Sample ID: MW21-5
Matrix: Water

Collected: 2021/03/30
Shipped:
Received: 2021/03/30

Test Description	Instrumentation	Batch	Extracted	Date Analyzed	Analyst
Methylnaphthalene Sum	CALC	7275377	N/A	2021/04/06	Automated Statchk
1,3-Dichloropropene Sum	CALC	7276240	N/A	2021/04/06	Automated Statchk
Petroleum Hydrocarbons F2-F4 in Water	GC/FID	7282282	2021/04/05	2021/04/06	Prabhjot Gulati
Dissolved Metals by ICPMS	ICP/MS	7279108	N/A	2021/04/05	Nan Raykha
PAH Compounds in Water by GC/MS (SIM)	GC/MS	7282283	2021/04/05	2021/04/06	Mitesh Raj
Volatile Organic Compounds and F1 PHCs	GC/MSFD	7278016	N/A	2021/04/05	Yang (Philip) Yu

BV Labs ID: PFA662
Sample ID: TRIP BLANK
Matrix: Water

Collected: 2021/03/30
Shipped:
Received: 2021/03/30

Test Description	Instrumentation	Batch	Extracted	Date Analyzed	Analyst
1,3-Dichloropropene Sum	CALC	7276240	N/A	2021/04/06	Automated Statchk
Volatile Organic Compounds in Water	GC/MS	7275761	N/A	2021/04/05	Chandni Khawas

GENERAL COMMENTS

Each temperature is the average of up to three cooler temperatures taken at receipt

Package 1	2.7°C

Results relate only to the items tested.

			Matrix Spike		SPIKED BLANK		Method Blank		RPD	
QC Batch	Parameter	Date	% Recovery	QC Limits	% Recovery	QC Limits	Value	UNITS	Value (%)	QC Limits
7275761	4-Bromofluorobenzene	2021/04/05	96	70 - 130	96	70 - 130	95	%		
7275761	D4-1,2-Dichloroethane	2021/04/05	106	70 - 130	101	70 - 130	104	%		
7275761	D8-Toluene	2021/04/05	103	70 - 130	105	70 - 130	104	%		
7278016	4-Bromofluorobenzene	2021/04/05	126	70 - 130	101	70 - 130	99	%		
7278016	D4-1,2-Dichloroethane	2021/04/05	110	70 - 130	101	70 - 130	101	%		
7278016	D8-Toluene	2021/04/05	98	70 - 130	101	70 - 130	102	%		
7282282	o-Terphenyl	2021/04/06	101	60 - 130	101	60 - 130	96	%		
7282283	D10-Anthracene	2021/04/06	115	50 - 130	129	50 - 130	124	%		
7282283	D14-Terphenyl (FS)	2021/04/06	110	50 - 130	129	50 - 130	120	%		
7282283	D8-Acenaphthylene	2021/04/06	107	50 - 130	124	50 - 130	114	%		
7275761	1,1,1,2-Tetrachloroethane	2021/04/05	103	70 - 130	102	70 - 130	<0.50	ug/L	NC	30
7275761	1,1,1-Trichloroethane	2021/04/05	103	70 - 130	105	70 - 130	<0.20	ug/L	NC	30
7275761	1,1,2,2-Tetrachloroethane	2021/04/05	102	70 - 130	96	70 - 130	<0.40	ug/L	NC	30
7275761	1,1,2-Trichloroethane	2021/04/05	114	70 - 130	109	70 - 130	<0.40	ug/L	NC	30
7275761	1,1-Dichloroethane	2021/04/05	101	70 - 130	100	70 - 130	<0.20	ug/L	0.56	30
7275761	1,1-Dichloroethylene	2021/04/05	105	70 - 130	107	70 - 130	<0.20	ug/L	NC	30
7275761	1,2-Dichlorobenzene	2021/04/05	102	70 - 130	101	70 - 130	<0.40	ug/L	NC	30
7275761	1,2-Dichloroethane	2021/04/05	103	70 - 130	98	70 - 130	<0.49	ug/L	NC	30
7275761	1,2-Dichloropropane	2021/04/05	99	70 - 130	98	70 - 130	<0.20	ug/L	NC	30
7275761	1,3-Dichlorobenzene	2021/04/05	102	70 - 130	104	70 - 130	<0.40	ug/L	NC	30
7275761	1,4-Dichlorobenzene	2021/04/05	119	70 - 130	121	70 - 130	<0.40	ug/L	NC	30
7275761	Acetone (2-Propanone)	2021/04/05	101	60 - 140	95	60 - 140	<10	ug/L	NC	30
7275761	Benzene	2021/04/05	95	70 - 130	95	70 - 130	<0.20	ug/L	0.23	30
7275761	Bromodichloromethane	2021/04/05	105	70 - 130	103	70 - 130	<0.50	ug/L	NC	30
7275761	Bromoform	2021/04/05	103	70 - 130	97	70 - 130	<1.0	ug/L	NC	30
7275761	Bromomethane	2021/04/05	110	60 - 140	106	60 - 140	<0.50	ug/L	NC	30
7275761	Carbon Tetrachloride	2021/04/05	101	70 - 130	104	70 - 130	<0.19	ug/L	NC	30
7275761	Chlorobenzene	2021/04/05	103	70 - 130	103	70 - 130	<0.20	ug/L	NC	30
7275761	Chloroform	2021/04/05	103	70 - 130	102	70 - 130	<0.20	ug/L	NC	30
7275761	cis-1,2-Dichloroethylene	2021/04/05	106	70 - 130	105	70 - 130	<0.50	ug/L	0.43	30
7275761	cis-1,3-Dichloropropene	2021/04/05	101	70 - 130	94	70 - 130	<0.30	ug/L	NC	30
7275761	Dibromochloromethane	2021/04/05	102	70 - 130	99	70 - 130	<0.50	ug/L	NC	30

			Matrix Spike		SPIKED BLANK		Method Blank		RPD	
QC Batch	Parameter	Date	% Recovery	QC Limits	% Recovery	QC Limits	Value	UNITS	Value (%)	QC Limits
7275761	Dichlorodifluoromethane (FREON 12)	2021/04/05	98	60 - 140	103	60 - 140	<1.0	ug/L	NC	30
7275761	Ethylbenzene	2021/04/05	97	70 - 130	99	70 - 130	<0.20	ug/L	NC	30
7275761	Ethylene Dibromide	2021/04/05	101	70 - 130	96	70 - 130	<0.19	ug/L	NC	30
7275761	Hexane	2021/04/05	103	70 - 130	106	70 - 130	<1.0	ug/L	NC	30
7275761	Methyl Ethyl Ketone (2-Butanone)	2021/04/05	112	60 - 140	102	60 - 140	<10	ug/L	NC	30
7275761	Methyl Isobutyl Ketone	2021/04/05	102	70 - 130	93	70 - 130	<5.0	ug/L	NC	30
7275761	Methyl t-butyl ether (MTBE)	2021/04/05	92	70 - 130	90	70 - 130	<0.50	ug/L	NC	30
7275761	Methylene Chloride(Dichloromethane)	2021/04/05	104	70 - 130	102	70 - 130	<2.0	ug/L	NC	30
7275761	o-Xylene	2021/04/05	93	70 - 130	96	70 - 130	<0.20	ug/L	0.96	30
7275761	p+m-Xylene	2021/04/05	98	70 - 130	100	70 - 130	<0.20	ug/L	0.20	30
7275761	Styrene	2021/04/05	101	70 - 130	103	70 - 130	<0.40	ug/L	NC	30
7275761	Tetrachloroethylene	2021/04/05	92	70 - 130	95	70 - 130	<0.20	ug/L	NC	30
7275761	Toluene	2021/04/05	99	70 - 130	101	70 - 130	<0.20	ug/L	0.38	30
7275761	Total Xylenes	2021/04/05					<0.20	ug/L	0.14	30
7275761	trans-1,2-Dichloroethylene	2021/04/05	102	70 - 130	103	70 - 130	<0.50	ug/L	2.5	30
7275761	trans-1,3-Dichloropropene	2021/04/05	114	70 - 130	104	70 - 130	<0.40	ug/L	NC	30
7275761	Trichloroethylene	2021/04/05	102	70 - 130	104	70 - 130	<0.20	ug/L	0.73	30
7275761	Trichlorofluoromethane (FREON 11)	2021/04/05	106	70 - 130	109	70 - 130	<0.50	ug/L	NC	30
7275761	Vinyl Chloride	2021/04/05	109	70 - 130	111	70 - 130	<0.20	ug/L	NC	30
7278016	1,1,1,2-Tetrachloroethane	2021/04/05	102	70 - 130	96	70 - 130	<0.50	ug/L	NC	30
7278016	1,1,1-Trichloroethane	2021/04/05	96	70 - 130	98	70 - 130	<0.20	ug/L	NC	30
7278016	1,1,2,2-Tetrachloroethane	2021/04/05	110	70 - 130	91	70 - 130	<0.50	ug/L	NC	30
7278016	1,1,2-Trichloroethane	2021/04/05	113	70 - 130	97	70 - 130	<0.50	ug/L	NC	30
7278016	1,1-Dichloroethane	2021/04/05	94	70 - 130	92	70 - 130	<0.20	ug/L	NC	30
7278016	1,1-Dichloroethylene	2021/04/05	94	70 - 130	98	70 - 130	<0.20	ug/L	NC	30
7278016	1,2-Dichlorobenzene	2021/04/05	101	70 - 130	94	70 - 130	<0.50	ug/L	NC	30
7278016	1,2-Dichloroethane	2021/04/05	103	70 - 130	91	70 - 130	<0.50	ug/L	NC	30
7278016	1,2-Dichloropropane	2021/04/05	100	70 - 130	94	70 - 130	<0.20	ug/L	NC	30
7278016	1,3-Dichlorobenzene	2021/04/05	99	70 - 130	98	70 - 130	<0.50	ug/L	NC	30
7278016	1,4-Dichlorobenzene	2021/04/05	116	70 - 130	113	70 - 130	<0.50	ug/L	NC	30
7278016	Acetone (2-Propanone)	2021/04/05	111	60 - 140	93	60 - 140	<10	ug/L	NC	30
7278016	Benzene	2021/04/05	91	70 - 130	90	70 - 130	<0.20	ug/L	NC	30

			Matrix Spike		SPIKED BLANK		Method Blank		RPD	
QC Batch	Parameter	Date	% Recovery	QC Limits	% Recovery	QC Limits	Value	UNITS	Value (%)	QC Limits
7278016	Bromodichloromethane	2021/04/05	105	70 - 130	96	70 - 130	<0.50	ug/L	NC	30
7278016	Bromoform	2021/04/05	113	70 - 130	94	70 - 130	<1.0	ug/L	NC	30
7278016	Bromomethane	2021/04/05	95	60 - 140	94	60 - 140	<0.50	ug/L	NC	30
7278016	Carbon Tetrachloride	2021/04/05	94	70 - 130	96	70 - 130	<0.20	ug/L	NC	30
7278016	Chlorobenzene	2021/04/05	98	70 - 130	94	70 - 130	<0.20	ug/L	NC	30
7278016	Chloroform	2021/04/05	101	70 - 130	97	70 - 130	<0.20	ug/L	NC	30
7278016	cis-1,2-Dichloroethylene	2021/04/05	101	70 - 130	97	70 - 130	<0.50	ug/L	NC	30
7278016	cis-1,3-Dichloropropene	2021/04/05	105	70 - 130	93	70 - 130	<0.30	ug/L	NC	30
7278016	Dibromochloromethane	2021/04/05	108	70 - 130	94	70 - 130	<0.50	ug/L	NC	30
7278016	Dichlorodifluoromethane (FREON 12)	2021/04/05	85	60 - 140	91	60 - 140	<1.0	ug/L	NC	30
7278016	Ethylbenzene	2021/04/05	90	70 - 130	91	70 - 130	<0.20	ug/L	NC	30
7278016	Ethylene Dibromide	2021/04/05	108	70 - 130	92	70 - 130	<0.20	ug/L	NC	30
7278016	F1 (C6-C10) - BTEX	2021/04/05					<25	ug/L	NC	30
7278016	F1 (C6-C10)	2021/04/05	89	60 - 140	98	60 - 140	<25	ug/L	NC	30
7278016	Hexane	2021/04/05	89	70 - 130	95	70 - 130	<1.0	ug/L	NC	30
7278016	Methyl Ethyl Ketone (2-Butanone)	2021/04/05	119	60 - 140	97	60 - 140	<10	ug/L	NC	30
7278016	Methyl Isobutyl Ketone	2021/04/05	121	70 - 130	97	70 - 130	<5.0	ug/L	NC	30
7278016	Methyl t-butyl ether (MTBE)	2021/04/05	98	70 - 130	90	70 - 130	<0.50	ug/L	NC	30
7278016	Methylene Chloride(Dichloromethane)	2021/04/05	105	70 - 130	99	70 - 130	<2.0	ug/L	NC	30
7278016	o-Xylene	2021/04/05	91	70 - 130	91	70 - 130	<0.20	ug/L	NC	30
7278016	p+m-Xylene	2021/04/05	91	70 - 130	93	70 - 130	<0.20	ug/L	NC	30
7278016	Styrene	2021/04/05	106	70 - 130	102	70 - 130	<0.50	ug/L	NC	30
7278016	Tetrachloroethylene	2021/04/05	88	70 - 130	91	70 - 130	<0.20	ug/L	NC	30
7278016	Toluene	2021/04/05	88	70 - 130	88	70 - 130	<0.20	ug/L	NC	30
7278016	Total Xylenes	2021/04/05					<0.20	ug/L	NC	30
7278016	trans-1,2-Dichloroethylene	2021/04/05	94	70 - 130	96	70 - 130	<0.50	ug/L	NC	30
7278016	trans-1,3-Dichloropropene	2021/04/05	106	70 - 130	90	70 - 130	<0.40	ug/L	NC	30
7278016	Trichloroethylene	2021/04/05	101	70 - 130	102	70 - 130	<0.20	ug/L	NC	30
7278016	Trichlorofluoromethane (FREON 11)	2021/04/05	95	70 - 130	100	70 - 130	<0.50	ug/L	NC	30
7278016	Vinyl Chloride	2021/04/05	94	70 - 130	99	70 - 130	<0.20	ug/L	NC	30
7279108	Dissolved Antimony (Sb)	2021/04/05	106	80 - 120	101	80 - 120	<0.50	ug/L	3.0	20
7279108	Dissolved Arsenic (As)	2021/04/05	99	80 - 120	100	80 - 120	<1.0	ug/L	1.0	20

QUALITY ASSURANCE REPORT(CONT'D)

			Matrix Spike		SPIKED BLANK		Method Blank		RPD	
QC Batch	Parameter	Date	% Recovery	QC Limits	% Recovery	QC Limits	Value	UNITS	Value (%)	QC Limits
7279108	Dissolved Barium (Ba)	2021/04/05	100	80 - 120	99	80 - 120	<2.0	ug/L	0.58	20
7279108	Dissolved Beryllium (Be)	2021/04/05	102	80 - 120	99	80 - 120	<0.40	ug/L	NC	20
7279108	Dissolved Boron (B)	2021/04/05	NC	80 - 120	97	80 - 120	<10	ug/L	0.45	20
7279108	Dissolved Cadmium (Cd)	2021/04/05	101	80 - 120	99	80 - 120	<0.090	ug/L	NC	20
7279108	Dissolved Chromium (Cr)	2021/04/05	97	80 - 120	97	80 - 120	<5.0	ug/L	NC	20
7279108	Dissolved Cobalt (Co)	2021/04/05	97	80 - 120	98	80 - 120	<0.50	ug/L	NC	20
7279108	Dissolved Copper (Cu)	2021/04/05	100	80 - 120	98	80 - 120	<0.90	ug/L	0.47	20
7279108	Dissolved Lead (Pb)	2021/04/05	97	80 - 120	99	80 - 120	<0.50	ug/L	NC	20
7279108	Dissolved Molybdenum (Mo)	2021/04/05	104	80 - 120	99	80 - 120	<0.50	ug/L	1.1	20
7279108	Dissolved Nickel (Ni)	2021/04/05	93	80 - 120	95	80 - 120	<1.0	ug/L	2.1	20
7279108	Dissolved Selenium (Se)	2021/04/05	99	80 - 120	97	80 - 120	<2.0	ug/L	NC	20
7279108	Dissolved Silver (Ag)	2021/04/05	86	80 - 120	96	80 - 120	<0.090	ug/L	NC	20
7279108	Dissolved Sodium (Na)	2021/04/05	NC	80 - 120	94	80 - 120	<100	ug/L	2.4	20
7279108	Dissolved Thallium (Tl)	2021/04/05	97	80 - 120	99	80 - 120	<0.050	ug/L	NC	20
7279108	Dissolved Uranium (U)	2021/04/05	99	80 - 120	100	80 - 120	<0.10	ug/L	0.35	20
7279108	Dissolved Vanadium (V)	2021/04/05	98	80 - 120	96	80 - 120	<0.50	ug/L	2.9	20
7279108	Dissolved Zinc (Zn)	2021/04/05	95	80 - 120	97	80 - 120	<5.0	ug/L	NC	20
7282282	F2 (C10-C16 Hydrocarbons)	2021/04/06	106	60 - 130	106	60 - 130	<100	ug/L	NC	30
7282282	F3 (C16-C34 Hydrocarbons)	2021/04/06	103	60 - 130	104	60 - 130	<200	ug/L	NC	30
7282282	F4 (C34-C50 Hydrocarbons)	2021/04/06	102	60 - 130	101	60 - 130	<200	ug/L	NC	30
7282283	1-Methylnaphthalene	2021/04/06	96	50 - 130	95	50 - 130	<0.050	ug/L	NC	30
7282283	2-Methylnaphthalene	2021/04/06	95	50 - 130	93	50 - 130	<0.050	ug/L	NC	30
7282283	Acenaphthene	2021/04/06	108	50 - 130	108	50 - 130	<0.050	ug/L	NC	30
7282283	Acenaphthylene	2021/04/06	105	50 - 130	104	50 - 130	<0.050	ug/L	NC	30
7282283	Anthracene	2021/04/06	109	50 - 130	110	50 - 130	<0.050	ug/L	NC	30
7282283	Benzo(a)anthracene	2021/04/06	115	50 - 130	112	50 - 130	<0.050	ug/L	NC	30
7282283	Benzo(a)pyrene	2021/04/06	96	50 - 130	94	50 - 130	<0.0090	ug/L	NC	30
7282283	Benzo(b/j)fluoranthene	2021/04/06	102	50 - 130	102	50 - 130	<0.050	ug/L	NC	30
7282283	Benzo(g,h,i)perylene	2021/04/06	102	50 - 130	101	50 - 130	<0.050	ug/L	NC	30
7282283	Benzo(k)fluoranthene	2021/04/06	103	50 - 130	101	50 - 130	<0.050	ug/L	NC	30
7282283	Chrysene	2021/04/06	116	50 - 130	114	50 - 130	<0.050	ug/L	NC	30
7282283	Dibenzo(a,h)anthracene	2021/04/06	99	50 - 130	96	50 - 130	<0.050	ug/L	NC	30

QUALITY ASSURANCE REPORT(CONT'D)

			Matrix Spike		SPIKED BLANK		Method Blank		RPD	
QC Batch	Parameter	Date	% Recovery	QC Limits	% Recovery	QC Limits	Value	UNITS	Value (%)	QC Limits
7282283	Fluoranthene	2021/04/06	118	50 - 130	118	50 - 130	<0.050	ug/L	NC	30
7282283	Fluorene	2021/04/06	110	50 - 130	110	50 - 130	<0.050	ug/L	NC	30
7282283	Indeno(1,2,3-cd)pyrene	2021/04/06	110	50 - 130	109	50 - 130	<0.050	ug/L	NC	30
7282283	Naphthalene	2021/04/06	99	50 - 130	98	50 - 130	<0.050	ug/L	NC	30
7282283	Phenanthrene	2021/04/06	113	50 - 130	113	50 - 130	<0.030	ug/L	NC	30
7282283	Pyrene	2021/04/06	117	50 - 130	117	50 - 130	<0.050	ug/L	NC	30

Duplicate: Paired analysis of a separate portion of the same sample. Used to evaluate the variance in the measurement.

Matrix Spike: A sample to which a known amount of the analyte of interest has been added. Used to evaluate sample matrix interference.

Spiked Blank: A blank matrix sample to which a known amount of the analyte, usually from a second source, has been added. Used to evaluate method accuracy.

Method Blank: A blank matrix containing all reagents used in the analytical procedure. Used to identify laboratory contamination.

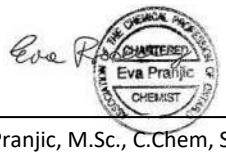
Surrogate: A pure or isotopically labeled compound whose behavior mirrors the analytes of interest. Used to evaluate extraction efficiency.

NC (Matrix Spike): The recovery in the matrix spike was not calculated. The relative difference between the concentration in the parent sample and the spike amount was too small to permit a reliable recovery calculation (matrix spike concentration was less than the native sample concentration)

NC (Duplicate RPD): The duplicate RPD was not calculated. The concentration in the sample and/or duplicate was too low to permit a reliable RPD calculation (absolute difference <= 2x RDL).

VALIDATION SIGNATURE PAGE

The analytical data and all QC contained in this report were reviewed and validated by the following individual(s).



Ewa Pranjic, M.Sc., C.Chem, Scientific Specialist

BV Labs has procedures in place to guard against improper use of the electronic signature and have the required "signatories", as per ISO/IEC 17025, signing the reports. For Service Group specific validation please refer to the Validation Signature Page.

Bureau Veritas Laboratories 100 – 36 Antares Dr. Nepean, ON, K2E 7W5 Phone: 613-274-0573 Website: www.bvlabs.com

Bureau Veritas Laboratories
6740 Campobello Road, Mississauga, Ontario Canada L5N 2L8 Tel (905) 817-5700 Toll-free 800-563-6266 Fax (905) 817-5777 www.bvlabs.com

CHAIN

30-Mar-21 16:33
Katherine Szozda
C184485
GID ENV-986

Page 1 of 1

INVOICE TO:	
Company Name:	#17498 exp Services Inc
Attention:	Accounts Payable
Address:	100-2650 Queensview Drive, Ottawa ON K2B 8H6
Tel:	(613) 688-1899 Fax: (613) 225-7337
Email:	AP@exp.com; Karen.Burke@exp.com

REPORT TO:	
Company Name:	
Attention:	Mark McCalla
Address:	
Tel:	Fax:
Email:	mark.mccalla@exp.com / Mark.devlin@exp.com

PROJECT INFORMATION:	
Quotation #:	B91718 Stream 3
P.O. #:	
Project:	OTT-00262765-A0
Project Name:	
Site #:	
Sampled By:	MAD

Order #: ...45
COC #: C#817845-03-01
Project Manager: Katherine Szozda

MOE REGULATED DRINKING WATER OR WATER INTENDED FOR HUMAN CONSUMPTION MUST BE SUBMITTED ON THE BV LABS DRINKING WATER CHAIN OF CUSTODY

Regulation 153 (2011): ☐ Table 1 ☐ Table 2 ☒ Table 3 ☐ Table ___ ☒ Res/Park ☐ Ind/Comm ☐ Agri/Other ☒ Medium/Fine ☐ Coarse ☐ For RSC

Other Regulations: ☐ CCME ☐ Reg 558 ☐ MISA ☐ PWQO ☐ Other ☐ Sanitary Sewer Bylaw ☐ Storm Sewer Bylaw Municipality ___ ☐ Reg 406 Table ___

Special Instructions:

Include Criteria on Certificate of Analysis (Y/N)? ___

Turnaround Time (TAT) Required:
Please provide advance notice for rush projects

Regular (Standard) TAT: ☒
(will be applied if Rush TAT is not specified)
Standard TAT = 5-7 Working days for most tests.
Please note: Standard TAT for certain tests such as BOD and Dioxins/Furans are > 5 days - contact your Project Manager for details.

Job Specific Rush TAT (if applies to entire submission)
Date Required: ___ Time Required: ___ ☐
Rush Confirmation Number: ___ (call lab for #)

ANALYSIS REQUESTED (PLEASE BE SPECIFIC)

#	Sample Barcode Label	Sample (Location) Identification	Date Sampled	Time Sampled	Matrix	Field Filtered (please circle): (Metals) / Hg / Cr VI	O.Reg 153 ICPMS Metals (Soil)	O.Reg 153 VOCs by HS & F1-F4 (Soil)	O.Reg 153 PAHs (Soil)	O.Reg 153 VOCs by HS & F1-F4 PHC	O.Reg 153 PAHs	O.Reg 153 Dissolved ICPMS Metals (Water)	VOC O.Reg 153				# of Bottles	Comments
1		MW21-1	March 30 2021	1:00pm	GW	yes				X	X	X					6	
2		MW21-2	↓	9:30am	↓	↓				↓	↓	↓					↓	
3		MW21-3	↓	12:00pm	↓	↓				↓	↓	↓					↓	
4		MW21-4	↓	10:30am	↓	↓				↓	↓	↓					↓	
5		MW21-5	↓	2:00pm	↓	↓				↓	↓	↓					↓	
6		Trip Blank			DI													
7													X				2	ON Ice
8																		Please dispose of
9																		Spike sample in
10																		cooler

RECEIVED IN OTTAWA

* RELINQUISHED BY: (Signature/Print)	Date: (YY/MM/DD)	Time	RECEIVED BY: (Signature/Print)	Date: (YY/MM/DD)	Time	# jars used and not submitted
Mark Devlin	21/03/30	4:30pm	Karen Jenny	2021/03/30	16:32	
[signature]			Lee GYUBHCN	2021/03/31	08:00	

Laboratory Use Only				
Time Sensitive	Temperature (°C) on Recei	Custody Seal	Yes	No
	2, 3, 3	Present		
		Intact	X	

* UNLESS OTHERWISE AGREED TO IN WRITING, WORK SUBMITTED ON THIS CHAIN OF CUSTODY IS SUBJECT TO BV LABS' STANDARD TERMS AND CONDITIONS. SIGNING OF THIS CHAIN OF CUSTODY DOCUMENT IS ACKNOWLEDGMENT AND ACCEPTANCE OF OUR TERMS WHICH ARE AVAILABLE FOR VIEWING AT WWW.BVLABS.COM/TERMS-AND-CONDITIONS.

* IT IS THE RESPONSIBILITY OF THE RELINQUISHER TO ENSURE THE ACCURACY OF THE CHAIN OF CUSTODY RECORD. AN INCOMPLETE CHAIN OF CUSTODY MAY RESULT IN ANALYTICAL TAT DELAYS.

** SAMPLE CONTAINER, PRESERVATION, HOLD TIME AND PACKAGE INFORMATION CAN BE VIEWED AT WWW.BVLABS.COM/RESOURCES/CHAIN-OF-CUSTODY-FORMS.

8, 9, 9 Tee-Yu

SAMPLES MUST BE KEPT COOL (< 10° C) FROM TIME OF SAMPLING UNTIL DELIVERY TO BV LABS

White: BV Labs · Yellow: Client

30-Mar-21 16:33

Katherine Szozda

C184485

GID ENV-986

Presence of Visible Particulate/Sediment

Maxxam Analytics
CAM FCD-01013/5
Page 1 of 1

When there is >1cm of visible particulate/sediment, the amount will be recorded in the field below

			Bottle Types																														
			Inorganics						Organics													Hydrocarbons							Volatiles				Other
	Sample ID	All	CrVI	CN	General	Hg	Metals (Diss.)	Organic 1 of 2	Organic 2 of 2	PCB 1 of 2	PCB 2 of 2	Pest/ Herb 1 of 2	Pest/ Herb 2 of 2	SVOC/ ABN 1 of 2	SVOC/ ABN 2 of 2	PAH 1 of 2	PAH 2 of 2	Dioxin /Furan	F1 Vial 1	F1 Vial 2	F1 Vial 3	F1 Vial 4	F2-F4 1 of 2	F2-F4 2 of 2	F4G	VOC Vial 1	VOC Vial 2	VOC Vial 3	VOC Vial 4	
1	MW21-1	TS																															
2	MW21-2	TS																															
3	MW21-4	TS																															
4																																	
5																																	
6																																	
7																																	
8																																	
9																																	
10																																	

Comments: EXCEPT DISH

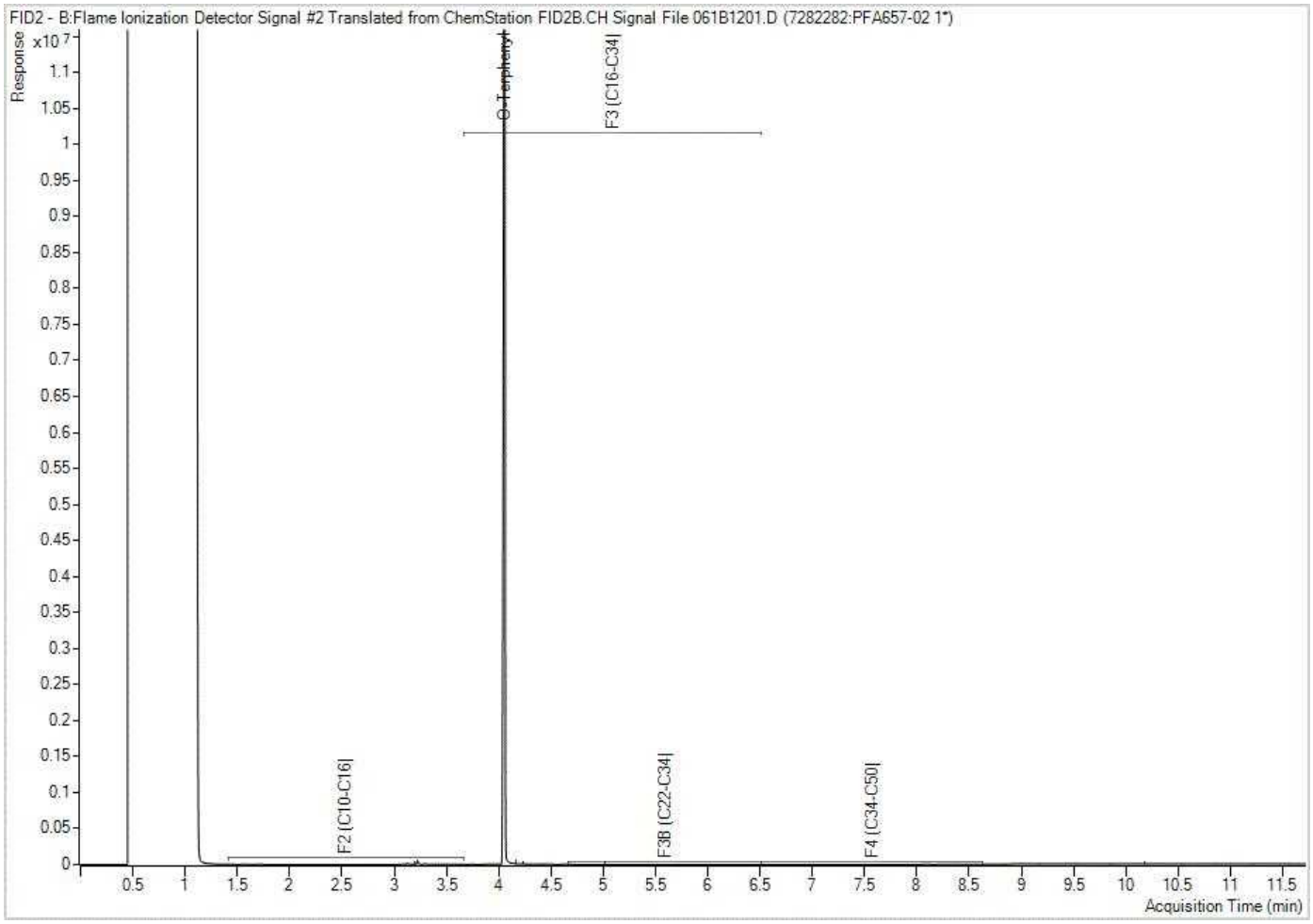
Legend:	
P	Suspended Particulate
TS	Trace Settled Sediment (just covers bottom of container or less)
S	Sediment greater than (>) Trace, but less than (<) 1 cm

Recorded By: (signature/print) [illegible]

BV Labs Job #: C184485
Report Date: 2021/04/06
BV Labs Sample: PFA657

exp Services Inc
Client Project #: OTT-00262765-A0
Client ID: MW21-1

Petroleum Hydrocarbons F2-F4 in Water Chromatogram

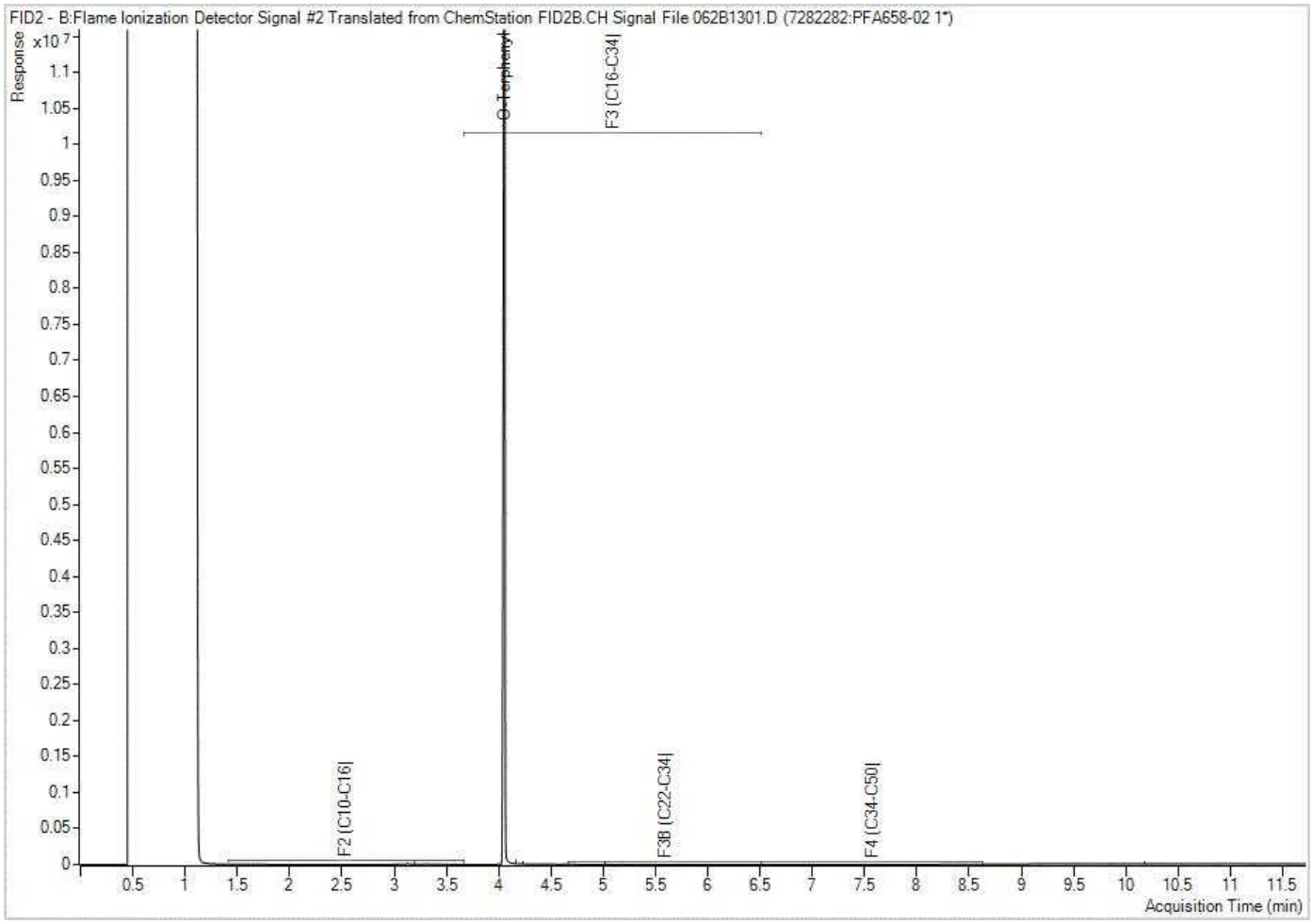


Note: This information is provided for reference purposes only. Should detailed chemist interpretation or fingerprinting be required, please contact the laboratory.

BV Labs Job #: C184485
Report Date: 2021/04/06
BV Labs Sample: PFA658

exp Services Inc
Client Project #: OTT-00262765-A0
Client ID: MW21-2

Petroleum Hydrocarbons F2-F4 in Water Chromatogram

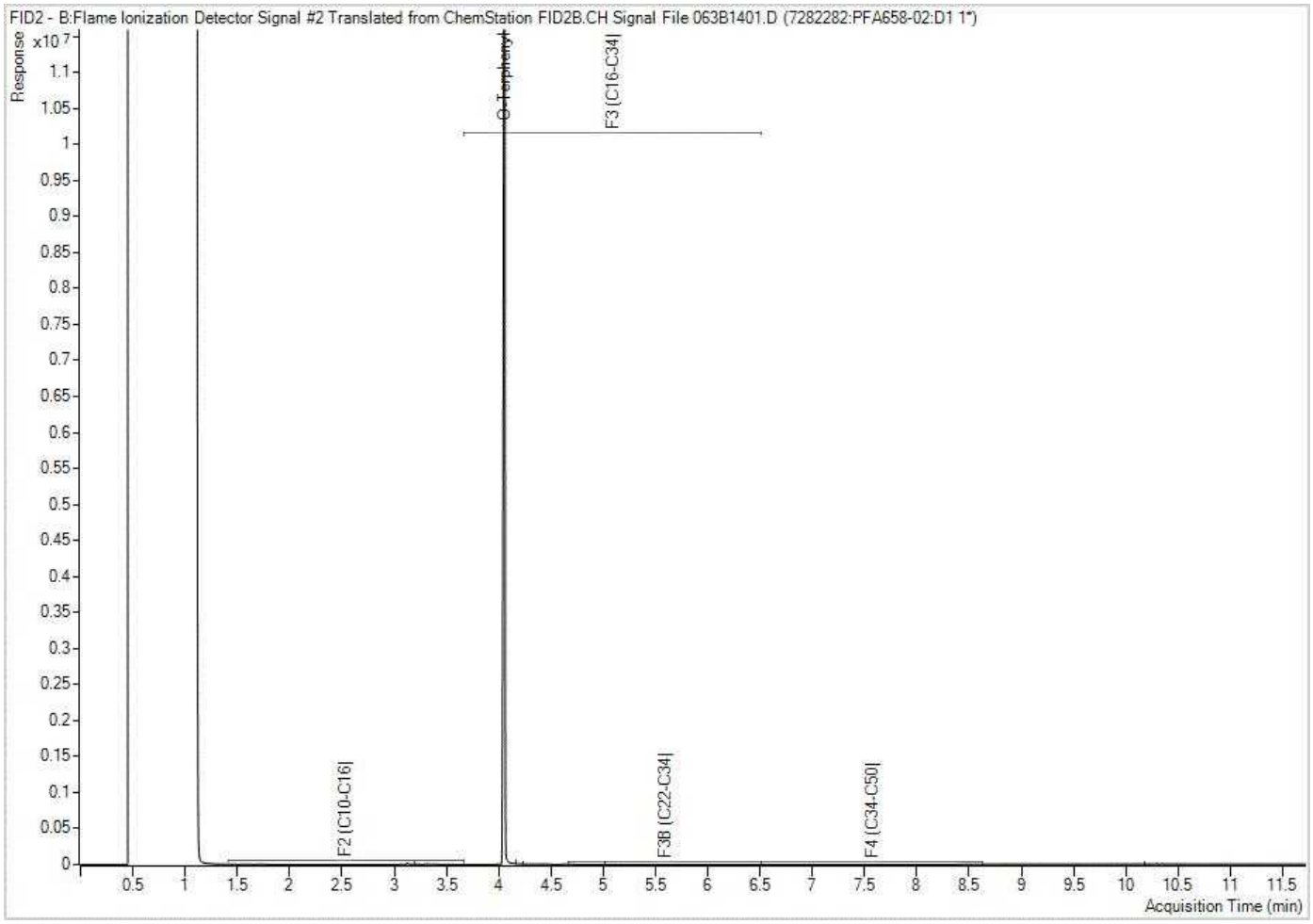


Note: This information is provided for reference purposes only. Should detailed chemist interpretation or fingerprinting be required, please contact the laboratory.

BV Labs Job #: C184485
Report Date: 2021/04/06
BV Labs Sample: PFA658 Lab-Dup

exp Services Inc
Client Project #: OTT-00262765-A0
Client ID: MW21-2

Petroleum Hydrocarbons F2-F4 in Water Chromatogram

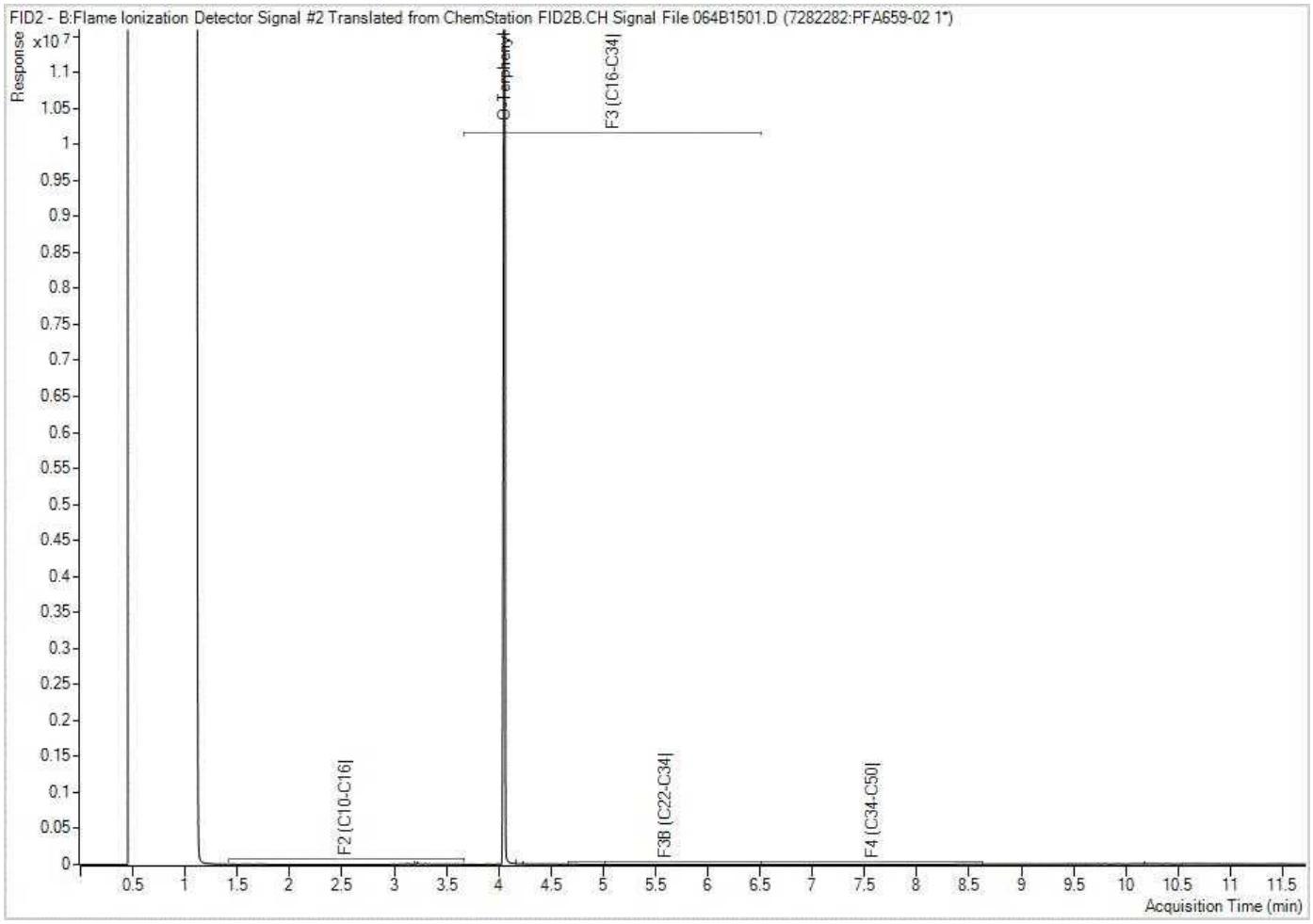


Note: This information is provided for reference purposes only. Should detailed chemist interpretation or fingerprinting be required, please contact the laboratory.

BV Labs Job #: C184485
Report Date: 2021/04/06
BV Labs Sample: PFA659

exp Services Inc
Client Project #: OTT-00262765-A0
Client ID: MW21-3

Petroleum Hydrocarbons F2-F4 in Water Chromatogram

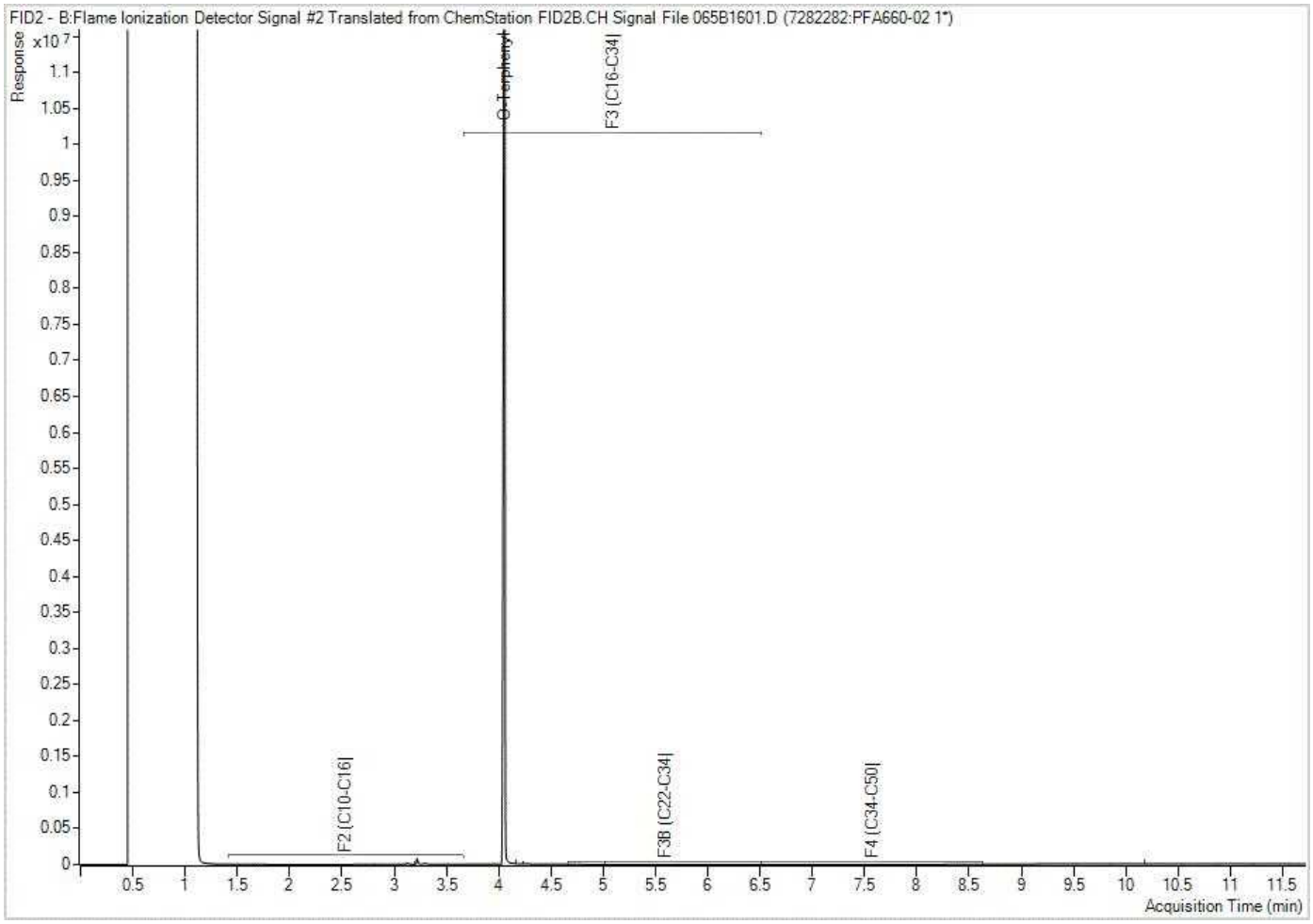


Note: This information is provided for reference purposes only. Should detailed chemist interpretation or fingerprinting be required, please contact the laboratory.

BV Labs Job #: C184485
Report Date: 2021/04/06
BV Labs Sample: PFA660

exp Services Inc
Client Project #: OTT-00262765-A0
Client ID: MW21-4

Petroleum Hydrocarbons F2-F4 in Water Chromatogram

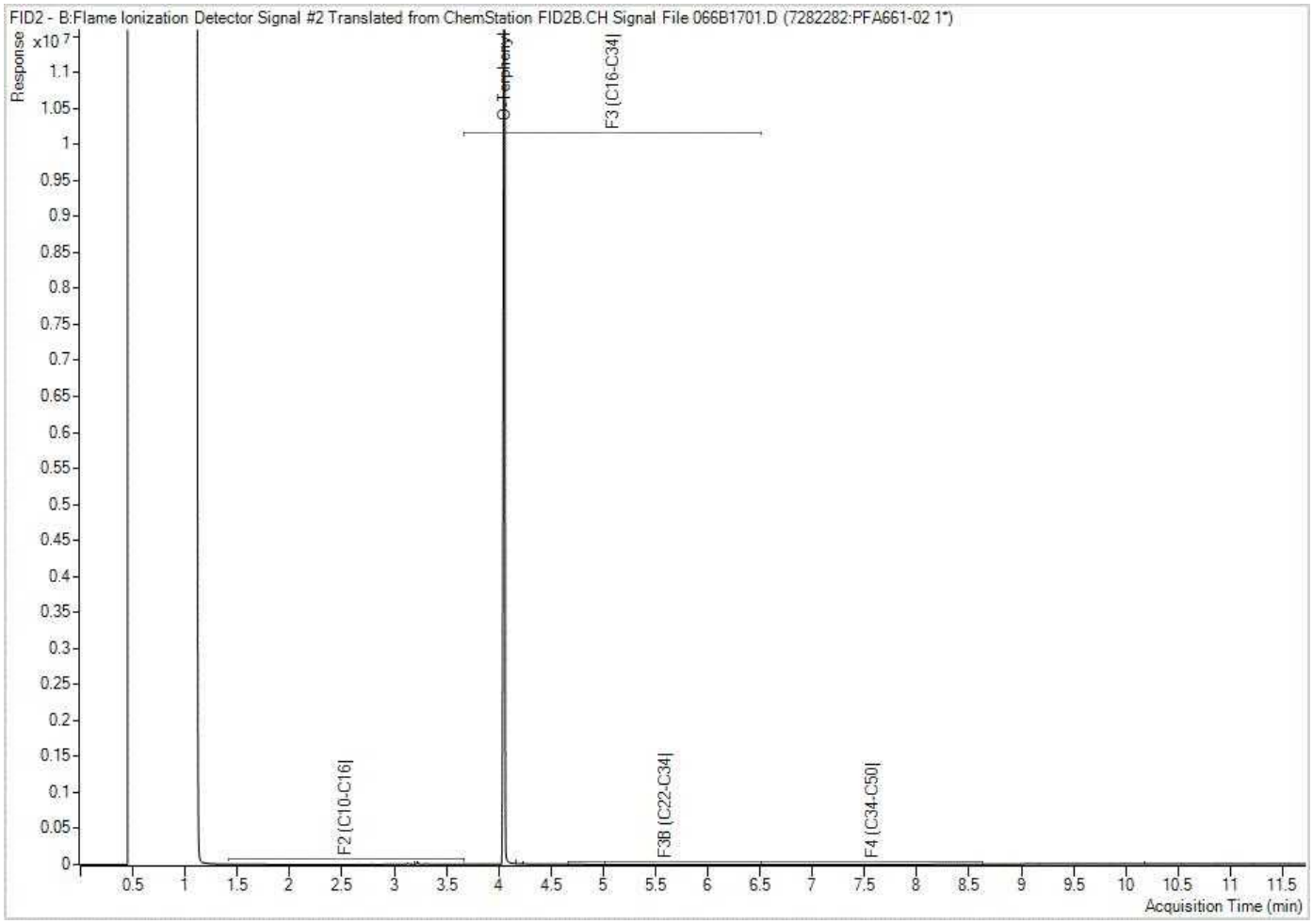


Note: This information is provided for reference purposes only. Should detailed chemist interpretation or fingerprinting be required, please contact the laboratory.

BV Labs Job #: C184485
Report Date: 2021/04/06
BV Labs Sample: PFA661

exp Services Inc
Client Project #: OTT-00262765-A0
Client ID: MW21-5

Petroleum Hydrocarbons F2-F4 in Water Chromatogram



Note: This information is provided for reference purposes only. Should detailed chemist interpretation or fingerprinting be required, please contact the laboratory.

Appendix G: Hydraulic Conductivity Tests

5938 Hazeldean Road, Ottawa **MW21-1** **21-Apr-21**
Rising Head Test Analysis Test 1
Hvorslev Method (1951)

H_0 3.22 m
(static water level in metres)

Time (sec)	Water Level (m)	Drawdown (m)	H-h/H-h0
0	5.52	2.30	1.00
60	5.41	2.19	0.95
120	5.34	2.12	0.92
180	5.31	2.09	0.91
240	5.28	2.06	0.90
300	5.27	2.05	0.89
600	5.21	1.99	0.87
900	5.18	1.96	0.85
1200	5.17	1.95	0.85
1500	5.16	1.94	0.84
1800	5.14	1.92	0.83
2400	5.12	1.90	0.83
24660	5	1.78	0.77
82260	4.79	1.57	0.68

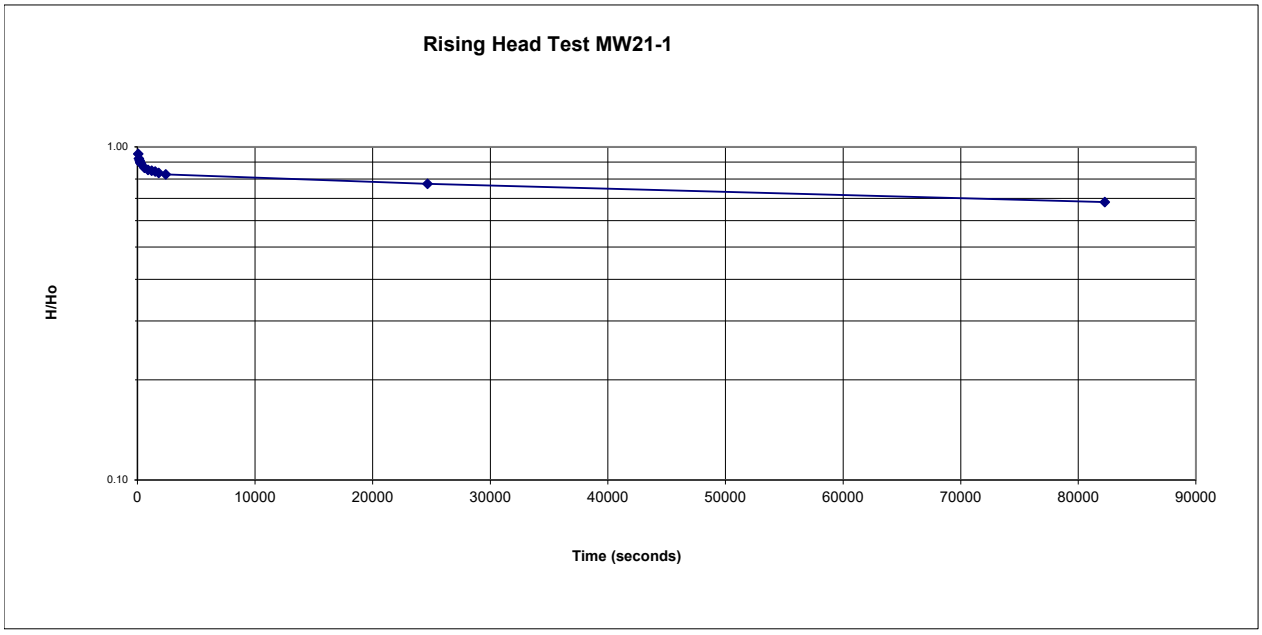
To constant= 0.37

L/R	ln(L/R)
50.0	3.912023

input
r= 0.025 (pipe radius)
L= 2.50 (effective screen length, if strattles water)
R= 0.05 (hole radius)
To= 287000

$$K = \frac{r^2 \ln(L/R)}{2(To)(L)}$$

K= 1.70E-09 m/sec or **1.70E-07 cm/sec**



5938 Hazeldean Road, Ottawa **MW21-4** **21-Apr-21**
Rising Head Test Analysis Test 2
Hvorslev Method (1951)

H_0 3.43 m
(static water level in metres)

Time (sec)	Water Level (m)	Drawdown (m)	H-h/H-h0	
0	5.5	2.07	1.00	
60	5.38	1.95	0.94	
120	5.33	1.90	0.92	
180	5.3	1.87	0.90	
240	5.29	1.86	0.90	
300	5.28	1.85	0.89	
600	5.24	1.81	0.87	
900	5.21	1.78	0.86	-0.43
1200	5.2	1.77	0.86	
1500	5.19	1.76	0.85	
1800	5.13	1.70	0.82	
2400	5.16	1.73	0.84	
24660	5	1.57	0.76	
82000	4.84	1.41	0.68	

L/R	ln(L/R)
44.8	3.802208

To constant= 0.37

input
r= 0.025 (pipe radius)
L= 2.24 (effective screen length, if strattles water)
R= 0.05 (hole radius)
To= 345000

$$K = \frac{r^2 \ln(L/R)}{2(To)(L)}$$

K= 1.54E-09 m/sec or **1.54E-07 cm/sec**