Final Report

Phase Two Environmental Site Assessment

759 Maple Avenue, Burlington, Ontario

Prepared for Structured Creations Inc.
by Arcadis
March 14, 2024

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1 Executive Summary

Arcadis Professional Services (Canada) Inc. (Arcadis) was retained by Structured Creations Inc. (Client) to compete a Phase Two Environmental Site Assessment (ESA) for the property with municipal address 759 Maple Avenue, Burlington, Ontario (referred to as the "Site"). The limits of the Site for this Phase Two ESA are illustrated on **Figure 1**.

It is our understanding that the proposed use for the Site is residential redevelopment. This investigation has been conducted in general accordance with the requirements of Ontario Regulation 153/04 (O. Reg. 153/04), as amended and is intended to support the filing of a Record of Site Condition (RSC), if required.

The following Phase Two ESA Report presents the findings of the investigation, conclusions formed based on those findings and subsequent recommendations given, based on industry best practice and Arcadis' knowledge of conditions at the time of the report.

The key relevant findings of this Phase Two ESA are summarized as:

- A total of three (3) boreholes were advanced at the Site to a maximum depth of approximately 7.6 metres below ground surface (mbgs).
- All three (3) of the boreholes were instrumented with a groundwater monitoring well.
- Subsurface stratigraphy at the Site generally consists primarily of silty sand overlying silty clay.
- Depth to groundwater at the Site ranged from 3.11mbgs and 3.52mbgs on March 1, 2024.
- Based on the March 1, 2024 groundwater elevations, the groundwater flow direction was interpreted to be to the southeast.
- A total of seven (7) soil samples (including one duplicate) were collected and analyzed for one or more of the following parameters: petroleum hydrocarbons fractions 1 to 4 (PHCs), benzene, toluene, ethylene, xylene (BTEX), and polycyclic aromatic hydrocarbons (PAHs).
- A total of four (4) groundwater samples (including one duplicate) were collected and analyzed for one or more of the following parameters: PHCs, BTEX and PAHs. A trip blank BTEX sample was also submitted for quality assurance / quality control (QA/QC) purposes.
- All tested soil and groundwater samples met their respective MECP Table 2 Standards.

Based on the results of the Phase Two ESA, all tested soil and groundwater samples met their respective Ministry of Environment, Conservation and Parks (MECP) Table 2 Standards and no further environmental work is required at this time.

An RSC is ready to be filed at this time.

2 Introduction

Arcadis Professional Services (Canada) Inc. (Arcadis) was retained by Structured Creations Inc. (Client) to conduct a Phase Two Environmental Site Assessment (ESA) for the property with municipal address 759 Maple Avenue, Burlington, Ontario (referred to as the "Site"). The limits of the Site for this Phase Two ESA are illustrated on **Figure 1**.

It is our understanding that the proposed use for the Site is residential redevelopment. This investigation has been conducted in general accordance with the requirements of Ontario Regulation 153/04 (O. Reg. 153/04), as amended and is intended to support the filing of a Record of Site Condition (RSC), if required.

2.1 Site Description

The Site is located along Maple Avenue, near the intersection of Hammond Street in the City of Burlington. The Site is currently occupied by a boarded-up abandoned residential building and empty backyard, with trees and grasses.

The legal description and Property Identification Number (PIN) of the Site is provided in **Table 2.1**.

Table 2.1 Legal Descriptions of the On-Site Properties

REGISTERED OWNER	PROPERTY ADDRESS	LEGAL DESCRIPTION	PIN #
Grant Burlie	759 Maple Avenue, Burlington	PT LT 50 , RCP PL99 , PART 2 & 3 , 20R5319 , S/T 554430 ; BURLINGTON	07090-0447(LT)

The Site is rectangular in shape and encompasses an area of 0.107355 hectares (ha).

2.2 Property Ownership

The current owner/client contact information is as follows in **Table 2.2**.

Table 2.2 Owner/Client Contact Information

OWNER INFORMATION	CLIENT INFORMATION
Grant Burlie P: (905) 906-9941 E: grantburlie@gmail.com	Darren Sanger-Smith Structured Creations Inc. 389 Pearl Street Burlington, ON L7R 2M8

2.3 Current and Proposed Future Uses

The Site is currently not occupied and was last used for residential purposes.

The proposed future use of the Site is for multi-unit residential. It is anticipated that the new development will be provided with municipal services meeting urban standards.

2.4 Applicable Site Condition Standards

The selection of the applicable site condition standards for the Phase Two Property is dependent on a number of Site conditions, outlined below in **Table 2.3**.

Table 2.3 Applicable Site Condition Standards

CRITERIA	DETAILS	APPLICABLE STANDARDS
Proposed Future Land Use	Residential	Residential
Groundwater Condition	Potable water wells were identified within the Study Area Conservatively, potable groundwater standards were applied.	Table 1, 2, 4, 6, 8
Soil Texture	No grain size samples were collected.	Coarse grained
Areas of Natural Significance	None present within 30m of the Phase Two Study Area.	All tables
Shallow Soil	Bedrock was not encountered within 2m during drilling activities.	Table 1, 2, 3, 4, 5, 8, 9
Distance to Water Body	The Phase Two Property is not located within 30m of a water body.	Table 1, 2, 3, 4, 5, 6, 7
Soil pH	Surficial soil at the Phase Two Property has a pH value within 5 to 9. Subsurface soil at the Phase Two Property has a pH value within 5 to 11.	All tables

Based on these characteristics of the Phase Two Property, conservatively, the Ministry of Environment, Conservation and Parks (MECP) Table 2 Standards in a Potable Groundwater Condition for residential/parkland/institutional use and coarse-grained soil texture were used to assess and characterize potential contaminants throughout this Phase Two ESA (MECP Table 2 Standards).

3 Background Information

3.1 Physical Setting

3.1.1 Water Bodies and Areas of Natural Significance

The Upper Hager Creek is located approximately 130m west of the Site and within the Study Area, while Lake Ontario is located approximately 1.4km southeast of the Site.

No areas of natural significance are present within the Study Area (MNR, 2024_.

3.1.2 Topography and Surface Water Drainage

The surface topography of the Site is relatively flat and lies at an approximate elevation of 92 metres above sea level (masl) (Natural Resources Canada, 2002). Within the Study Area and at a regional scale, the land is generally flat, with a gentle slope southeast towards Lake Ontario.

3.1.3 Wellhead Protection Areas

Based on a review of the MECP's Source Protection Information Atlas, the Site is not located within a wellhead protection area (WHPA) or SGRA (significant groundwater recharge area), however it is mapped to lie within a highly vulnerable aquifer (HVA). A Source Water Protection report is included as **Appendix A**.

3.1.4 Municipal Drinking Water

The Site is located in a developed area of the City of Burlington, which is provided with municipal water. However, as no application of intent to apply non-potable groundwater standards was submitted, potable groundwater standards were used to assess groundwater quality at the Site. These are considered more conservative that non-potable standards.

3.2 Past Investigations

Historical environmental investigations and reports have been completed for the Site, as follows:

1. *Arcadis (December 18, 2023), Phase One Environmental Site Assessment, 759 Maple Avenue, Burlington, Ontario, Reference No. 145252*

A summary of key information from this historical report is described below.

Phase One Environmental Site Assessment, Arcadis (2023):

- The EcoLog ERIS report identified a documented fire at the neighboring property located at 1205 Hammond Street, Burlington.
- The Site has been owned by private individuals since 1798, prior to which it was Crown land.
- A total of three (3) potentially contaminating activities (PCAs) were identified within the Study Area.
- The PCAs were evaluated to contribute to two (2) areas of potential environmental concern (APECs) on the Phase One Property.
- A Phase Two ESA was recommended to investigate the identified APECs.

4 Scope of the Investigation

4.1 Overview of Site Investigation

The Phase Two ESA was completed to support the proposed redevelopment of the property by the Client and has been conducted in accordance with the requirements of O. Reg. 153/04, as amended.

A breakdown of the scope of work completed by Arcadis in preparing this Phase Two ESA report is as follows:

- Previous reports and site-specific conditions were reviewed to prepare a Sampling and Analysis Plan (SAP).
- Prior to the environmental investigation, Arcadis arranged for public underground utility clearance through Ontario One Call. Additionally, a private underground utility clearance was also completed to clear individual borehole locations.
- A site-specific health and safety plan was completed, documented, and communicated with all parties present during field activities, prior to engaging in the work.
- Collection and analysis of soil samples from three (3) boreholes, in accordance with the SAP.
- Collection of groundwater samples from three (3) newly installed monitoring wells, in accordance with the SAP.
- Completed an elevation survey to establish vertical control of topography and groundwater levels.
- Maintained and executed on quality assurance / quality control measures, including duplicate samples, trip blank samples and equipment calibration.
- A review and evaluation of the data obtained during this investigation.
- Forming of conclusions and recommendations based on the information obtained during this investigation.
- Tabulated and illustrated the field data in relevant tables and figures.
- Compiled and consolidated the above information and records into a Phase Two ESA report, including the preparation of a Phase Two Conceptual Site Model (CSM).

4.2 Media Investigated

Based on the findings of the Phase One ESA (Arcadis, 2023), the media investigated during the Phase Two ESA included soil and groundwater.

The Sampling and Analysis Plan is provided in **Appendix B**.

4.2.1 Soil

A total of seven (7) soil samples, including one duplicate, were collected for analysis of one (1) or more of the following parameters: PHCs, BTEX and PAHs.

4.2.2 Groundwater

A total of four (4) groundwater samples (including one duplicate sample) were collected in accordance with the SAP for analysis of one or more of the following parameters: PHCs, BTEX and PAHs. Additionally, one (1) trip blank sample was submitted for analysis of BTEX, for Quality Assurance and Quality Control (QA/QC) purposes.

4.2.3 Sediment

Sediment sampling was not included in the scope of this Phase Two ESA, as no surface water body was present at the Phase Two Property.

4.3 Phase One Conceptual Site Model

4.3.1 Areas Where Potentially Contaminating Activities Have Occurred

Based on the findings of the Phase One ESA, two (2) potentially contaminating activities (PCAs) were identified on Site, with one (1) additional off-site PCA identified:

On-site PCAs:

- Historical home heating source unknown; conservatively assumed heating oil or coal potentially used in the past. #28 – Gasoline and Associated Products Storage in Fixed Tanks.
- Documented house fire in 2021. #24 – Fire Training.

One (1) off-Site PCA is summarized as follows:

- Documented house fire in February 2011. #24 – Fire Training.

The locations of the identified PCAs are shown on **Figure 2**.

4.3.2 Contaminants of Potential Concern

Contaminants of Potential Concern associated with the above PCAs include one or more of the following: PHCs, BTEX and PAHs.

4.3.3 Areas of Potential Environmental Concern

The noted PCAs are expected to contribute to two (2) APECs on the Site. The APECs are summarized in **Section 6.10.2**.

Based on the identified PCAs and their locations in relation to the Site, the following APECs in **Table 4.1** were identified at the Site.

Table 4.1 Areas of Potential Environmental Concern

AREA OF POTENTIAL ENVIRONMENTAL CONCERN (APEC)	LOCATION OF APEC ON PHASE ONE PROPERTY	POTENTIALLY CONTAMINATING ACTIVITY	LOCATION OF PCA (ON-SITE OR OFF-SITE)	CONTAMINANTS OF POTENTIAL CONCERN	MEDIA POTENTIALLY IMPACTED
APEC 1	Entire Site	#28. Gasoline and associated products storage in fixed tanks #24. Fire Training	On-site	PHCs, PAHs, BTEX	Soil and groundwater
APEC 2	Northern portion of Site	#24. Fire Training	Northeast adjacent property (1025 Hammond Street)	PAHs	Soil and/or groundwater

The locations of APECs are shown on **Figure 2**.

4.3.4 Potential for Underground Utilities to Affect Contaminant Distribution or Transport

Utilities are located along Maple Avenue and service the Site from the south. These utility corridors are not located between an identified PCA and the Site and should not affect contaminant distribution and transport at the Site.

4.3.5 Relevant Geological and Hydrogeological Information

Based on the Phase One ESA, the following physical setting information was identified:

- The surficial geology across the Site consists of coarse-grained glaciolacustrine deposits of sand and gravel (OGS, 2003).
- The bedrock underlying the Site is comprised of the Queenston Formation shale with minor limestone (OGS, 2005).
- The surface topography of the Site is relatively flat with a slight slope to the southeast at an elevation of approximately 92 masl (MNR, 2002).

4.3.6 Uncertainty or Absence of Information that Could Affect the Validity of the Model

No significant uncertainty or absence of information is expected to affect the validity of the CSM.

4.4 Deviations from Sampling and Analysis Plan

No deviations from the sampling and analyses plan were encountered.

4.5 Impediments

No impediments were encountered during the investigation for the Phase Two ESA.

5 Investigation Method

5.1 General Requirements

This section details the field methodology followed during the execution of this Phase Two ESA, including:

- Drilling
- Soil Sampling
- Field Screening
- Monitoring Well Installation
- Groundwater Field Measurement of Water Quality Parameters
- Groundwater Sampling
- Analytical Testing
- Residue Management Procedures
- Elevation Surveying
- Quality Assurance and Quality Control Measures

Prior to any intrusive ground disturbance, Arcadis arranged for public underground utility clearance through Ontario One Call. Additionally, a private underground utility clearance was also completed by a sub-contactor to clear individual borehole locations.

A Site-specific health and safety plan was completed, documented, and communicated with all parties present during field activities, prior to engaging in the work.

5.2 Drilling

Borehole drilling for this investigation was completed between January 29, 2024. Three (3) boreholes, MW1 to MW3, were advanced to a maximum depth of approximately 7.6 mbgs. All boreholes were completed with monitoring well installations.

The sampling locations including boreholes and monitoring wells are shown on **Figure 3**.

The boreholes were advanced using a conventional track-mounted drilling rig equipped with solid stem augers, supplied by a specialist drilling contractor, Tri-Phase Group. Tri-Phase utilized a track-mounted drill rig equipped with 2 ft split spoon samplers to drill the boreholes. Soil cuttings were stored in the metal barrels and left on-site for future management (refer to **Section 5.10**).

Field equipment including drill rigs and drilling rods were decontaminated prior to initial use, between the borehole locations and at the completion of drilling activities. The drilling equipment was manually scrubbed with a brush using a phosphate-free solution and then power washed to remove any adhered soils, foreign material and potential contaminants.

Monitoring well installation and soil sampling work was completed under the direct supervision of Arcadis staff, who logged the details of the soil stratigraphy, made visual observations and collected appropriate soil samples for chemical analysis. Sample collection frequency is illustrated in the borehole logs, included in **Appendix C**.

Dedicated nitrile gloves were used between samples to minimize the potential for cross-contamination. Sampling equipment was cleaned between borehole locations

5.3 Soil: Sampling

5.3.1 Soil Sampling Procedures

Soil samples were collected in accordance with accepted industry standards. Sampling, transportation, and storage procedures were conducted according to the MECP “Guidance on Sampling and Analytical Methods for Use at Contaminated Sites in Ontario”, May 1996, revised December 1996, as amended by Ontario Regulation 511/09 (O.Reg.511/09), and Ontario Regulation 153/04 (O.Reg.153/04), as amended.

Soil samples retrieved from boreholes were recovered using a split spoon sampler, for soil vapour measurement, soil classification and visual and olfactory observations. Soil samples were collected in duplicate for the purposes of screening and selection for laboratory analyses. One (1) set of soil samples were placed into pre-cleaned, laboratory-supplied glass sample jars/vials for chemical analyses and stored within individual bubble wrap bags in an ice-packed cooler to maintain a temperature below 10°C. The other set of soil samples were placed in sealed Ziploc™ plastic bags for vapour screening. An RKI Eagle combustible gas instrument (CGI) with methane elimination mode was used to field screen the organic vapour concentrations which were collected in the headspace of soil samples within the Ziploc™ bags.

VOCs and PHC F1 soil samples were immediately collected using the calibrated TerraCore soil sampler provided by the laboratory and methanol preservative procedures in the field in accordance with EPA 5035A as well as the amendments of O.Reg.153/04.

Non-detectable to a maximum value of 5 ppm head space readings were recorded for the PHC F1-F4 and BTEX soil samples.

Details of the soil sampling program are presented in both **Table 1** and the SAP in **Appendix B**.

5.4 Field Screening Measurements

A portion of each soil core was placed in a sealed soil bag and allowed to reach ambient temperature prior to field screening. Field screening measurements were made by inserting the instrument’s probe into the plastic bag while agitating the sample to promote volatilization of the soil gases. These readings provide a real-time indication of the relative concentration of combustible vapors present in the subsurface during drilling and are used to aid in the assessment of the vertical and horizontal extent of contamination and the selection of soil samples for laboratory analysis. Readings deemed to be representative of a moderate to high likelihood of the presence of volatiles were used to select soil samples for PHCs and BTEX analyses. Field screening results are reported in **Section 6.5**.

5.5 Monitoring Well Installation

Monitoring wells were installed under the supervision of Arcadis in accordance with Ontario Regulation 903 (O.Reg.903), amended to Ontario Regulation 128/03 (O.Reg.903). Installation was carried out by licensed well technicians from Tri-Phase Group. Monitoring wells are required to be decommissioned in accordance with O.Reg.903 when they are no longer required or in use.

The monitoring wells were constructed with a 51mm (2-inch) diameter, Schedule 40 polyvinyl chloride (PVC) riser and a 3.05m (10-foot), No. 10 slot size well screen. The well screens were installed to straddle the groundwater table based on wet/saturated soil conditions observed during drilling. A silica sand pack was placed in the annular space around the screen to a height of approximately 0.6m above the top of the screen. A bentonite seal was placed above the sand pack and extended to within 0.15m of the ground surface. An expandable J-plug was installed

on the casing to cover the top of the riser pipe. Monument protective casings were placed around each of the wells upon completion.

The monitoring wells were developed to purge sediments and/or any fluids that may have been introduced into the well during drilling and accumulated in the well, and to help “set-up” the sand pack to allow for the collection of groundwater samples representative of the surrounding formation. The monitoring wells were developed with dedicated Waterra tubing and foot valves. During monitoring well development, the wells were purged of at least three well casing volumes of groundwater in each well (or until dry) and allows the water to stabilize prior to the sampling event. In the case of a dry well during well development, the well was re-purged after spending adequate time for recovering the well by the shallow groundwater.

The monitoring wells were registered with the MECP by Tri-Phase Group on behalf of the property owner.

A borehole and monitoring well location map is included as **Figure 3**.

Monitoring well construction details are illustrated on the borehole logs included in **Appendix C**. A table of monitoring well installation data is included in **Table 2**.

5.6 Groundwater Monitoring

Static groundwater level measurements and water temperature were taken in all monitoring wells after well development to support water stabilization. A Solinst oil / water interface probe was used to assess the depth of the water and the depth / thickness of measurable free product, if present. The oil / water interface probe was cleaned with Alconox® and rinsed with distilled water between each well location to prevent a potential cross contamination. The depth to water was measured relative to a specific reference point in each monitoring well (i.e., the top of the monitoring well riser pipe). Based on the measured ground surface elevations, the groundwater elevation was calculated by subtracting the water level measurement from the reference point elevation, as presented in **Table 2.**

5.7 Groundwater Sampling

Groundwater samples were collected on March 1, 2024. Groundwater samples were collected from each of the new monitoring wells installed on the Site.

The following protocol was followed during groundwater sample collection:

- Each monitoring well was purged using the dedicated Waterra tubing and foot valves. During well development, field measurements of temperature, pH, dissolved oxygen (DO), and oxidation reduction potential (ORP) were taken and recorded. Prior to collecting the sample at each monitoring well, groundwater was allowed to recover and settle to reduce sediment agitation and mobilization in volatile and semi-volatile samples.
- Appropriate QA/QC protocols (e.g., nitrile gloves, etc.) were employed, as outlined in **Section 5.12**.
- Groundwater samples were retrieved via a low-flow peristaltic spectra scientific pump to collect representative groundwater samples at the well screen depth at each well. To minimize drawdown at each well interval, the pumping rate was adjusted to keep the drawdown at approximately 0.3m or less.
- Samples were collected in laboratory-supplied sample containers specific to the analytical parameters, stored in coolers chilled with ice, and submitted to the laboratory under chain-of-custody protocol for analyses.

- Any groundwater samples proposed for analysis of dissolved metals, including mercury, chromium (VI) and cyanide, were passed through a 0.45µm filter in the field prior to collection in the appropriate laboratory supplied container.

Laboratory analyses were conducted on four (4) groundwater samples including one (1) field duplicate, and one (1) BTEX trip blank was submitted for QA/QC purposes.

Details of the groundwater sampling program are presented in both **Table 1** and the SAP in **Appendix B**.

5.8 Sediment Sampling

Sediment sampling was not completed during the Phase Two ESA.

5.9 Analytical Testing

Laboratory analytical methods, protocols and procedures were carried out in accordance with the Protocol for Analytical Methods Used in the Assessment of Properties under Part XV.1 of the *Environmental Protection Act*, dated March 9, 2004, and in accordance with O.Reg.511/09 and Ontario Regulation 269/11 (O.Reg.269/11).

Soil and groundwater samples were submitted to ALS Canada Ltd. (ALS) in Mississauga. ALS is accredited by the Canadian Association for Laboratory Accreditation (CALA), in accordance with ISO/IEC 17025:2005 – "General Requirements for the Competence of Testing and Calibration Laboratories" for the analyses of all parameters for all samples in the scope of work for which SCS have been established under O.Reg.153/04.

The laboratory Certificates of Analysis are provided in **Appendix D**.

5.10 Residue Management Procedures

The drilling program and well development resulted in the generation of soil and groundwater residue. Soil cuttings, residual fluids from the cleaning of equipment and groundwater pumped during well development were stored in sealed drums.

It is understood that all generated residues will be removed by a licensed waste removal contractor or as part of the development process, as applicable.

5.11 Elevation Surveying

The ground surface elevations of the borehole and monitoring well locations were surveyed using a Trimble R6 Global Positioning System (GPS) Receiver. The Trimble R6 GPS Receiver utilizes the Can-Net Virtual Reference Station (VRS) Network to deliver GPS data in real-time in the field to determine position and elevation. The Can-Net VRS Network contains 275 stations across Canada, with at least five (5) in the Greater Toronto Area and allows for centimeter-level accuracy. Using real-time kinematic surveying, the Trimble R6 GPS Receiver is able to achieve horizontal accuracies of 8 millimeters (mm) + 1ppm root mean square (RMS) and vertical accuracies of 15mm + 1 ppm RMS.

The ground surface easting, northing and elevation for all borehole and/or monitoring wells are summarized in **Table 2**.

5.12 Quality Assurance and Quality Control Measures

A QA/QC program was developed as part of the Sampling and Analysis Plan to maintain the integrity of the Phase Two ESA field investigations. The objective of the QA/QC program was to ensure that collected field data were representative of the accurate Site conditions and were

developed in accordance with the Protocol for Analytical Methods Used in the Assessment of Properties under Part XV.1 of the *Environmental Protection Act*.

The containers and preservatives used in the collection of soil and groundwater samples were supplied by the chosen laboratory, ALS. Sample containers were labelled in the field, given a moniker unique to the sample location, depth, contaminant of concern and date/time of collection. The sample ID was transferred to laboratory supplied chain of custody forms, as well as field note sheets.

The soil samples intended to be submitted for analysis of volatile compounds were preserved in laboratory supplied methanol vials. Soil and groundwater samples were placed in a laboratory supplied cooler, with cooling agents present, to control temperature prior to deliver to the laboratory.

The stainless-steel sampling tools were decontaminated between sampling locations by cleaning with a brush to remove loose soil and/or debris, washed with a dilute solution of Alconox, rinsed with potable water and distilled water, rinsed with a methanol solution, and allowed to air dry.

Field duplicate samples for soil and groundwater were submitted to ALS for chemical analysis at a minimum rate of one (1) duplicate sample for every ten (10) samples from the sampled medium, and at a minimum of one (1) duplicate sample per every sampling event (day).

The QA/QC program was carried out in accordance with the SAP.

6 Review and Evaluation

6.1 Geology

Topsoil was encountered at all borehole locations, which was described to be dark brown, loose and with trace sand and organics.

The topsoil was underlain with a silty sand material that was observed to be light brown, loose and moist. The unit transitioned to wet at depths between approximately 2mbgs and 3mbgs, which may be due to a perched groundwater layer.

Native silty clay was observed below the silty sand, which consisted of a brownish-grey material that transitioned to grey at approximately 5mbgs to 6mbgs. The material was noted to be very stiff. Groundwater was observed at the approximate contact between the silty sand and silty clay.

Hydrogeological characteristics of the above stratigraphic units are as follows:

- Topsoil/Fill Material – Unsaturated zone
- Silty Sand – Unconfined contact zone aquifer
- Silty Clay – Aquitard

A cross-section location map is included as **Figure 4**. Geological cross sections A-A' and B-B' are provided as **Figures 5a** and **5b,** respectively**.**

6.2 Groundwater Elevations and Flow Direction

Groundwater level measurements were conducted on March 1, 2024. The depth to groundwater in the monitoring wells ranged from 3.11mbgs and 3.52mbgs across the Site. Based on the measured groundwater elevations on March 1, 2024, the groundwater flow direction in the shallow aquifer at the Site is interpreted to be to the southeast.

At each of the three (3) boreholes drilled on the Site, the stratigraphy to the top of the water table is similar and the Site covers a small area. As a result, temporal variability in groundwater flow direction is not expected.

Based on the completed utility locates and Site observations, underground utilities are not expected to significantly affect contaminant distribution or transport within the Phase Two Study Area.

A table of all monitored groundwater levels is included as **Table 2**. Groundwater contours and flow direction are depicted, visually, on **Figure 6**.

6.3 Groundwater Hydraulic Gradients

Based on the groundwater records on March 1, 2024, the horizontal hydraulic gradient for the investigated aquifer at the Site is approximately 0.015m/m southeast.

Vertical gradients could not be established since nested monitoring wells were not installed as part of this investigation.

6.4 Soil Texture

No grain size analysis was conducted as part of this investigation.

Conservatively, coarse-grained standards have been used to assess soil and groundwater quality at the Site.

6.5 Soil Field Screening Results

Head space vapour screening was conducted for all retrieved soil samples using a combustible gas detector (RKI Eagle) in methane elimination mode. The results of the soil field screening and corresponding sample depth intervals are provided on the borehole logs provided in **Appendix C**. Elevated CGI readings (i.e., greater than 100ppm) were not observed in any of the samples collected.

No other visual or olfactory evidence of impact was identified.

6.6 Soil Quality

A total of seven (7) soil samples (including one (1) duplicate sample) were collected and submitted for chemical analysis. Of one (1) or more of the following parameters: PHCs, BTEX and PAHs.

All tested soil samples met their respective MECP Table 2 Standards.

Soil quality results are summarized in **Tables 3a** and **3b**.

6.7 Groundwater Quality

A total of four (4) groundwater samples (including one (1) duplicate sample) were collected and submitted for chemical analysis to ALS. Additionally, one (1) trip blank sample was submitted for analysis of BTEX, for QA/QC purposes.

All tested groundwater samples met their respective MECP Table 2 Standards.

Groundwater quality results are summarized in **Tables 4a** and **4b**.

6.8 Sediment Quality

Sediment sampling was not completed as part of this investigation.

6.9 Quality Assurance and Quality Control Results

One (1) field duplicate soil sample and one (1) field duplicate groundwater sample were collected and submitted for chemical analyses. Details of duplicate sampling and analyses are presented in the **Table 6.1** below.

Table 6.1 QA/QC Results

SAMPLE ID		MEDIA	TEST CONDUCTED
DUPLICATE	ORIGINAL		
DUP1	BH3-SS2-24	Soil	PAHs
DUP2	MW2	Groundwater	BTEX

Laboratory quality control limits for duplicate, method blank, method blank spike, matrix spike and surrogate recoveries were within the acceptable limits.

All samples were handled in accordance with the Protocol for Analytical Methods Used in the Assessments of Properties under Part XV.1 of the *Environmental Protection Act* with respect to:

- Holding time
- Preservation method

- Storage requirements
- Container type

Based on the review of soil and groundwater results, as well as the laboratory internal QA/QC procedures and results, Arcadis certifies that:

- All Certificates of Analysis received comply with subsection 47 (3) pursuant to clause 47 (2) (b) of the regulation.
- A Certificate of Analysis was received for each sample submitted for analysis.
- All Certificates of Analysis received have been included in full and are included as **Appendix D**.

In summary, the results and interpretations of this Phase Two ESA were not affected by any QA/QC concerns and the overall objectives of the investigation, and this Phase Two ESA were met.

6.10 Phase Two Conceptual Site Model

The Phase Two Conceptual Site Model (CSM) has been prepared to serve as a narrative description and assessment of the environmental conditions of the Site prior to any actions taken to reduce the concentration of contaminants on, in or under the Phase Two Property.

Maximum concentrations for tested soil and groundwater samples are included in **Table 5** and **Table 6**, respectively.

6.10.1 Identified Potentially Contaminating Activity

A total of three (3) PCAs were identified within the Phase One Study Area as shown in **Table 6.2**.

Table 6.2 PCAs within the Study Area

PCA	LOCATION RELATIVE TO SITE
#24. Fire Training	On-site
#28. Gasoline and Associated Products Storage in Fixed Tanks	On-site
#24. Fire Training	Northeast adjacent property (1025 Hammond Street)

The locations of the PCAs are shown on **Figure 2.**

6.10.2 Areas of Potential Environmental Concern

An evaluation of the identified PCAs interprets them to contribute to two (2) APECs at the Phase Two Property as shown in **Table 6.3**.

Table 6.3 Areas of Potential Environmental Concern

APEC	LOCATION ON RSC PROPERTY	PCA NUMBER	LOCATION OF PCA	COPC	MEDIA POTENTIALLY IMPACTED
APEC 1	Entire Site	#28. Gasoline and associated products storage in fixed tanks #24. Fire Training	on-site	PHCs, PAHs, BTEX	Soil and groundwater
APEC 2	Northern portion of Site	#24. Fire Training	Northeast adjacent property (1025 Hammond Street)	PAHs	Soil and/or groundwater

The locations of the APECs are shown on **Figure 2**.

6.10.3 Subsurface Structures and Utilities Affecting Contaminant Distribution and Transport

Utilities are located along Maple Avenue and service the Site from the south. These utility corridors are not located between an identified PCA and the Site and should not affect contaminant distribution and transport at the Site.

6.10.4 Stratigraphy from Ground Surface to the Deepest Aquifer or Aquitard Investigated

Topsoil was encountered at all borehole locations, which was described to be dark brown, loose and with trace sand and organics.

The topsoil was underlain with a silty sand material that was observed to be light brown, loose and moist. The unit transitioned to wet at depths between approximately 2mbgs and 3mbgs, which is likely due to a perched groundwater layer.

Native silty clay was observed below the silty sand, which consisted of a brownish-grey material that transitioned to grey at approximately 5mbgs to 6mbgs. The material was noted to be very stiff.

A cross section location map is included as **Figure 4** and geological cross-sectional view of the Site is presented on **Figure 5a** and **5b**.

6.10.5 Hydrogeological Characteristics, Including Aquifers, Aquitards, Lateral and Vertical Hydraulic Gradients

Hydrogeological characteristics of the above stratigraphic units are as follows:

- Topsoil/Fill Material – Unsaturated zone
- Silty Sand – Unconfined contact zone aquifer
- Silty Clay - Aquitard

Based on the groundwater records on March 1, 2024, the horizontal hydraulic gradient at the Site is approximately 0.015 m/m southeast.

Vertical gradients could not be established since nested monitoring wells were not installed as part of this investigation.

A groundwater contour map is presented on **Figure 6**.

6.10.6 Approximate Depth to Bedrock

Bedrock was not encountered during drilling activities undertaken as part of the Phase Two ESA. Based on the Oak Ridges Moraine Groundwater Program's (ORMGP) regional overburden thickness data, the bedrock is expected to be encountered at approximately 81masl (10mbgs).

6.10.7 Approximate Depth to Water Table

Based on hydrogeological data collected as part of the Phase Two ESA, the depth to the investigated groundwater table is between approximately 3.11mbgs and 3.52mbgs.

6.10.8 Any Respect in which Section 35, 41 or 43.1 of the Regulation Applies to the Property

The Site is located in an urban area where it is likely that the Site and surrounding Study Area are supplied by municipal water. However, conservatively, potable groundwater standards have been applied.

The Phase Two Property is not considered an environmentally sensitive area, per Section 41 of the Regulation, as:

- The RSC Property is not located within an area of natural significance.
- The RSC Property does not include or is adjacent to an area of natural significance or part of such an area.
- The QP is not of the opinion that it is appropriate to apply this Section of the Regulation to the RSC Property.
- Surficial and subsurface soil samples are within acceptable pH ranges for non-environmentally sensitive sites.

Section 43.1 of the Regulation does not apply to the Phase Two Property as:

- More than two-thirds (2/3) of the lateral area of the Phase Two Property can be characterized with an overburden thickness of more than 2m deep; and
- The Phase Two Property does not include land that is within 30m of a water body.

The MECP Table 2 Standards for residential/parkland/institutional property were applied to assess the environmental condition of the Phase Two Property.

6.10.9 Imported Soils at the Phase Two Property

To Arcadis' best knowledge, no significant source of fill material was ever brought from another property and placed on, in or under the Phase Two Property.

No excess soil was brought and finally placed on, in or under the Phase Two Property as part of the Phase Two ESA.

6.10.10 Approximate Locations of Any Proposed Buildings and Other Structures

Arcadis understands that the proposed future use of the Site is for multi-unit residential, however the approximate locations of proposed buildings is not currently known.

6.10.11 Each Area Where a Contaminant is Present on, in or under the Phase Two Property at a Concentration Greater than the Applicable Site Condition Standard

No contaminants were identified at a concentration above the MECP Table 2 Standards.

7 Conclusions

A total of two (2) APECs were investigated as part of this Phase Two ESA:

- Three (3) boreholes were advanced to a maximum depth of approximately 7.6mbgs.
- All three (3) boreholes were completed with a monitoring well installation.
- Depth to groundwater at the Site ranged between approximately 3.11mbgs and 3.52mbgs on March 1, 2024.
- A total of seven (7) soil samples (including one (1) duplicate sample were collected and submitted for analysis of one or more of the following parameters: PHCs, BTEX and PAHs.
- A total of four (4) groundwater samples (including one (1) duplicate sample) were collected and submitted for analysis of one or more of the following parameters: PHCs, BTEX and PAHs.
- A trip blank sample was submitted for analysis of BTEX for QA/QC purposes.
- All tested samples met their respective MEPC Table 2 Standards.

Based on the results of the Phase Two ESA, all tested soil and groundwater samples met their respective MECP Table 2 Standards and no further environmental work is required at this time.

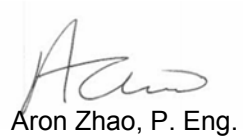
An RSC is ready to be filed at this time.

7.1 Signatures

The findings contained herein have been produced in accordance with generally accepted environmental site assessment protocol by a QP, in accordance with Ontario Regulation 153/04, as amended. Arcadis believes that the data presented in this report concerning the Site is reliable at the time it was collected.

Prepared by:

ARCADIS PROFESSIONAL SERVICES (CANADA) INC.



Aron Zhao, P. Eng.
Environmental Engineer



Steve Davies, M.Sc., P.Geo., QP_{ESA}.
Senior Geoscientist

8 References

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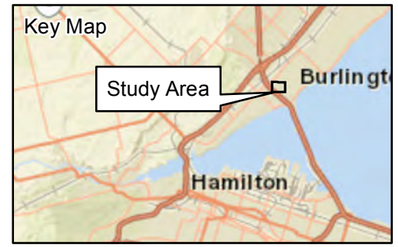
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York, Peel, Durham, Toronto and The Conservation Authorities Moraine Coalition (YPDT-CAMC), Oak Ridges Moraine Groundwater Program, 2024.

Figures





Legend (Plan)

- Site
- Study
- Streets
- Watercourse

Phase Two ESA
759 Maple Avenue
Burlington, Ontario

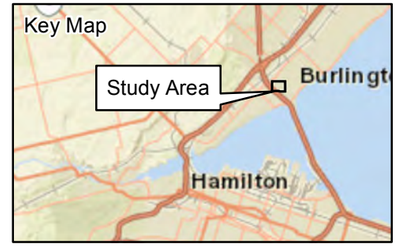
ARCADIS

Site Location Map

Project No.:	Scale:
145252	1:2,500
Figure No.: 1	Date: February 2024

DVG 2024-02-12 C:\Users\aron.zhao\OneDrive - ARCADIS\Desktop\Temporary\Mike Crough\759 Maple, Burlington\P2\01 Site Location.mxd





Legend (Plan)

- Site
- Study Area
- APEC 1
- APEC 2
- Streets
- Watercourse
- PCAs

Phase Two ESA
759 Maple Avenue
Burlington, Ontario

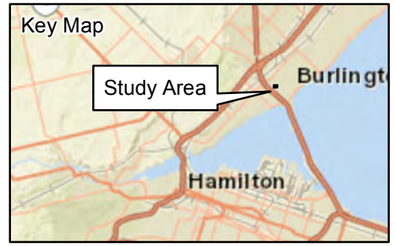
ARCADIS

Conceptual Site Model Map

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Figure No.:	Date:
2	February 2024

DVG 2024-03-13 C:\Users\aron.zhao\OneDrive - ARCADIS\Desktop\Temporary\Mike Crough\759 Maple, Burlington\P2\02 CSM.mxd





Legend (Plan)

- Monitoring Wells
- Site
- Streets

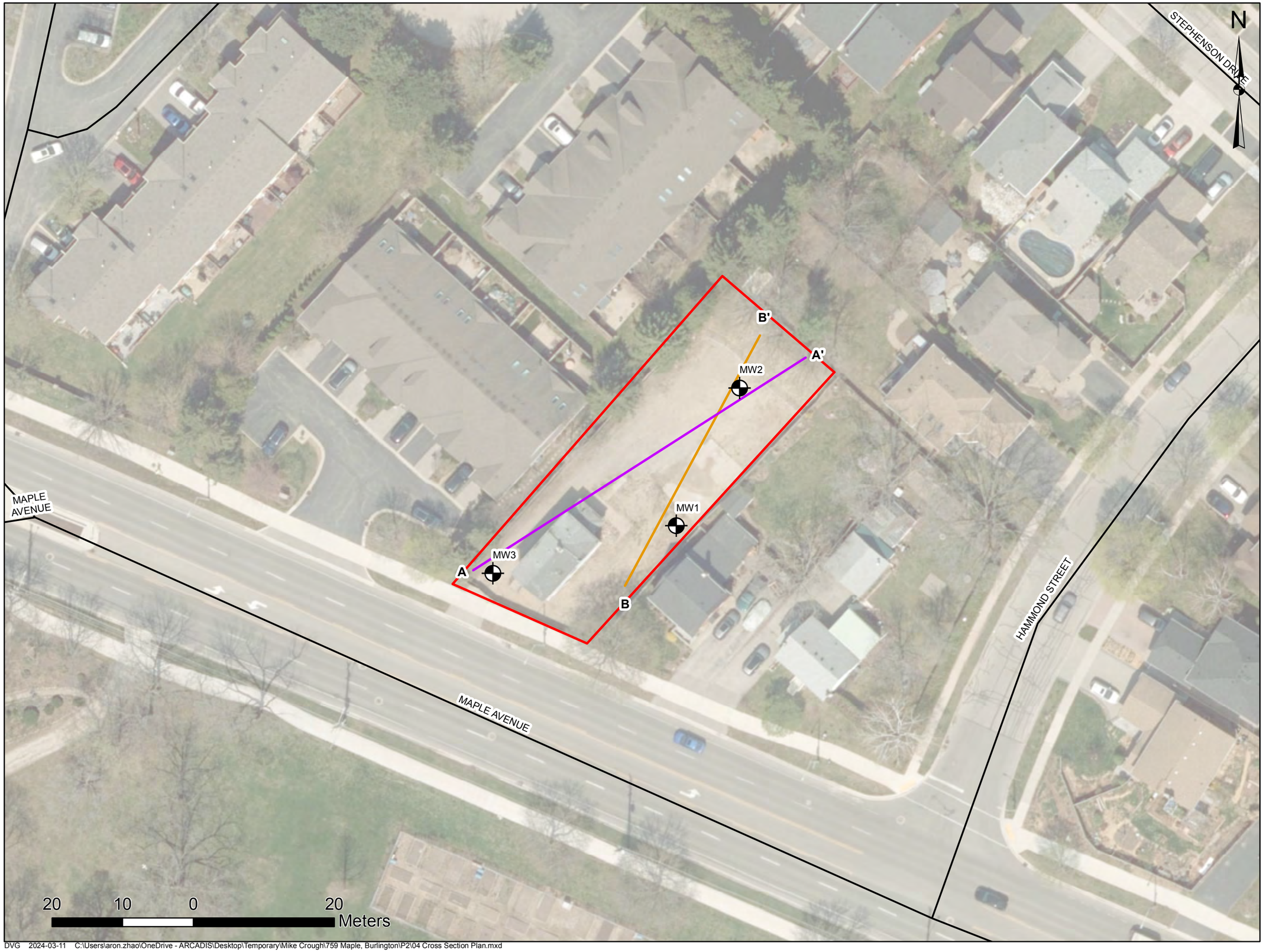
Phase Two ESA
759 Maple Avenue
Burlington, Ontario

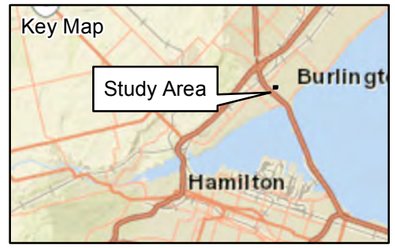
ARCADIS

Borehole and Monitoring Well Location Plan

Project No.:	Scale:
145252	1:500
Figure No.:	Date:
3	February 2024

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Legend (Plan)

- Monitoring Wells
- A-A'
- B-B'
- Site
- Streets

Phase Two ESA
759 Maple Avenue
Burlington, Ontario

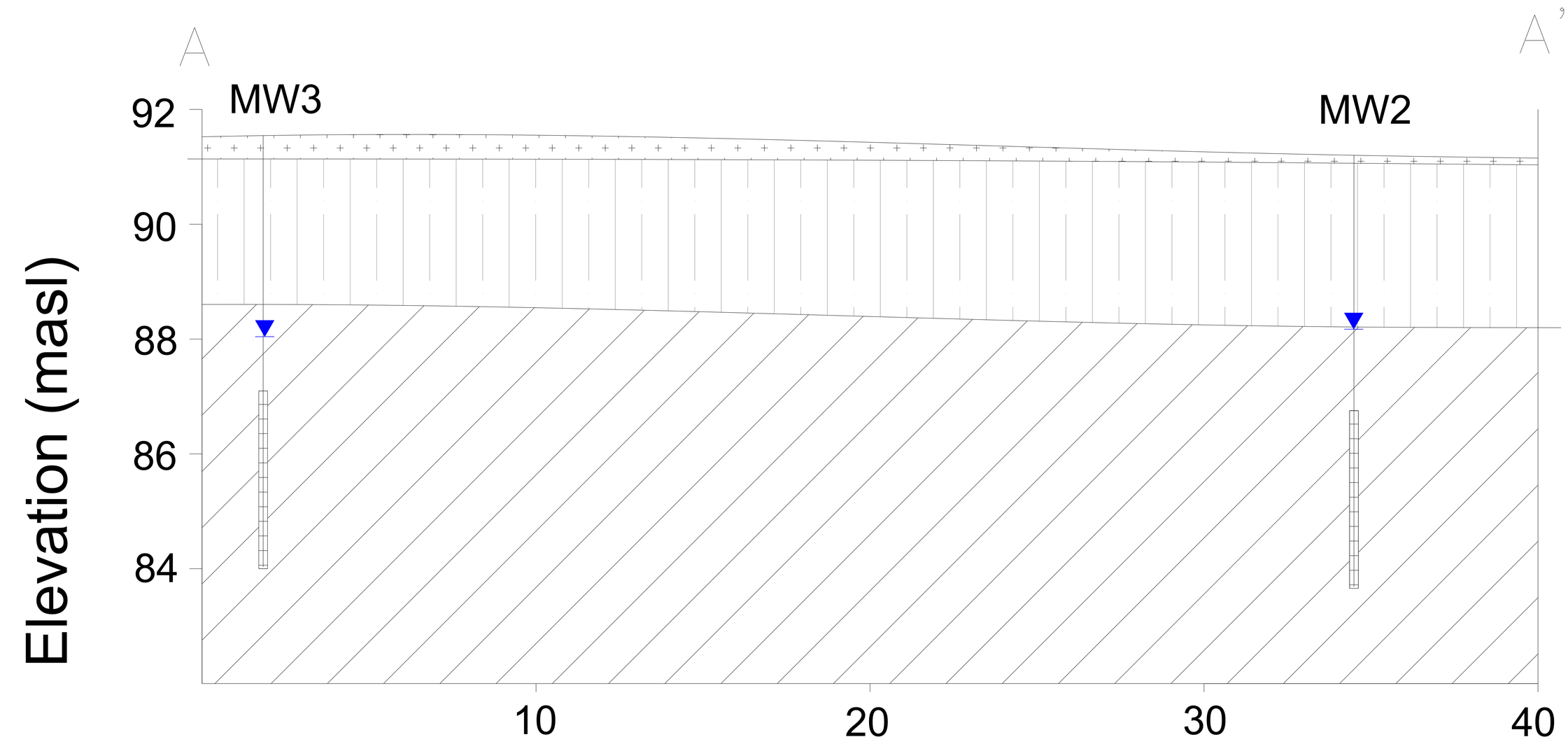
ARCADIS

Plan View of Geological Cross-Sections

Project No.:	Scale:
145252	1:500
Figure No.:	Date:
4	February 2024

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Cross Section A-A'



LEGEND:

TOPSOIL

SILTY SAND

SILTY CLAY

MEASURED WATER LEVEL (MARCH 1, 2024)

MONITORING WELL SCREEN SECTION

ARCADIS

PROJECT
Phase Two ESA
759 Maple Avenue,
Burlington, Ontario

PROJECT NO: 145256

DRAWN BY: AZ | CHECKED BY: SD

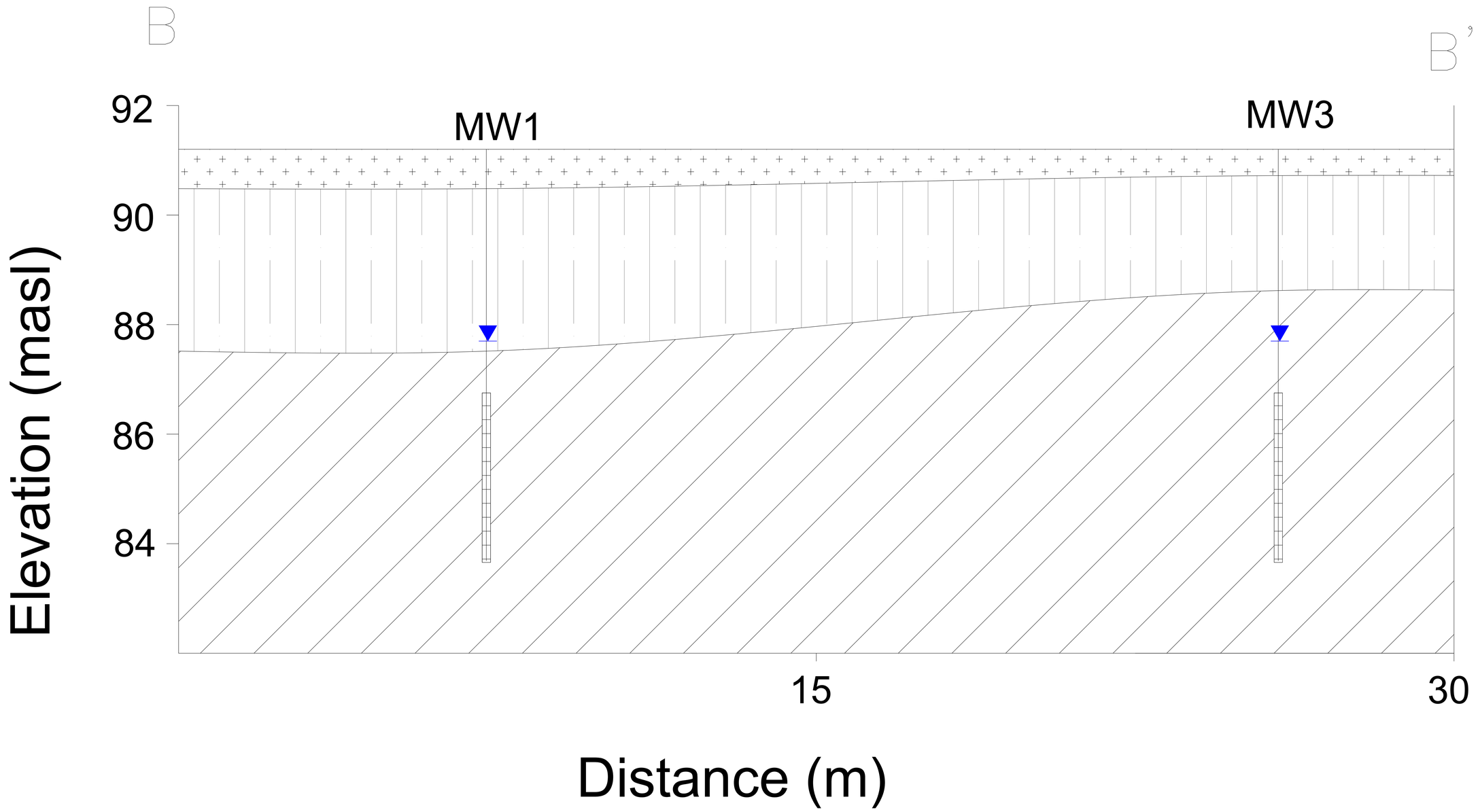
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SHEET TITLE
Geological Cross Section A-A'

SHEET NUMBER FIGURE 5a | ISSUE 1

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Cross Section B-B'



LEGEND:

- TOPSOIL
- SILTY SAND
- SILTY CLAY
- MEASURED WATER LEVEL (MARCH 1, 2024)
- MONITORING WELL SCREEN SECTION

ARCADIS

PROJECT
Phase Two ESA
759 Maple Avenue,
Burlington, Ontario

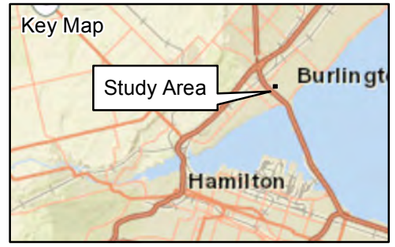
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DRAWN BY: AZ
CHECKED BY: SD
PROJECT MGR: MC
SCALE: NTS

SHEET TITLE
Geological Cross Section B-B'

SHEET NUMBER: FIGURE 5b
ISSUE: 1

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Legend (Plan)

- Monitoring Wells
- GW Contours (masl)
- Interpretted GW Flow Direction
- Site
- Streets

Phase Two ESA
759 Maple Avenue
Burlington, Ontario

ARCADIS

Shallow Groundwater Contour and Flow Direction

Project No.:	Scale:
145252	1:500
Figure No.:	Date:
6	March 2024

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Tables

Table 1: Sample Identification Key

Media	Date of Sampling	Sample ID	Depth (mbgs)	Analysis Performed
Soil	2024-01-24	BH1-SS2-24	0.8 - 1.4	PAHs
		BH1-SS9-24	6.1 - 6.7	PHCs, BTEX
		BH2-SS1-24	0 - 0.6	PAHs
		BH2-SS3-24	6.1 - 6.7	PHCs, BTEX
		BH3-SS2-24	0.8 - 1.4	PAHs
		BH3-SS4-24	6.1 - 6.7	PHCs, BTEX
		DUP1	-	PAHs
Media	**Date of Sampling**	**Sample ID**	**Screened Interval (mbgs)**	**Analysis Performed**
Groundwater	2024-03-01	MW1	4.6 - 7.6	PHCs, BTEX, PAHs
		MW2	4.6 - 7.6	PHCs, BTEX, PAHs
		MW3	4.6 - 7.6	PHCs, BTEX, PAHs
		DUP2	-	BTEX

Notes:

mbgs	metres below ground surface
PHCs	petroleum hydrocarbons
PAHs	polycyclic aromatic hydrocarbons
BTEX	benzene, toluene, ethylbenzene, xylenes

Table 2: Monitoring Well Details

Sampling Location ID	Completion Date	UTM Coordinates		Ground Elevation (masl)	Riser Stick-Up (mags)	Top of Riser Elevation (masl)	Total Depth Drilled (mbgs)	Elevation of Bottom (masl)	Depth to Water (mbtop)	Groundwater Elevation (masl)	Depth to Water (mbgs)
		Easting	Northing						*01-03-24*	*01-03-24*	*01-03-24*
MW1-24	Jan. 29, 2024	596039	4797555	91.334	0.83	92.164	8.59	82.74	4.34	86.99	3.510
MW2-24		596048	4797575	91.335	0.79	92.125	8.39	82.95	3.90	87.44	3.110
MW3-24		596013	4797549	91.601	0.78	92.381	8.21	83.39	4.30	87.30	3.520

Table 3a: Soil PHCs and BTEX Analysis Results

Sample ID	Units	O.Reg 153/04 Table 2	RDL	BH1-SS9-24	BH2-SS3-24	BH3-SS4-24
Date of Sample Collection				29-Jan-24	29-Jan-24	29-Jan-24
Depth of Sample (mbgs)				6.1 - 6.7	6.1 - 6.9	6.1 - 6.9
Date of Analysis				05-Feb-24	05-Feb-24	05-Feb-24
Lab Reference #				WT2402142-002	WT2402142-004	WT2402142-006
F1-F4 Hydrocarbons						
PHC F1 (C6-C10)	µg/g	55	5	<5	<5	<5
PHC F2 (C10-C16)	µg/g	98	10	22	23	17
PHC F3 (C16-C34)	µg/g	300	50	81	77	62
PHC F4 (C34-C50)	µg/g	2800	50	<50	<50	<50
BTEX						
Benzene	µg/g	0.21	0.005	<0.005	<0.005	<0.005
Ethylbenzene	µg/g	1.1	0.015	<0.015	<0.015	<0.015
Toluene	µg/g	2.3	0.05	<0.05	<0.05	<0.05
Xylene, m,p,o-	µg/g	3.1	0.05	<0.05	<0.05	<0.05

RDL = Reportable Detection Limit
Soil, Groundwater and Sediment Standards for Use Under the Environmental Protection Act as made November 28,2019
O.Reg. 153/04 Table 2 = Table 2: Full Depth Generic Site Condition Standards in a Potable Ground Water Condition, RPI, coarse grained soil
Yellow highlighted values indicate an exceedance of MECP Table 2 Criteria

Table 3b: Soil PAHs Analysis Results

Sample ID	Units	O.Reg 153/04 Table 2	RDL	BH1-SS2-24	BH2-SS1-24	BH3-SS2-24	BH10-SS1-23
Date of Sample Collection				29-Jan-24	29-Jan-24	29-Jan-24	17-Nov-23
Depth of Sample (mbgs)				0.8 - 1.4	0 - 0.6	0.8 - 1.4	0 - 0.6
Date of Analysis				05-Feb-24	05-Feb-24	05-Feb-24	28-Nov-23
Lab Reference #				WT2402142-001	WT2402142-003	WT2402142-005	WT2402142-007
PAHs							
Acenaphthene	µg/g	7.9	0.05	< 0.05	< 0.05	< 0.05	< 0.05
Acenaphthylene	µg/g	0.15	0.05	< 0.05	< 0.05	< 0.05	< 0.05
Anthracene	µg/g	0.67	0.05	< 0.05	< 0.05	< 0.05	< 0.05
Benz(a)anthracene	µg/g	0.5	0.05	< 0.05	0.083	< 0.05	< 0.05
Benzo(a)pyrene	µg/g	0.3	0.05	< 0.05	0.108	< 0.05	< 0.05
Benzo(b)fluoranthene	µg/g	0.78	0.05	< 0.05	0.145	< 0.05	< 0.05
Benzo(g,h,i)perylene	µg/g	6.6	0.05	< 0.05	0.086	< 0.05	< 0.05
Benzo(k)fluoranthene	µg/g	0.78	0.05	< 0.05	0.056	< 0.05	< 0.05
Chrysene	µg/g	7	0.05	< 0.05	0.101	< 0.05	< 0.05
Dibenzo(a,h)anthracene	µg/g	0.1	0.05	< 0.05	< 0.05	< 0.05	< 0.05
Fluoranthene	µg/g	0.69	0.05	< 0.05	0.143	< 0.05	< 0.05
Fluorene	µg/g	62	0.05	< 0.05	< 0.05	< 0.05	< 0.05
Indeno(1,2,3,-cd)pyrene	µg/g	0.38	0.05	< 0.05	0.084	< 0.05	< 0.05
Methylnaphthalene 2-(1-)	µg/g	0.99	0.05	< 0.05	0.154	< 0.05	< 0.05
Naphthalene	µg/g	0.6	0.01	< 0.01	<0.01	< 0.01	< 0.01
Phenanthrene	µg/g	6.2	0.05	< 0.05	0.074	< 0.05	< 0.05
Pyrene	µg/g	78	0.05	< 0.05	0.134	< 0.05	< 0.05

RDL = Reportable Detection Limit
Soil, Groundwater and Sediment Standards for Use Under the Environmental Protection Act as made November 28,2019
O.Reg. 153/04 Table 2 = Table 2: Full Depth Generic Site Condition Standards in a Potable Ground Water Condition, RPI, coarse grained soil
Yellow highlighted values indicate an exceedance of MECP Table 2 Criteria

Table 3c: Soil EC and SAR Analysis Results

Sample ID	Units	O.Reg. 153/04 Table 3	RDL	BH1-SS1-23	BH1-SS3-23	BH2-SS1-23	BH2-SS3-23	BH3-SS2-23	BH3-SS3-23	BH3-SS4-23	BH4-SS2-23	BH4-SS3-23	BH4-SS5-23	BH5-SS2-23	BH5-SS4-23	BH6-SS1-23	BH6-SS2-23	BH6-SS3-23
Date of Sample Collection				16-Nov-23	16-Nov-23	16-Nov-23	16-Nov-23	16-Nov-23	16-Nov-23	16-Nov-23	16-Nov-23	16-Nov-23	16-Nov-23	16-Nov-23	16-Nov-23	16-Nov-23	16-Nov-23	16-Nov-23
Depth of Sample (mbgs)				0 - 0.6	3.1 - 3.7	0 - 0.6	2.3 - 2.9	0.8 - 1.4	2.3 - 2.9	3.1 - 3.7	0.8 - 1.4	1.5 - 2.1	3.1 - 3.7	0.8 - 1.4	2.3 - 2.9	0 - 0.6	3.1 - 3.7	3.8 - 4.4
Date of Analysis				28-Nov-23	28-Nov-23	28-Nov-23	28-Nov-23	28-Nov-23	28-Nov-23	28-Nov-23	28-Nov-23	28-Nov-23	28-Nov-23	28-Nov-23	28-Nov-23	28-Nov-23	28-Nov-23	28-Nov-23
Lab Reference #				WT2337665-019	WT2337665-021	WT2337665-016	WT2337665-018	WT2337665-023	WT2337665-024	WT2337665-025	WT2337785-001	WT2337785-002	WT2337785-004	WT2337785-005	WT2337785-007	WT2337665-013	WT2337665-014	WT2337665-015
General Parameters																		
Conductivity @25°C	mS/cm	0.7	0.005	0.232	0.121	0.5	0.287	0.862	0.96	0.759	0.986	4.62	-	0.561	-	0.266	0.199	0.218
Sodium Adsorption Ratio	-	5	0.1	1.06	0.42	11.5	5.14	13	4	3.6	17.2	15.2	3.81	7.53	34.2	4.09	2.59	2.64

Sample ID	Units	O.Reg. 153/04 Table 3	RDL	BH7-SS1-23	BH7-SS3-23	BH7-SS5-23	BH8/MW8-SS4-23	BH9-SS1-23	BH9-SS3-23	BH9-SS5-23	BH10-SS1-23	BH10-SS2-23	BH10-SS3-23	BH11-SS1-23	BH11-SS2-23	BH11-SS3-23	BH2-SS2-23	
Date of Sample Collection				16-Nov-23	16-Nov-23	16-Nov-23	16-Nov-23	16-Nov-23	16-Nov-23	16-Nov-23	16-Nov-23	16-Nov-23	16-Nov-23	16-Nov-23	16-Nov-23	16-Nov-23	16-Nov-23	
Depth of Sample (mbgs)				0 - 0.6	1.5 - 2.1	3.1 - 3.7	3.8 - 4.4	0 - 0.6	1.5 - 2.1	3.1 - 3.7	0 - 0.6	0.8 - 1.4	3.8 - 4.4	0 - 0.6	0.8 - 1.4	2.3 - 2.9	0 - 0.6	
Date of Analysis				28-Nov-23	28-Nov-23	28-Nov-23	28-Nov-23	28-Nov-23	28-Nov-23	28-Nov-23	28-Nov-23	28-Nov-23	28-Nov-23	28-Nov-23	28-Nov-23	28-Nov-23	28-Nov-23	
Lab Reference #				WT2337665-005	WT2337665-006	WT2337665-008	WT2337785-010	WT2337665-001	WT2337665-003	WT2337665-004	WT2337665-010	WT2337665-011	WT2337665-012	WT2337665-027	WT2337665-028	WT2337665-029	WT2337665-017	
General Parameters																		
Conductivity @25°C	mS/cm	0.7	0.005	0.208	0.549	0.294	1.58	0.246	1.78	1.29	0.306	0.26	0.235	0.13	0.16	0.13	0.755	
Sodium Adsorption Ratio	-	5	0.1	0.45	9.85	4.51	28	0.35	88.5	52.5	1.13	1.97	2.24	0.166	0.159	0.131	16.5	

RDL = Reportable Detection Limit
Soil, Groundwater and Sediment Standards for Use Under the Environmental Protection Act as made November 28,2019
O.Reg. 153/04 Table 3 = Table 3: Full Depth Generic Site Condition Standards in a Non-Potable Ground Water Condition, RPI, fine-medium grained soil
Yellow highlighted values indicate an exceedance of MECP Table 3 Criteria

Table 4a: Groundwater PHCs and BTEX Analysis Results

Sample ID	Units	O.Reg 153/04 Table 2	RDL	MW1-24	MW2-24	MW3-24	DUP2	Trip Blank
Date of Sample Collection				01-Mar-24	01-Mar-24	01-Mar-24	01-Mar-24	
Screen (mbgs)				4.6 - 7.6	4.6 - 7.6	4.6 - 7.6	4.6 - 7.6	
Date of Analysis				07-Mar-24	07-Mar-24	07-Mar-24	07-Mar-24	
Lab Reference #				WT2404700-001	WT2404700-002	WT2404700-003	WT2400768-001	
F1-F4 Hydrocarbons								
PHC F1 (C6-C10)	µg/L	750	25	<25	<25	<25	-	-
PHC F2 (C10-C16)	µg/L	150	100	<100	<100	<100	-	-
PHC F3 (C16-C34)	µg/L	500	250	<250	<250	<250	-	-
PHC F4 (C34-C50)	µg/L	500	250	<250	<250	<250	-	-
BTEX								
Benzene	µg/L	5	0.5	<0.5	<0.5	<0.5	<0.5	<0.5
Ethylbenzene	µg/L	2.4	0.5	<0.5	<0.5	<0.5	<0.5	<0.5
Toluene	µg/L	24	0.5	<0.5	<0.5	<0.5	<0.5	<0.5
Xylene, m,p,o-	µg/L	300	0.5	<0.5	<0.5	<0.5	<0.5	<0.5

RDL = Reportable Detection Limit
Soil, Groundwater and Sediment Standards for Use Under the Environmental Protection Act as made November 28,2019
O.Reg. 153/04 Table 2 = Table 2: Full Depth Generic Site Condition Standards in a Potable Ground Water Condition, RPI
Yellow highlighted values indicate an exceedance of MECP Table 2 Criteria

Table 4b: PAHs Analysis Results

Sample ID	Units	O.Reg. 153/04 Table 2	RDL	MW1	MW2	MW3
Date of Sample Collection				01-Mar-24	01-Mar-24	01-Mar-24
Screen (mbgs)				4.6 - 7.6	4.6 - 7.6	4.6 - 7.6
Date of Analysis				07-Mar-24	07-Mar-24	07-Mar-24
Lab Reference #				WT2404700-001	WT2404700-002	WT2404700-003
PAHs						
Acenaphthene	µg/L	4.1	0.01	<0.01	<0.01	<0.01
Acenaphthylene	µg/L	1	0.01	<0.01	<0.01	<0.01
Anthracene	µg/L	2.4	0.01	<0.01	<0.01	<0.01
Benz(a)anthracene	µg/L	1	0.01	<0.01	<0.01	<0.01
Benzo(a)pyrene	µg/L	0.01	0.005	<0.005	<0.005	<0.005
Benzo(b)fluoranthene	µg/L	0.1	0.01	<0.01	<0.01	<0.01
Benzo(g,h,i)perylene	µg/L	0.2	0.01	<0.01	<0.01	<0.01
Benzo(k)fluoranthene	µg/L	0.1	0.01	<0.01	<0.01	<0.01
Chrysene	µg/L	0.1	0.01	<0.01	<0.01	<0.01
Dibenzo(a,h)anthracene	µg/L	0.2	0.005	<0.005	<0.005	<0.005
Fluoranthene	µg/L	0.41	0.01	<0.01	<0.01	<0.01
Fluorene	µg/L	120	0.01	<0.01	<0.01	<0.01
Indeno(1,2,3,-cd)pyrene	µg/L	0.2	0.01	<0.01	<0.01	<0.01
Methylnaphthalene 2-(1-)	µg/L	3.2	0.015	<0.015	<0.015	<0.015
Naphthalene	µg/L	11	0.05	<0.05	<0.05	<0.05
Phenanthrene	µg/L	1	0.02	<0.02	<0.02	<0.02
Pyrene	µg/L	4.1	0.01	<0.01	<0.01	<0.01

RDL = Reportable Detection Limit
Soil, Groundwater and Sediment Standards for Use Under the Environmental Protection Act as made November 28,2019
O.Reg. 153/04 Table 2 = Table 2: Full Depth Generic Site Condition Standards in a Potable Ground Water Condition, RPI
Yellow highlighted values indicate an exceedance of MECP Table 2 Criteria

Table 5: Soil Maximum Concentration Data

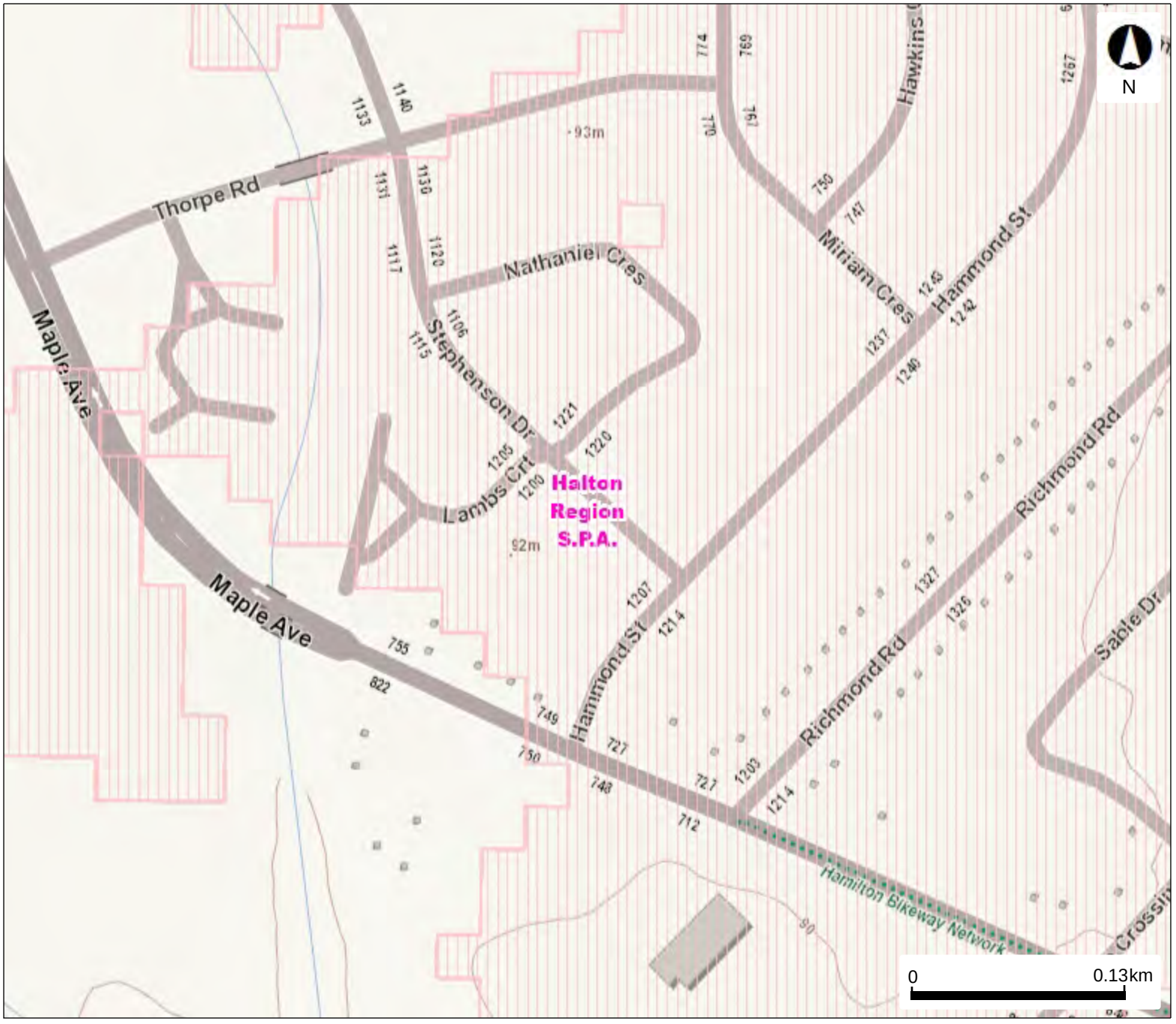
	Units	O.Reg 153/04 Table 2 RPI	RDL	Maximum Concentration	Sample Location	Sample Depth (mbgs)	Sample ID
F1-F4 Hydrocarbons							
PHC F1 (C6-C10)	µg/g	65	5	<5	-	-	-
PHC F2 (>C10-C16)	µg/g	150	10	23	BH2	6.1 - 6.7	BH2-SS3-24
PHC F3 (>C16-C34)	µg/g	1300	50	81	BH11	6.1 - 6.7	BH1-SS9-24
PHC F4 (>C34-C50)	µg/g	5600	50	<50	BH11	6.1 - 6.7	BH11-SS1-23
BTEX							
Benzene	µg/g	0.21	0.005	<0.005	-	-	-
Ethylbenzene	µg/g	1.1	0.015	<0.015	-	-	-
Toluene	µg/g	2.3	0.05	<0.05	-	-	-
Xylenes	µg/g	3.1	0.05	<0.05	-	-	-
PAHs							
Acenaphthene	µg/g	7.9	0.05	< 0.05	-	-	-
Acenaphthylene	µg/g	0.15	0.05	< 0.05	-	-	-
Anthracene	µg/g	0.67	0.05	< 0.05	-	-	-
Benzo(a)anthracene	µg/g	0.5	0.05	0.083	BH2	0 - 0.6	BH2-SS1-24
Benzo(a)pyrene	µg/g	0.3	0.05	0.108	BH2	0 - 0.6	BH2-SS1-24
Benzo(b)fluoranthene	µg/g	0.78	0.05	0.145	BH2	0 - 0.6	BH2-SS1-24
Benzo(g,h,i)perylene	µg/g	6.6	0.05	0.086	BH2	0 - 0.6	BH2-SS1-24
Benzo(k)fluoranthene	µg/g	0.78	0.05	0.056	BH2	0 - 0.6	BH2-SS1-24
Chrysene	µg/g	7	0.05	0.101	BH2	0 - 0.6	BH2-SS1-24
Dibenzo(a,h)anthracene	µg/g	0.1	0.05	< 0.05	-	-	-
Fluoranthene	µg/g	0.69	0.05	0.143	BH2	0 - 0.6	BH2-SS1-24
Fluorene	µg/g	62	0.05	< 0.05	-	-	-
Indeno(1,2,3,-cd)pyrene	µg/g	0.38	0.05	0.084	BH2	0 - 0.6	BH2-SS1-24
Methylnaphthalene 2-(1	µg/g	0.99	0.05	0.154	BH2	0 - 0.6	BH2-SS1-24
Naphthalene	µg/g	0.6	0.01	<0.01	-	-	-
Phenanthrene	µg/g	6.2	0.05	0.074	BH2	0 - 0.6	BH2-SS1-24
Pyrene	µg/g	78	0.05	0.134	BH2	0 - 0.6	BH2-SS1-24

Table 6: Groundwater Maximum Concentration Data

	Units	O.Reg 153/04 Table 2 RPI	RDL	Maximum Concentration	Sample Location	Sample Depth (mbgs)	Sample ID
F1-F4 Hydrocarbons							
PHC F1 (C6-C10)	µg/g	750	25	<25	-	-	-
PHC F2 (>C10-C16)	µg/g	150	100	<100	-	-	-
PHC F3 (>C16-C34)	µg/g	500	250	<250	-	-	-
PHC F4 (>C34-C50)	µg/g	500	250	<250	-	-	-
BTEX							
Benzene	µg/g	5	0.5	<0.5	-	-	-
Ethylbenzene	µg/g	2.4	0.5	<0.5	-	-	-
Toluene	µg/g	24	0.5	<0.5	-	-	-
Xylenes	µg/g	300	0.5	<0.5	-	-	-
PAHs							
Acenaphthene	µg/g	4.1	0.01	<0.01	-	-	-
Acenaphthylene	µg/g	1	0.01	<0.01	-	-	-
Anthracene	µg/g	2.4	0.01	<0.01	-	-	-
Benzo(a)anthracene	µg/g	1	0.01	<0.01	-	-	-
Benzo(a)pyrene	µg/g	0.01	0.005	<0.005	-	-	-
Benzo(b)fluoranthene	µg/g	0.1	0.01	<0.01	-	-	-
Benzo(g,h,i)perylene	µg/g	0.2	0.01	<0.01	-	-	-
Benzo(k)fluoranthene	µg/g	0.1	0.01	<0.01	-	-	-
Chrysene	µg/g	0.1	0.01	<0.01	-	-	-
Dibenzo(a,h)anthracene	µg/g	0.2	0.005	<0.005	-	-	-
Fluoranthene	µg/g	0.41	0.01	<0.01	-	-	-
Fluorene	µg/g	120	0.01	<0.01	-	-	-
Indeno(1,2,3,-cd)pyrene	µg/g	0.2	0.01	<0.01	-	-	-
Methylnaphthalene 2-(1	µg/g	3.2	0.015	<0.015	-	-	-
Naphthalene	µg/g	11	0.05	<0.05	-	-	-
Phenanthrene	µg/g	1	0.02	<0.02	-	-	-
Pyrene	µg/g	4.1	0.01	<0.01	-	-	-

Appendix A – Source Water Protection Report

Source Water Protection Mapping



Legend

- Significant Groundwater Recharge Area
  - N/A
  - 0
  - 2
  - 4
  - 6
- Issue Contributing Areas
- Highly Vulnerable Aquifers
- WHPA-E
- Wellhead Protection Area
  - A
  - B
  - C
  - C1
  - D
  - F
- Intake Protection Zone 1
- Event Based Areas
- Intake Protection Zone 2
- Source Protection Areas

This map should not be relied on as a precise indicator of routes or locations, nor as a guide to navigation. The Ontario Ministry of Environment, Conservation and Parks (MECP) shall not be liable in any way for the use or any information on this map. of, or reliance upon, this map.

Ontario

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THIS IS NOT A PLAN OF SURVEY.

Map Created: 12/1/2023
Map Center: 43.32546 N, -79.81493 W

Appendix B – Sampling and Analyses Plan

Sampling and Analysis Plan – 759 Maple Avenue, Burlington, ON

Area of Potential Environmental Concern	Location of APEC on Phase One Property	Potentially Contaminating Activity O.REG. 153/04)	Location of PCA (on-site or off-site)	Contaminants of Potential Concern	Media Potentially Impacted (Ground water, soil and/or sediment)	BH/MW Well ID
APEC 1	Entire Site	#28. Gasoline and associated products storage in fixed tanks #24. Fire Training	On-Site	PHCs, PAHs, BTEX	Soil and groundwater	MW1, MW2, MW3
APEC 2	Northern portion of Site	#24. Fire Training	Off-Site	PAHs	Soil and groundwater	MW2

Appendix C – Borehole Logs

Arcadis
2620 Bristol Cir #300
Oakville, ON

ARCADIS

WELL NUMBER MW1

CLIENT Structured Creations Inc. **PROJECT NAME** Phase II ESA

PROJECT NUMBER 145256 **PROJECT LOCATION** 759 Maple Ave, Burlington, Ontario

DATE STARTED 24-1-29 **COMPLETED** 24-1-29 **GROUND ELEVATION** 91.334 m **HOLE SIZE** 4"

DRILLING CONTRACTOR Tri-Phase Group Inc. **GROUND WATER LEVELS:**

DRILLING METHOD Solid Stem **AT TIME OF DRILLING** ---

LOGGED BY DS **CHECKED BY** **AT END OF DRILLING** ---

NOTES Overcast 0°C **AFTER DRILLING** 3.51 m / Elev 87.82 m

DEPTH (m)	SAMPLE TYPE NUMBER	RECOVERY %	BLOW COUNTS (N VALUE)	REMARKS	GRAPHIC LOG	MATERIAL DESCRIPTION	ENVIRONMENTAL DATA	WELL DIAGRAM
	SS 1	63	1-2-3-1 (5)	SS1		**TOPSOIL/FILL** Dark brown, loose, some gravel, w/ trace sand and organics, no stains or odours	Vapor = 0	
						0.76 / 90.57		
1	SS 2	100	3-3-3-2 (6)	SS2/PAHs		**SILTY SAND** Light brown, loose, damp, no odour 5" pocket of dark brown fill w/ trace sand and organics	Vapor = 0	
	SS 3	75	3-3-7-10 (10)	SS3			Vapor = 0	
2						Sandy Silt, brown, loose and damp		Bentonite
	SS 4	88	7-8-17-11 (25)	SS4			Vapor = 0	
3						wet/very damp		
	SS 5	71	37-50-24-26 (74)	SS5		5" Silty clay and some gravel	Vapor = 0	
						Brown, silty sand, wet, w/ 3" gravel		
						3.81 / 87.52		
4	SS 6	100	14-19-19-30 (38)	SS6		**SILTY CLAY** Brownish grey, w/ trace gravel, very stiff, moist to damp.	Vapor = 0	
						Alternating brown and grey sections, very still, damp		
5	SS 7	67	11-20-24-43 (44)	SS7		6" pocket of sandy silt, damp, very stiff	Vapor = 0	
						Gray, silty clay, moist, very stiff		
	SS 8	100	49-23-29-39 (52)	SS8			Vapor = 0	Filter Sand Pack
6								Screened Interval from 4.6m to 7.6m
	SS 9	71	14-12-20-27 (32)	SS9/PHCs/BTEX			Vapor = 0	
7	SS 10	71	37-22-25-27 (47)	SS10			Vapor = 0	
						7.62 / 83.71		

Bottom of hole at 7.62 m.

GENERAL BH / TP / WELL PROJECT-134459.GPJ GINT STD CANADA LAB.GDT 24-3-11

Arcadis
2620 Bristol Cir #300
Oakville, ON

ARCADIS

WELL NUMBER MW2

CLIENT Structured Creations Inc. **PROJECT NAME** Phase II ESA

PROJECT NUMBER 145256 **PROJECT LOCATION** 759 Maple Ave, Burlington, Ontario

DATE STARTED 24-1-29 **COMPLETED** 24-1-29 **GROUND ELEVATION** 91.335 m **HOLE SIZE** 4"

DRILLING CONTRACTOR Tri-Phase Group Inc. **GROUND WATER LEVELS:**

DRILLING METHOD Solid Stem **AT TIME OF DRILLING** ---

LOGGED BY DS **CHECKED BY** **AT END OF DRILLING** ---

NOTES Overcast 3°C **AFTER DRILLING** 3.11 m / Elev 88.23 m

DEPTH (m)	SAMPLE TYPE NUMBER	RECOVERY %	BLOW COUNTS (N VALUE)	REMARKS	GRAPHIC LOG	MATERIAL DESCRIPTION	ENVIRONMENTAL DATA	WELL DIAGRAM
0	SS 1	67	4-4-3-4 (7)	SS1/PAHs		0.10 (91.23) **TOPSOIL/FILL** Organic matter, dark brown, silty sand w/ trace gravel, moist	Vapor = 0	
						SILTY SAND Light brown, loose, damp, no odour		
1								
2						very wet		Bentonite
3						3.05 (88.29)		
	SS 2	79	15-13-21-50 (34)	SS2		**SILTY CLAY** 5" wet sandy silt w/ trace gravel 14" SIlty clay, brownish grey, stiff, moist w/ trace pebbles	Vapor = 0	
4								
5						Grayish brown		
6								Filter Sand Pack
	SS 3	83	2-15-17-24 (32)	SS3/PHCs/BTEX		Grey, firm, moist to damp	Vapor = 0	Screened Interval from 4.6m to 7.6m
7						7.62 (83.72)		

Bottom of hole at 7.62 m.

GENERAL BH / TP / WELL PROJECT-134459.GPJ GINT STD CANADA LAB.GDT 24-3-11

Arcadis
2620 Bristol Cir #300
Oakville, ON

ARCADIS

WELL NUMBER MW3

CLIENT Structured Creations Inc.
PROJECT NAME Phase II ESA
PROJECT NUMBER 145256
PROJECT LOCATION 759 Maple Ave, Burlington, Ontario
DATE STARTED 24-1-29 **COMPLETED** 24-1-29
GROUND ELEVATION 91.601 m **HOLE SIZE** 4"
DRILLING CONTRACTOR Tri-Phase Group Inc.
GROUND WATER LEVELS:
DRILLING METHOD Solid Stem
AT TIME OF DRILLING ---
LOGGED BY DS **CHECKED BY**
AT END OF DRILLING ---
NOTES Sunny/Overcast 4°C
AFTER DRILLING 3.52 m / Elev 88.08 m

DEPTH (m)	SAMPLE TYPE NUMBER	RECOVERY %	BLOW COUNTS (N VALUE)	REMARKS	GRAPHIC LOG	MATERIAL DESCRIPTION	ENVIRONMENTAL DATA	WELL DIAGRAM
	SS 1	63	4-4-3-2 (7)	SS1		**TOPSOIL/FILL** Grayish brown, sandy silt, w/ trace pepples, grayish, moist to damp	Vapor = 0	
						0.38 / 91.22 **SILTY SAND** Brown, loose, moist, no odour or staining		
1	SS 2	96	3-3-2-2 (5)	SS2/PAHs/DUP1			Vapor = 0	
2						very wet		Bentonite
3						3.05 / 88.55		
	SS 3	67	7-12-45-50 (57)	SS3		**SILTY CLAY** 9" wet sandy silt w/ trace gravel 7" SIlty clay, brownish grey, stiff, moist w/ trace sand and gravel	Vapor = 0	
4								
5						Greyish brown w/ trace pebbles		
6						11" brown sandy silt, damp, loose Grey silty clay, moist, firm		Filter Sand Pack Screened Interval from 4.6m to 7.6m
	SS 4	100	7-10-25-32 (35)	SS4/PHCs/BTEX			Vapor = 0	
7						7.62 / 83.98		

Bottom of hole at 7.62 m.

GENERAL BH / TP / WELL PROJECT-134459.GPJ GINT STD CANADA LAB.GDT 24-3-11

Appendix D – Laboratory Certificates of Analyses

ALS Canada Ltd.

right solutions. right partner.

CERTIFICATE OF ANALYSIS (GUIDELINE EVALUATION)

Work Order	: **WT2402142**	Page	: 1 of 16
Client	: **Arcadis Canada Inc.**	Laboratory	: ALS Environmental - Waterloo
Contact	: Aron Zhao	Account Manager	: Emily Smith
Address	: 121 Granton Drive Unit 12 Richmond Hill ON Canada L4B 3N4	Address	: 60 Northland Road, Unit 1 Waterloo, Ontario Canada N2V 2B8
Telephone	: ----	Telephone	: +1 519 886 6910
Project	: 145256	Date Samples Received	: 30-Jan-2024 11:30
PO	: ----	Date Analysis Commenced	: 30-Jan-2024
C-O-C number	: ----	Issue Date	: 05-Feb-2024 10:36
Sampler	: Daniel Sin		
Site	: 759 MAPLE AVE		
Quote number	: Waterloo 2024 Price List		
No. of samples received	: 7		
No. of samples analysed	: 7		

This report supersedes any previous report(s) with this reference. Results apply to the sample(s) as submitted. This document shall not be reproduced, except in full.

This Certificate of Analysis contains the following information:

- General Comments
- Analytical Results
- Guideline Comparison

Additional information pertinent to this report will be found in the following separate attachments: Quality Control Report, QC Interpretive report to assist with Quality Review and Sample Receipt Notification (SRN).

Signatories

This document has been electronically signed by the authorized signatories below. Electronic signing is conducted in accordance with US FDA 21 CFR Part 11.

Signatories	*Position*	*Laboratory Department*
Jeremy Gingras	Supervisor - Semi-Volatile Instrumentation	Organics, Waterloo, Ontario
Josphin Masihi	Analyst	Centralized Prep, Waterloo, Ontario
Sarah Birch	VOC Section Supervisor	VOC, Waterloo, Ontario

General Comments

The analytical methods used by ALS are developed using internationally recognized reference methods (where available), such as those published by US EPA, APHA Standard Methods, ASTM, ISO, Environment Canada, BC MOE, and Ontario MOE. Refer to the ALS Quality Control Interpretive report (QCI) for applicable references and methodology summaries. Reference methods may incorporate modifications to improve performance.

Where a reported less than (<) result is higher than the LOR, this may be due to primary sample extract/digestate dilution and/or insufficient sample for analysis.
Where the LOR of a reported result differs from standard LOR, this may be due to high moisture content, insufficient sample (reduced weight employed) or matrix interference.

Additional information pertinent to this report will be found in the following separate attachments: Quality Control Report, QA/QC Compliance Assessment to assist with Quality Review and Sample Receipt Notification.

When sampling time information is not provided by the client, sampling dates are shown without a time component. In these instances, the time component has been assumed by the laboratory for processing purposes.

Application of guidelines is provided "as is" without warranty of any kind, either expressed or implied, including, but not limited to fitness for a particular purpose, or non-infringement. ALS assumes no responsibility for errors or omissions in the information. Guidelines are not adjusted for the hardness, pH or temperature of the sample (the most conservative values are used). Measurement uncertainty is not applied to test results prior to comparison with specified criteria values.

Key : LOR: Limit of Reporting (detection limit).

Unit	*Description*
-	no units
%	percent
mg/kg	milligrams per kilogram

>: greater than.
<: less than.
Red shading is applied where the result or the LOR is greater than the Guideline Upper Limit (or lower than the Guideline Lower Limit, if applicable).
For drinking water samples, Red shading is applied where the result for E.coli, fecal or total coliforms is greater than or equal to the Guideline Upper Limit .

Analytical Results

Sub-Matrix: **Soil/Solid**
(Matrix: **Soil/Solid**)

Analyte	Method/Lab	LOR	Unit	Client sample ID: BH1-SS2-24 Sampling date/time: 29-Jan-2024 09:45 WT2402142-001	ON153/04 T2-ICC-C	ON153/04 T2-ICC-F	ON153/04 T2-RPI-C	ON153/04 T2-RPI-F	--	--
Physical Tests										
Moisture	E144/WT	0.25	%	13.1	--	--	--	--	--	--
Polycyclic Aromatic Hydrocarbons										
Acenaphthene	E641A/WT	0.050	mg/kg	<0.050	**21 mg/kg**	**29 mg/kg**	**7.9 mg/kg**	**29 mg/kg**	--	--
Acenaphthylene	E641A/WT	0.050	mg/kg	<0.050	**0.15 mg/kg**	**0.17 mg/kg**	**0.15 mg/kg**	**0.17 mg/kg**	--	--
Anthracene	E641A/WT	0.050	mg/kg	<0.050	**0.67 mg/kg**	**0.74 mg/kg**	**0.67 mg/kg**	**0.74 mg/kg**	--	--
Benz(a)anthracene	E641A/WT	0.050	mg/kg	<0.050	**0.96 mg/kg**	**0.96 mg/kg**	**0.5 mg/kg**	**0.63 mg/kg**	--	--
Benzo(a)pyrene	E641A/WT	0.050	mg/kg	<0.050	**0.3 mg/kg**	**0.3 mg/kg**	**0.3 mg/kg**	**0.3 mg/kg**	--	--
Benzo(b+j)fluoranthene	E641A/WT	0.050	mg/kg	<0.050	**0.96 mg/kg**	**0.96 mg/kg**	**0.78 mg/kg**	**0.78 mg/kg**	--	--
Benzo(g,h,i)perylene	E641A/WT	0.050	mg/kg	<0.050	**9.6 mg/kg**	**9.6 mg/kg**	**6.6 mg/kg**	**7.8 mg/kg**	--	--
Benzo(k)fluoranthene	E641A/WT	0.050	mg/kg	<0.050	**0.96 mg/kg**	**0.96 mg/kg**	**0.78 mg/kg**	**0.78 mg/kg**	--	--
Chrysene	E641A/WT	0.050	mg/kg	<0.050	**9.6 mg/kg**	**9.6 mg/kg**	**7 mg/kg**	**7.8 mg/kg**	--	--
Dibenz(a,h)anthracene	E641A/WT	0.050	mg/kg	<0.050	**0.1 mg/kg**	**0.1 mg/kg**	**0.1 mg/kg**	**0.1 mg/kg**	--	--
Fluoranthene	E641A/WT	0.050	mg/kg	<0.050	**9.6 mg/kg**	**9.6 mg/kg**	**0.69 mg/kg**	**0.69 mg/kg**	--	--
Fluorene	E641A/WT	0.050	mg/kg	<0.050	**62 mg/kg**	**69 mg/kg**	**62 mg/kg**	**69 mg/kg**	--	--
Indeno(1,2,3-c,d)pyrene	E641A/WT	0.050	mg/kg	<0.050	**0.76 mg/kg**	**0.95 mg/kg**	**0.38 mg/kg**	**0.48 mg/kg**	--	--
Methylnaphthalene, 1+2-	E641A/WT	0.050	mg/kg	<0.050	**30 mg/kg**	**42 mg/kg**	**0.99 mg/kg**	**3.4 mg/kg**	--	--
Methylnaphthalene, 1-	E641A/WT	0.030	mg/kg	<0.030	**30 mg/kg**	**42 mg/kg**	**0.99 mg/kg**	**3.4 mg/kg**	--	--
Methylnaphthalene, 2-	E641A/WT	0.030	mg/kg	<0.030	**30 mg/kg**	**42 mg/kg**	**0.99 mg/kg**	**3.4 mg/kg**	--	--
Naphthalene	E641A/WT	0.010	mg/kg	<0.010	**9.6 mg/kg**	**28 mg/kg**	**0.6 mg/kg**	**0.75 mg/kg**	--	--
Phenanthrene	E641A/WT	0.050	mg/kg	<0.050	**12 mg/kg**	**16 mg/kg**	**6.2 mg/kg**	**7.8 mg/kg**	--	--
Pyrene	E641A/WT	0.050	mg/kg	<0.050	**96 mg/kg**	**96 mg/kg**	**78 mg/kg**	**78 mg/kg**	--	--
Acridine-d9	E641A/WT	0.1	%	93.9	--	--	--	--	--	--
Chrysene-d12	E641A/WT	0.1	%	93.4	--	--	--	--	--	--
Naphthalene-d8	E641A/WT	0.1	%	101	--	--	--	--	--	--
Phenanthrene-d10	E641A/WT	0.1	%	99.3	--	--	--	--	--	--

Please refer to the General Comments section for an explanation of any result qualifiers detected.

Please refer to the Accreditation section for an explanation of analyte accreditations.

No Breaches Found

Key:

ON153/04	Ontario Regulation 153/04 - April 15, 2011 Standards (JUL, 2011)
T2-ICC-C	153 T2-Soil-Ind/Com/Commu Property Use (Coarse)
T2-ICC-F	153 T2-Soil-Ind/Com/Commu Property Use (Fine)
T2-RPI-C	153 T2-Soil-Res/Park/Inst. Property Use (Coarse)
T2-RPI-F	153 T2-Soil-Res/Park/Inst. Property Use (Fine)

Analytical Results

Sub-Matrix: **Soil/Solid**
(Matrix: **Soil/Solid**)

Analyte	Method/Lab	LOR	Unit	Client sample ID: BH1-SS9-24 Sampling date/time: 29-Jan-2024 11:11 WT2402142-002	ON153/04 T2-ICC-C	ON153/04 T2-ICC-F	ON153/04 T2-RPI-C	ON153/04 T2-RPI-F	--	--
Physical Tests										
Moisture	E144/WT	0.25	%	16.6	--	--	--	--	--	--
Volatile Organic Compounds										
Benzene	E611A/WT	0.0050	mg/kg	<0.0050	**0.32 mg/kg**	**0.4 mg/kg**	**0.21 mg/kg**	**0.17 mg/kg**	--	--
Ethylbenzene	E611A/WT	0.015	mg/kg	<0.015	**1.1 mg/kg**	**1.6 mg/kg**	**1.1 mg/kg**	**1.6 mg/kg**	--	--
Toluene	E611A/WT	0.050	mg/kg	<0.050	**6.4 mg/kg**	**9 mg/kg**	**2.3 mg/kg**	**6 mg/kg**	--	--
Xylene, m+p-	E611A/WT	0.030	mg/kg	<0.030	--	--	--	--	--	--
Xylene, o-	E611A/WT	0.030	mg/kg	<0.030	--	--	--	--	--	--
Xylenes, total	E611A/WT	0.050	mg/kg	<0.050	**26 mg/kg**	**30 mg/kg**	**3.1 mg/kg**	**25 mg/kg**	--	--
BTEX, total	E611A/WT	0.10	mg/kg	<0.10	--	--	--	--	--	--
Hydrocarbons										
F1 (C6-C10)	E581.F1/WT	5.0	mg/kg	<5.0	**55 mg/kg**	**65 mg/kg**	**55 mg/kg**	**65 mg/kg**	--	--
F2 (C10-C16)	E601.SG-L/WT	10	mg/kg	22	**230 mg/kg**	**250 mg/kg**	**98 mg/kg**	**150 mg/kg**	--	--
F3 (C16-C34)	E601.SG-L/WT	50	mg/kg	81	**1700 mg/kg**	**2500 mg/kg**	**300 mg/kg**	**1300 mg/kg**	--	--
F4 (C34-C50)	E601.SG-L/WT	50	mg/kg	<50	**3300 mg/kg**	**6600 mg/kg**	**2800 mg/kg**	**5600 mg/kg**	--	--
F1-BTEX	EC580/WT	5.0	mg/kg	<5.0	**55 mg/kg**	**65 mg/kg**	**55 mg/kg**	**65 mg/kg**	--	--
Hydrocarbons, total (C6-C50)	EC581/WT	80	mg/kg	103	--	--	--	--	--	--
Chromatogram to baseline at nC50	E601.SG-L/WT		-	YES	--	--	--	--	--	--
Bromobenzotrifluoride, 2- (F2-F4 surrogate)	E601.SG-L/WT	1.0	%	90.5	--	--	--	--	--	--
Dichlorotoluene, 3,4-	E581.F1/WT	1.0	%	97.3	--	--	--	--	--	--
Bromofluorobenzene, 4-	E611A/WT	0.10	%	77.5	--	--	--	--	--	--
Difluorobenzene, 1,4-	E611A/WT	0.10	%	95.9	--	--	--	--	--	--

Please refer to the General Comments section for an explanation of any result qualifiers detected.

Please refer to the Accreditation section for an explanation of analyte accreditations.

No Breaches Found

Key:

ON153/04	Ontario Regulation 153/04 - April 15, 2011 Standards (JUL, 2011)
T2-ICC-C	153 T2-Soil-Ind/Com/Commu Property Use (Coarse)
T2-ICC-F	153 T2-Soil-Ind/Com/Commu Property Use (Fine)
T2-RPI-C	153 T2-Soil-Res/Park/Inst. Property Use (Coarse)
T2-RPI-F	153 T2-Soil-Res/Park/Inst. Property Use (Fine)

Analytical Results

Sub-Matrix: **Soil/Solid**
(Matrix: **Soil/Solid**)

Analyte	Method/Lab	LOR	Unit	Client sample ID: BH2-SS1-24 Sampling date/time: 29-Jan-2024 01:07 WT2402142-003	ON153/04 T2-ICC-C	ON153/04 T2-ICC-F	ON153/04 T2-RPI-C	ON153/04 T2-RPI-F	--	--
Physical Tests										
Moisture	E144/WT	0.25	%	11.0	--	--	--	--	--	--
Polycyclic Aromatic Hydrocarbons										
Acenaphthene	E641A/WT	0.050	mg/kg	<0.050	**21 mg/kg**	**29 mg/kg**	**7.9 mg/kg**	**29 mg/kg**	--	--
Acenaphthylene	E641A/WT	0.050	mg/kg	<0.050	**0.15 mg/kg**	**0.17 mg/kg**	**0.15 mg/kg**	**0.17 mg/kg**	--	--
Anthracene	E641A/WT	0.050	mg/kg	<0.050	**0.67 mg/kg**	**0.74 mg/kg**	**0.67 mg/kg**	**0.74 mg/kg**	--	--
Benz(a)anthracene	E641A/WT	0.050	mg/kg	0.083	**0.96 mg/kg**	**0.96 mg/kg**	**0.5 mg/kg**	**0.63 mg/kg**	--	--
Benzo(a)pyrene	E641A/WT	0.050	mg/kg	0.108	**0.3 mg/kg**	**0.3 mg/kg**	**0.3 mg/kg**	**0.3 mg/kg**	--	--
Benzo(b+j)fluoranthene	E641A/WT	0.050	mg/kg	0.145	**0.96 mg/kg**	**0.96 mg/kg**	**0.78 mg/kg**	**0.78 mg/kg**	--	--
Benzo(g,h,i)perylene	E641A/WT	0.050	mg/kg	0.086	**9.6 mg/kg**	**9.6 mg/kg**	**6.6 mg/kg**	**7.8 mg/kg**	--	--
Benzo(k)fluoranthene	E641A/WT	0.050	mg/kg	0.056	**0.96 mg/kg**	**0.96 mg/kg**	**0.78 mg/kg**	**0.78 mg/kg**	--	--
Chrysene	E641A/WT	0.050	mg/kg	0.101	**9.6 mg/kg**	**9.6 mg/kg**	**7 mg/kg**	**7.8 mg/kg**	--	--
Dibenz(a,h)anthracene	E641A/WT	0.050	mg/kg	<0.050	**0.1 mg/kg**	**0.1 mg/kg**	**0.1 mg/kg**	**0.1 mg/kg**	--	--
Fluoranthene	E641A/WT	0.050	mg/kg	0.143	**9.6 mg/kg**	**9.6 mg/kg**	**0.69 mg/kg**	**0.69 mg/kg**	--	--
Fluorene	E641A/WT	0.050	mg/kg	<0.050	**62 mg/kg**	**69 mg/kg**	**62 mg/kg**	**69 mg/kg**	--	--
Indeno(1,2,3-c,d)pyrene	E641A/WT	0.050	mg/kg	0.084	**0.76 mg/kg**	**0.95 mg/kg**	**0.38 mg/kg**	**0.48 mg/kg**	--	--
Methylnaphthalene, 1+2-	E641A/WT	0.050	mg/kg	<0.050	**30 mg/kg**	**42 mg/kg**	**0.99 mg/kg**	**3.4 mg/kg**	--	--
Methylnaphthalene, 1-	E641A/WT	0.030	mg/kg	<0.030	**30 mg/kg**	**42 mg/kg**	**0.99 mg/kg**	**3.4 mg/kg**	--	--
Methylnaphthalene, 2-	E641A/WT	0.030	mg/kg	<0.030	**30 mg/kg**	**42 mg/kg**	**0.99 mg/kg**	**3.4 mg/kg**	--	--
Naphthalene	E641A/WT	0.010	mg/kg	<0.010	**9.6 mg/kg**	**28 mg/kg**	**0.6 mg/kg**	**0.75 mg/kg**	--	--
Phenanthrene	E641A/WT	0.050	mg/kg	0.074	**12 mg/kg**	**16 mg/kg**	**6.2 mg/kg**	**7.8 mg/kg**	--	--
Pyrene	E641A/WT	0.050	mg/kg	0.134	**96 mg/kg**	**96 mg/kg**	**78 mg/kg**	**78 mg/kg**	--	--
Acridine-d9	E641A/WT	0.1	%	92.9	--	--	--	--	--	--
Chrysene-d12	E641A/WT	0.1	%	94.7	--	--	--	--	--	--
Naphthalene-d8	E641A/WT	0.1	%	101	--	--	--	--	--	--
Phenanthrene-d10	E641A/WT	0.1	%	97.5	--	--	--	--	--	--

Please refer to the General Comments section for an explanation of any result qualifiers detected.

Please refer to the Accreditation section for an explanation of analyte accreditations.

No Breaches Found

Key:

ON153/04	Ontario Regulation 153/04 - April 15, 2011 Standards (JUL, 2011)
T2-ICC-C	153 T2-Soil-Ind/Com/Commu Property Use (Coarse)
T2-ICC-F	153 T2-Soil-Ind/Com/Commu Property Use (Fine)
T2-RPI-C	153 T2-Soil-Res/Park/Inst. Property Use (Coarse)
T2-RPI-F	153 T2-Soil-Res/Park/Inst. Property Use (Fine)

Analytical Results

Sub-Matrix: **Soil/Solid**
(Matrix: **Soil/Solid**)

Analyte	Method/Lab	LOR	Unit	Client sample ID: BH2-SS3-24 Sampling date/time: 29-Jan-2024 13:30 WT2402142-004	ON153/04 T2-ICC-C	ON153/04 T2-ICC-F	ON153/04 T2-RPI-C	ON153/04 T2-RPI-F	--	--
Physical Tests										
Moisture	E144/WT	0.25	%	20.5	--	--	--	--	--	--
Volatile Organic Compounds										
Benzene	E611A/WT	0.0050	mg/kg	<0.0050	**0.32 mg/kg**	**0.4 mg/kg**	**0.21 mg/kg**	**0.17 mg/kg**	--	--
Ethylbenzene	E611A/WT	0.015	mg/kg	<0.015	**1.1 mg/kg**	**1.6 mg/kg**	**1.1 mg/kg**	**1.6 mg/kg**	--	--
Toluene	E611A/WT	0.050	mg/kg	<0.050	**6.4 mg/kg**	**9 mg/kg**	**2.3 mg/kg**	**6 mg/kg**	--	--
Xylene, m+p-	E611A/WT	0.030	mg/kg	<0.030	--	--	--	--	--	--
Xylene, o-	E611A/WT	0.030	mg/kg	<0.030	--	--	--	--	--	--
Xylenes, total	E611A/WT	0.050	mg/kg	<0.050	**26 mg/kg**	**30 mg/kg**	**3.1 mg/kg**	**25 mg/kg**	--	--
BTEX, total	E611A/WT	0.10	mg/kg	<0.10	--	--	--	--	--	--
Hydrocarbons										
F1 (C6-C10)	E581.F1/WT	5.0	mg/kg	<5.0	**55 mg/kg**	**65 mg/kg**	**55 mg/kg**	**65 mg/kg**	--	--
F2 (C10-C16)	E601.SG-L/WT	10	mg/kg	23	**230 mg/kg**	**250 mg/kg**	**98 mg/kg**	**150 mg/kg**	--	--
F3 (C16-C34)	E601.SG-L/WT	50	mg/kg	77	**1700 mg/kg**	**2500 mg/kg**	**300 mg/kg**	**1300 mg/kg**	--	--
F4 (C34-C50)	E601.SG-L/WT	50	mg/kg	<50	**3300 mg/kg**	**6600 mg/kg**	**2800 mg/kg**	**5600 mg/kg**	--	--
F1-BTEX	EC580/WT	5.0	mg/kg	<5.0	**55 mg/kg**	**65 mg/kg**	**55 mg/kg**	**65 mg/kg**	--	--
Hydrocarbons, total (C6-C50)	EC581/WT	80	mg/kg	100	--	--	--	--	--	--
Chromatogram to baseline at nC50	E601.SG-L/WT		-	YES	--	--	--	--	--	--
Bromobenzotrifluoride, 2- (F2-F4 surrogate)	E601.SG-L/WT	1.0	%	86.9	--	--	--	--	--	--
Dichlorotoluene, 3,4-	E581.F1/WT	1.0	%	96.8	--	--	--	--	--	--
Bromofluorobenzene, 4-	E611A/WT	0.10	%	81.1	--	--	--	--	--	--
Difluorobenzene, 1,4-	E611A/WT	0.10	%	99.4	--	--	--	--	--	--

Please refer to the General Comments section for an explanation of any result qualifiers detected.

Please refer to the Accreditation section for an explanation of analyte accreditations.

No Breaches Found

Key:

ON153/04	Ontario Regulation 153/04 - April 15, 2011 Standards (JUL, 2011)
T2-ICC-C	153 T2-Soil-Ind/Com/Commu Property Use (Coarse)
T2-ICC-F	153 T2-Soil-Ind/Com/Commu Property Use (Fine)
T2-RPI-C	153 T2-Soil-Res/Park/Inst. Property Use (Coarse)
T2-RPI-F	153 T2-Soil-Res/Park/Inst. Property Use (Fine)

Analytical Results

Sub-Matrix: **Soil/Solid**
(Matrix: **Soil/Solid**)

Analyte	Method/Lab	LOR	Unit	Client sample ID: BH3-SS2-24 Sampling date/time: 29-Jan-2024 14:00 WT2402142-005	ON153/04 T2-ICC-C	ON153/04 T2-ICC-F	ON153/04 T2-RPI-C	ON153/04 T2-RPI-F	--	--
Physical Tests										
Moisture	E144/WT	0.25	%	9.05	--	--	--	--	--	--
Polycyclic Aromatic Hydrocarbons										
Acenaphthene	E641A/WT	0.050	mg/kg	<0.050	**21 mg/kg**	**29 mg/kg**	**7.9 mg/kg**	**29 mg/kg**	--	--
Acenaphthylene	E641A/WT	0.050	mg/kg	<0.050	**0.15 mg/kg**	**0.17 mg/kg**	**0.15 mg/kg**	**0.17 mg/kg**	--	--
Anthracene	E641A/WT	0.050	mg/kg	<0.050	**0.67 mg/kg**	**0.74 mg/kg**	**0.67 mg/kg**	**0.74 mg/kg**	--	--
Benz(a)anthracene	E641A/WT	0.050	mg/kg	<0.050	**0.96 mg/kg**	**0.96 mg/kg**	**0.5 mg/kg**	**0.63 mg/kg**	--	--
Benzo(a)pyrene	E641A/WT	0.050	mg/kg	<0.050	**0.3 mg/kg**	**0.3 mg/kg**	**0.3 mg/kg**	**0.3 mg/kg**	--	--
Benzo(b+j)fluoranthene	E641A/WT	0.050	mg/kg	<0.050	**0.96 mg/kg**	**0.96 mg/kg**	**0.78 mg/kg**	**0.78 mg/kg**	--	--
Benzo(g,h,i)perylene	E641A/WT	0.050	mg/kg	<0.050	**9.6 mg/kg**	**9.6 mg/kg**	**6.6 mg/kg**	**7.8 mg/kg**	--	--
Benzo(k)fluoranthene	E641A/WT	0.050	mg/kg	<0.050	**0.96 mg/kg**	**0.96 mg/kg**	**0.78 mg/kg**	**0.78 mg/kg**	--	--
Chrysene	E641A/WT	0.050	mg/kg	<0.050	**9.6 mg/kg**	**9.6 mg/kg**	**7 mg/kg**	**7.8 mg/kg**	--	--
Dibenz(a,h)anthracene	E641A/WT	0.050	mg/kg	<0.050	**0.1 mg/kg**	**0.1 mg/kg**	**0.1 mg/kg**	**0.1 mg/kg**	--	--
Fluoranthene	E641A/WT	0.050	mg/kg	<0.050	**9.6 mg/kg**	**9.6 mg/kg**	**0.69 mg/kg**	**0.69 mg/kg**	--	--
Fluorene	E641A/WT	0.050	mg/kg	<0.050	**62 mg/kg**	**69 mg/kg**	**62 mg/kg**	**69 mg/kg**	--	--
Indeno(1,2,3-c,d)pyrene	E641A/WT	0.050	mg/kg	<0.050	**0.76 mg/kg**	**0.95 mg/kg**	**0.38 mg/kg**	**0.48 mg/kg**	--	--
Methylnaphthalene, 1+2-	E641A/WT	0.050	mg/kg	<0.050	**30 mg/kg**	**42 mg/kg**	**0.99 mg/kg**	**3.4 mg/kg**	--	--
Methylnaphthalene, 1-	E641A/WT	0.030	mg/kg	<0.030	**30 mg/kg**	**42 mg/kg**	**0.99 mg/kg**	**3.4 mg/kg**	--	--
Methylnaphthalene, 2-	E641A/WT	0.030	mg/kg	<0.030	**30 mg/kg**	**42 mg/kg**	**0.99 mg/kg**	**3.4 mg/kg**	--	--
Naphthalene	E641A/WT	0.010	mg/kg	<0.010	**9.6 mg/kg**	**28 mg/kg**	**0.6 mg/kg**	**0.75 mg/kg**	--	--
Phenanthrene	E641A/WT	0.050	mg/kg	<0.050	**12 mg/kg**	**16 mg/kg**	**6.2 mg/kg**	**7.8 mg/kg**	--	--
Pyrene	E641A/WT	0.050	mg/kg	<0.050	**96 mg/kg**	**96 mg/kg**	**78 mg/kg**	**78 mg/kg**	--	--
Acridine-d9	E641A/WT	0.1	%	91.8	--	--	--	--	--	--
Chrysene-d12	E641A/WT	0.1	%	90.0	--	--	--	--	--	--
Naphthalene-d8	E641A/WT	0.1	%	100	--	--	--	--	--	--
Phenanthrene-d10	E641A/WT	0.1	%	96.3	--	--	--	--	--	--

Please refer to the General Comments section for an explanation of any result qualifiers detected.

Please refer to the Accreditation section for an explanation of analyte accreditations.

No Breaches Found

Key:

ON153/04	Ontario Regulation 153/04 - April 15, 2011 Standards (JUL, 2011)
T2-ICC-C	153 T2-Soil-Ind/Com/Commu Property Use (Coarse)
T2-ICC-F	153 T2-Soil-Ind/Com/Commu Property Use (Fine)
T2-RPI-C	153 T2-Soil-Res/Park/Inst. Property Use (Coarse)
T2-RPI-F	153 T2-Soil-Res/Park/Inst. Property Use (Fine)

Analytical Results

Sub-Matrix: **Soil/Solid**
(Matrix: **Soil/Solid**)

Analyte	Method/Lab	LOR	Unit	Client sample ID: BH3-SS4-24 Sampling date/time: 29-Jan-2024 15:00 WT2402142-006	ON153/04 T2-ICC-C	ON153/04 T2-ICC-F	ON153/04 T2-RPI-C	ON153/04 T2-RPI-F	--	--
Physical Tests										
Moisture	E144/WT	0.25	%	16.3	--	--	--	--	--	--
Volatile Organic Compounds										
Benzene	E611A/WT	0.0050	mg/kg	<0.0050	**0.32 mg/kg**	**0.4 mg/kg**	**0.21 mg/kg**	**0.17 mg/kg**	--	--
Ethylbenzene	E611A/WT	0.015	mg/kg	<0.015	**1.1 mg/kg**	**1.6 mg/kg**	**1.1 mg/kg**	**1.6 mg/kg**	--	--
Toluene	E611A/WT	0.050	mg/kg	<0.050	**6.4 mg/kg**	**9 mg/kg**	**2.3 mg/kg**	**6 mg/kg**	--	--
Xylene, m+p-	E611A/WT	0.030	mg/kg	<0.030	--	--	--	--	--	--
Xylene, o-	E611A/WT	0.030	mg/kg	<0.030	--	--	--	--	--	--
Xylenes, total	E611A/WT	0.050	mg/kg	<0.050	**26 mg/kg**	**30 mg/kg**	**3.1 mg/kg**	**25 mg/kg**	--	--
BTEX, total	E611A/WT	0.10	mg/kg	<0.10	--	--	--	--	--	--
Hydrocarbons										
F1 (C6-C10)	E581.F1/WT	5.0	mg/kg	<5.0	**55 mg/kg**	**65 mg/kg**	**55 mg/kg**	**65 mg/kg**	--	--
F2 (C10-C16)	E601.SG-L/WT	10	mg/kg	17	**230 mg/kg**	**250 mg/kg**	**98 mg/kg**	**150 mg/kg**	--	--
F3 (C16-C34)	E601.SG-L/WT	50	mg/kg	62	**1700 mg/kg**	**2500 mg/kg**	**300 mg/kg**	**1300 mg/kg**	--	--
F4 (C34-C50)	E601.SG-L/WT	50	mg/kg	<50	**3300 mg/kg**	**6600 mg/kg**	**2800 mg/kg**	**5600 mg/kg**	--	--
F1-BTEX	EC580/WT	5.0	mg/kg	<5.0	**55 mg/kg**	**65 mg/kg**	**55 mg/kg**	**65 mg/kg**	--	--
Hydrocarbons, total (C6-C50)	EC581/WT	80	mg/kg	<80	--	--	--	--	--	--
Chromatogram to baseline at nC50	E601.SG-L/WT		-	YES	--	--	--	--	--	--
Bromobenzotrifluoride, 2- (F2-F4 surrogate)	E601.SG-L/WT	1.0	%	89.7	--	--	--	--	--	--
Dichlorotoluene, 3,4-	E581.F1/WT	1.0	%	95.8	--	--	--	--	--	--
Bromofluorobenzene, 4-	E611A/WT	0.10	%	80.6	--	--	--	--	--	--
Difluorobenzene, 1,4-	E611A/WT	0.10	%	98.9	--	--	--	--	--	--

Please refer to the General Comments section for an explanation of any result qualifiers detected.

Please refer to the Accreditation section for an explanation of analyte accreditations.

No Breaches Found

Key:

ON153/04	Ontario Regulation 153/04 - April 15, 2011 Standards (JUL, 2011)
T2-ICC-C	153 T2-Soil-Ind/Com/Commu Property Use (Coarse)
T2-ICC-F	153 T2-Soil-Ind/Com/Commu Property Use (Fine)
T2-RPI-C	153 T2-Soil-Res/Park/Inst. Property Use (Coarse)
T2-RPI-F	153 T2-Soil-Res/Park/Inst. Property Use (Fine)

Analytical Results

Sub-Matrix: **Soil/Solid**
(Matrix: **Soil/Solid**)

Analyte	Method/Lab	LOR	Unit	Client sample ID: DUP1 Sampling date/time: 29-Jan-2024 00:00 WT2402142-007	ON153/04 T2-ICC-C	ON153/04 T2-ICC-F	ON153/04 T2-RPI-C	ON153/04 T2-RPI-F	--	--
Physical Tests										
Moisture	E144/WT	0.25	%	8.17	--	--	--	--	--	--
Polycyclic Aromatic Hydrocarbons										
Acenaphthene	E641A/WT	0.050	mg/kg	<0.050	**21 mg/kg**	**29 mg/kg**	**7.9 mg/kg**	**29 mg/kg**	--	--
Acenaphthylene	E641A/WT	0.050	mg/kg	<0.050	**0.15 mg/kg**	**0.17 mg/kg**	**0.15 mg/kg**	**0.17 mg/kg**	--	--
Anthracene	E641A/WT	0.050	mg/kg	<0.050	**0.67 mg/kg**	**0.74 mg/kg**	**0.67 mg/kg**	**0.74 mg/kg**	--	--
Benz(a)anthracene	E641A/WT	0.050	mg/kg	<0.050	**0.96 mg/kg**	**0.96 mg/kg**	**0.5 mg/kg**	**0.63 mg/kg**	--	--
Benzo(a)pyrene	E641A/WT	0.050	mg/kg	<0.050	**0.3 mg/kg**	**0.3 mg/kg**	**0.3 mg/kg**	**0.3 mg/kg**	--	--
Benzo(b+j)fluoranthene	E641A/WT	0.050	mg/kg	<0.050	**0.96 mg/kg**	**0.96 mg/kg**	**0.78 mg/kg**	**0.78 mg/kg**	--	--
Benzo(g,h,i)perylene	E641A/WT	0.050	mg/kg	<0.050	**9.6 mg/kg**	**9.6 mg/kg**	**6.6 mg/kg**	**7.8 mg/kg**	--	--
Benzo(k)fluoranthene	E641A/WT	0.050	mg/kg	<0.050	**0.96 mg/kg**	**0.96 mg/kg**	**0.78 mg/kg**	**0.78 mg/kg**	--	--
Chrysene	E641A/WT	0.050	mg/kg	<0.050	**9.6 mg/kg**	**9.6 mg/kg**	**7 mg/kg**	**7.8 mg/kg**	--	--
Dibenz(a,h)anthracene	E641A/WT	0.050	mg/kg	<0.050	**0.1 mg/kg**	**0.1 mg/kg**	**0.1 mg/kg**	**0.1 mg/kg**	--	--
Fluoranthene	E641A/WT	0.050	mg/kg	<0.050	**9.6 mg/kg**	**9.6 mg/kg**	**0.69 mg/kg**	**0.69 mg/kg**	--	--
Fluorene	E641A/WT	0.050	mg/kg	<0.050	**62 mg/kg**	**69 mg/kg**	**62 mg/kg**	**69 mg/kg**	--	--
Indeno(1,2,3-c,d)pyrene	E641A/WT	0.050	mg/kg	<0.050	**0.76 mg/kg**	**0.95 mg/kg**	**0.38 mg/kg**	**0.48 mg/kg**	--	--
Methylnaphthalene, 1+2-	E641A/WT	0.050	mg/kg	<0.050	**30 mg/kg**	**42 mg/kg**	**0.99 mg/kg**	**3.4 mg/kg**	--	--
Methylnaphthalene, 1-	E641A/WT	0.030	mg/kg	<0.030	**30 mg/kg**	**42 mg/kg**	**0.99 mg/kg**	**3.4 mg/kg**	--	--
Methylnaphthalene, 2-	E641A/WT	0.030	mg/kg	<0.030	**30 mg/kg**	**42 mg/kg**	**0.99 mg/kg**	**3.4 mg/kg**	--	--
Naphthalene	E641A/WT	0.010	mg/kg	<0.010	**9.6 mg/kg**	**28 mg/kg**	**0.6 mg/kg**	**0.75 mg/kg**	--	--
Phenanthrene	E641A/WT	0.050	mg/kg	<0.050	**12 mg/kg**	**16 mg/kg**	**6.2 mg/kg**	**7.8 mg/kg**	--	--
Pyrene	E641A/WT	0.050	mg/kg	<0.050	**96 mg/kg**	**96 mg/kg**	**78 mg/kg**	**78 mg/kg**	--	--
Acridine-d9	E641A/WT	0.1	%	93.8	--	--	--	--	--	--
Chrysene-d12	E641A/WT	0.1	%	91.6	--	--	--	--	--	--
Naphthalene-d8	E641A/WT	0.1	%	101	--	--	--	--	--	--
Phenanthrene-d10	E641A/WT	0.1	%	97.3	--	--	--	--	--	--

Please refer to the General Comments section for an explanation of any result qualifiers detected.

Please refer to the Accreditation section for an explanation of analyte accreditations.

No Breaches Found

Key:

ON153/04	Ontario Regulation 153/04 - April 15, 2011 Standards (JUL, 2011)
T2-ICC-C	153 T2-Soil-Ind/Com/Commu Property Use (Coarse)
T2-ICC-F	153 T2-Soil-Ind/Com/Commu Property Use (Fine)
T2-RPI-C	153 T2-Soil-Res/Park/Inst. Property Use (Coarse)
T2-RPI-F	153 T2-Soil-Res/Park/Inst. Property Use (Fine)

ALS Canada Ltd.

QUALITY CONTROL INTERPRETIVE REPORT

Work Order	: **WT2402142**	Page	: 1 of 8
Client	: **Arcadis Canada Inc.**	Laboratory	: ALS Environmental - Waterloo
Contact	: Aron Zhao	Account Manager	: Emily Smith
Address	: 121 Granton Drive Unit 12 Richmond Hill ON Canada L4B 3N4	Address	: 60 Northland Road, Unit 1 Waterloo, Ontario Canada N2V 2B8
Telephone	: ----	Telephone	: +1 519 886 6910
Project	: 145256	Date Samples Received	: 30-Jan-2024 11:30
PO	: ----	Issue Date	: 05-Feb-2024 10:37
C-O-C number	: ----		
Sampler	: Daniel Sin		
Site	: 759 MAPLE AVE		
Quote number	: Waterloo 2024 Price List		
No. of samples received	: 7		
No. of samples analysed	: 7		

This report is automatically generated by the ALS LIMS (Laboratory Information Management System) through evaluation of Quality Control (QC) results and other QA parameters associated with this submission, and is intended to facilitate rapid data validation by auditors or reviewers. The report highlights any exceptions and outliers to ALS Data Quality Objectives, provides holding time details and exceptions, summarizes QC sample frequencies, and lists applicable methodology references and summaries.

Key

Anonymous: Refers to samples which are not part of this work order, but which formed part of the QC process lot.
CAS Number: Chemical Abstracts Service number is a unique identifier assigned to discrete substances.
DQO: Data Quality Objective.
LOR: Limit of Reporting (detection limit).
RPD: Relative Percent Difference.

Workorder Comments

Holding times are displayed as "---" if no guidance exists from CCME, Canadian provinces, or broadly recognized international references.

Summary of Outliers

Outliers : Quality Control Samples

- No Method Blank value outliers occur.
- No Duplicate outliers occur.
- No Laboratory Control Sample (LCS) outliers occur
- No Matrix Spike outliers occur.
- No Test sample Surrogate recovery outliers exist.

Outliers: Reference Material (RM) Samples

- No Reference Material (RM) Sample outliers occur.

Outliers : Analysis Holding Time Compliance (Breaches)

- No Analysis Holding Time Outliers exist.

Outliers : Frequency of Quality Control Samples

- No Quality Control Sample Frequency Outliers occur.

Analysis Holding Time Compliance

This report summarizes extraction / preparation and analysis times and compares each with ALS recommended holding times, which are selected to meet known provincial and /or federal requirements. In the absence of regulatory hold times, ALS establishes recommendations based on guidelines published by organizations such as CCME, US EPA, APHA Standard Methods, ASTM, or Environment Canada (where available). Dates and holding times reported below represent the first dates of extraction or analysis. If subsequent tests or dilutions exceeded holding times, qualifiers are added (refer to COA).

If samples are identified below as having been analyzed or extracted outside of recommended holding times, measurement uncertainties may be increased, and this should be taken into consideration when interpreting results.

Where actual sampling date is not provided on the chain of custody, the date of receipt with time at 00:00 is used for calculation purposes.

Where only the sample date without time is provided on the chain of custody, the sampling date at 00:00 is used for calculation purposes.

Matrix: **Soil/Solid**

Evaluation: × = Holding time exceedance ; ✓ = Within Holding Time

Analyte Group : Analytical Method / Container / Client Sample ID(s)	Method	Sampling Date	Extraction / Preparation				Analysis			
			Preparation Date	Holding Times Rec	Holding Times Actual	Eval	Analysis Date	Holding Times Rec	Holding Times Actual	Eval
Hydrocarbons : CCME PHC - F1 by Headspace GC-FID										
Glass soil methanol vial [ON MECP]										
BH1-SS9-24	E581.F1	29-Jan-2024	30-Jan-2024	14 days	1 days	✓	30-Jan-2024	40 days	0 days	✓
Hydrocarbons : CCME PHC - F1 by Headspace GC-FID										
Glass soil methanol vial [ON MECP]										
BH2-SS3-24	E581.F1	29-Jan-2024	30-Jan-2024	14 days	1 days	✓	30-Jan-2024	40 days	0 days	✓
Hydrocarbons : CCME PHC - F1 by Headspace GC-FID										
Glass soil methanol vial [ON MECP]										
BH3-SS4-24	E581.F1	29-Jan-2024	30-Jan-2024	14 days	1 days	✓	30-Jan-2024	40 days	0 days	✓
Hydrocarbons : CCME PHCs - F2-F4 by GC-FID (Low Level)										
Glass soil jar/Teflon lined cap [ON MECP]										
BH1-SS9-24	E601.SG-L	29-Jan-2024	31-Jan-2024	14 days	2 days	✓	01-Feb-2024	40 days	1 days	✓
Hydrocarbons : CCME PHCs - F2-F4 by GC-FID (Low Level)										
Glass soil jar/Teflon lined cap [ON MECP]										
BH2-SS3-24	E601.SG-L	29-Jan-2024	31-Jan-2024	14 days	2 days	✓	01-Feb-2024	40 days	1 days	✓
Hydrocarbons : CCME PHCs - F2-F4 by GC-FID (Low Level)										
Glass soil jar/Teflon lined cap [ON MECP]										
BH3-SS4-24	E601.SG-L	29-Jan-2024	31-Jan-2024	14 days	2 days	✓	01-Feb-2024	40 days	1 days	✓
Physical Tests : Moisture Content by Gravimetry										
Glass soil jar/Teflon lined cap [ON MECP]										
BH1-SS2-24	E144	29-Jan-2024	----	----	----		30-Jan-2024	----	1 days	

Matrix: **Soil/Solid**

Evaluation: × = Holding time exceedance ; ✓ = Within Holding Time

Analyte Group : Analytical Method / Container / Client Sample ID(s)	Method	Sampling Date	Extraction / Preparation				Analysis			
			Preparation Date	Holding Times Rec	Holding Times Actual	Eval	Analysis Date	Holding Times Rec	Holding Times Actual	Eval
Physical Tests : Moisture Content by Gravimetry										
Glass soil jar/Teflon lined cap [ON MECP]										
BH1-SS9-24	E144	29-Jan-2024	----	----	----		30-Jan-2024	----	1 days	
Physical Tests : Moisture Content by Gravimetry										
Glass soil jar/Teflon lined cap [ON MECP]										
BH2-SS3-24	E144	29-Jan-2024	----	----	----		30-Jan-2024	----	1 days	
Physical Tests : Moisture Content by Gravimetry										
Glass soil jar/Teflon lined cap [ON MECP]										
BH3-SS2-24	E144	29-Jan-2024	----	----	----		30-Jan-2024	----	1 days	
Physical Tests : Moisture Content by Gravimetry										
Glass soil jar/Teflon lined cap [ON MECP]										
BH3-SS4-24	E144	29-Jan-2024	----	----	----		30-Jan-2024	----	1 days	
Physical Tests : Moisture Content by Gravimetry										
Glass soil jar/Teflon lined cap [ON MECP]										
BH2-SS1-24	E144	29-Jan-2024	----	----	----		30-Jan-2024	----	2 days	
Physical Tests : Moisture Content by Gravimetry										
Glass soil jar/Teflon lined cap [ON MECP]										
DUP1	E144	29-Jan-2024	----	----	----		30-Jan-2024	----	2 days	
Polycyclic Aromatic Hydrocarbons : PAHs by Hex:Ace GC-MS										
Glass soil jar/Teflon lined cap [ON MECP]										
BH1-SS2-24	E641A	29-Jan-2024	31-Jan-2024	60 days	2 days	✓	01-Feb-2024	40 days	1 days	✓
Polycyclic Aromatic Hydrocarbons : PAHs by Hex:Ace GC-MS										
Glass soil jar/Teflon lined cap [ON MECP]										
BH3-SS2-24	E641A	29-Jan-2024	31-Jan-2024	60 days	2 days	✓	01-Feb-2024	40 days	1 days	✓
Polycyclic Aromatic Hydrocarbons : PAHs by Hex:Ace GC-MS										
Glass soil jar/Teflon lined cap [ON MECP]										
BH2-SS1-24	E641A	29-Jan-2024	31-Jan-2024	60 days	3 days	✓	01-Feb-2024	40 days	1 days	✓

Matrix: **Soil/Solid**

Evaluation: × = Holding time exceedance ; ✓ = Within Holding Time

Analyte Group : Analytical Method / Container / Client Sample ID(s)	Method	Sampling Date	Extraction / Preparation				Analysis			
			Preparation Date	Holding Times Rec	Holding Times Actual	Eval	Analysis Date	Holding Times Rec	Holding Times Actual	Eval
Polycyclic Aromatic Hydrocarbons : PAHs by Hex:Ace GC-MS										
Glass soil jar/Teflon lined cap [ON MECP]										
DUP1	E641A	29-Jan-2024	31-Jan-2024	60 days	3 days	✓	01-Feb-2024	40 days	1 days	✓
Volatile Organic Compounds : BTEX by Headspace GC-MS										
Glass soil methanol vial [ON MECP]										
BH1-SS9-24	E611A	29-Jan-2024	30-Jan-2024	14 days	1 days	✓	30-Jan-2024	40 days	0 days	✓
Volatile Organic Compounds : BTEX by Headspace GC-MS										
Glass soil methanol vial [ON MECP]										
BH2-SS3-24	E611A	29-Jan-2024	30-Jan-2024	14 days	1 days	✓	30-Jan-2024	40 days	0 days	✓
Volatile Organic Compounds : BTEX by Headspace GC-MS										
Glass soil methanol vial [ON MECP]										
BH3-SS4-24	E611A	29-Jan-2024	30-Jan-2024	14 days	1 days	✓	30-Jan-2024	40 days	0 days	✓

Legend & Qualifier Definitions

Rec. HT: ALS recommended hold time (see units).

Quality Control Parameter Frequency Compliance

The following report summarizes the frequency of laboratory QC samples analyzed within the analytical batches (QC lots) in which the submitted samples were processed. The actual frequency should be greater than or equal to the expected frequency.

Matrix: **Soil/Solid**

Evaluation: × = *QC frequency outside specification*; ✓ = *QC frequency within specification.*

Quality Control Sample Type			Count		Frequency (%)		
Analytical Methods	*Method*	*QC Lot #*	*QC*	*Regular*	*Actual*	*Expected*	*Evaluation*
Laboratory Duplicates (DUP)							
BTEX by Headspace GC-MS	E611A	1317713	1	7	14.2	5.0	✓
CCME PHC - F1 by Headspace GC-FID	E581.F1	1317714	1	7	14.2	5.0	✓
CCME PHCs - F2-F4 by GC-FID (Low Level)	E601.SG-L	1318287	1	8	12.5	5.0	✓
Moisture Content by Gravimetry	E144	1317698	1	20	5.0	5.0	✓
PAHs by Hex:Ace GC-MS	E641A	1318286	1	13	7.6	5.0	✓
Laboratory Control Samples (LCS)							
BTEX by Headspace GC-MS	E611A	1317713	1	7	14.2	5.0	✓
CCME PHC - F1 by Headspace GC-FID	E581.F1	1317714	1	7	14.2	5.0	✓
CCME PHCs - F2-F4 by GC-FID (Low Level)	E601.SG-L	1318287	1	8	12.5	5.0	✓
Moisture Content by Gravimetry	E144	1317698	1	20	5.0	5.0	✓
PAHs by Hex:Ace GC-MS	E641A	1318286	1	13	7.6	5.0	✓
Method Blanks (MB)							
BTEX by Headspace GC-MS	E611A	1317713	1	7	14.2	5.0	✓
CCME PHC - F1 by Headspace GC-FID	E581.F1	1317714	1	7	14.2	5.0	✓
CCME PHCs - F2-F4 by GC-FID (Low Level)	E601.SG-L	1318287	1	8	12.5	5.0	✓
Moisture Content by Gravimetry	E144	1317698	1	20	5.0	5.0	✓
PAHs by Hex:Ace GC-MS	E641A	1318286	1	13	7.6	5.0	✓
Matrix Spikes (MS)							
BTEX by Headspace GC-MS	E611A	1317713	1	7	14.2	5.0	✓
CCME PHC - F1 by Headspace GC-FID	E581.F1	1317714	1	7	14.2	5.0	✓
CCME PHCs - F2-F4 by GC-FID (Low Level)	E601.SG-L	1318287	1	8	12.5	5.0	✓
PAHs by Hex:Ace GC-MS	E641A	1318286	1	13	7.6	5.0	✓

Methodology References and Summaries

The analytical methods used by ALS are developed using internationally recognized reference methods (where available), such as those published by US EPA, APHA Standard Methods, ASTM, ISO, Environment Canada, BC MOE, and Ontario MOE. Reference methods may incorporate modifications to improve performance (indicated by "mod").

Analytical Methods	Method / Lab	Matrix	Method Reference	Method Descriptions
Moisture Content by Gravimetry	E144 ALS Environmental - Waterloo	Soil/Solid	CCME PHC in Soil - Tier 1	Moisture is measured gravimetrically by drying the sample at 105°C. Moisture content is calculated as the weight loss (due to water) divided by the wet weight of the sample, expressed as a percentage.
CCME PHC - F1 by Headspace GC-FID	E581.F1 ALS Environmental - Waterloo	Soil/Solid	CCME PHC in Soil - Tier 1	CCME Fraction 1 (F1) is analyzed by static headspace GC-FID. Samples are prepared in headspace vials and are heated and agitated on the headspace autosampler, causing VOCs to partition between the aqueous phase and the headspace in accordance with Henry's law. Analytical methods for CCME Petroleum Hydrocarbons (PHCs) are validated to comply fully with the Reference Method for the Canada-Wide Standard for PHC. Test results are expressed on a dry weight basis. Unless qualified, all required quality control criteria of the CCME PHC method have been met, including response factor and linearity requirements.
CCME PHCs - F2-F4 by GC-FID (Low Level)	E601.SG-L ALS Environmental - Waterloo	Soil/Solid	CCME PHC in Soil - Tier 1	Sample extracts are subjected to in-situ silica gel treatment prior to analysis by GC-FID for CCME hydrocarbon fractions (F2-F4). Analytical methods for CCME Petroleum Hydrocarbons (PHCs) are validated to comply fully with the Reference Method for the Canada-Wide Standard for PHC. Test results are expressed on a dry weight basis. Unless qualified, all required quality control criteria of the CCME PHC method have been met, including response factor and linearity requirements.
BTEX by Headspace GC-MS	E611A ALS Environmental - Waterloo	Soil/Solid	EPA 8260D (mod)	Volatile Organic Compounds (VOCs) are analyzed by static headspace GC-MS. Samples are prepared in headspace vials and are heated and agitated on the headspace autosampler, causing VOCs to partition between the aqueous phase and the headspace in accordance with Henry's law.
PAHs by Hex:Ace GC-MS	E641A ALS Environmental - Waterloo	Soil/Solid	EPA 8270E (mod)	Polycyclic Aromatic Hydrocarbons (PAHs) are extracted with hexane/acetone and analyzed by GC-MS. If reported, IACR (index of additive cancer risk, unitless) and B(a)P toxic potency equivalent (in soil concentration units) are calculated as per CCME PAH Soil Quality Guidelines fact sheet (2010) or ABT1.
F1-BTEX	EC580 ALS Environmental - Waterloo	Soil/Solid	CCME PHC in Soil - Tier 1	F1-BTEX is calculated as follows: F1-BTEX = F1 (C6-C10) minus benzene, toluene, ethylbenzene and xylenes (BTEX).
Sum F1 to F4 (C6-C50)	EC581 ALS Environmental - Waterloo	Soil/Solid	CCME PHC in Soil - Tier 1	Hydrocarbons, total (C6-C50) is the sum of CCME Fractions F1(C6-C10), F2(C10-C16), F3(C16-C34), and F4(C34-C50). F4G-sg is not used within this calculation due to overlap with other fractions.

Preparation Methods	Method / Lab	Matrix	Method Reference	Method Descriptions

Preparation Methods	Method / Lab	Matrix	Method Reference	Method Descriptions
VOCs Methanol Extraction for Headspace Analysis	EP581 ALS Environmental - Waterloo	Soil/Solid	EPA 5035A (mod)	VOCs in samples are extracted with methanol. Extracts are then prepared in headspace vials and are heated and agitated on the headspace autosampler, causing VOCs to partition between the aqueous phase and the headspace in accordance with Henry's law.
PHCs and PAHs Hexane-Acetone Tumbler Extraction	EP601 ALS Environmental - Waterloo	Soil/Solid	CCME PHC in Soil - Tier 1 (mod)	Samples are subsampled and Petroleum Hydrocarbons (PHC) and PAHs are extracted with 1:1 hexane:acetone using a rotary extractor.

ALS Canada Ltd.

QUALITY CONTROL REPORT

Work Order	: **WT2402142**	Page	: 1 of 10
Client	: Arcadis Canada Inc.	Laboratory	: ALS Environmental - Waterloo
Contact	: Aron Zhao	Account Manager	: Emily Smith
Address	: 121 Granton Drive Unit 12 Richmond Hill ON Canada L4B 3N4	Address	: 60 Northland Road, Unit 1 Waterloo, Ontario Canada N2V 2B8
Telephone	:	Telephone	: +1 519 886 6910
Project	: 145256	Date Samples Received	: 30-Jan-2024 11:30
PO	: ----	Date Analysis Commenced	: 30-Jan-2024
C-O-C number	: ----	Issue Date	: 05-Feb-2024 10:37
Sampler	: Daniel Sin ----		
Site	: 759 MAPLE AVE		
Quote number	: Waterloo 2024 Price List		
No. of samples received	: 7		
No. of samples analysed	: 7		

This report supersedes any previous report(s) with this reference. Results apply to the sample(s) as submitted. This document shall not be reproduced, except in full.

This Quality Control Report contains the following information:

- Laboratory Duplicate (DUP) Report; Relative Percent Difference (RPD) and Data Quality Objectives
- Matrix Spike (MS) Report; Recovery and Data Quality Objectives
- Method Blank (MB) Report; Recovery and Data Quality Objectives
- Laboratory Control Sample (LCS) Report; Recovery and Data Quality Objectives

Signatories

This document has been electronically signed by the authorized signatories below. Electronic signing is conducted in accordance with US FDA 21 CFR Part 11.

Signatories	*Position*	*Laboratory Department*
Jeremy Gingras	Supervisor - Semi-Volatile Instrumentation	Waterloo Organics, Waterloo, Ontario
Josphin Masihi	Analyst	Waterloo Centralized Prep, Waterloo, Ontario
Sarah Birch	VOC Section Supervisor	Waterloo VOC, Waterloo, Ontario

General Comments

The ALS Quality Control (QC) report is optionally provided to ALS clients upon request. ALS test methods include comprehensive QC checks with every analysis to ensure our high standards of quality are met. Each QC result has a known or expected target value, which is compared against predetermined Data Quality Objectives (DQOs) to provide confidence in the accuracy of associated test results. This report contains detailed results for all QC results applicable to this sample submission. Please refer to the ALS Quality Control Interpretation report (QCI) for applicable method references and methodology summaries.

Key :

Anonymous = Refers to samples which are not part of this work order, but which formed part of the QC process lot.
CAS Number = Chemical Abstracts Service number is a unique identifier assigned to discrete substances.
DQO = Data Quality Objective.
LOR = Limit of Reporting (detection limit).
RPD = Relative Percent Difference
# = Indicates a QC result that did not meet the ALS DQO.

Workorder Comments

Holding times are displayed as "---" if no guidance exists from CCME, Canadian provinces, or broadly recognized international references.

Laboratory Duplicate (DUP) Report

A Laboratory Duplicate (DUP) is a randomly selected intralaboratory replicate sample. Laboratory Duplicates provide information regarding method precision and sample heterogeneity. ALS DQOs for Laboratory Duplicates are expressed as test-specific limits for Relative Percent Difference (RPD), or as an absolute difference limit of 2 times the LOR for low concentration duplicates within ~ 4-10 times the LOR (cut-off is test-specific).

Sub-Matrix: **Soil/Solid**

					Laboratory Duplicate (DUP) Report						
Laboratory sample ID	Client sample ID	Analyte	CAS Number	Method	LOR	Unit	Original Result	Duplicate Result	RPD(%) or Difference	Duplicate Limits	Qualifier
Physical Tests (QC Lot: 1317698)											
WT2402142-001	BH1-SS2-24	Moisture	----	E144	0.25	%	13.1	12.1	7.99%	20%	----
Volatile Organic Compounds (QC Lot: 1317713)											
WT2402176-003	Anonymous	Benzene	71-43-2	E611A	0.0050	mg/kg	0.0078 µg/g	0.0081	0.0002	Diff <2x LOR	----
		Ethylbenzene	100-41-4	E611A	0.015	mg/kg	0.094 µg/g	0.097	3.72%	40%	----
		Toluene	108-88-3	E611A	0.050	mg/kg	<0.050 µg/g	<0.050	0	Diff <2x LOR	----
		Xylene, m+p-	179601-23-1	E611A	0.030	mg/kg	0.133 µg/g	0.139	0.006	Diff <2x LOR	----
		Xylene, o-	95-47-6	E611A	0.030	mg/kg	0.032 µg/g	0.035	0.002	Diff <2x LOR	----
Hydrocarbons (QC Lot: 1317714)											
WT2402176-003	Anonymous	F1 (C6-C10)	----	E581.F1	5.0	mg/kg	5.6 µg/g	6.6	1.0	Diff <2x LOR	----
Hydrocarbons (QC Lot: 1318287)											
WT2402145-003	Anonymous	F2 (C10-C16)	----	E601.SG-L	10	mg/kg	<10	<10	0	Diff <2x LOR	----
		F3 (C16-C34)	----	E601.SG-L	50	mg/kg	<50	<50	0	Diff <2x LOR	----
		F4 (C34-C50)	----	E601.SG-L	50	mg/kg	<50	<50	0	Diff <2x LOR	----
Polycyclic Aromatic Hydrocarbons (QC Lot: 1318286)											
WT2402145-003	Anonymous	Acenaphthene	83-32-9	E641A	0.050	mg/kg	<0.050	<0.050	0	Diff <2x LOR	----
		Acenaphthylene	208-96-8	E641A	0.050	mg/kg	<0.050	<0.050	0	Diff <2x LOR	----
		Anthracene	120-12-7	E641A	0.050	mg/kg	<0.050	<0.050	0	Diff <2x LOR	----
		Benz(a)anthracene	56-55-3	E641A	0.050	mg/kg	<0.050	<0.050	0	Diff <2x LOR	----
		Benzo(a)pyrene	50-32-8	E641A	0.050	mg/kg	<0.050	<0.050	0	Diff <2x LOR	----
		Benzo(b+j)fluoranthene	n/a	E641A	0.050	mg/kg	<0.050	<0.050	0	Diff <2x LOR	----
		Benzo(g,h,i)perylene	191-24-2	E641A	0.050	mg/kg	<0.050	<0.050	0	Diff <2x LOR	----
		Benzo(k)fluoranthene	207-08-9	E641A	0.050	mg/kg	<0.050	<0.050	0	Diff <2x LOR	----
		Chrysene	218-01-9	E641A	0.050	mg/kg	<0.050	<0.050	0	Diff <2x LOR	----
		Dibenz(a,h)anthracene	53-70-3	E641A	0.050	mg/kg	<0.050	<0.050	0	Diff <2x LOR	----
		Fluoranthene	206-44-0	E641A	0.050	mg/kg	<0.050	<0.050	0	Diff <2x LOR	----
		Fluorene	86-73-7	E641A	0.050	mg/kg	<0.050	<0.050	0	Diff <2x LOR	----
		Indeno(1,2,3-c,d)pyrene	193-39-5	E641A	0.050	mg/kg	<0.050	<0.050	0	Diff <2x LOR	----
		Methylnaphthalene, 1-	90-12-0	E641A	0.030	mg/kg	<0.030	<0.030	0	Diff <2x LOR	----
		Methylnaphthalene, 2-	91-57-6	E641A	0.030	mg/kg	<0.030	<0.030	0	Diff <2x LOR	----
		Naphthalene	91-20-3	E641A	0.010	mg/kg	<0.010	<0.010	0	Diff <2x LOR	----

Sub-Matrix: **Soil/Solid**

					Laboratory Duplicate (DUP) Report						
Laboratory sample ID	*Client sample ID*	*Analyte*	*CAS Number*	*Method*	*LOR*	*Unit*	*Original Result*	*Duplicate Result*	*RPD(%) or Difference*	*Duplicate Limits*	*Qualifier*
Polycyclic Aromatic Hydrocarbons (QC Lot: 1318286) - continued											
WT2402145-003	Anonymous	Phenanthrene	85-01-8	E641A	0.050	mg/kg	<0.050	<0.050	0	Diff <2x LOR	----
		Pyrene	129-00-0	E641A	0.050	mg/kg	<0.050	<0.050	0	Diff <2x LOR	----

Method Blank (MB) Report

A Method Blank is an analyte-free matrix that undergoes sample processing identical to that carried out for test samples. Method Blank results are used to monitor and control for potential contamination from the laboratory environment and reagents. For most tests, the DQO for Method Blanks is for the result to be < LOR.

Sub-Matrix: **Soil/Solid**

Analyte	CAS Number	Method	LOR	Unit	Result	Qualifier
Physical Tests (QCLot: 1317698)						
Moisture	----	E144	0.25	%	<0.25	----
Volatile Organic Compounds (QCLot: 1317713)						
Benzene	71-43-2	E611A	0.005	mg/kg	<0.0050	----
Ethylbenzene	100-41-4	E611A	0.015	mg/kg	<0.015	----
Toluene	108-88-3	E611A	0.05	mg/kg	<0.050	----
Xylene, m+p-	179601-23-1	E611A	0.03	mg/kg	<0.030	----
Xylene, o-	95-47-6	E611A	0.03	mg/kg	<0.030	----
Hydrocarbons (QCLot: 1317714)						
F1 (C6-C10)	----	E581.F1	5	mg/kg	<5.0	----
Hydrocarbons (QCLot: 1318287)						
F2 (C10-C16)	----	E601.SG-L	10	mg/kg	<10	----
F3 (C16-C34)	----	E601.SG-L	50	mg/kg	<50	----
F4 (C34-C50)	----	E601.SG-L	50	mg/kg	<50	----
Polycyclic Aromatic Hydrocarbons (QCLot: 1318286)						
Acenaphthene	83-32-9	E641A	0.05	mg/kg	<0.050	----
Acenaphthylene	208-96-8	E641A	0.05	mg/kg	<0.050	----
Anthracene	120-12-7	E641A	0.05	mg/kg	<0.050	----
Benz(a)anthracene	56-55-3	E641A	0.05	mg/kg	<0.050	----
Benzo(a)pyrene	50-32-8	E641A	0.05	mg/kg	<0.050	----
Benzo(b+j)fluoranthene	n/a	E641A	0.05	mg/kg	<0.050	----
Benzo(g,h,i)perylene	191-24-2	E641A	0.05	mg/kg	<0.050	----
Benzo(k)fluoranthene	207-08-9	E641A	0.05	mg/kg	<0.050	----
Chrysene	218-01-9	E641A	0.05	mg/kg	<0.050	----
Dibenz(a,h)anthracene	53-70-3	E641A	0.05	mg/kg	<0.050	----
Fluoranthene	206-44-0	E641A	0.05	mg/kg	<0.050	----
Fluorene	86-73-7	E641A	0.05	mg/kg	<0.050	----
Indeno(1,2,3-c,d)pyrene	193-39-5	E641A	0.05	mg/kg	<0.050	----
Methylnaphthalene, 1-	90-12-0	E641A	0.03	mg/kg	<0.030	----
Methylnaphthalene, 2-	91-57-6	E641A	0.03	mg/kg	<0.030	----
Naphthalene	91-20-3	E641A	0.01	mg/kg	<0.010	----
Phenanthrene	85-01-8	E641A	0.05	mg/kg	<0.050	----
Pyrene	129-00-0	E641A	0.05	mg/kg	<0.050	----

Laboratory Control Sample (LCS) Report

A Laboratory Control Sample (LCS) is an analyte-free matrix that has been fortified (spiked) with test analytes at known concentration and processed in an identical manner to test samples. LCS results are expressed as percent recovery, and are used to monitor and control test method accuracy and precision, independent of test sample matrix.

Sub-Matrix: **Soil/Solid**

					Laboratory Control Sample (LCS) Report				
					Spike	Recovery (%)	Recovery Limits (%)		
Analyte	CAS Number	Method	LOR	Unit	Concentration	LCS	Low	High	Qualifier
Physical Tests (QCLot: 1317698)									
Moisture	----	E144	0.25	%	50 %	98.8	90.0	110	----
Volatile Organic Compounds (QCLot: 1317713)									
Benzene	71-43-2	E611A	0.005	mg/kg	3.475 mg/kg	98.1	70.0	130	----
Ethylbenzene	100-41-4	E611A	0.015	mg/kg	3.475 mg/kg	89.8	70.0	130	----
Toluene	108-88-3	E611A	0.05	mg/kg	3.475 mg/kg	89.8	70.0	130	----
Xylene, m+p-	179601-23-1	E611A	0.03	mg/kg	6.95 mg/kg	95.0	70.0	130	----
Xylene, o-	95-47-6	E611A	0.03	mg/kg	3.475 mg/kg	95.1	70.0	130	----
Hydrocarbons (QCLot: 1317714)									
F1 (C6-C10)	----	E581.F1	5	mg/kg	69.1875 mg/kg	103	80.0	120	----
Hydrocarbons (QCLot: 1318287)									
F2 (C10-C16)	----	E601.SG-L	10	mg/kg	671.175 mg/kg	106	70.0	130	----
F3 (C16-C34)	----	E601.SG-L	50	mg/kg	1384.058 mg/kg	109	70.0	130	----
F4 (C34-C50)	----	E601.SG-L	50	mg/kg	738.5 mg/kg	109	70.0	130	----
Polycyclic Aromatic Hydrocarbons (QCLot: 1318286)									
Acenaphthene	83-32-9	E641A	0.05	mg/kg	0.5 mg/kg	92.9	60.0	130	----
Acenaphthylene	208-96-8	E641A	0.05	mg/kg	0.5 mg/kg	95.2	60.0	130	----
Anthracene	120-12-7	E641A	0.05	mg/kg	0.5 mg/kg	105	60.0	130	----
Benz(a)anthracene	56-55-3	E641A	0.05	mg/kg	0.5 mg/kg	91.2	60.0	130	----
Benzo(a)pyrene	50-32-8	E641A	0.05	mg/kg	0.5 mg/kg	92.9	60.0	130	----
Benzo(b+j)fluoranthene	n/a	E641A	0.05	mg/kg	0.5 mg/kg	95.9	60.0	130	----
Benzo(g,h,i)perylene	191-24-2	E641A	0.05	mg/kg	0.5 mg/kg	98.2	60.0	130	----
Benzo(k)fluoranthene	207-08-9	E641A	0.05	mg/kg	0.5 mg/kg	96.9	60.0	130	----
Chrysene	218-01-9	E641A	0.05	mg/kg	0.5 mg/kg	81.0	60.0	130	----
Dibenz(a,h)anthracene	53-70-3	E641A	0.05	mg/kg	0.5 mg/kg	89.9	60.0	130	----
Fluoranthene	206-44-0	E641A	0.05	mg/kg	0.5 mg/kg	96.3	60.0	130	----
Fluorene	86-73-7	E641A	0.05	mg/kg	0.5 mg/kg	95.9	60.0	130	----
Indeno(1,2,3-c,d)pyrene	193-39-5	E641A	0.05	mg/kg	0.5 mg/kg	99.7	60.0	130	----
Methylnaphthalene, 1-	90-12-0	E641A	0.03	mg/kg	0.5 mg/kg	85.6	60.0	130	----
Methylnaphthalene, 2-	91-57-6	E641A	0.03	mg/kg	0.5 mg/kg	89.8	60.0	130	----
Naphthalene	91-20-3	E641A	0.01	mg/kg	0.5 mg/kg	87.9	60.0	130	----

Sub-Matrix: **Soil/Solid**

Analyte	CAS Number	Method	LOR	Unit	Laboratory Control Sample (LCS) Report				
					Spike	Recovery (%)	Recovery Limits (%)		
					Concentration	LCS	Low	High	Qualifier
Polycyclic Aromatic Hydrocarbons (QCLot: 1318286) - continued									
Phenanthrene	85-01-8	E641A	0.05	mg/kg	0.5 mg/kg	93.2	60.0	130	----
Pyrene	129-00-0	E641A	0.05	mg/kg	0.5 mg/kg	92.9	60.0	130	----

Matrix Spike (MS) Report

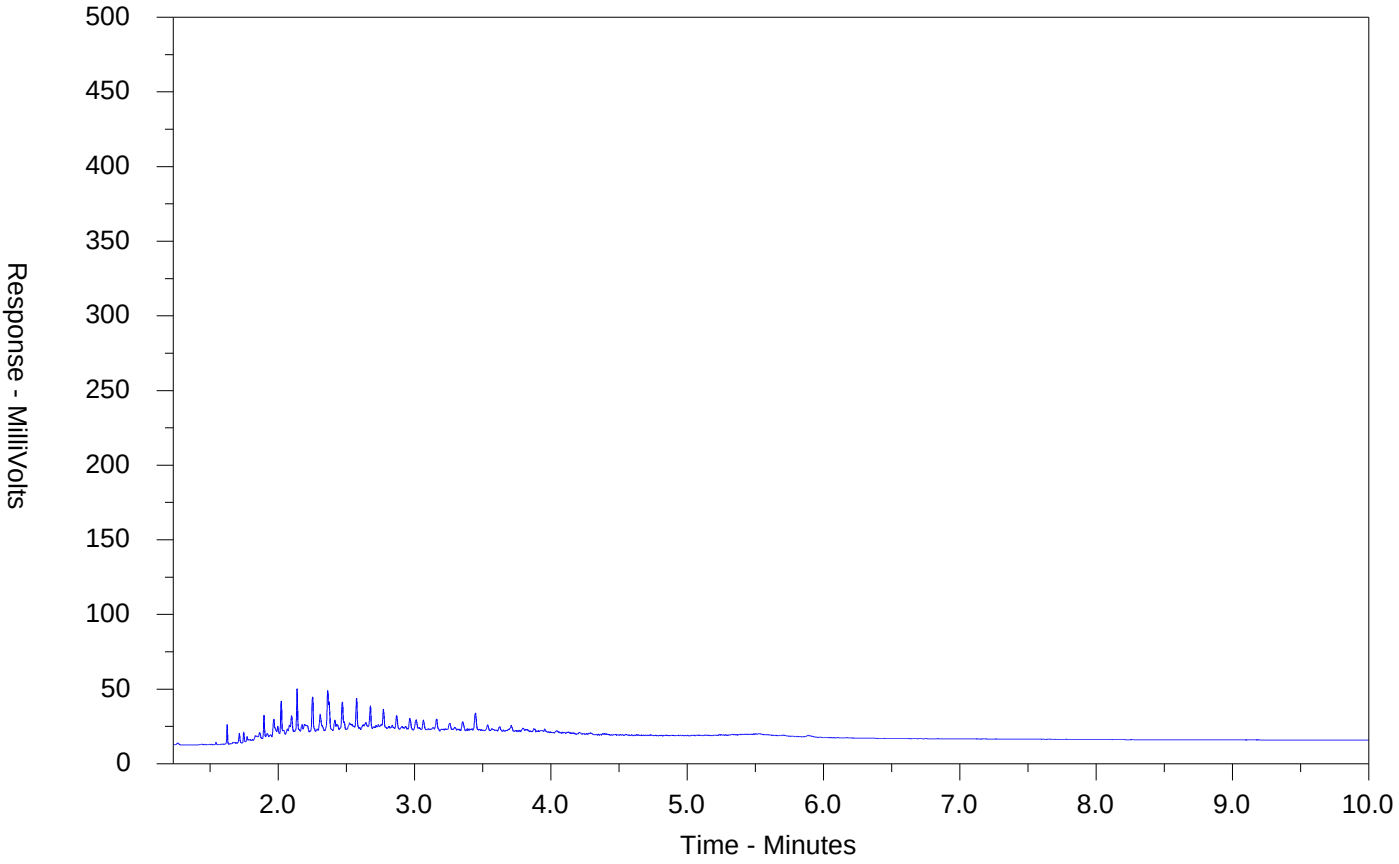
A Matrix Spike (MS) is a randomly selected intra-laboratory replicate sample that has been fortified (spiked) with test analytes at known concentration, and processed in an identical manner to test samples. Matrix Spikes provide information regarding analyte recovery and potential matrix effects. MS DQO exceedances due to sample matrix may sometimes be unavoidable; in such cases, test results for the associated sample (or similar samples) may be subject to bias. ND – Recovery not determined, background level >= 1x spike level.

Sub-Matrix: **Soil/Solid**

					Matrix Spike (MS) Report					
					Spike		Recovery (%)	Recovery Limits (%)		
Laboratory sample ID	Client sample ID	Analyte	CAS Number	Method	Concentration	Target	MS	Low	High	Qualifier
Volatile Organic Compounds (QCLot: 1317713)										
WT2402176-003	Anonymous	Benzene	71-43-2	E611A	2.04 mg/kg	3.125 mg/kg	100	60.0	140	----
		Ethylbenzene	100-41-4	E611A	1.88 mg/kg	3.125 mg/kg	92.5	60.0	140	----
		Toluene	108-88-3	E611A	1.89 mg/kg	3.125 mg/kg	92.9	60.0	140	----
		Xylene, m+p-	179601-23-1	E611A	3.78 mg/kg	6.25 mg/kg	92.9	60.0	140	----
		Xylene, o-	95-47-6	E611A	1.92 mg/kg	3.125 mg/kg	94.4	60.0	140	----
Hydrocarbons (QCLot: 1317714)										
WT2402176-003	Anonymous	F1 (C6-C10)	----	E581.F1	43.3 mg/kg	62.5 mg/kg	106	60.0	140	----
Hydrocarbons (QCLot: 1318287)										
WT2402145-003	Anonymous	F2 (C10-C16)	----	E601.SG-L	554 mg/kg	671.175 mg/kg	102	60.0	140	----
		F3 (C16-C34)	----	E601.SG-L	1170 mg/kg	1384.058 mg/kg	105	60.0	140	----
		F4 (C34-C50)	----	E601.SG-L	652 mg/kg	738.5 mg/kg	110	60.0	140	----
Polycyclic Aromatic Hydrocarbons (QCLot: 1318286)										
WT2402145-003	Anonymous	Acenaphthene	83-32-9	E641A	0.401 mg/kg	0.5 mg/kg	99.8	50.0	140	----
		Acenaphthylene	208-96-8	E641A	0.406 mg/kg	0.5 mg/kg	101	50.0	140	----
		Anthracene	120-12-7	E641A	0.448 mg/kg	0.5 mg/kg	111	50.0	140	----
		Benz(a)anthracene	56-55-3	E641A	0.398 mg/kg	0.5 mg/kg	99.1	50.0	140	----
		Benzo(a)pyrene	50-32-8	E641A	0.396 mg/kg	0.5 mg/kg	98.3	50.0	140	----
		Benzo(b+j)fluoranthene	n/a	E641A	0.419 mg/kg	0.5 mg/kg	104	50.0	140	----
		Benzo(g,h,i)perylene	191-24-2	E641A	0.421 mg/kg	0.5 mg/kg	105	50.0	140	----
		Benzo(k)fluoranthene	207-08-9	E641A	0.418 mg/kg	0.5 mg/kg	104	50.0	140	----
		Chrysene	218-01-9	E641A	0.354 mg/kg	0.5 mg/kg	87.9	50.0	140	----
		Dibenz(a,h)anthracene	53-70-3	E641A	0.381 mg/kg	0.5 mg/kg	94.7	50.0	140	----
		Fluoranthene	206-44-0	E641A	0.432 mg/kg	0.5 mg/kg	107	50.0	140	----
		Fluorene	86-73-7	E641A	0.408 mg/kg	0.5 mg/kg	101	50.0	140	----
		Indeno(1,2,3-c,d)pyrene	193-39-5	E641A	0.425 mg/kg	0.5 mg/kg	106	50.0	140	----
		Methylnaphthalene, 1-	90-12-0	E641A	0.383 mg/kg	0.5 mg/kg	95.3	50.0	140	----
		Methylnaphthalene, 2-	91-57-6	E641A	0.416 mg/kg	0.5 mg/kg	103	50.0	140	----
		Naphthalene	91-20-3	E641A	0.405 mg/kg	0.5 mg/kg	101	50.0	140	----
		Phenanthrene	85-01-8	E641A	0.417 mg/kg	0.5 mg/kg	104	50.0	140	----
		Pyrene	129-00-0	E641A	0.418 mg/kg	0.5 mg/kg	104	50.0	140	----

CCME F2-F4 HYDROCARBON DISTRIBUTION REPORT

ALS Sample ID: WT2402142-002-E601.SG-L
Client Sample ID: BH1-SS9-24



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

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

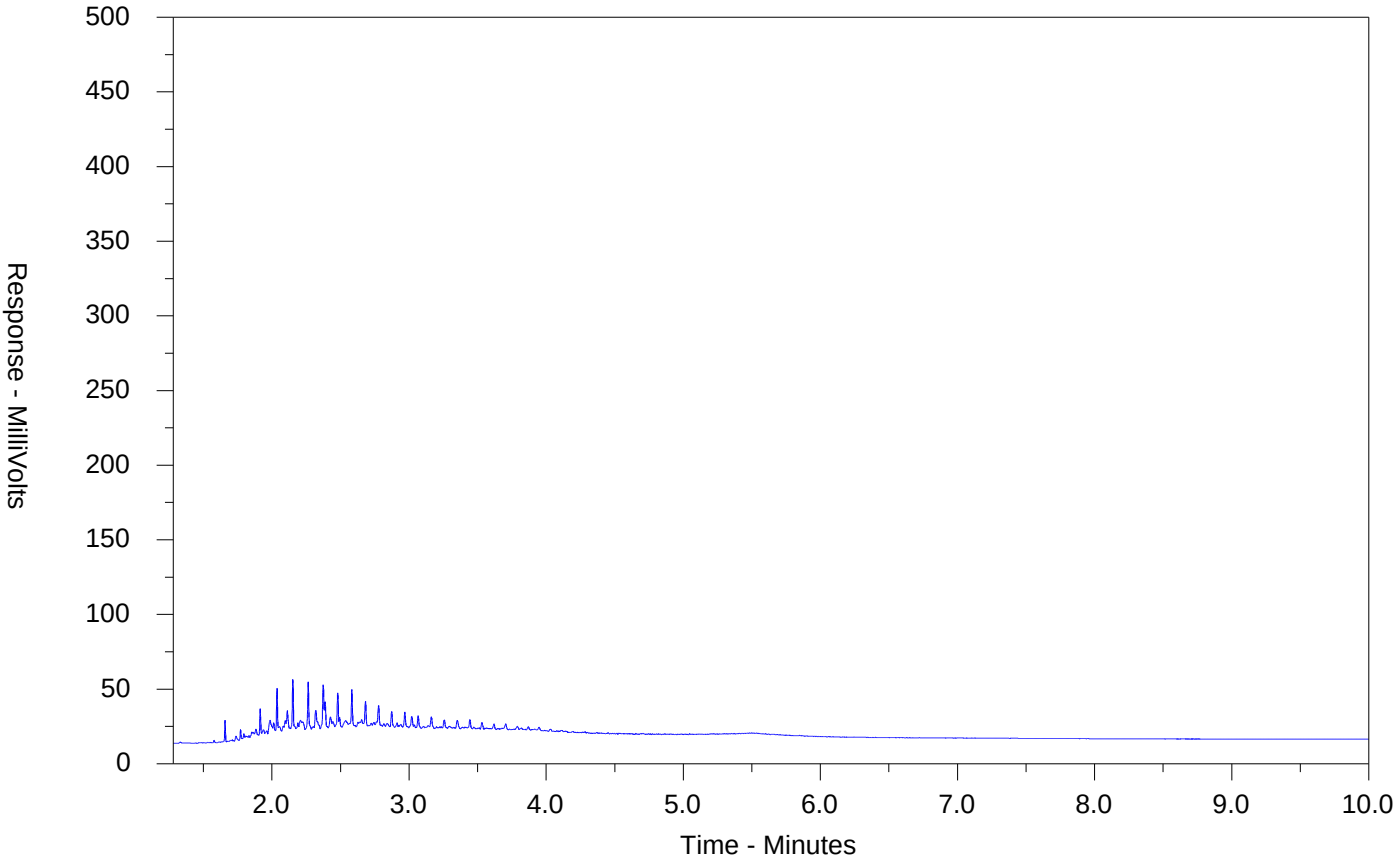
The scale at the bottom of the chromatogram indicates the approximate retention times of common petroleum products and four n-alkane hydrocarbon marker compounds. Retention times may vary between samples, but general patterns and distributions will remain similar.

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

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

CCME F2-F4 HYDROCARBON DISTRIBUTION REPORT

ALS Sample ID: WT2402142-004-E601.SG-L
Client Sample ID: BH2-SS3-24



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

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

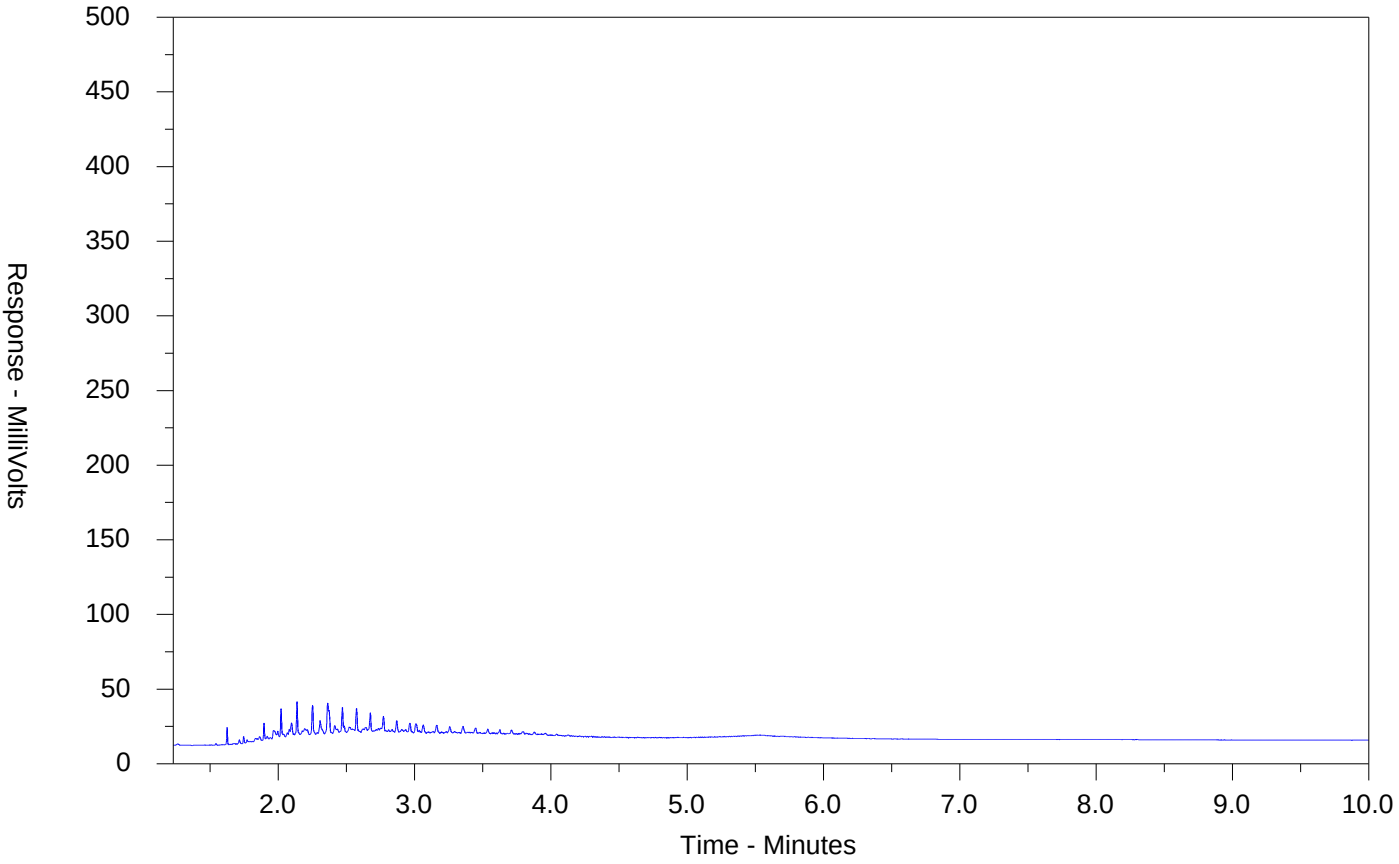
The scale at the bottom of the chromatogram indicates the approximate retention times of common petroleum products and four n-alkane hydrocarbon marker compounds. Retention times may vary between samples, but general patterns and distributions will remain similar.

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

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

CCME F2-F4 HYDROCARBON DISTRIBUTION REPORT

ALS Sample ID: WT2402142-006-E601.SG-L
Client Sample ID: BH3-SS4-24



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

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

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

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

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

Chain of Custody (COC) / Analytical Request Form

COC Number: 20 -

ALS www.alsglobal.com

Canada Toll Free: 1 800 668 9878

Page

Environmental Division
Waterloo
Work Order Reference
WT2402142

Telephone : +1 519 886 6910

Report To	Contact and company name below will appear on the final report
Company:	ARCADIS Canada Inc
Contact:	Aon Zhao
Phone:	780-270-3575
	Company address below will appear on the final report
Street:	8133 Warden Ave, Unit 300
City/Province:	Markham, ON
Postal Code:	L6G 1B3
Invoice To	Same as Report To ☐ YES ☑ NO
	Copy of Invoice with Report ☑ YES ☐ NO
Company:	Arcadis
Contact:	D.S

Reports / Recipients

Select Report Format: ☑ PDF ☑ EXCEL ☐ EDD (DIGITAL)
Merge QC/QCI Reports with COA ☐ YES ☐ NO ☐ N/A
☑ Compare Results to Criteria on Report - provide details below if box checked
Select Distribution: ☑ EMAIL ☐ MAIL ☐ FAX
Email 1 or Fax daniel.sin@arcadis.com
Email 2 aon.zhao@arcadis.com
Email 3

Invoice Recipients

Select Invoice Distribution: ☑ EMAIL ☐ MAIL ☐ FAX
Email 1 or Fax accounts.payable@arcadis.com
Email 2

Turnaround Time (TAT) Requested

☑ Routine [R] if received by 3pm M-F - no surcharges apply
☐ 4 day [P4] if received by 3pm M-F - 20% rush surcharge minimum
☐ 3 day [P3] if received by 3pm M-F - 25% rush surcharge minimum
☐ 2 day [P2] if received by 3pm M-F - 50% rush surcharge minimum
☐ 1 day [E] if received by 3pm M-F - 100% rush surcharge minimum
☐ Same day [E2] if received by 10am M-S - 200% rush surcharge minimum
Additional fees may apply to rush requests on weekends, statutory holidays and non-routine tests

Date and Time Required for all E&P TATs:

For all tests with rush TATs requested, please contact your AM to confirm availability.

Project Information

ALS Account # / Quote #:	2024 Price List
Job #:	145256
PO / AFE:	
LSD:	759 Maple Ave

Oil and Gas Required Fields (client use)

AFE/Cost Center:	PO#
Major/Minor Code:	Routing Code:
Requisitioner:	
Location:	

ALS Lab Work Order # (ALS use only):

ALS Contact: Emily Smith

Sampler: Daniel Sin

Analysis Requested

Indicate Filtered (F), Preserved (P) or Filtered and Preserved (F/P) below

ALS Sample # (ALS use only)	Sample Identification and/or Coordinates (This description will appear on the report)	Date (dd-mmm-yy)	Time (hh:mm)	Sample Type	NUMBER OF CONTAINERS	BTEX, F1-F4	PAHs in Soil (O.Reg.153/511/#06)	BTEX (Trip Blank)	SAMPLES ON HOLD	EXTENDED STORAGE REQUIRED	SUSPECTED HAZARD (see notes)
	BH1-SS2-24	29-01-24	9:45	~~Water~~	1		✓				
	BH1-SS9-24	" "	11:11am	~~Water~~	3	✓					
	BH2-SS1-24	" "	1:07pm	~~Water~~	1		✓				
	BH2-SS3-24	" "	1:30pm	~~Water~~	3	✓					
	BH3-SS2-24	" "	2:01pm	~~Water~~	1		✓				
	BH3-SS4-24	" "	3:00pm	~~Water~~	3	✓					
	DUP1	" "	-	~~Water~~	1		✓				
				~~Water~~							
				Water							
				Water							
				Water							
				Water							

Drinking Water (DW) Samples[1] (client use)

Are samples taken from a Regulated DW System? ☐ YES ☑ NO
Are samples for human consumption/ use? ☐ YES ☑ NO

Notes / Specify Limits for result evaluation by selecting from drop-down below (Excel COC only)

confirm with Aon Zhao if VOCs are required
1-780-270-3875
- compare to table 2, Oreg 153/04.

SAMPLE RECEIPT DETAILS (ALS use only)

Cooling Method: ☐ NONE ☐ ICE ☑ ICE PACKS ☐ FROZEN ☐ COOLING INITIATED
Submission Comments identified on Sample Receipt Notification: ☐ YES ☐ NO
Cooler Custody Seals Intact: ☑ YES ☐ N/A Sample Custody Seals Intact: ☐ YES ☐ N/A

INITIAL COOLER TEMPERATURES °C				FINAL COOLER TEMPERATURES °C			
3.6				4.3			

SHIPMENT RELEASE (client use)

Released by:	Date:	Time:
Daniel Sin	Jan 29, 2024	6:03 PM

INITIAL SHIPMENT RECEPTION (ALS use only)

Received by:	Date:	Time:
PV	Jan 30/24	11:30am

FINAL SHIPMENT RECEPTION (ALS use only)

Received by:	Date:	Time:
TL	30-Jan-24	15:45

REFER TO BACK PAGE FOR ALS LOCATIONS AND SAMPLING INFORMATION

WHITE - LABORATORY COPY YELLOW - CLIENT COPY

AUG 2020 FRONT

Failure to complete all portions of this form may delay analysis. Please fill in this form LEGIBLY. By the use of this form the user acknowledges and agrees with the Terms and Conditions as specified on the back page of the white - report copy.

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

VS-093 fax-627-7...

ALS Canada Ltd.

right solutions. right partner.

CERTIFICATE OF ANALYSIS (GUIDELINE EVALUATION)

Work Order	: **WT2404700**	Page	: 1 of 10
Client	: **Arcadis Canada Inc.**	Laboratory	: ALS Environmental - Waterloo
Contact	: Daniel Sin	Account Manager	: Emily Smith
Address	: 155 Frobisher Dr Suite J-101 Waterloo ON Canada N2V 2E1	Address	: 60 Northland Road, Unit 1 Waterloo, Ontario Canada N2V 2B8
Telephone	: ----	Telephone	: +1 519 886 6910
Project	: 145256	Date Samples Received	: 01-Mar-2024 16:21
PO	: ----	Date Analysis Commenced	: 05-Mar-2024
C-O-C number	: 20-1004475	Issue Date	: 07-Mar-2024 10:13
Sampler	: Daniel Sin		
Site	: ----		
Quote number	: Waterloo 2024 Price List		
No. of samples received	: 5		
No. of samples analysed	: 5		

This report supersedes any previous report(s) with this reference. Results apply to the sample(s) as submitted. This document shall not be reproduced, except in full.

This Certificate of Analysis contains the following information:

- General Comments
- Analytical Results
- Guideline Comparison

Additional information pertinent to this report will be found in the following separate attachments: Quality Control Report, QC Interpretive report to assist with Quality Review and Sample Receipt Notification (SRN).

Signatories

This document has been electronically signed by the authorized signatories below. Electronic signing is conducted in accordance with US FDA 21 CFR Part 11.

Signatories	*Position*	*Laboratory Department*
Jeremy Gingras	Supervisor - Semi-Volatile Instrumentation	Organics, Waterloo, Ontario
Sarah Birch	VOC Section Supervisor	VOC, Waterloo, Ontario

General Comments

The analytical methods used by ALS are developed using internationally recognized reference methods (where available), such as those published by US EPA, APHA Standard Methods, ASTM, ISO, Environment Canada, BC MOE, and Ontario MOE. Refer to the ALS Quality Control Interpretive report (QCI) for applicable references and methodology summaries. Reference methods may incorporate modifications to improve performance.

Where a reported less than (<) result is higher than the LOR, this may be due to primary sample extract/digestate dilution and/or insufficient sample for analysis.
Where the LOR of a reported result differs from standard LOR, this may be due to high moisture content, insufficient sample (reduced weight employed) or matrix interference.

Additional information pertinent to this report will be found in the following separate attachments: Quality Control Report, QA/QC Compliance Assessment to assist with Quality Review and Sample Receipt Notification.

When sampling time information is not provided by the client, sampling dates are shown without a time component. In these instances, the time component has been assumed by the laboratory for processing purposes.

Application of guidelines is provided "as is" without warranty of any kind, either expressed or implied, including, but not limited to fitness for a particular purpose, or non-infringement. ALS assumes no responsibility for errors or omissions in the information. Guidelines are not adjusted for the hardness, pH or temperature of the sample (the most conservative values are used). Measurement uncertainty is not applied to test results prior to comparison with specified criteria values.

Key : LOR: Limit of Reporting (detection limit).

Unit	*Description*
-	no units
µg/L	micrograms per litre

>: greater than.
<: less than.
Red shading is applied where the result or the LOR is greater than the Guideline Upper Limit (or lower than the Guideline Lower Limit, if applicable).
For drinking water samples, Red shading is applied where the result for E.coli, fecal or total coliforms is greater than or equal to the Guideline Upper Limit .

Analytical Results

Sub-Matrix: **Water**
(Matrix: **Water**)

Analyte	Method/Lab	LOR	Unit	Client sample ID: MW1-24 Sampling date/time: 01-Mar-2024 12:00 WT2404700-001	ON153/04 T2-GW-C-All	ON153/04 T2-GW-F-All	--	--	--	--
Volatile Organic Compounds										
Benzene	E611A/WT	0.50	µg/L	<0.50	5 µg/L	5 µg/L	--	--	--	--
Ethylbenzene	E611A/WT	0.50	µg/L	<0.50	2.4 µg/L	2.4 µg/L	--	--	--	--
Toluene	E611A/WT	0.50	µg/L	<0.50	24 µg/L	24 µg/L	--	--	--	--
Xylene, m+p-	E611A/WT	0.40	µg/L	<0.40	--	--	--	--	--	--
Xylene, o-	E611A/WT	0.30	µg/L	<0.30	--	--	--	--	--	--
Xylenes, total	E611A/WT	0.50	µg/L	<0.50	300 µg/L	300 µg/L	--	--	--	--
BTEX, total	E611A/WT	1.0	µg/L	<1.0	--	--	--	--	--	--
Hydrocarbons										
F1 (C6-C10)	E581.F1-L/WT	25	µg/L	<25	750 µg/L	750 µg/L	--	--	--	--
F2 (C10-C16)	E601.SG/WT	100	µg/L	<100	150 µg/L	150 µg/L	--	--	--	--
F3 (C16-C34)	E601.SG/WT	250	µg/L	<250	500 µg/L	500 µg/L	--	--	--	--
F4 (C34-C50)	E601.SG/WT	250	µg/L	<250	500 µg/L	500 µg/L	--	--	--	--
F1-BTEX	EC580/WT	25	µg/L	<25	750 µg/L	750 µg/L	--	--	--	--
F2-Naphthalene	EC600SG/WT	100	µg/L	<100	--	--	--	--	--	--
F3-PAH	EC600SG/WT	250	µg/L	<250	--	--	--	--	--	--
Hydrocarbons, total (C6-C50)	EC581SG/WT	240	µg/L	<370	--	--	--	--	--	--
Chromatogram to baseline at nC50	E601.SG/WT		-	YES	--	--	--	--	--	--
Bromobenzotrifluoride, 2- (F2-F4 surrogate)	E601.SG/WT	1.0	%	90.7	--	--	--	--	--	--
Dichlorotoluene, 3,4-	E581.F1-L/WT	1.0	%	110	--	--	--	--	--	--
Bromofluorobenzene, 4-	E611A/WT	1.0	%	98.4	--	--	--	--	--	--
Difluorobenzene, 1,4-	E611A/WT	1.0	%	99.2	--	--	--	--	--	--
Polycyclic Aromatic Hydrocarbons										
Acenaphthene	E641A/WT	0.010	µg/L	<0.010	4.1 µg/L	4.1 µg/L	--	--	--	--
Acenaphthylene	E641A/WT	0.010	µg/L	<0.010	1 µg/L	1 µg/L	--	--	--	--
Chrysene-d12	E641A/WT	0.1	%	110	--	--	--	--	--	--
Naphthalene-d8	E641A/WT	0.1	%	109	--	--	--	--	--	--
Phenanthrene-d10	E641A/WT	0.1	%	108	--	--	--	--	--	--
Anthracene	E641A/WT	0.010	µg/L	<0.010	2.4 µg/L	2.4 µg/L	--	--	--	--
Benz(a)anthracene	E641A/WT	0.010	µg/L	<0.010	1 µg/L	1 µg/L	--	--	--	--
Benzo(a)pyrene	E641A/WT	0.0050	µg/L	<0.0050	0.01 µg/L	0.01 µg/L	--	--	--	--

Analyte	Method/Lab	LOR	Unit	WT2404700-001 (Continued)	ON153/04 T2-GW-C-All	ON153/04 T2-GW-F-All	--	--	--	--
Polycyclic Aromatic Hydrocarbons - Continued										
Benzo(b+j)fluoranthene	E641A/WT	0.010	µg/L	<0.010	0.1 µg/L	0.1 µg/L	--	--	--	--
Benzo(g,h,i)perylene	E641A/WT	0.010	µg/L	<0.010	0.2 µg/L	0.2 µg/L	--	--	--	--
Benzo(k)fluoranthene	E641A/WT	0.010	µg/L	<0.010	0.1 µg/L	0.1 µg/L	--	--	--	--
Chrysene	E641A/WT	0.010	µg/L	<0.010	0.1 µg/L	0.1 µg/L	--	--	--	--
Dibenz(a,h)anthracene	E641A/WT	0.0050	µg/L	<0.0050	0.2 µg/L	0.2 µg/L	--	--	--	--
Fluoranthene	E641A/WT	0.010	µg/L	<0.010	0.41 µg/L	0.41 µg/L	--	--	--	--
Fluorene	E641A/WT	0.010	µg/L	<0.010	120 µg/L	120 µg/L	--	--	--	--
Indeno(1,2,3-c,d)pyrene	E641A/WT	0.010	µg/L	<0.010	0.2 µg/L	0.2 µg/L	--	--	--	--
Methylnaphthalene, 1-	E641A/WT	0.010	µg/L	<0.010	3.2 µg/L	3.2 µg/L	--	--	--	--
Methylnaphthalene, 1+2-	E641A/WT	0.015	µg/L	<0.015	3.2 µg/L	3.2 µg/L	--	--	--	--
Methylnaphthalene, 2-	E641A/WT	0.010	µg/L	<0.010	3.2 µg/L	3.2 µg/L	--	--	--	--
Naphthalene	E641A/WT	0.050	µg/L	<0.050	11 µg/L	11 µg/L	--	--	--	--
Phenanthrene	E641A/WT	0.020	µg/L	<0.020	1 µg/L	1 µg/L	--	--	--	--
Pyrene	E641A/WT	0.010	µg/L	<0.010	4.1 µg/L	4.1 µg/L	--	--	--	--

Please refer to the General Comments section for an explanation of any result qualifiers detected.

Please refer to the Accreditation section for an explanation of analyte accreditations.

No Breaches Found

Key:

ON153/04	Ontario Regulation 153/04 - April 15, 2011 Standards (JUL, 2011)
T2-GW-C-All	153 T2-Ground Water (Coarse Soil)-All Types of Property Use
T2-GW-F-All	153 T2-Ground Water (Fine Soil)-All Types of Property Use

Analytical Results

Sub-Matrix: **Water**
(Matrix: **Water**)

Analyte	Method/Lab	LOR	Unit	Client sample ID: MW2-24 Sampling date/time: 01-Mar-2024 12:45 WT2404700-002	ON153/04 T2-GW-C-All	ON153/04 T2-GW-F-All	--	--	--	--
Volatile Organic Compounds										
Benzene	E611A/WT	0.50	µg/L	<0.50	5 µg/L	5 µg/L	--	--	--	--
Ethylbenzene	E611A/WT	0.50	µg/L	<0.50	2.4 µg/L	2.4 µg/L	--	--	--	--
Toluene	E611A/WT	0.50	µg/L	<0.50	24 µg/L	24 µg/L	--	--	--	--
Xylene, m+p-	E611A/WT	0.40	µg/L	<0.40	--	--	--	--	--	--
Xylene, o-	E611A/WT	0.30	µg/L	<0.30	--	--	--	--	--	--
Xylenes, total	E611A/WT	0.50	µg/L	<0.50	300 µg/L	300 µg/L	--	--	--	--
BTEX, total	E611A/WT	1.0	µg/L	<1.0	--	--	--	--	--	--
Hydrocarbons										
F1 (C6-C10)	E581.F1-L/WT	25	µg/L	<25	750 µg/L	750 µg/L	--	--	--	--
F2 (C10-C16)	E601.SG/WT	100	µg/L	<100	150 µg/L	150 µg/L	--	--	--	--
F3 (C16-C34)	E601.SG/WT	250	µg/L	<250	500 µg/L	500 µg/L	--	--	--	--
F4 (C34-C50)	E601.SG/WT	250	µg/L	<250	500 µg/L	500 µg/L	--	--	--	--
F1-BTEX	EC580/WT	25	µg/L	<25	750 µg/L	750 µg/L	--	--	--	--
F2-Naphthalene	EC600SG/WT	100	µg/L	<100	--	--	--	--	--	--
F3-PAH	EC600SG/WT	250	µg/L	<250	--	--	--	--	--	--
Hydrocarbons, total (C6-C50)	EC581SG/WT	240	µg/L	<370	--	--	--	--	--	--
Chromatogram to baseline at nC50	E601.SG/WT		-	YES	--	--	--	--	--	--
Bromobenzotrifluoride, 2- (F2-F4 surrogate)	E601.SG/WT	1.0	%	82.7	--	--	--	--	--	--
Dichlorotoluene, 3,4-	E581.F1-L/WT	1.0	%	112	--	--	--	--	--	--
Bromofluorobenzene, 4-	E611A/WT	1.0	%	87.5	--	--	--	--	--	--
Difluorobenzene, 1,4-	E611A/WT	1.0	%	98.3	--	--	--	--	--	--
Polycyclic Aromatic Hydrocarbons										
Acenaphthene	E641A/WT	0.010	µg/L	<0.010	4.1 µg/L	4.1 µg/L	--	--	--	--
Acenaphthylene	E641A/WT	0.010	µg/L	<0.010	1 µg/L	1 µg/L	--	--	--	--
Chrysene-d12	E641A/WT	0.1	%	113	--	--	--	--	--	--
Naphthalene-d8	E641A/WT	0.1	%	114	--	--	--	--	--	--
Phenanthrene-d10	E641A/WT	0.1	%	113	--	--	--	--	--	--
Anthracene	E641A/WT	0.010	µg/L	<0.010	2.4 µg/L	2.4 µg/L	--	--	--	--
Benz(a)anthracene	E641A/WT	0.010	µg/L	<0.010	1 µg/L	1 µg/L	--	--	--	--
Benzo(a)pyrene	E641A/WT	0.0050	µg/L	<0.0050	0.01 µg/L	0.01 µg/L	--	--	--	--

Analyte	Method/Lab	LOR	Unit	WT2404700-002 (Continued)	ON153/04 T2-GW-C-All	ON153/04 T2-GW-F-All	--	--	--	--
Polycyclic Aromatic Hydrocarbons - Continued										
Benzo(b+j)fluoranthene	E641A/WT	0.010	µg/L	<0.010	0.1 µg/L	0.1 µg/L	--	--	--	--
Benzo(g,h,i)perylene	E641A/WT	0.010	µg/L	<0.010	0.2 µg/L	0.2 µg/L	--	--	--	--
Benzo(k)fluoranthene	E641A/WT	0.010	µg/L	<0.010	0.1 µg/L	0.1 µg/L	--	--	--	--
Chrysene	E641A/WT	0.010	µg/L	<0.010	0.1 µg/L	0.1 µg/L	--	--	--	--
Dibenz(a,h)anthracene	E641A/WT	0.0050	µg/L	<0.0050	0.2 µg/L	0.2 µg/L	--	--	--	--
Fluoranthene	E641A/WT	0.010	µg/L	<0.010	0.41 µg/L	0.41 µg/L	--	--	--	--
Fluorene	E641A/WT	0.010	µg/L	<0.010	120 µg/L	120 µg/L	--	--	--	--
Indeno(1,2,3-c,d)pyrene	E641A/WT	0.010	µg/L	<0.010	0.2 µg/L	0.2 µg/L	--	--	--	--
Methylnaphthalene, 1-	E641A/WT	0.010	µg/L	<0.010	3.2 µg/L	3.2 µg/L	--	--	--	--
Methylnaphthalene, 1+2-	E641A/WT	0.015	µg/L	<0.015	3.2 µg/L	3.2 µg/L	--	--	--	--
Methylnaphthalene, 2-	E641A/WT	0.010	µg/L	<0.010	3.2 µg/L	3.2 µg/L	--	--	--	--
Naphthalene	E641A/WT	0.050	µg/L	<0.050	11 µg/L	11 µg/L	--	--	--	--
Phenanthrene	E641A/WT	0.020	µg/L	<0.020	1 µg/L	1 µg/L	--	--	--	--
Pyrene	E641A/WT	0.010	µg/L	<0.010	4.1 µg/L	4.1 µg/L	--	--	--	--

Please refer to the General Comments section for an explanation of any result qualifiers detected.

Please refer to the Accreditation section for an explanation of analyte accreditations.

No Breaches Found

Key:

ON153/04	Ontario Regulation 153/04 - April 15, 2011 Standards (JUL, 2011)
T2-GW-C-All	153 T2-Ground Water (Coarse Soil)-All Types of Property Use
T2-GW-F-All	153 T2-Ground Water (Fine Soil)-All Types of Property Use

Analytical Results

Sub-Matrix: **Water**
(Matrix: **Water**)

Analyte	Method/Lab	LOR	Unit	Client sample ID: MW3-24 Sampling date/time: 01-Mar-2024 13:30 WT2404700-003	ON153/04 T2-GW-C-All	ON153/04 T2-GW-F-All	--	--	--	--
Volatile Organic Compounds										
Benzene	E611A/WT	0.50	µg/L	<0.50	5 µg/L	5 µg/L	--	--	--	--
Ethylbenzene	E611A/WT	0.50	µg/L	<0.50	2.4 µg/L	2.4 µg/L	--	--	--	--
Toluene	E611A/WT	0.50	µg/L	<0.50	24 µg/L	24 µg/L	--	--	--	--
Xylene, m+p-	E611A/WT	0.40	µg/L	<0.40	--	--	--	--	--	--
Xylene, o-	E611A/WT	0.30	µg/L	<0.30	--	--	--	--	--	--
Xylenes, total	E611A/WT	0.50	µg/L	<0.50	300 µg/L	300 µg/L	--	--	--	--
BTEX, total	E611A/WT	1.0	µg/L	<1.0	--	--	--	--	--	--
Hydrocarbons										
F1 (C6-C10)	E581.F1-L/WT	25	µg/L	<25	750 µg/L	750 µg/L	--	--	--	--
F2 (C10-C16)	E601.SG/WT	100	µg/L	<100	150 µg/L	150 µg/L	--	--	--	--
F3 (C16-C34)	E601.SG/WT	250	µg/L	<250	500 µg/L	500 µg/L	--	--	--	--
F4 (C34-C50)	E601.SG/WT	250	µg/L	<250	500 µg/L	500 µg/L	--	--	--	--
F1-BTEX	EC580/WT	25	µg/L	<25	750 µg/L	750 µg/L	--	--	--	--
F2-Naphthalene	EC600SG/WT	100	µg/L	<100	--	--	--	--	--	--
F3-PAH	EC600SG/WT	250	µg/L	<250	--	--	--	--	--	--
Hydrocarbons, total (C6-C50)	EC581SG/WT	240	µg/L	<370	--	--	--	--	--	--
Chromatogram to baseline at nC50	E601.SG/WT		-	YES	--	--	--	--	--	--
Bromobenzotrifluoride, 2- (F2-F4 surrogate)	E601.SG/WT	1.0	%	83.8	--	--	--	--	--	--
Dichlorotoluene, 3,4-	E581.F1-L/WT	1.0	%	110	--	--	--	--	--	--
Bromofluorobenzene, 4-	E611A/WT	1.0	%	97.7	--	--	--	--	--	--
Difluorobenzene, 1,4-	E611A/WT	1.0	%	98.8	--	--	--	--	--	--
Polycyclic Aromatic Hydrocarbons										
Acenaphthene	E641A/WT	0.010	µg/L	<0.010	4.1 µg/L	4.1 µg/L	--	--	--	--
Acenaphthylene	E641A/WT	0.010	µg/L	<0.010	1 µg/L	1 µg/L	--	--	--	--
Chrysene-d12	E641A/WT	0.1	%	110	--	--	--	--	--	--
Naphthalene-d8	E641A/WT	0.1	%	108	--	--	--	--	--	--
Phenanthrene-d10	E641A/WT	0.1	%	107	--	--	--	--	--	--
Anthracene	E641A/WT	0.010	µg/L	<0.010	2.4 µg/L	2.4 µg/L	--	--	--	--
Benz(a)anthracene	E641A/WT	0.010	µg/L	<0.010	1 µg/L	1 µg/L	--	--	--	--
Benzo(a)pyrene	E641A/WT	0.0050	µg/L	<0.0050	0.01 µg/L	0.01 µg/L	--	--	--	--

Analyte	Method/Lab	LOR	Unit	WT2404700-003 (Continued)	ON153/04 T2-GW-C-All	ON153/04 T2-GW-F-All	--	--	--	--
Polycyclic Aromatic Hydrocarbons - Continued										
Benzo(b+j)fluoranthene	E641A/WT	0.010	µg/L	<0.010	0.1 µg/L	0.1 µg/L	--	--	--	--
Benzo(g,h,i)perylene	E641A/WT	0.010	µg/L	<0.010	0.2 µg/L	0.2 µg/L	--	--	--	--
Benzo(k)fluoranthene	E641A/WT	0.010	µg/L	<0.010	0.1 µg/L	0.1 µg/L	--	--	--	--
Chrysene	E641A/WT	0.010	µg/L	<0.010	0.1 µg/L	0.1 µg/L	--	--	--	--
Dibenz(a,h)anthracene	E641A/WT	0.0050	µg/L	<0.0050	0.2 µg/L	0.2 µg/L	--	--	--	--
Fluoranthene	E641A/WT	0.010	µg/L	<0.010	0.41 µg/L	0.41 µg/L	--	--	--	--
Fluorene	E641A/WT	0.010	µg/L	<0.010	120 µg/L	120 µg/L	--	--	--	--
Indeno(1,2,3-c,d)pyrene	E641A/WT	0.010	µg/L	<0.010	0.2 µg/L	0.2 µg/L	--	--	--	--
Methylnaphthalene, 1-	E641A/WT	0.010	µg/L	<0.010	3.2 µg/L	3.2 µg/L	--	--	--	--
Methylnaphthalene, 1+2-	E641A/WT	0.015	µg/L	<0.015	3.2 µg/L	3.2 µg/L	--	--	--	--
Methylnaphthalene, 2-	E641A/WT	0.010	µg/L	<0.010	3.2 µg/L	3.2 µg/L	--	--	--	--
Naphthalene	E641A/WT	0.050	µg/L	<0.050	11 µg/L	11 µg/L	--	--	--	--
Phenanthrene	E641A/WT	0.020	µg/L	<0.020	1 µg/L	1 µg/L	--	--	--	--
Pyrene	E641A/WT	0.010	µg/L	<0.010	4.1 µg/L	4.1 µg/L	--	--	--	--

Please refer to the General Comments section for an explanation of any result qualifiers detected.

Please refer to the Accreditation section for an explanation of analyte accreditations.

No Breaches Found

Key:

ON153/04	Ontario Regulation 153/04 - April 15, 2011 Standards (JUL, 2011)
T2-GW-C-All	153 T2-Ground Water (Coarse Soil)-All Types of Property Use
T2-GW-F-All	153 T2-Ground Water (Fine Soil)-All Types of Property Use

Analytical Results

Sub-Matrix: **Water** (Matrix: **Water**)				Client sample ID	DUP2					
				Sampling date/time	01-Mar-2024 00:00					
Analyte	*Method/Lab*	*LOR*	*Unit*	WT2404700-004	**ON153/04 T2-GW-C-All**	**ON153/04 T2-GW-F-All**	**--**	**--**	**--**	**--**
Volatile Organic Compounds [Fuels]										
Benzene	E611A/WT	0.50	µg/L	<0.50	5 µg/L	5 µg/L	--	--	--	--
Ethylbenzene	E611A/WT	0.50	µg/L	<0.50	2.4 µg/L	2.4 µg/L	--	--	--	--
Toluene	E611A/WT	0.50	µg/L	<0.50	24 µg/L	24 µg/L	--	--	--	--
Xylene, m+p-	E611A/WT	0.40	µg/L	<0.40	--	--	--	--	--	--
Xylene, o-	E611A/WT	0.30	µg/L	<0.30	--	--	--	--	--	--
Xylenes, total	E611A/WT	0.50	µg/L	<0.50	300 µg/L	300 µg/L	--	--	--	--
BTEX, total	E611A/WT	1.0	µg/L	<1.0	--	--	--	--	--	--
Volatile Organic Compounds Surrogates										
Bromofluorobenzene, 4-	E611A/WT	1.0	%	97.5	--	--	--	--	--	--
Difluorobenzene, 1,4-	E611A/WT	1.0	%	98.9	--	--	--	--	--	--

Please refer to the General Comments section for an explanation of any result qualifiers detected.

Please refer to the Accreditation section for an explanation of analyte accreditations.

No Breaches Found

Key:

ON153/04	Ontario Regulation 153/04 - April 15, 2011 Standards (JUL, 2011)
T2-GW-C-All	153 T2-Ground Water (Coarse Soil)-All Types of Property Use
T2-GW-F-All	153 T2-Ground Water (Fine Soil)-All Types of Property Use

Analytical Results

Sub-Matrix: **Water**
(Matrix: **Water**)

				Client sample ID	TRIP BLANK					
				Sampling date/time	01-Mar-2024 00:00					
Analyte	*Method/Lab*	*LOR*	*Unit*	WT2404700-005	**ON153/04 T2-GW-C-All**	**ON153/04 T2-GW-F-All**	**--**	**--**	**--**	**--**
Volatile Organic Compounds [Fuels]										
Benzene	E611A/WT	0.50	µg/L	<0.50	5 µg/L	5 µg/L	--	--	--	--
Ethylbenzene	E611A/WT	0.50	µg/L	<0.50	2.4 µg/L	2.4 µg/L	--	--	--	--
Toluene	E611A/WT	0.50	µg/L	<0.50	24 µg/L	24 µg/L	--	--	--	--
Xylene, m+p-	E611A/WT	0.40	µg/L	<0.40	--	--	--	--	--	--
Xylene, o-	E611A/WT	0.30	µg/L	<0.30	--	--	--	--	--	--
Xylenes, total	E611A/WT	0.50	µg/L	<0.50	300 µg/L	300 µg/L	--	--	--	--
BTEX, total	E611A/WT	1.0	µg/L	<1.0	--	--	--	--	--	--
Volatile Organic Compounds Surrogates										
Bromofluorobenzene, 4-	E611A/WT	1.0	%	95.0	--	--	--	--	--	--
Difluorobenzene, 1,4-	E611A/WT	1.0	%	98.7	--	--	--	--	--	--

Please refer to the General Comments section for an explanation of any result qualifiers detected.

Please refer to the Accreditation section for an explanation of analyte accreditations.

No Breaches Found

Key:

ON153/04	Ontario Regulation 153/04 - April 15, 2011 Standards (JUL, 2011)
T2-GW-C-All	153 T2-Ground Water (Coarse Soil)-All Types of Property Use
T2-GW-F-All	153 T2-Ground Water (Fine Soil)-All Types of Property Use

ALS Canada Ltd.

QUALITY CONTROL INTERPRETIVE REPORT

Work Order	: **WT2404700**	Page	: 1 of 7
Client	: **Arcadis Canada Inc.**	Laboratory	: ALS Environmental - Waterloo
Contact	: Daniel Sin	Account Manager	: Emily Smith
Address	: 155 Frobisher Dr Suite J-101 Waterloo ON Canada N2V 2E1	Address	: 60 Northland Road, Unit 1 Waterloo, Ontario Canada N2V 2B8
Telephone	: ----	Telephone	: +1 519 886 6910
Project	: 145256	Date Samples Received	: 01-Mar-2024 16:21
PO	: ----	Issue Date	: 07-Mar-2024 10:13
C-O-C number	: 20-1004475		
Sampler	: Daniel Sin		
Site	: ----		
Quote number	: Waterloo 2024 Price List		
No. of samples received	: 5		
No. of samples analysed	: 5		

This report is automatically generated by the ALS LIMS (Laboratory Information Management System) through evaluation of Quality Control (QC) results and other QA parameters associated with this submission, and is intended to facilitate rapid data validation by auditors or reviewers. The report highlights any exceptions and outliers to ALS Data Quality Objectives, provides holding time details and exceptions, summarizes QC sample frequencies, and lists applicable methodology references and summaries.

Key

Anonymous: Refers to samples which are not part of this work order, but which formed part of the QC process lot.
CAS Number: Chemical Abstracts Service number is a unique identifier assigned to discrete substances.
DQO: Data Quality Objective.
LOR: Limit of Reporting (detection limit).
RPD: Relative Percent Difference.

Workorder Comments

Holding times are displayed as "---" if no guidance exists from CCME, Canadian provinces, or broadly recognized international references.

Summary of Outliers

Outliers : Quality Control Samples

- No Method Blank value outliers occur.
- No Duplicate outliers occur.
- No Laboratory Control Sample (LCS) outliers occur
- No Matrix Spike outliers occur.
- No Test sample Surrogate recovery outliers exist.

Outliers: Reference Material (RM) Samples

- No Reference Material (RM) Sample outliers occur.

Outliers : Analysis Holding Time Compliance (Breaches)

- No Analysis Holding Time Outliers exist.

Outliers : Frequency of Quality Control Samples

- No Quality Control Sample Frequency Outliers occur.

Analysis Holding Time Compliance

This report summarizes extraction / preparation and analysis times and compares each with ALS recommended holding times, which are selected to meet known provincial and /or federal requirements. In the absence of regulatory hold times, ALS establishes recommendations based on guidelines published by organizations such as CCME, US EPA, APHA Standard Methods, ASTM, or Environment Canada (where available). Dates and holding times reported below represent the first dates of extraction or analysis. If subsequent tests or dilutions exceeded holding times, qualifiers are added (refer to COA).

If samples are identified below as having been analyzed or extracted outside of recommended holding times, measurement uncertainties may be increased, and this should be taken into consideration when interpreting results.

Where actual sampling date is not provided on the chain of custody, the date of receipt with time at 00:00 is used for calculation purposes.

Where only the sample date without time is provided on the chain of custody, the sampling date at 00:00 is used for calculation purposes.

Matrix: **Water**

Evaluation: × = Holding time exceedance ; ✓ = Within Holding Time

Analyte Group : Analytical Method / Container / Client Sample ID(s)	Method	Sampling Date	Extraction / Preparation				Analysis			
			Preparation Date	Holding Times Rec	Holding Times Actual	Eval	Analysis Date	Holding Times Rec	Holding Times Actual	Eval
Hydrocarbons : CCME PHC - F1 by Headspace GC-FID (Low Level)										
Glass vial (sodium bisulfate) MW1-24	E581.F1-L	01-Mar-2024	05-Mar-2024	14 days	4 days	✓	05-Mar-2024	14 days	4 days	✓
Hydrocarbons : CCME PHC - F1 by Headspace GC-FID (Low Level)										
Glass vial (sodium bisulfate) MW2-24	E581.F1-L	01-Mar-2024	05-Mar-2024	14 days	4 days	✓	05-Mar-2024	14 days	4 days	✓
Hydrocarbons : CCME PHC - F1 by Headspace GC-FID (Low Level)										
Glass vial (sodium bisulfate) MW3-24	E581.F1-L	01-Mar-2024	05-Mar-2024	14 days	4 days	✓	05-Mar-2024	14 days	4 days	✓
Hydrocarbons : Silica Gel Treated CCME PHCs - F2-F4sg by GC-FID										
Amber glass/Teflon lined cap (sodium bisulfate) MW1-24	E601.SG	01-Mar-2024	05-Mar-2024	14 days	4 days	✓	06-Mar-2024	40 days	1 days	✓
Hydrocarbons : Silica Gel Treated CCME PHCs - F2-F4sg by GC-FID										
Amber glass/Teflon lined cap (sodium bisulfate) MW2-24	E601.SG	01-Mar-2024	05-Mar-2024	14 days	4 days	✓	06-Mar-2024	40 days	1 days	✓
Hydrocarbons : Silica Gel Treated CCME PHCs - F2-F4sg by GC-FID										
Amber glass/Teflon lined cap (sodium bisulfate) MW3-24	E601.SG	01-Mar-2024	05-Mar-2024	14 days	4 days	✓	06-Mar-2024	40 days	1 days	✓
Polycyclic Aromatic Hydrocarbons : PAHs by Hexane LVI GC-MS										
Amber glass/Teflon lined cap (sodium bisulfate) MW1-24	E641A	01-Mar-2024	05-Mar-2024	14 days	4 days	✓	05-Mar-2024	40 days	0 days	✓

Matrix: **Water**

Evaluation: × = Holding time exceedance ; ✓ = Within Holding Time

Analyte Group : Analytical Method / Container / Client Sample ID(s)	Method	Sampling Date	Extraction / Preparation				Analysis			
			Preparation Date	Holding Times Rec	Holding Times Actual	Eval	Analysis Date	Holding Times Rec	Holding Times Actual	Eval
Polycyclic Aromatic Hydrocarbons : PAHs by Hexane LVI GC-MS										
Amber glass/Teflon lined cap (sodium bisulfate) MW2-24	E641A	01-Mar-2024	05-Mar-2024	14 days	4 days	✓	05-Mar-2024	40 days	0 days	✓
Polycyclic Aromatic Hydrocarbons : PAHs by Hexane LVI GC-MS										
Amber glass/Teflon lined cap (sodium bisulfate) MW3-24	E641A	01-Mar-2024	05-Mar-2024	14 days	4 days	✓	05-Mar-2024	40 days	0 days	✓
Volatile Organic Compounds : BTEX by Headspace GC-MS										
Glass vial (sodium bisulfate) DUP2	E611A	01-Mar-2024	05-Mar-2024	14 days	4 days	✓	05-Mar-2024	14 days	4 days	✓
Volatile Organic Compounds : BTEX by Headspace GC-MS										
Glass vial (sodium bisulfate) MW1-24	E611A	01-Mar-2024	05-Mar-2024	14 days	4 days	✓	05-Mar-2024	14 days	4 days	✓
Volatile Organic Compounds : BTEX by Headspace GC-MS										
Glass vial (sodium bisulfate) MW2-24	E611A	01-Mar-2024	05-Mar-2024	14 days	4 days	✓	05-Mar-2024	14 days	4 days	✓
Volatile Organic Compounds : BTEX by Headspace GC-MS										
Glass vial (sodium bisulfate) MW3-24	E611A	01-Mar-2024	05-Mar-2024	14 days	4 days	✓	05-Mar-2024	14 days	4 days	✓
Volatile Organic Compounds : BTEX by Headspace GC-MS										
Glass vial (sodium bisulfate) TRIP BLANK	E611A	01-Mar-2024	05-Mar-2024	14 days	4 days	✓	05-Mar-2024	14 days	4 days	✓

Legend & Qualifier Definitions

Rec. HT: ALS recommended hold time (see units).

Quality Control Parameter Frequency Compliance

The following report summarizes the frequency of laboratory QC samples analyzed within the analytical batches (QC lots) in which the submitted samples were processed. The actual frequency should be greater than or equal to the expected frequency.

Matrix: **Water**

Evaluation: × = *QC frequency outside specification*; ✓ = *QC frequency within specification.*

Quality Control Sample Type			Count		Frequency (%)		
Analytical Methods	*Method*	*QC Lot #*	*QC*	*Regular*	*Actual*	*Expected*	*Evaluation*
Laboratory Duplicates (DUP)							
BTEX by Headspace GC-MS	E611A	1354046	1	20	5.0	5.0	✓
CCME PHC - F1 by Headspace GC-FID (Low Level)	E581.F1-L	1354045	1	17	5.8	5.0	✓
Laboratory Control Samples (LCS)							
BTEX by Headspace GC-MS	E611A	1354046	1	20	5.0	5.0	✓
CCME PHC - F1 by Headspace GC-FID (Low Level)	E581.F1-L	1354045	1	17	5.8	5.0	✓
PAHs by Hexane LVI GC-MS	E641A	1353729	1	11	9.0	5.0	✓
Silica Gel Treated CCME PHCs - F2-F4sg by GC-FID	E601.SG	1353728	1	15	6.6	5.0	✓
Method Blanks (MB)							
BTEX by Headspace GC-MS	E611A	1354046	1	20	5.0	5.0	✓
CCME PHC - F1 by Headspace GC-FID (Low Level)	E581.F1-L	1354045	1	17	5.8	5.0	✓
PAHs by Hexane LVI GC-MS	E641A	1353729	1	11	9.0	5.0	✓
Silica Gel Treated CCME PHCs - F2-F4sg by GC-FID	E601.SG	1353728	1	15	6.6	5.0	✓
Matrix Spikes (MS)							
BTEX by Headspace GC-MS	E611A	1354046	1	20	5.0	5.0	✓
CCME PHC - F1 by Headspace GC-FID (Low Level)	E581.F1-L	1354045	1	17	5.8	5.0	✓

Methodology References and Summaries

The analytical methods used by ALS are developed using internationally recognized reference methods (where available), such as those published by US EPA, APHA Standard Methods, ASTM, ISO, Environment Canada, BC MOE, and Ontario MOE. Reference methods may incorporate modifications to improve performance (indicated by "mod").

Analytical Methods	Method / Lab	Matrix	Method Reference	Method Descriptions
CCME PHC - F1 by Headspace GC-FID (Low Level)	E581.F1-L ALS Environmental - Waterloo	Water	CCME PHC in Soil - Tier 1 (mod)	CCME Fraction 1 (F1) is analyzed by static headspace GC-FID. Samples are prepared in headspace vials and are heated and agitated on the headspace autosampler, causing VOCs to partition between the aqueous phase and the headspace in accordance with Henry's law. Analytical methods for CCME Petroleum Hydrocarbons (PHCs) are validated to comply fully with the Reference Method for the Canada-Wide Standard for PHC. Unless qualified, all required quality control criteria of the CCME PHC method have been met, including response factor and linearity requirements.
Silica Gel Treated CCME PHCs - F2-F4sg by GC-FID	E601.SG ALS Environmental - Waterloo	Water	CCME PHC in Soil - Tier 1 (mod)	Sample extracts are subjected to in-situ silica gel treatment prior to analysis by GC-FID for CCME hydrocarbon fractions (F2-F4). Analytical methods for CCME Petroleum Hydrocarbons (PHCs) are validated to comply fully with the Reference Method for the Canada-Wide Standard for PHC. Unless qualified, all required quality control criteria of the CCME PHC method have been met, including response factor and linearity requirements.
BTEX by Headspace GC-MS	E611A ALS Environmental - Waterloo	Water	EPA 8260D (mod)	Volatile Organic Compounds (VOCs) are analyzed by static headspace GC-MS. Samples are prepared in headspace vials and are heated and agitated on the headspace autosampler, causing VOCs to partition between the aqueous phase and the headspace in accordance with Henry's law.
PAHs by Hexane LVI GC-MS	E641A ALS Environmental - Waterloo	Water	EPA 8270E (mod)	Polycyclic Aromatic Hydrocarbons (PAHs) are analyzed by large volume injection (LVI) GC-MS.
F1-BTEX	EC580 ALS Environmental - Waterloo	Water	CCME PHC in Soil - Tier 1	F1-BTEX is calculated as follows: F1-BTEX = F1 (C6-C10) minus benzene, toluene, ethylbenzene and xylenes (BTEX).
SUM F1 to F4 where F2-F4 is SG treated	EC581SG ALS Environmental - Waterloo	Water	CCME PHC in Soil - Tier 1	Hydrocarbons, total (C6-C50) is the sum of CCME Fraction F1(C6-C10), F2(C10-C16), F3(C16-C34), and F4(C34-C50), where F2-F4 have been treated with silica gel. F4G-sg is not used within this calculation due to overlap with other fractions.
F2-F4 (sg) minus PAH	EC600SG ALS Environmental - Waterloo	Water	CCME PHC in Soil - Tier 1	F2-F4 (sg) minus PAH is calculated as follows: F2-F4 minus PAH = Sum of CCME Fraction 2 (C10-C16), CCME Fraction 3 (C16-C34), and CCME Fraction 4 (C34-C50), minus select Polycyclic Aromatic Hydrocarbons (PAH).

Preparation Methods	Method / Lab	Matrix	Method Reference	Method Descriptions

Preparation Methods	Method / Lab	Matrix	Method Reference	Method Descriptions
VOCs Preparation for Headspace Analysis	EP581 ALS Environmental - Waterloo	Water	EPA 5021A (mod)	Samples are prepared in headspace vials and are heated and agitated on the headspace autosampler. An aliquot of the headspace is then injected into the GC/MS-FID system.
PHCs and PAHs Hexane Extraction	EP601 ALS Environmental - Waterloo	Water	EPA 3511 (mod)	Petroleum Hydrocarbons (PHCs) and Polycyclic Aromatic Hydrocarbons (PAHs) are extracted using a hexane liquid-liquid extraction.

QUALITY CONTROL REPORT

Work Order	: **WT2404700**	Page	: 1 of 6
Client	: Arcadis Canada Inc.	Laboratory	: ALS Environmental - Waterloo
Contact	: Daniel Sin	Account Manager	: Emily Smith
Address	: 155 Frobisher Dr Suite J-101 Waterloo ON Canada N2V 2E1	Address	: 60 Northland Road, Unit 1 Waterloo, Ontario Canada N2V 2B8
Telephone	:	Telephone	: +1 519 886 6910
Project	: 145256	Date Samples Received	: 01-Mar-2024 16:21
PO	: ----	Date Analysis Commenced	: 05-Mar-2024
C-O-C number	: 20-1004475	Issue Date	: 07-Mar-2024 10:13
Sampler	: Daniel Sin ----		
Site	: ----		
Quote number	: Waterloo 2024 Price List		
No. of samples received	: 5		
No. of samples analysed	: 5		

This report supersedes any previous report(s) with this reference. Results apply to the sample(s) as submitted. This document shall not be reproduced, except in full.

This Quality Control Report contains the following information:

- Laboratory Duplicate (DUP) Report; Relative Percent Difference (RPD) and Data Quality Objectives
- Matrix Spike (MS) Report; Recovery and Data Quality Objectives
- Method Blank (MB) Report; Recovery and Data Quality Objectives
- Laboratory Control Sample (LCS) Report; Recovery and Data Quality Objectives

Signatories

This document has been electronically signed by the authorized signatories below. Electronic signing is conducted in accordance with US FDA 21 CFR Part 11.

Signatories	*Position*	*Laboratory Department*
Jeremy Gingras	Supervisor - Semi-Volatile Instrumentation	Waterloo Organics, Waterloo, Ontario
Sarah Birch	VOC Section Supervisor	Waterloo VOC, Waterloo, Ontario

General Comments

The ALS Quality Control (QC) report is optionally provided to ALS clients upon request. ALS test methods include comprehensive QC checks with every analysis to ensure our high standards of quality are met. Each QC result has a known or expected target value, which is compared against predetermined Data Quality Objectives (DQOs) to provide confidence in the accuracy of associated test results. This report contains detailed results for all QC results applicable to this sample submission. Please refer to the ALS Quality Control Interpretation report (QCI) for applicable method references and methodology summaries.

Key :

Anonymous = Refers to samples which are not part of this work order, but which formed part of the QC process lot.
CAS Number = Chemical Abstracts Service number is a unique identifier assigned to discrete substances.
DQO = Data Quality Objective.
LOR = Limit of Reporting (detection limit).
RPD = Relative Percent Difference
# = Indicates a QC result that did not meet the ALS DQO.

Workorder Comments

Holding times are displayed as "---" if no guidance exists from CCME, Canadian provinces, or broadly recognized international references.

Laboratory Duplicate (DUP) Report

A Laboratory Duplicate (DUP) is a randomly selected intralaboratory replicate sample. Laboratory Duplicates provide information regarding method precision and sample heterogeneity. ALS DQOs for Laboratory Duplicates are expressed as test-specific limits for Relative Percent Difference (RPD), or as an absolute difference limit of 2 times the LOR for low concentration duplicates within ~ 4-10 times the LOR (cut-off is test-specific).

Sub-Matrix: **Water**

					Laboratory Duplicate (DUP) Report						
Laboratory sample ID	*Client sample ID*	*Analyte*	*CAS Number*	*Method*	*LOR*	*Unit*	*Original Result*	*Duplicate Result*	*RPD(%) or Difference*	*Duplicate Limits*	*Qualifier*
Volatile Organic Compounds (QC Lot: 1354046)											
WT2404583-003	Anonymous	Benzene	71-43-2	E611A	0.50	µg/L	<0.50	<0.50	0	Diff <2x LOR	----
		Ethylbenzene	100-41-4	E611A	0.50	µg/L	<0.50	<0.50	0	Diff <2x LOR	----
		Toluene	108-88-3	E611A	0.50	µg/L	<0.50	<0.50	0	Diff <2x LOR	----
		Xylene, m+p-	179601-23-1	E611A	0.40	µg/L	<0.40	<0.40	0	Diff <2x LOR	----
		Xylene, o-	95-47-6	E611A	0.30	µg/L	<0.30	<0.30	0	Diff <2x LOR	----
Hydrocarbons (QC Lot: 1354045)											
WT2404583-003	Anonymous	F1 (C6-C10)	----	E581.F1-L	25	µg/L	<25	<25	0	Diff <2x LOR	----

Method Blank (MB) Report

A Method Blank is an analyte-free matrix that undergoes sample processing identical to that carried out for test samples. Method Blank results are used to monitor and control for potential contamination from the laboratory environment and reagents. For most tests, the DQO for Method Blanks is for the result to be < LOR.

Sub-Matrix: **Water**

Analyte	CAS Number	Method	LOR	Unit	Result	Qualifier
Volatile Organic Compounds (QCLot: 1354046)						
Benzene	71-43-2	E611A	0.5	µg/L	<0.50	----
Ethylbenzene	100-41-4	E611A	0.5	µg/L	<0.50	----
Toluene	108-88-3	E611A	0.5	µg/L	<0.50	----
Xylene, m+p-	179601-23-1	E611A	0.4	µg/L	<0.40	----
Xylene, o-	95-47-6	E611A	0.3	µg/L	<0.30	----
Hydrocarbons (QCLot: 1353728)						
F2 (C10-C16)	----	E601.SG	100	µg/L	<100	----
F3 (C16-C34)	----	E601.SG	250	µg/L	<250	----
F4 (C34-C50)	----	E601.SG	250	µg/L	<250	----
Hydrocarbons (QCLot: 1354045)						
F1 (C6-C10)	----	E581.F1-L	25	µg/L	<25	----
Polycyclic Aromatic Hydrocarbons (QCLot: 1353729)						
Acenaphthene	83-32-9	E641A	0.01	µg/L	<0.010	----
Acenaphthylene	208-96-8	E641A	0.01	µg/L	<0.010	----
Anthracene	120-12-7	E641A	0.01	µg/L	<0.010	----
Benz(a)anthracene	56-55-3	E641A	0.01	µg/L	<0.010	----
Benzo(a)pyrene	50-32-8	E641A	0.005	µg/L	<0.0050	----
Benzo(b+j)fluoranthene	n/a	E641A	0.01	µg/L	<0.010	----
Benzo(g,h,i)perylene	191-24-2	E641A	0.01	µg/L	<0.010	----
Benzo(k)fluoranthene	207-08-9	E641A	0.01	µg/L	<0.010	----
Chrysene	218-01-9	E641A	0.01	µg/L	<0.010	----
Dibenz(a,h)anthracene	53-70-3	E641A	0.005	µg/L	<0.0050	----
Fluoranthene	206-44-0	E641A	0.01	µg/L	<0.010	----
Fluorene	86-73-7	E641A	0.01	µg/L	<0.010	----
Indeno(1,2,3-c,d)pyrene	193-39-5	E641A	0.01	µg/L	<0.010	----
Methylnaphthalene, 1-	90-12-0	E641A	0.01	µg/L	<0.010	----
Methylnaphthalene, 2-	91-57-6	E641A	0.01	µg/L	<0.010	----
Naphthalene	91-20-3	E641A	0.05	µg/L	<0.050	----
Phenanthrene	85-01-8	E641A	0.02	µg/L	<0.020	----
Pyrene	129-00-0	E641A	0.01	µg/L	<0.010	----

Laboratory Control Sample (LCS) Report

A Laboratory Control Sample (LCS) is an analyte-free matrix that has been fortified (spiked) with test analytes at known concentration and processed in an identical manner to test samples. LCS results are expressed as percent recovery, and are used to monitor and control test method accuracy and precision, independent of test sample matrix.

Sub-Matrix: **Water**

					Laboratory Control Sample (LCS) Report				
					Spike	Recovery (%)	Recovery Limits (%)		
Analyte	CAS Number	Method	LOR	Unit	Concentration	LCS	Low	High	Qualifier
Volatile Organic Compounds (QCLot: 1354046)									
Benzene	71-43-2	E611A	0.5	µg/L	100 µg/L	100	70.0	130	----
Ethylbenzene	100-41-4	E611A	0.5	µg/L	100 µg/L	95.2	70.0	130	----
Toluene	108-88-3	E611A	0.5	µg/L	100 µg/L	95.0	70.0	130	----
Xylene, m+p-	179601-23-1	E611A	0.4	µg/L	200 µg/L	94.9	70.0	130	----
Xylene, o-	95-47-6	E611A	0.3	µg/L	100 µg/L	99.5	70.0	130	----
Hydrocarbons (QCLot: 1353728)									
F2 (C10-C16)	----	E601.SG	100	µg/L	3768 µg/L	103	70.0	130	----
F3 (C16-C34)	----	E601.SG	250	µg/L	7770.15 µg/L	111	70.0	130	----
F4 (C34-C50)	----	E601.SG	250	µg/L	4145.96 µg/L	109	70.0	130	----
Hydrocarbons (QCLot: 1354045)									
F1 (C6-C10)	----	E581.F1-L	25	µg/L	2000 µg/L	109	80.0	120	----
Polycyclic Aromatic Hydrocarbons (QCLot: 1353729)									
Acenaphthene	83-32-9	E641A	0.01	µg/L	0.5263 µg/L	102	50.0	140	----
Acenaphthylene	208-96-8	E641A	0.01	µg/L	0.5263 µg/L	102	50.0	140	----
Anthracene	120-12-7	E641A	0.01	µg/L	0.5263 µg/L	104	50.0	140	----
Benz(a)anthracene	56-55-3	E641A	0.01	µg/L	0.5263 µg/L	116	50.0	140	----
Benzo(a)pyrene	50-32-8	E641A	0.005	µg/L	0.5263 µg/L	99.0	50.0	140	----
Benzo(b+j)fluoranthene	n/a	E641A	0.01	µg/L	0.5263 µg/L	103	50.0	140	----
Benzo(g,h,i)perylene	191-24-2	E641A	0.01	µg/L	0.5263 µg/L	113	50.0	140	----
Benzo(k)fluoranthene	207-08-9	E641A	0.01	µg/L	0.5263 µg/L	115	50.0	140	----
Chrysene	218-01-9	E641A	0.01	µg/L	0.5263 µg/L	118	50.0	140	----
Dibenz(a,h)anthracene	53-70-3	E641A	0.005	µg/L	0.5263 µg/L	101	50.0	140	----
Fluoranthene	206-44-0	E641A	0.01	µg/L	0.5263 µg/L	118	50.0	140	----
Fluorene	86-73-7	E641A	0.01	µg/L	0.5263 µg/L	114	50.0	140	----
Indeno(1,2,3-c,d)pyrene	193-39-5	E641A	0.01	µg/L	0.5263 µg/L	133	50.0	140	----
Methylnaphthalene, 1-	90-12-0	E641A	0.01	µg/L	0.5263 µg/L	93.5	50.0	140	----
Methylnaphthalene, 2-	91-57-6	E641A	0.01	µg/L	0.5263 µg/L	92.9	50.0	140	----
Naphthalene	91-20-3	E641A	0.05	µg/L	0.5263 µg/L	93.1	50.0	140	----
Phenanthrene	85-01-8	E641A	0.02	µg/L	0.5263 µg/L	117	50.0	140	----
Pyrene	129-00-0	E641A	0.01	µg/L	0.5263 µg/L	112	50.0	140	----

Matrix Spike (MS) Report

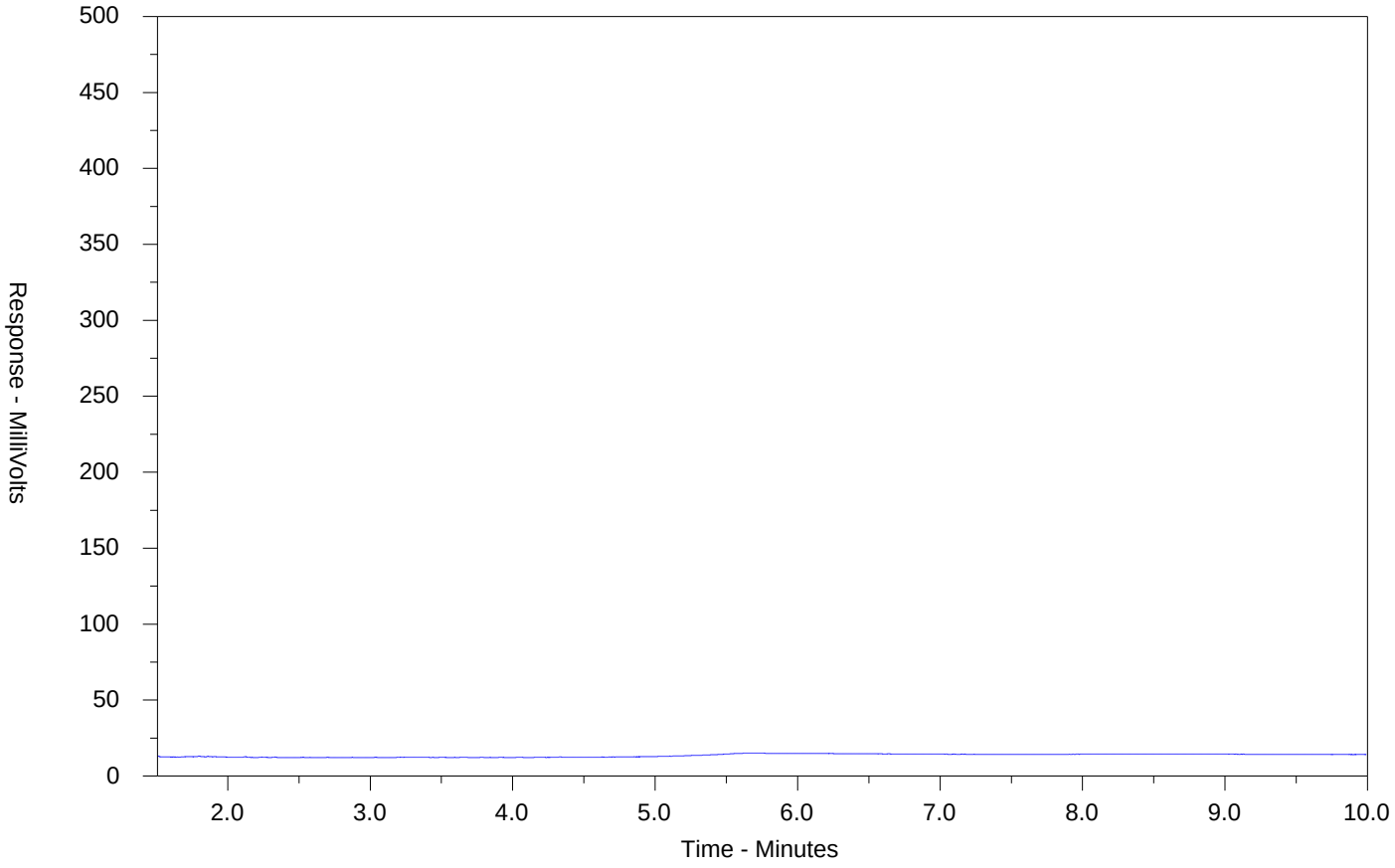
A Matrix Spike (MS) is a randomly selected intra-laboratory replicate sample that has been fortified (spiked) with test analytes at known concentration, and processed in an identical manner to test samples. Matrix Spikes provide information regarding analyte recovery and potential matrix effects. MS DQO exceedances due to sample matrix may sometimes be unavoidable; in such cases, test results for the associated sample (or similar samples) may be subject to bias. ND – Recovery not determined, background level >= 1x spike level.

Sub-Matrix: **Water**

					Matrix Spike (MS) Report					
					Spike		Recovery (%)	Recovery Limits (%)		
Laboratory sample ID	Client sample ID	Analyte	CAS Number	Method	Concentration	Target	MS	Low	High	Qualifier
Volatile Organic Compounds (QCLot: 1354046)										
WT2404583-003	Anonymous	Benzene	71-43-2	E611A	99.3 µg/L	100 µg/L	99.3	60.0	140	----
		Ethylbenzene	100-41-4	E611A	87.0 µg/L	100 µg/L	87.0	60.0	140	----
		Toluene	108-88-3	E611A	91.9 µg/L	100 µg/L	91.9	60.0	140	----
		Xylene, m+p-	179601-23-1	E611A	182 µg/L	200 µg/L	91.0	60.0	140	----
		Xylene, o-	95-47-6	E611A	95.8 µg/L	100 µg/L	95.8	60.0	140	----
Hydrocarbons (QCLot: 1354045)										
WT2404583-003	Anonymous	F1 (C6-C10)	----	E581.F1-L	1460 µg/L	2000 µg/L	72.9	60.0	140	----

CCME F2-F4 HYDROCARBON DISTRIBUTION REPORT

ALS Sample ID: WT2404700-001-E601.SG
Client Sample ID: MW1-24



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

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

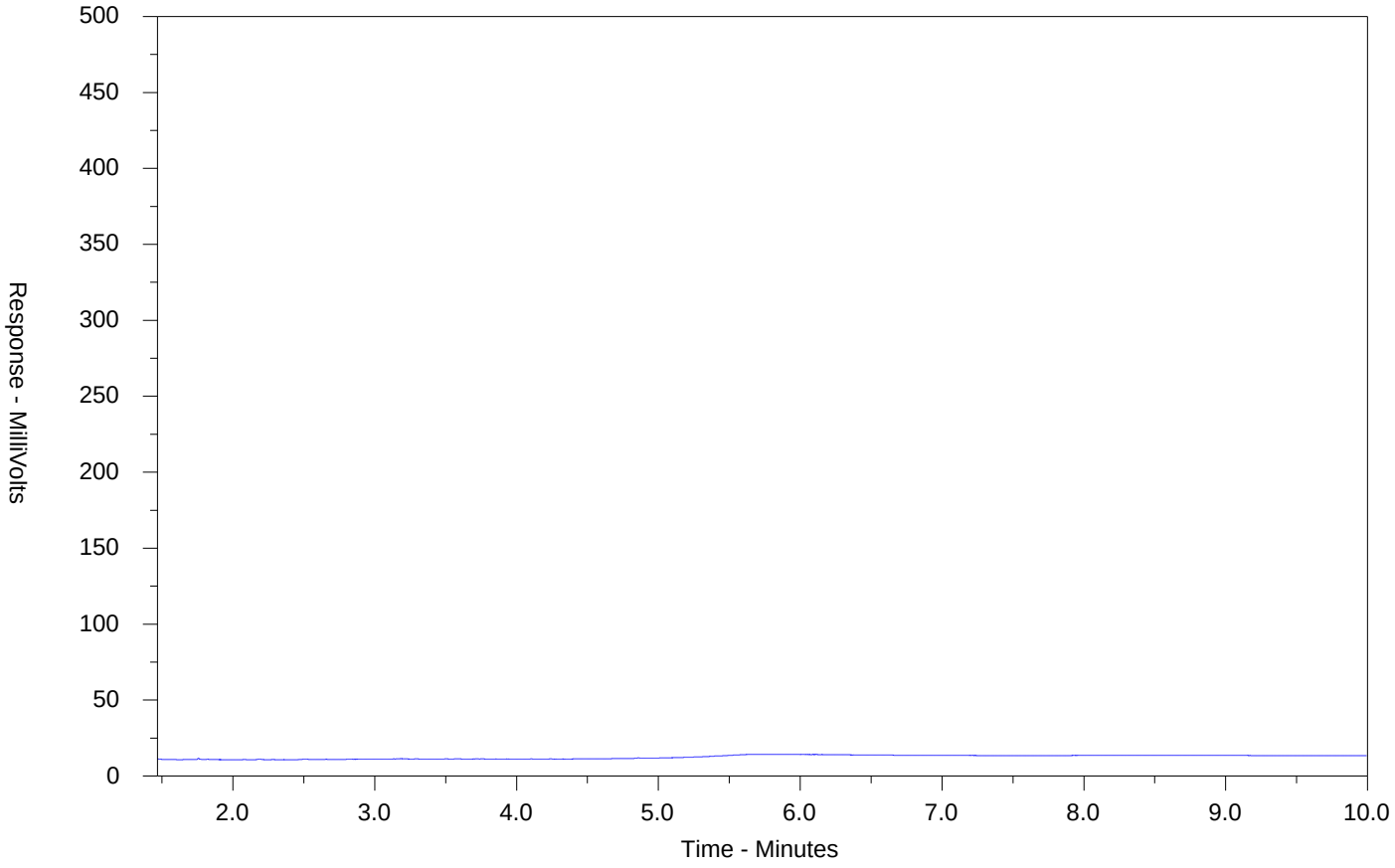
The scale at the bottom of the chromatogram indicates the approximate retention times of common petroleum products and four n-alkane hydrocarbon marker compounds. Retention times may vary between samples, but general patterns and distributions will remain similar.

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

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

CCME F2-F4 HYDROCARBON DISTRIBUTION REPORT

ALS Sample ID: WT2404700-002-E601.SG
Client Sample ID: MW2-24



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

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

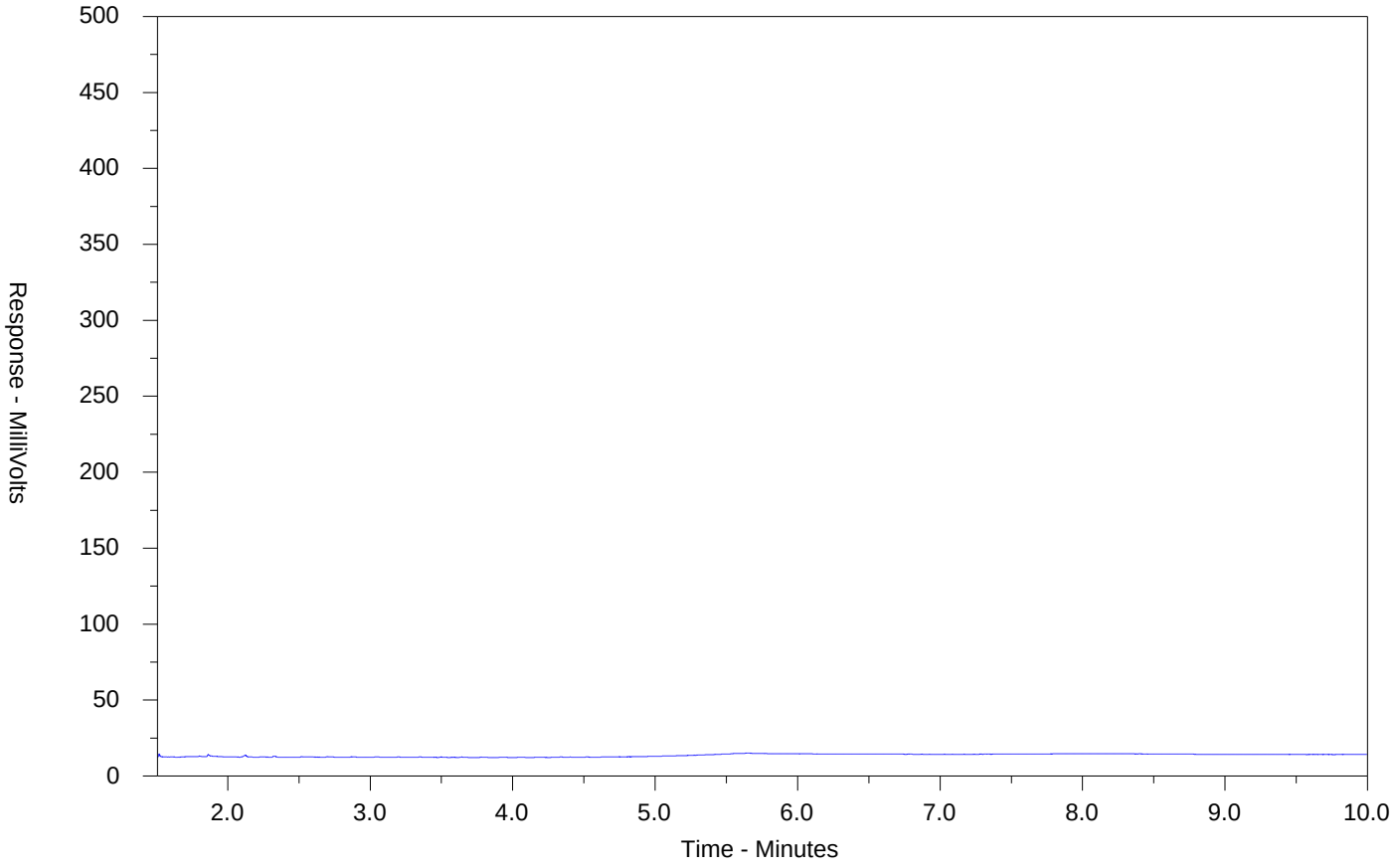
The scale at the bottom of the chromatogram indicates the approximate retention times of common petroleum products and four n-alkane hydrocarbon marker compounds. Retention times may vary between samples, but general patterns and distributions will remain similar.

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

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

CCME F2-F4 HYDROCARBON DISTRIBUTION REPORT

ALS Sample ID: WT2404700-003-E601.SG
Client Sample ID: MW3-24



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

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

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

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

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

Chain of Custody (COC) / Analytical Request Form

COC Number: 20 - 1004475

Canada Toll Free: 1 800 668 9878

Page of

www.alsglobal.com

Environmental Division
Waterloo
Work Order Reference
WT2404700

Telephone : +1 519 886 6910

Report To	Contact and company name below will appear on the final report
Company:	Arcadis
Contact:	Daniel Sin
Phone:	416 970 9545
	Company address below will appear on the final report
Street:	8133 Warden Ave unit 300
City/Province:	Markham ON
Postal Code:	L6G 1B3
Invoice To	Same as Report To ☑ YES ☐ NO
	Copy of Invoice with Report ☑ YES ☐ NO
Company:	Arcadis
Contact:	Daniel Sin

Reports / Recipients	
Select Report Format:	☑ PDF ☑ EXCEL ☐ EDD (DIGITAL)
Merge QC/QCI Reports with COA	☐ YES ☐ NO ☐ N/A
☑ Compare Results to Criteria on Report - provide details below if box checked	
Select Distribution:	☑ EMAIL ☐ MAIL ☐ FAX
Email 1 or Fax	daniel.sin@arcadis.com
Email 2	aron.zhao@"
Email 3	

Invoice Recipients	
Select Invoice Distribution:	☑ EMAIL ☐ MAIL ☐ FAX
Email 1 or Fax	arcamb.mytable@bigpond.com
Email 2	

Turnaround Time (TAT) Requested
☑ Routine [R] if received by 3pm M-F - no surcharges apply
☐ 4 day [P4] if received by 3pm M-F - 20% rush surcharge minim
☐ 3 day [P3] if received by 3pm M-F - 25% rush surcharge minim
☐ 2 day [P2] if received by 3pm M-F - 50% rush surcharge minim
☐ 1 day [E] if received by 3pm M-F - 100% rush surcharge minim
☐ Same day [E2] if received by 10am M-S - 200% rush surcharge. Ad may apply to rush requests on weekends, statutory holidays and non-r
Date and Time Required for all E&P TATs:
For all tests with rush TATs requested, please

Project Information	
ALS Account # / Quote #:	
Job #:	145256
PO / AFE:	
LSD:	

Oil and Gas Required Fields (client use)	
AFE/Cost Center:	PO#:
Major/Minor Code:	Routing Code:
Requisitioner:	
Location:	

ALS Lab Work Order # (ALS use only): WT2404700 R0

ALS Contact: Emily Smith Sampler: David Sin

Analysis Re

Indicate Filtered (F), Preserved (P) or Filtered an

ALS Sample # (ALS use only)	Sample Identification and/or Coordinates (This description will appear on the report)	Date (dd-mmm-yy)	Time (hh:mm)	Sample Type	NUMBER OF CONTAINERS	PAHs	dTEX PAHs	VOCs	D.S	SAMPLES ON HOLD	EXTENDED STORAGE REQUIF	SUSPECTED HAZARD (see not
	MW1-24	01-03-24	12:00	GW	4	✓	✓	✓	✓			
	MW2-24	↓	12:45	↓	4	✓	✓	✓	✓			
	MW3-24	↓	13:30	↓	4	✓	✓	✓	✓			
	DUP2	↓	-	↓	4	D.S	✓		✓			
	Trip Blank	↓	-	-	2		✓					

Drinking Water (DW) Samples[1] (client use)	Notes / Specify Limits for result evaluation by selecting from drop-down below (Excel COC only)
Are samples taken from a Regulated DW System? ☐ YES ☑ NO	- Compare to table 2, Oreg 153/04
Are samples for human consumption/ use? ☐ YES ☑ NO	

SAMPLE RECEIPT DETAILS (ALS use only)

Cooling Method: ☐ NONE ☐ ICE ☑ ICE PACKS ☐ FROZEN ☐ COOLING INITIATED

Submission Comments identified on Sample Receipt Notification: ☐ YES ☐ NO

Cooler Custody Seals Intact: ☐ YES ☑ N/A Sample Custody Seals Intact: ☐ YES ☑ N/A

INITIAL COOLER TEMPERATURES °C					FINAL COOLER TEMPERATURES °C				
4.6					5.5				

SHIPMENT RELEASE (client use)		
Released by: Daniel Sin	Date: March 1	Time: 2:40pm

INITIAL SHIPMENT RECEPTION (ALS use only)		
Received by: PV	Date: Mar 1/24	Time: 4:29

FINAL SHIPMENT RECEPTION (ALS use only)		
Received by:	Date: 03/04/24	Time: 8:50

VW243, QR 788

REFER TO BACK PAGE FOR ALS LOCATIONS AND SAMPLING INFORMATION

WHITE - LABORATORY COPY YELLOW - CLIENT COPY

AUG 2020 FRONT

Failure to complete all portions of this form may delay analysis. Please fill in this form LEGIBLY. By the use of this form the user acknowledges and agrees with the Terms and Conditions as specified on the back page of the white - report copy.

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